NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 15 2018
RECEIVED

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM89055

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.: NMNM70928X

1b. Type of Well: ☑ Oil Well ☑ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.: COTTON DRAW UNIT 516H 300635

2. Name of Operator: DEVON ENERGY PRODUCTION COMPANY LP 6137

9. API Well No.: 30-015-44717

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

3b. Phone No. *(include area code)*: (405)552-6571

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

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

At surface: NENE / 485 FNL / 440 FEL / LAT 32.1942688 / LONG -103.7243942

At proposed prod. zone: LOT 4 / 200 FSL / 330 FEL / LAT 32.1671358 / LONG -103.7240238

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 25 / T24S / R31E / NMP

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

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
200 feet	160	320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
700 feet	12097 feet / 22175 feet	FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3542 feet	02/25/2018	30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Linda Good / Ph: (405)552-6558	08/28/2017

Title: Regulatory Compliance Professional

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	02/08/2018

Title	Office
Supervisor Multiple Resources	CARLSBAD

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Approval Date: 02/08/2018

NSP Required

RWP 2-20-18

INSTRUCTIONS

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

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

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

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

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

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

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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Additional Operator Remarks

Location of Well

1. SHL: NENE / 485 FNL / 440 FEL / TWSP: 24S / RANGE: 31E / SECTION: 25 / LAT: 32.1942688 / LONG: -103.7243942 (TVD: 0 feet, MD: 0 feet)
   PPP: SESE / 0 FSL / 330 FEL / TWSP: 24S / RANGE: 31E / SECTION: 25 / LAT: 32.181072 / LONG: -103.724045 (TVD: 12083 feet, MD: 17100 feet)
   PPP: NENE / 330 FNL / 477 FEL / TWSP: 24S / RANGE: 31E / SECTION: 25 / LAT: 32.1942688 / LONG: -103.7243942 (TVD: 11992 feet, MD: 12124 feet)
   BHL: LOT 4 / 200 FSL / 330 FEL / TWSP: 24S / RANGE: 31E / SECTION: 36 / LAT: 32.1671358 / LONG: -103.7240238 (TVD: 12097 feet, MD: 22175 feet)

BLM Point of Contact

Name: Priscilla Perez
Title: Legal Instruments Examiner
Phone: 5752345934
Email: pperez@blm.gov

Review and Appeal Rights

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

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Devon Energy Production Company, L.P.**
LEASE NO.:	**NMNM-89055**
WELL NAME & NO.:	**Cotton Draw Unit 516H**
SURFACE HOLE FOOTAGE:	**0485' FNL & 0440' FEL**
BOTTOM HOLE FOOTAGE	**0200' FSL & 0330' FEL Sec. 36, T. 24 S., R 31 E.**
LOCATION:	**Section 25, T. 24 S., R 31 E., NMPM**
COUNTY:	**County, New Mexico**

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)

☐ **Eddy County**

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

Commercial Well Determination
A commercial well determination shall be submitted after production has been established for at least six months.

Unit Wells
The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

A. **Hydrogen Sulfide**

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM. Operator has stated they will install Hydrogen Sulfide (H2S) monitors prior to drilling out the surface shoe**

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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. **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 wells.**

4. Option – Setting surface casing with Spudder Rig

   a. Notify the BLM when removing the Spudder Rig.

   b. Notify the BLM when moving in the H&P Flex Rig. Rig to be moved in within 60 days of notification that Ashton Oilfield Services Rig has left the location. Failure to notify or have rig on location within 60 days will result in an Incident of Non-Compliance.

   c. Once the H&P Flex Rig is on location, it shall not be removed from over the hole without prior approval unless the production casing has been run and cemented or the well has been properly plugged. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

   d. BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as H&P Flex Rig is rigged up on well. CIT for the surface casing shall be performed and results recorded on subsequent sundry – pressure to be 1200 psi.

5. 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 is located, this does not include the dog house or stairway area.

6. **The record of the drilling rate along with the GR/N well log 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

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

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.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possibility of water flows in the Salado and Castile.
Possibility of lost circulation in the Red Bed, Rustler, and Delaware.

1. The **10-3/4** inch surface casing shall be set at approximately **725** feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Formation below the 10-3/4" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Intermediate casing shall be kept fluid filled while running into hole to meet BLM minimum collapse requirements.

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

☐ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to 7% - Additional cement may be required.**

If cement does not circulate to surface, operator shall run a Cement Bond Log (CBL) and contact the BLM with results. Operator must obtain approval for any cement remediation.

Formation below the 7-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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

☐ Cement as proposed by operator. Operator shall provide method of verification.

4. 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.

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 53.

2. Variance approved to use flex line from BOP to choke manifold. 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.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi.**
    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **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.**

5M 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. The appropriate BLM office shall be notified a minimum of 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).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. 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.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. 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.**

    e. 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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

    f. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

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

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

JAM 011618

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION
LEASE NO.:	NMNM89055
WELL NAME & NO.:	516H – COTTON DRAW UNIT
SURFACE HOLE FOOTAGE:	485'/N & 440'/E
BOTTOM HOLE FOOTAGE	200'/S & 330'/E
LOCATION:	Section 25.,T24S., R.31E., NMP
COUNTY:	EDDY County, New Mexico

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

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.
- Devon would need to construct and maintain escape ramps according to the following criteria:
    - Earthen escape ramps would be required to be constructed to sufficiently support livestock at no more than a 30-degree slope and spaced no more than 500 feet apart.
    - If trench is left open under an 8-hour time period, it would not be required to have an escape ramp; however, before the trench is backfilled, Lucid would inspect the trench for wildlife and remove any species that are trapped at a distance of at least 100 yards away from the trench.
- 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.

During construction, Devon shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. Devon 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.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

Ditching
Ditching shall be required on both sides of the road.

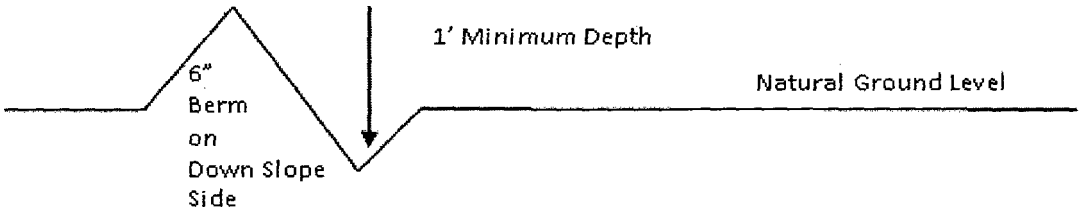
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

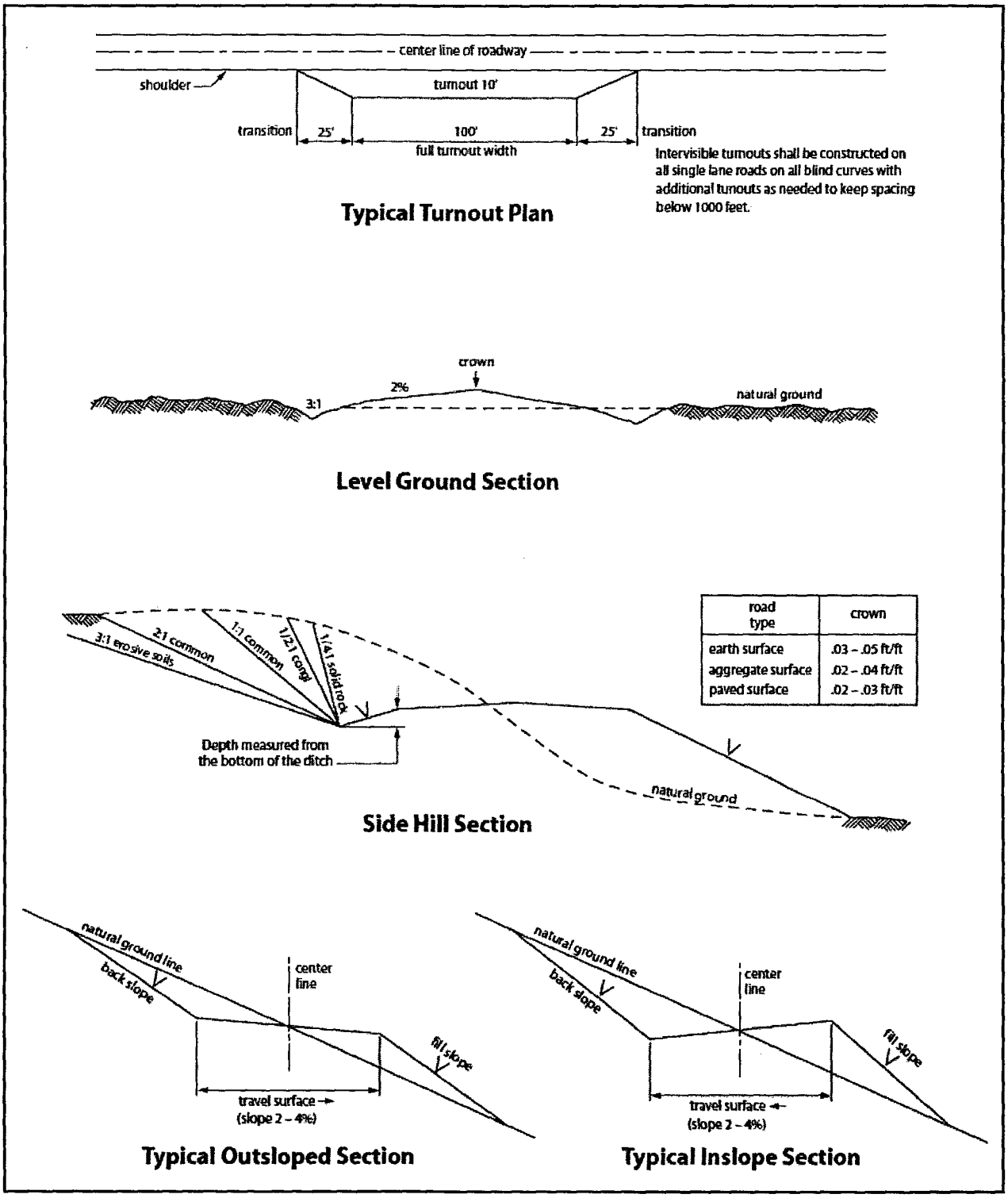


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures

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

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

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) 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 activity of 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. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

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

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. 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.

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. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green,** Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. 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. Signs will be maintained in a legible condition for the life of the pipeline.

14. 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. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. 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 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.

16. 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, powerline 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.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

a. **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 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.

BURIED PIPELINE STIPULATIONS

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of

a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

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

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

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

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

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

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

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or

other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

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.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

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

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

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.)

Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

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

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

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

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

crossing and at the facilities served.

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

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

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

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

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

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

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

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 ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION
LEASE NO.:	NMNM89055
WELL NAME & NO.:	516H – COTTON DRAW UNIT
SURFACE HOLE FOOTAGE:	485'/N & 440'/E
BOTTOM HOLE FOOTAGE	200'/S & 330'/E
LOCATION:	Section 25.,T24S., R.31E., NMP
COUNTY:	EDDY County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

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.
- Devon would need to construct and maintain escape ramps according to the following criteria:
    - Earthen escape ramps would be required to be constructed to sufficiently support livestock at no more than a 30-degree slope and spaced no more than 500 feet apart.
    - If trench is left open under an 8-hour time period, it would not be required to have an escape ramp; however, before the trench is backfilled, Lucid would inspect the trench for wildlife and remove any species that are trapped at a distance of at least 100 yards away from the trench.
- 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.

During construction, Devon shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. Devon 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.

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

Ditching
Ditching shall be required on both sides of the road.

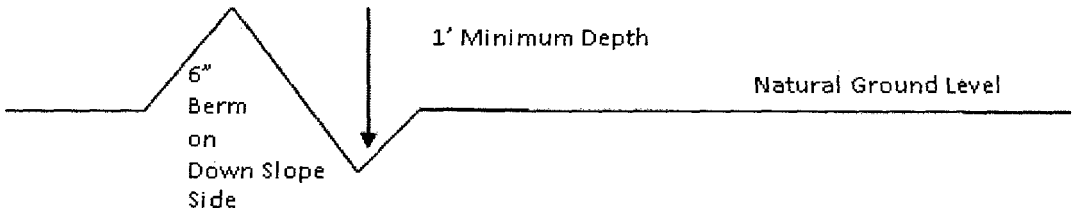
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

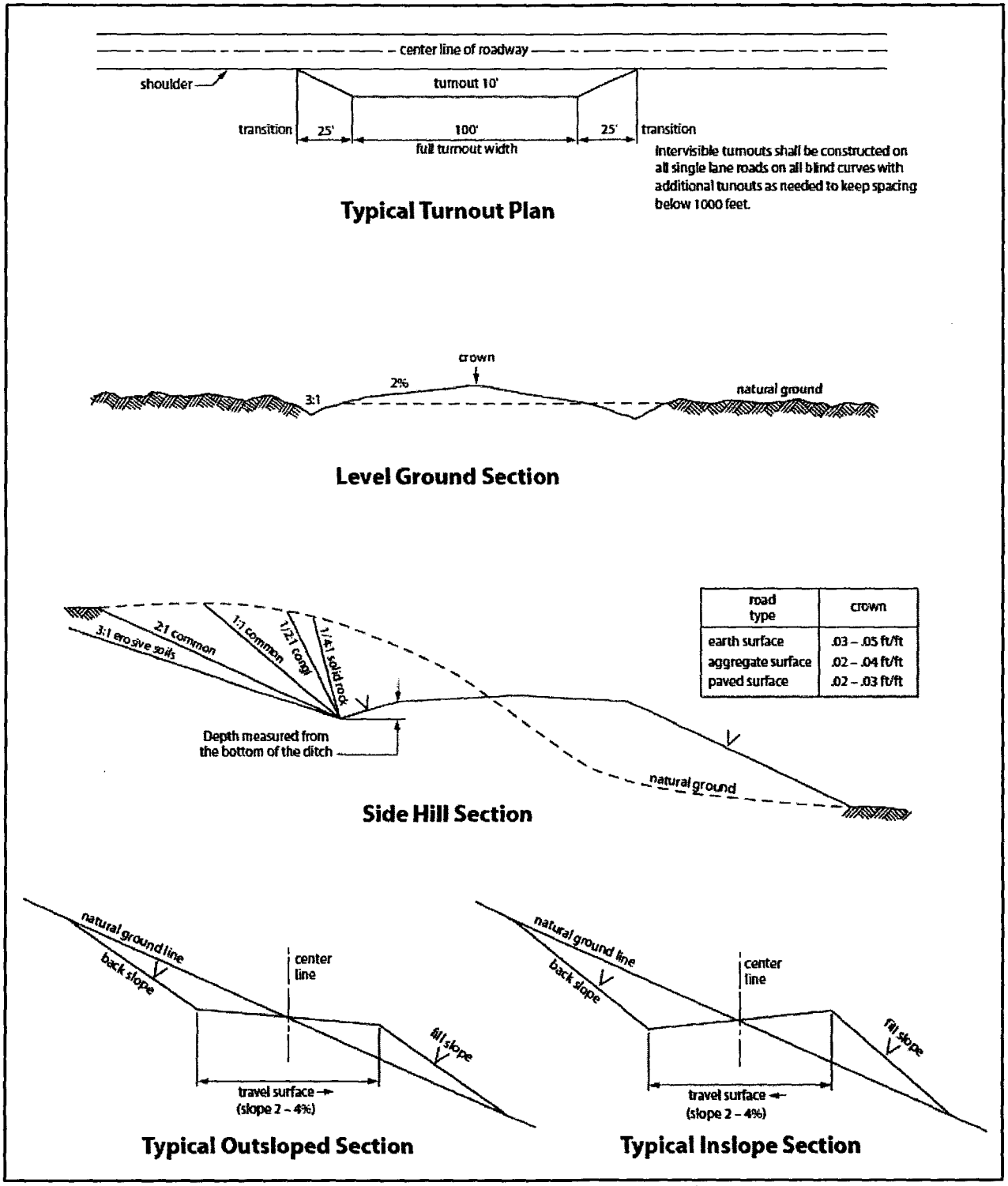


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

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

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

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

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

Containment Structures

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

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

B. PIPELINES
STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the application (Grant, Sundry Notice, APD) 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 activity of 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. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
b. Activities of other parties including, but not limited to:
    (1) Land clearing.
    (2) Earth-disturbing and earth-moving work.
    (3) Blasting.
    (4) Vandalism and sabotage.
c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars ($1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

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

6. All construction and maintenance activity will be confined to the authorized right-of-way width of **20** feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline must be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline must be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity will be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky of duney areas, the pipeline will be "snaked" around hummocks and dunes rather then suspended across these features.

9. The pipeline shall be buried with a minimum of **24** inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. 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.

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. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. 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. Signs will be maintained in a legible condition for the life of the pipeline.

14. 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. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. 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 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.

16. 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, powerline 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.

17. Surface pipelines must be less than or equal to 4 inches and a working pressure below 125 psi.

18. Special Stipulations:

a. **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 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.

BURIED PIPELINE STIPULATIONS

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of

a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

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

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

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

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

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

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

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

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

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

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

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

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

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or

other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

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.

C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

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

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

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.)

Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

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

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

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

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

crossing and at the facilities served.

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

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

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

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

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

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

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

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 ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

Species lb/acre
Plains Bristlegrass 5lbs/A
Sand Bluestem 5lbs/A
Little Bluestem 3lbs/A
Big Bluestem 6lbs/A
Plains Coreopsis 2lbs/A
Sand Dropseed 1lbs/A

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

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

Operator Certification Data Report

02/08/2018

Operator Certification

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

NAME: Linda Good **Signed on:** 08/28/2017

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

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

Application Data Report

02/08/2018

APD ID: 10400017572 **Submission Date:** 08/28/2017

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400017572 **Tie to previous NOS?** **Submission Date:** 08/28/2017

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: NMNM89055 **Lease Acres:** 160

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? YES **Federal or Indian agreement:** FEDERAL

Agreement number: NMNM70928X

Agreement name: COTTON DRAW

Keep application confidential? YES

Permitting Agent? NO **APD Operator:** DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue **Zip:** 73102

Operator PO Box:

Operator City: Oklahoma City **State:** OK

Operator Phone: (405)552-6571

Operator Internet Address: aletha.dewbre@dvn.com

Section 2 - Well Information

Well in Master Development Plan? NO **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: COTTON DRAW UNIT **Well Number:** 516H **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? USEABLE WATER

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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:** COTTON DRAW UNIT **Number:** 514H/515H/516H/517H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: APPRAISAL

Describe sub-type:

Distance to town: **Distance to nearest well:** 700 FT **Distance to lease line:** 200 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: CDU_516H_C_102_signed_with_FTP_08-14-2017.pdf

Well work start Date: 02/25/2018 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 5334

	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	485	FNL	440	FEL	24S	31E	25	Aliquot NENE	32.1942688	-103.7243942	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 89055	3542	0	0
KOP Leg #1	50	FNL	530	FEL	24S	31E	25	Aliquot NENE	32.1942688	-103.7243942	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 89055	-7955	11525	11497
PPP Leg #1	330	FNL	477	FEL	24S	31E	25	Aliquot NENE	32.1942688	-103.7243942	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 89055	-8450	12124	11992

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BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

02/08/2018

APD ID: 10400017572 **Submission Date:** 08/28/2017

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3541	0	0	ALLUVIUM	NONE	No
2	RUSTLER	2886	655	655	SALT	NONE	No
3	BASE OF SALT	-688	4229	4229	SALT	NONE	No
4	DELAWARE	-935	4476	4476	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4811	8352	8352	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 12097

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

Requesting Variance? YES

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

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

Choke Diagram Attachment:

CDU_516H_5M_BOPE_Ck_08-28-2017.pdf

BOP Diagram Attachment:

CDU_516H_5M_BOPE_Ck_08-28-2017.pdf

NSP

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Pressure Rating (PSI): 5M **Rating Depth:** 12097

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

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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:

CDU_515H_5M_BOPE_Ck_08-25-2017.pdf

BOP Diagram Attachment:

CDU_515H_5M_BOPE_Ck_08-25-2017.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	725	0	725	-8541	-9266	725	J-55	40.5	STC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	8.75	7.625	NEW	API	N	0	8375	0	8371	-8541	-16912	8375	P-110	29.7	BUTT	1.125	1.125	BUOY	1.6	BUOY	1.6
3	INTERMEDIATE	9.875	7.625	NEW	NON API	N	8375	12225	8371	12043	-8541	-16912	3850	P-110	29.7	OTHER - Flushmax	1.125	1.25	BUOY	1.6	BUOY	1.6
4	PRODUCTION	6.75	5.5	NEW	NON API	N	0	22175	0	12097	-8541	-20638	22175	P-110	20	OTHER - VAM SG	1.125	1.125	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_515H_SurfCsg_Ass_08-25-2017.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_516H_Int_Csg_Ass_08-28-2017.pdf

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

Inspection Document:

Spec Document:

CDU_516H_Flushmax_08-28-2017.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_515H_Int_Csg_Ass_08-25-2017.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Casing Attachments

Casing ID: 4 **String Type:**PRODUCTION

Inspection Document:

Spec Document:

CDU_516H_VAMSG_08-28-2017.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_516H_ProdCasing_Ass_08-28-2017.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
SURFACE	Lead		0	725	451	1.34	14.8	605	50	C	1% Calcium Chloride
INTERMEDIATE	Lead		8375	8371	828	3.27	9	2708	30	Tuned	Tuned Light
INTERMEDIATE	Lead		0	11225	828	3.27	9	2708	30	Tuned	Tuned Light
INTERMEDIATE	Tail		11225	12225	108	1.2	14.5	1.31	30	H	Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
PRODUCTION	Lead		11725	22175	820	1.33	14.8	1091	25	C	0.125 lbs/sack Poly-E-Flake

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

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

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

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	725	OTHER : FRESH WATER GEL	8.33	9.1							
725	12225	OTHER : OIL BASED MUD/CUT BRINE	8.6	10							
725	12225	OIL-BASED MUD	8.6	10							
12225	22175	OIL-BASED MUD	10.5	11							

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6920 **Anticipated Surface Pressure:** 4258.66

Anticipated Bottom Hole Temperature(F): 165

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:

CDU_515H_H2S_Plan_08-03-2017.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

CDU_516H_Anticollision_20170828084839.pdf
CDU_516H_Dir_Plan_20170828084840.pdf
CDU_516H_Dir_Plan1_20170828084841.pdf

Other proposed operations facets description:

Drilling Plan
Closed Loop Design
Multi-Bowl Wellhead & Verbiage

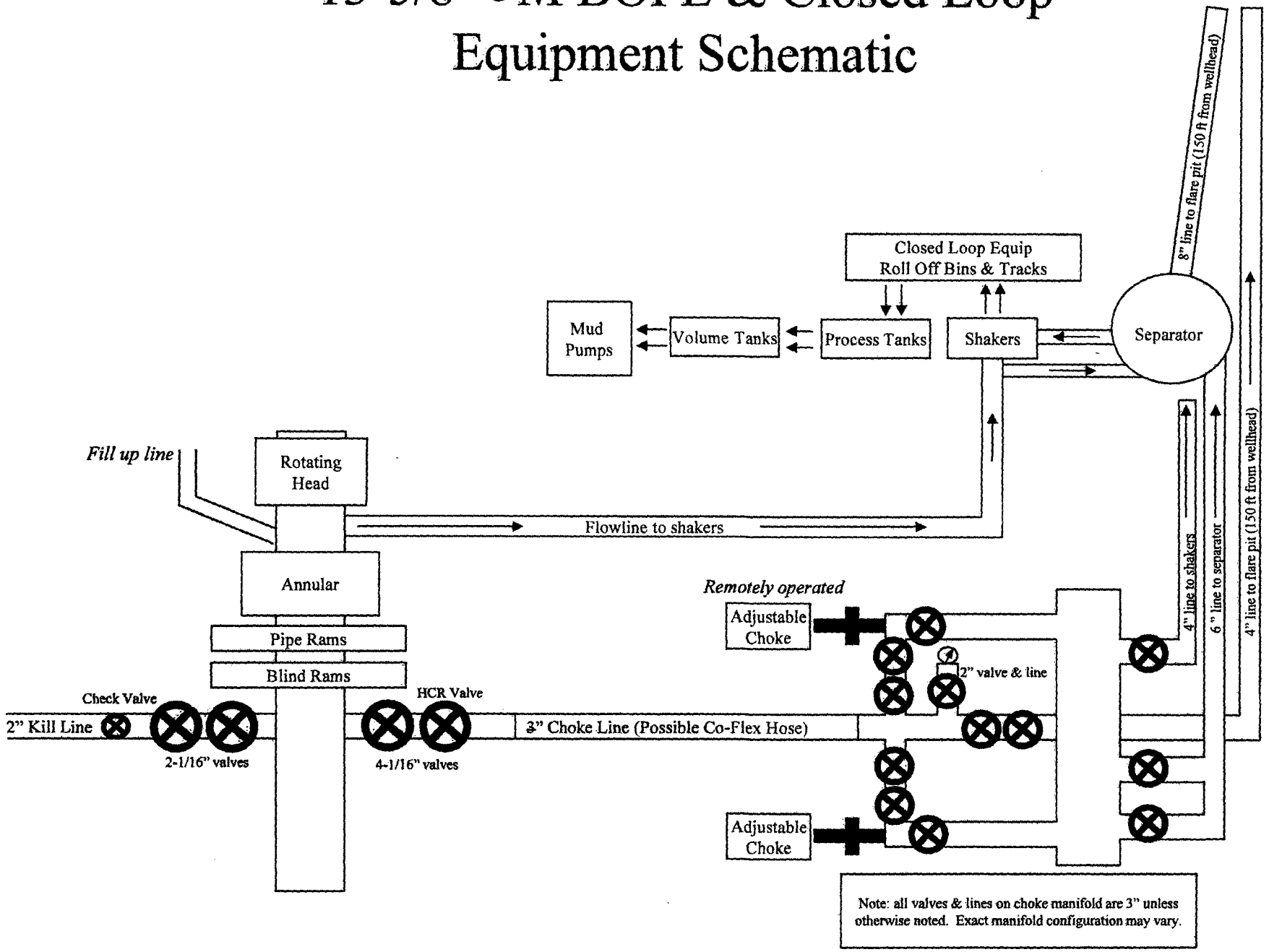
Other proposed operations facets attachment:

CDU_516H_Drilling_Plan_20170828085010.pdf
CDU_516H_Clsd_Loop_20170828085353.pdf
CDU_516H_MB_Verb_20170828085421.pdf
CDU_516H_MB_WellHd_20170828085422.pdf

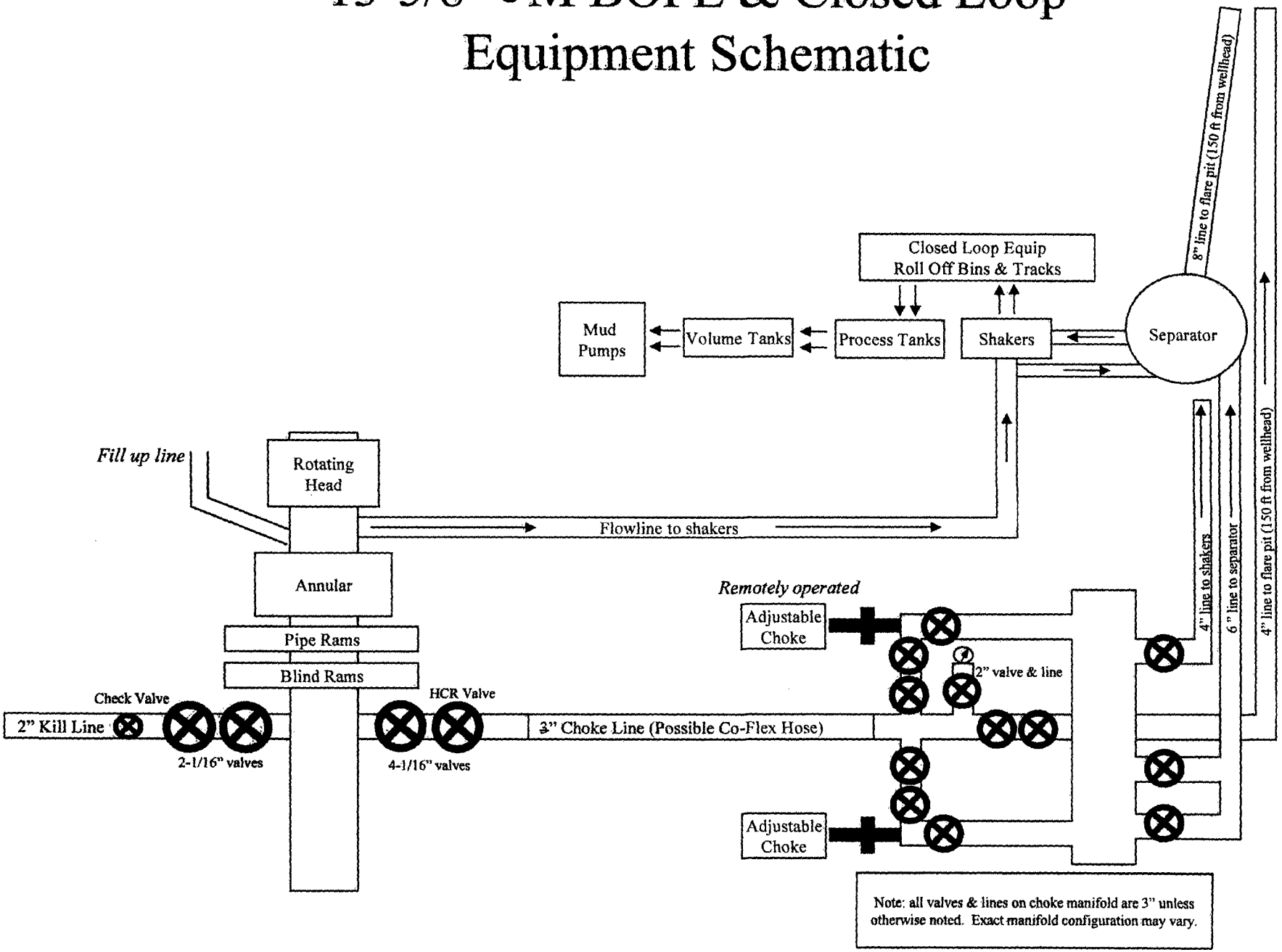
Other Variance attachment:

CDU_515H_Co_flex_08-03-2017.pdf

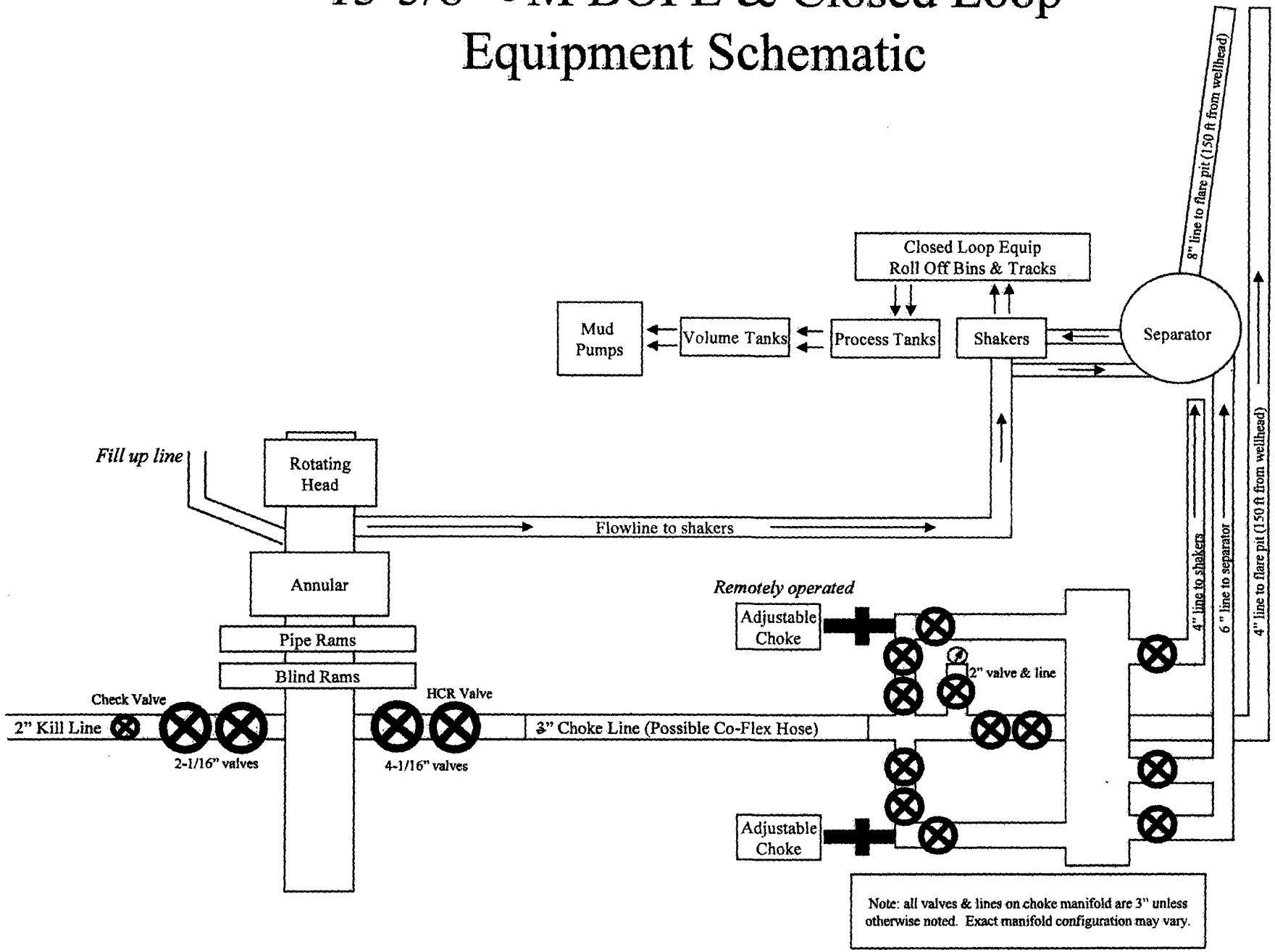
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



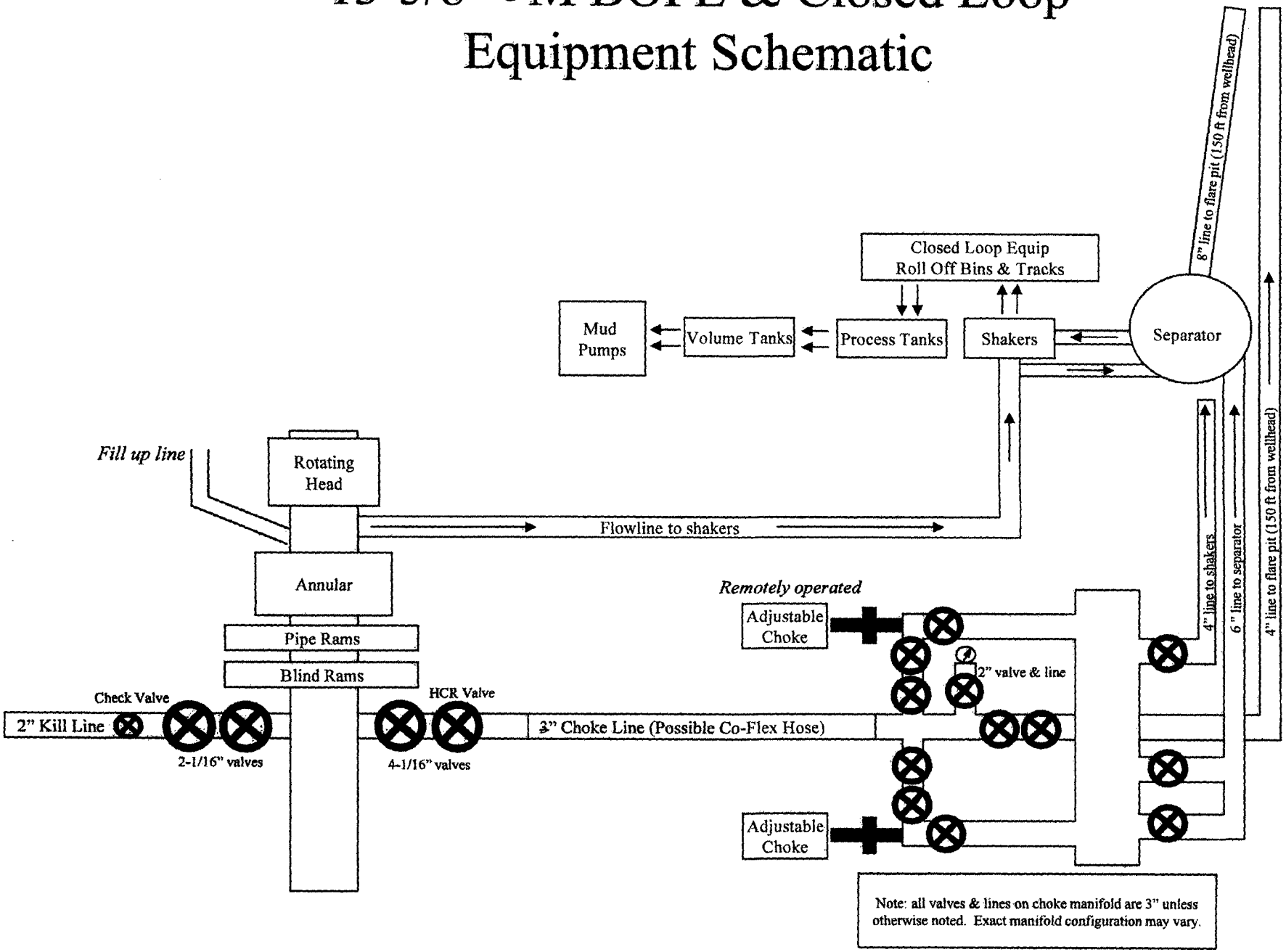
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



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



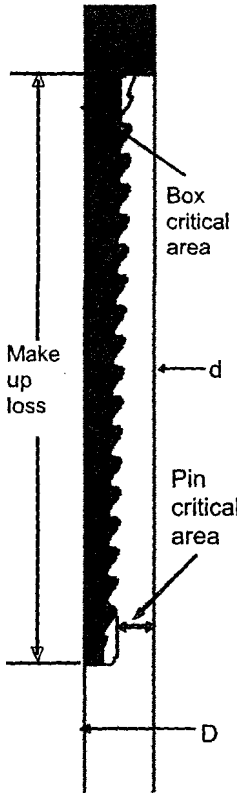
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Metal One Corp.	FLUSHMAX-III	Page	44-O
Metal One	**Connection Data Sheet**	Date	25-Jan-17
		Rev.	N - 1

Geometry

FLUSHMAX-III



Pipe Body

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

Connection

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

Performance

Performance Properties for Pipe Body

S.M.Y.S.	939	kips	4,177	kN
M.I.Y.P.	9,470	psi	65.31	MPa
Collapse Strength	5,350	psi	36.90	MPa

Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body
M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body

Performance Properties for Connection

Tensile Yield load	563 kips (60% of S.M.Y.S.)
Min. Compression Yield	563 kips (60% of S.M.Y.S.)
Internal Pressure	7,580 psi (80% of M.I.Y.P.)
External Pressure	100% of Collapse Strength
Max. DLS (deg. /100ft)	25

Recommended Torque

Min.	15,500	ft-lb	21,000	N-m
Opti.	17,200	ft-lb	23,300	N-m
Max.	18,900	ft-lb	25,600	N-m
Operational Max.	23,600	ft-lb	32,000	N-m

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

Issued on: 11 Sep. 2014

VAM SG

Connection Data Sheet

OD	Weight	Wall Th.	Grade	API Drift	Connection
5 1/2 in.	20.00 lb/ft	0.361 in.	P110 EC	4.653 in.	VAM® SG

PIPE PROPERTIES	
Nominal OD	5.500 in.
Nominal ID	4.778 in.
Nominal Cross Section Area	5.828 sqin.
Grade Type	High Yield
Min. Yield Strength	125 ksi
Max. Yield Strength	140 ksi
Min. Ultimate Tensile Strength	135 ksi

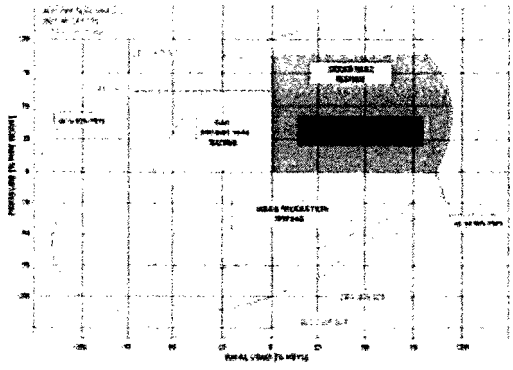
CONNECTION PROPERTIES	
Connection Type	Premium integral semi-flush
Connection OD (nom)	5.697 in.
Connection ID (nom)	4.711 in.
Make-up Loss	6.336 in.
Tension Efficiency	87 % of pipe
Compression Efficiency	61 % of pipe
Internal Pressure Efficiency	100 % of pipe
External Pressure Efficiency	70 % of pipe

CONNECTION PERFORMANCES	
Tensile Yield Strength	634 klb
Compression Resistance	446 klb
Internal Yield Pressure	14360 psi
External pressure resistance	8463 psi
Max. bending with sealability	40 °/100 ft

TORQUE VALUES	
Min. Make-up torque	8100 ft.lb
Opti. Make-up torque	9800 ft.lb
Max. Make-up torque	11500 ft.lb
Maximum Torque with Sealability	12500 ft.lb

The single solution for Shale Play needs

VAM® SG brings VAM® premium sealing performance to a semi-flush connection with extremely high Tension performance and increase Torque capacity, validated to the specific Shale drilling requirements, while remaining highly competitive in North American Shale play economics.



Do you need help on this product? - Remember no one knows VAM® like VAM

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mexico@vamfieldservice.com *nigeria@vamfieldservice.com* *singapore@vamfieldservice.com*
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Over 140 VAM® Specialists available worldwide 24/7 for Rig Site Assistance

VAM USA

Casing Assumptions and Load Cases

Surface

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

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

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

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

Casing Assumptions and Load Cases

Intermediate

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

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

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

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

Casing Assumptions and Load Cases

Intermediate

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

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

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

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

Casing Assumptions and Load Cases

Production

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

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

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

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

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

Hydrogen Sulfide (H_2S) Contingency Plan

For

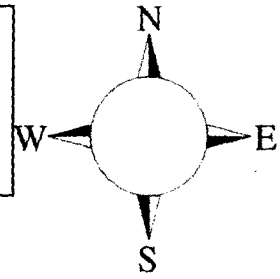
Cotton Draw Unit 515H

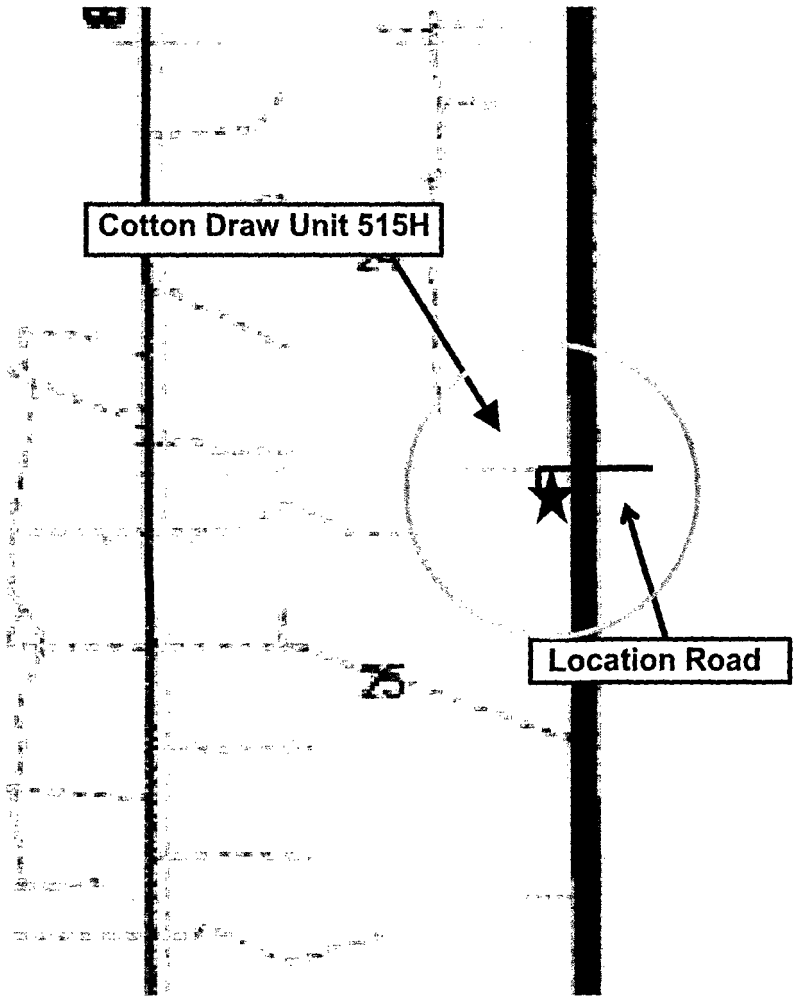
Sec-25 T-24S R-31E
485' FNL & 410 FEL
LAT. = 32.1942688' N (NAD83)
LONG = 103.7242973 W

Eddy County NM

Cotton Draw Unit 515H

This is an open drilling site. H_2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H_2S, including warning signs, wind indicators and H_2S monitor.





Assumed 100 ppm ROE = 3000' (Radius of Exposure)
100 ppm H_2S 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 H_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H_2S monitors and air packs in order to control the release.**
- **Use the "buddy system" to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H_2S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

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

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H_2S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H_2S)

2. The proper use and maintenance of personal protective equipment and life support systems.

3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.

4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H_2S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.

2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.

3. The contents and requirements of the H_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

1. **Well Control Equipment**

   A. Flare line

   B. Choke manifold – Remotely Operated

   C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

   D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

   E. Mud/Gas Separator

2. **Protective equipment for essential personnel:**

   30-minute SCBA units located at briefing areas, as indicated on well site diagram, with one escape unit available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

3. **H_2S detection and monitoring equipment:**

   Portable H_2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H_2S levels reach 10 ppm and audible sirens which activate at 10 ppm. Sensor locations:

   - Bell nipple
   - Shale shaker
   - Trip tank
   - Suction pit
   - Rig floor
   - Cellar
   - Choke manifold
   - Living Quarters (usually the company man's trailer stairs.)

   Visual warning systems:

   A. Wind direction indicators as shown on well site diagram

   B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

4. **Mud program:**

   The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weight, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

5. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H_2S trim.

   B. All elastomers used for packing and seals shall be H_2S trim.

6. **Communication:**

   A. Company personnel have/use cellular telephones in the field.

   B. Land line (telephone) communications at Office

7. **Well testing:**

   A. There will be no drill stem testing.

Devon Energy Corp. Company Call List		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
Jerry Matthews – Day: 575-748-0161 Cell: 575-748-5234		
EHS Professional – Jason Robison		405-541-2841

Agency Call List

Lea County (575)	**Hobbs**		
	Lea County Communication Authority		393-3981
	State Police		392-5588
	City Police		397-9265
	Sheriff's Office		393-2515
	Ambulance		**911**
	Fire Department		397-9308
	LEPC (Local Emergency Planning Committee)		393-2870
	NMOCD		393-6161
	US Bureau of Land Management		393-3612
Eddy County (575)	**Carlsbad**		
	State Police		885-3137
	City Police		885-2111
	Sheriff's Office		887-7551
	Ambulance		**911**
	Fire Department		885-3125
	LEPC (Local Emergency Planning Committee)		887-3798
	US Bureau of Land Management		887-6544
	NM Emergency Response Commission (Santa Fe)		(505) 476-9600
	24 HR		(505) 827-9126
	National Emergency Response Center		(800) 424-8802
	National Pollution Control Center: Direct		(703) 872-6000
	For Oil Spills		(800) 280-7118
	Emergency Services		
	Wild Well Control		(281) 784-4700
	Cudd Pressure Control	(915) 699-0139	(915) 563-3356
	Halliburton		(575) 746-2757
	B. J. Services		(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs		(575) 392-6429
	Flight For Life - Lubbock, TX		(806) 743-9911
	Aerocare - Lubbock, TX		(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM		(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM		(800) 222-1222
	Poison Control (24/7)		(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service		(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov		

Prepared in conjunction with
Dave Small

SMARP COMMUNICATIONS & CONSULTING, LLC

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Devon Energy

Eddy County, New Mexico (NAD 83)
Cotton Draw Unit
516H

Wellbore #1
Design #1

Anticollision Report

22 August, 2017

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MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 u	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 8/22/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	22,175.33	Design #1 (Wellbore #1)	MWD	OWSG MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
BTBN 25 FED						
#2 - Wellbore #1 - Surveys	2,574.44	2,555.21	1,775.43	1,757.69	100.061	CC
#2 - Wellbore #1 - Surveys	2,600.00	2,579.99	1,775.50	1,757.57	99.057	ES
#2 - Wellbore #1 - Surveys	10,010.32	10,007.74	2,026.88	1,955.73	28.487	SF
Cotton Draw						
#99 - Wellbore #1 - Surveys	17,472.76	10,750.00	2,354.17	2,242.45	21.072	CC
#99 - Wellbore #1 - Surveys	17,500.00	10,750.00	2,354.32	2,242.25	21.008	ES
#99 - Wellbore #1 - Surveys	17,900.00	10,750.00	2,392.62	2,276.36	20.581	SF
Cotton Draw Unit						
116H - Wellbore #1 - Surveys	8,372.08	14,732.00	3,466.05	3,418.19	72.429	CC, ES
116H - Wellbore #1 - Surveys	18,200.00	18,200.00	3,740.85	3,608.32	28.227	SF
182H - Wellbore #1 - Surveys	1,503.88	1,491.57	2,838.85	2,828.80	282.509	CC
182H - Wellbore #1 - Surveys	2,200.00	2,171.42	2,840.30	2,825.39	190.472	ES
182H - Wellbore #1 - Surveys	22,175.33	15,400.00	4,192.65	4,015.41	23.656	SF
242H - Wellbore #1 - Surveys	22,175.33	17,847.00	2,315.48	2,080.29	9.845	CC, ES, SF
290H - Wellbore #1 - Surveys	18,035.36	11,185.86	1,522.02	1,442.60	19.164	CC
290H - Wellbore #1 - Surveys	18,200.00	11,345.31	1,522.09	1,440.99	18.768	ES
290H - Wellbore #1 - Surveys	22,175.33	15,191.00	1,607.53	1,471.18	11.790	SF
291H - Wellbore #1 - Design #2	10,654.54	15,322.76	657.39	541.42	5.669	CC, ES, SF
292H - Wellbore #1 - Surveys	18,011.53	10,879.11	1,930.92	1,846.12	22.770	CC, ES
292H - Wellbore #1 - Surveys	22,175.33	14,965.82	2,002.37	1,855.50	13.634	SF
293H - Wellbore #1 - Design #2	22,175.33	15,663.42	2,298.08	2,081.45	10.609	CC, ES, SF
294H - Wellbore #1 - Design #2	10,629.58	15,283.47	1,772.28	1,646.88	14.133	CC, ES
294H - Wellbore #1 - Design #2	10,700.00	15,283.47	1,773.68	1,648.03	14.116	SF
511H - Wellbore #1 - Surveys	21,918.42	14,871.85	2,758.61	2,559.86	13.879	CC
511H - Wellbore #1 - Surveys	22,175.33	15,067.00	2,760.25	2,556.31	13.534	ES, SF
512H - Wellbore #1 - Design #2	10,259.77	14,933.27	1,772.28	1,649.02	14.378	CC, ES
512H - Wellbore #1 - Design #2	10,300.00	14,933.27	1,772.74	1,649.31	14.363	SF
513H - Wellbore #1 - Design #2	10,287.89	15,046.81	308.66	227.88	3.821	CC, ES, SF
514H - Wellbore #1 - Design #1	2,500.00	2,499.40	59.98	42.51	3.433	CC
514H - Wellbore #1 - Design #1	2,600.00	2,599.28	60.26	42.07	3.313	ES
514H - Wellbore #1 - Design #1	2,900.00	2,898.88	64.40	44.07	3.167	SF
515H - Wellbore #1 - Design #1	2,500.00	2,499.60	29.98	12.50	1.715	CC
515H - Wellbore #1 - Design #1	2,800.00	2,799.67	31.21	11.59	1.591	ES
515H - Wellbore #1 - Design #1	8,800.00	8,797.80	100.27	36.57	1.574	SF
517H - Wellbore #1 - Design #1	2,500.00	2,499.90	29.99	12.51	1.716	CC

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

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MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Cotton Draw Unit						
517H - Wellbore #1 - Design #1	2,700.00	2,699.49	30.65	11.75	1.622	ES
517H - Wellbore #1 - Design #1	11,550.00	11,551.92	126.10	43.04	1.518	SF
King Tut Federal						
#1H - Wellbore #1 - Surveys	0.00	0.00	824.60			
#1H - Wellbore #1 - Surveys	8,000.00	7,908.42	920.39	864.22	16.386	SF
Redhead 31 Federal						
#1H - Wellbore #1 - Surveys	18,100.00	10,862.91	1,991.12	1,891.70	20.027	CC
#1H - Wellbore #1 - Surveys	19,100.00	19,100.00	2,018.13	1,834.88	11.013	ES, SF
Windward Federal						
#1H - Wellbore #1 - Surveys	0.00	0.00	918.70			
#1H - Wellbore #1 - Surveys	4,100.00	4,094.98	924.43	895.95	32.458	ES
#1H - Wellbore #1 - Surveys	10,000.00	9,942.00	980.64	910.89	14.059	SF
#5H - Wellbore #1 - Surveys	2,835.58	2,830.66	983.33	963.71	50.120	CC
#5H - Wellbore #1 - Surveys	2,900.00	2,887.86	983.56	963.51	49.059	ES
#5H - Wellbore #1 - Surveys	22,175.33	18,987.39	3,011.98	2,836.24	17.140	SF
#6H - Wellbore #1 - Design #1	3,379.43	3,373.86	1,035.11	1,020.77	72.162	CC
#6H - Wellbore #1 - Design #1	3,600.00	3,607.72	1,035.57	1,020.26	67.663	ES
#6H - Wellbore #1 - Design #1	22,175.33	19,220.87	3,184.73	2,998.96	17.144	SF

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys

Offset Site Error: 0.00 usft
Survey Program: 237-MWD
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	176.19	-1,814.45	120.94	1,818.98				
100.00	100.00	61.62	61.62	0.13	0.11	176.19	-1,814.38	120.94	1,818.41	1,818.17	0.25	7,418.015	
200.00	200.00	168.77	168.77	0.49	0.30	176.19	-1,813.93	120.94	1,817.99	1,817.19	0.80	2,284.727	
300.00	300.00	274.16	274.15	0.85	0.56	176.18	-1,813.09	120.94	1,817.19	1,815.78	1.41	1,288.974	
400.00	400.00	376.44	376.43	1.21	0.92	176.18	-1,812.08	120.94	1,816.21	1,814.08	2.13	850.709	
500.00	500.00	478.72	478.70	1.57	1.29	176.18	-1,810.95	120.94	1,815.11	1,812.25	2.86	634.637	
600.00	600.00	580.99	580.97	1.93	1.66	176.18	-1,809.69	120.94	1,813.88	1,810.29	3.59	505.939	
700.00	700.00	685.18	685.15	2.29	2.03	176.17	-1,808.22	120.94	1,812.47	1,808.15	4.32	419.811	
800.00	800.00	789.57	789.52	2.64	2.41	176.17	-1,806.50	120.94	1,810.82	1,805.77	5.05	358.573	
900.00	900.00	893.95	893.88	3.00	2.78	176.17	-1,804.52	120.94	1,808.94	1,803.15	5.78	312.819	
1,000.00	1,000.00	998.64	998.54	3.36	3.16	176.16	-1,802.28	120.94	1,806.80	1,800.28	6.52	277.269	
1,100.00	1,100.00	1,103.98	1,103.86	3.72	3.54	176.16	-1,799.72	120.94	1,804.38	1,797.13	7.25	248.792	
1,200.00	1,200.00	1,209.31	1,209.15	4.08	3.92	176.15	-1,796.85	120.94	1,801.66	1,793.67	7.99	225.529	
1,300.00	1,300.00	1,311.43	1,311.22	4.44	4.28	176.14	-1,793.81	120.94	1,798.68	1,789.97	8.71	206.432	
1,400.00	1,400.00	1,408.65	1,408.40	4.79	4.63	176.14	-1,790.97	120.94	1,795.77	1,786.35	9.42	190.621	
1,500.00	1,500.00	1,505.88	1,505.60	5.15	4.98	176.13	-1,788.28	120.94	1,793.01	1,782.88	10.13	177.032	
1,600.00	1,600.00	1,600.00	1,599.68	5.51	5.32	176.13	-1,785.86	120.94	1,790.45	1,779.63	10.82	165.405	
1,700.00	1,700.00	1,691.43	1,691.09	5.87	5.65	176.12	-1,783.92	120.94	1,788.33	1,776.82	11.51	155.352	
1,800.00	1,800.00	1,782.87	1,782.53	6.23	5.98	176.12	-1,782.42	120.94	1,786.70	1,774.50	12.20	146.472	
1,900.00	1,900.00	1,882.45	1,882.09	6.59	6.34	176.12	-1,781.08	120.94	1,785.35	1,772.44	12.91	138.252	
2,000.00	2,000.00	1,984.03	1,983.66	6.95	6.70	176.11	-1,779.63	120.94	1,783.93	1,770.29	13.64	130.821	
2,100.00	2,100.00	2,085.60	2,085.22	7.30	7.06	176.11	-1,778.09	120.94	1,782.42	1,768.06	14.36	124.132	
2,200.00	2,200.00	2,187.17	2,186.78	7.66	7.43	176.11	-1,776.47	120.94	1,780.82	1,765.74	15.08	118.078	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 237-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,300.00	2,300.00	2,288.74	2,288.33	8.02	7.79	176.10	-1,774.75	120.94	1,779.13	1,763.33	15.80	112.573	
2,400.00	2,400.00	2,386.10	2,385.68	8.38	8.14	176.10	-1,773.12	120.94	1,777.46	1,760.95	16.51	107.647	
2,500.00	2,500.00	2,483.04	2,482.61	8.74	8.49	176.09	-1,771.66	120.94	1,775.96	1,758.74	17.22	103.145	
2,574.44	2,574.44	2,555.21	2,554.77	9.00	8.75	176.09	-1,770.68	120.94	1,775.43	1,757.69	17.74	100.061	CC
2,600.00	2,599.99	2,579.99	2,579.55	9.10	8.84	176.09	-1,770.37	120.94	1,775.50	1,757.57	17.92	99.057	ES
2,700.00	2,699.96	2,676.93	2,676.48	9.45	9.18	176.07	-1,769.25	120.94	1,776.93	1,758.30	18.63	95.381	
2,800.00	2,799.86	2,773.82	2,773.37	9.81	9.53	176.05	-1,768.29	120.94	1,780.27	1,760.93	19.34	92.073	
2,900.00	2,899.68	2,874.49	2,874.03	10.17	9.89	176.02	-1,767.38	120.94	1,785.41	1,765.35	20.05	89.029	
3,000.00	2,999.37	2,975.83	2,975.37	10.53	10.26	175.98	-1,766.37	120.94	1,792.19	1,771.42	20.78	86.266	
3,100.00	3,098.90	3,077.04	3,076.58	10.89	10.62	175.94	-1,765.28	120.94	1,800.61	1,779.11	21.50	83.766	
3,200.00	3,198.26	3,178.11	3,177.64	11.25	10.98	175.89	-1,764.10	120.94	1,810.66	1,788.45	22.22	81.505	
3,300.06	3,297.46	3,279.06	3,278.58	11.62	11.34	175.83	-1,762.83	120.94	1,822.36	1,799.42	22.93	79.458	
3,400.00	3,396.43	3,378.37	3,377.88	11.98	11.70	175.76	-1,761.53	120.94	1,834.84	1,811.20	23.65	77.590	
3,500.00	3,495.46	3,477.57	3,477.07	12.36	12.05	175.70	-1,760.24	120.94	1,847.34	1,822.98	24.36	75.832	
3,600.00	3,594.48	3,576.77	3,576.26	12.73	12.41	175.64	-1,758.94	120.94	1,859.84	1,834.76	25.08	74.171	
3,700.00	3,693.51	3,675.96	3,675.45	13.11	12.77	175.58	-1,757.64	120.94	1,872.34	1,846.55	25.79	72.601	
3,800.00	3,792.54	3,775.16	3,774.63	13.49	13.12	175.52	-1,756.34	120.94	1,884.84	1,858.34	26.50	71.113	
3,900.00	3,891.56	3,877.40	3,876.87	13.87	13.49	175.46	-1,754.93	120.94	1,897.28	1,870.05	27.23	69.671	
4,000.00	3,990.59	3,980.23	3,979.68	14.25	13.86	175.41	-1,753.32	120.94	1,909.53	1,881.57	27.96	68.290	
4,100.00	4,089.62	4,083.10	4,082.53	14.64	14.23	175.35	-1,751.52	120.94	1,921.60	1,892.91	28.69	66.972	
4,200.00	4,188.64	4,186.02	4,185.43	15.03	14.60	175.29	-1,749.52	120.94	1,933.48	1,904.06	29.42	65.711	
4,300.00	4,287.67	4,288.98	4,288.37	15.42	14.97	175.23	-1,747.32	120.94	1,945.18	1,915.02	30.16	64.504	
4,400.00	4,386.70	4,391.99	4,391.35	15.81	15.34	175.17	-1,744.93	120.94	1,956.69	1,925.80	30.89	63.347	
4,500.00	4,485.72	4,495.04	4,494.37	16.20	15.71	175.12	-1,742.34	120.94	1,968.01	1,936.39	31.62	62.236	
4,600.00	4,584.75	4,599.47	4,598.77	16.59	16.08	175.06	-1,739.48	120.94	1,979.12	1,946.76	32.36	61.159	
4,700.00	4,683.78	4,704.03	4,703.28	16.98	16.46	175.00	-1,736.35	120.94	1,989.97	1,956.87	33.10	60.120	
4,800.00	4,782.80	4,808.65	4,807.84	17.38	16.84	174.95	-1,732.94	120.94	2,000.56	1,966.72	33.84	59.118	
4,900.00	4,881.83	4,912.20	4,911.33	17.78	17.21	174.89	-1,729.31	120.94	2,010.91	1,976.34	34.58	58.158	
5,000.00	4,980.86	5,015.09	5,014.15	18.17	17.58	174.83	-1,725.52	120.94	2,021.09	1,985.78	35.31	57.237	
5,100.00	5,079.88	5,118.01	5,116.99	18.57	17.95	174.77	-1,721.56	120.94	2,031.10	1,995.06	36.05	56.348	
5,200.00	5,178.91	5,220.45	5,219.35	18.97	18.32	174.72	-1,717.46	120.94	2,040.96	2,004.18	36.78	55.492	
5,300.00	5,277.94	5,322.94	5,321.75	19.37	18.69	174.66	-1,713.20	120.94	2,050.68	2,013.16	37.51	54.665	
5,400.00	5,376.96	5,425.46	5,424.18	19.77	19.06	174.60	-1,708.79	120.94	2,060.25	2,022.00	38.25	53.866	
5,500.00	5,475.99	5,521.14	5,519.77	20.17	19.41	174.55	-1,704.71	120.94	2,069.85	2,030.90	38.96	53.131	
5,600.00	5,575.02	5,617.31	5,615.86	20.57	19.76	174.49	-1,700.76	120.94	2,079.62	2,039.95	39.67	52.424	
5,690.40	5,664.54	5,704.22	5,702.70	20.93	20.07	174.44	-1,697.32	120.94	2,088.59	2,048.28	40.31	51.810	
5,700.00	5,674.04	5,713.45	5,711.92	20.97	20.10	174.44	-1,696.96	120.94	2,089.54	2,049.16	40.38	51.746	
5,800.00	5,773.21	5,809.65	5,808.06	21.37	20.45	174.39	-1,693.32	120.94	2,098.60	2,057.51	41.09	51.071	
5,900.00	5,872.58	5,905.98	5,904.32	21.76	20.80	174.35	-1,689.83	120.94	2,106.10	2,064.30	41.80	50.383	
6,000.00	5,972.14	6,002.31	6,000.59	22.15	21.15	174.31	-1,686.50	120.94	2,112.03	2,069.51	42.51	49.682	
6,100.00	6,071.84	6,098.66	6,096.90	22.52	21.49	174.28	-1,683.33	120.94	2,116.39	2,073.17	43.22	48.970	
6,200.00	6,171.66	6,195.07	6,193.26	22.89	21.84	174.25	-1,680.32	120.94	2,119.18	2,075.26	43.92	48.246	
6,300.00	6,271.57	6,291.51	6,289.65	23.25	22.19	174.23	-1,677.47	120.94	2,120.42	2,075.79	44.63	47.513	
6,400.00	6,371.54	6,387.96	6,386.06	23.60	22.54	174.22	-1,674.78	120.94	2,120.08	2,074.75	45.33	46.770	
6,490.46	6,462.00	6,476.60	6,474.67	23.92	22.86	174.21	-1,672.44	120.94	2,118.41	2,072.44	45.97	46.084	
6,500.00	6,471.54	6,486.13	6,484.20	23.95	22.89	174.21	-1,672.19	120.94	2,118.16	2,072.13	46.04	46.010	
6,600.00	6,571.54	6,586.10	6,584.13	24.29	23.25	174.20	-1,669.57	120.94	2,115.56	2,068.81	46.75	45.253	
6,700.00	6,671.54	6,686.06	6,684.07	24.63	23.61	174.19	-1,666.95	120.94	2,112.95	2,065.49	47.46	44.519	
6,800.00	6,771.54	6,784.92	6,782.89	24.98	23.97	174.19	-1,664.38	120.94	2,110.36	2,062.19	48.17	43.810	
6,900.00	6,871.54	6,882.75	6,880.68	25.32	24.32	174.18	-1,661.92	120.94	2,107.86	2,058.99	48.87	43.128	
7,000.00	6,971.54	6,980.58	6,978.49	25.66	24.67	174.17	-1,659.56	120.94	2,105.46	2,055.88	49.58	42.466	
7,100.00	7,071.54	7,078.42	7,076.31	26.01	25.02	174.17	-1,657.30	120.94	2,103.16	2,052.88	50.28	41.826	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 237-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,200.00	7,171.54	7,176.27	7,174.13	26.35	25.37	174.16	-1,655.14	120.94	2,100.97	2,049.98	50.99	41.204	
7,300.00	7,271.54	7,272.10	7,269.94	26.70	25.72	174.16	-1,653.18	120.94	2,098.93	2,047.25	51.69	40.610	
7,400.00	7,371.54	7,368.33	7,366.16	27.04	26.06	174.15	-1,651.38	120.94	2,097.07	2,044.69	52.38	40.033	
7,500.00	7,471.54	7,464.57	7,462.38	27.39	26.41	174.15	-1,649.76	120.94	2,095.39	2,042.31	53.08	39.475	
7,600.00	7,571.54	7,560.81	7,558.61	27.73	26.75	174.14	-1,648.30	120.94	2,093.89	2,040.11	53.78	38.934	
7,700.00	7,671.54	7,662.34	7,660.13	28.08	27.12	174.14	-1,646.90	120.94	2,092.52	2,038.02	54.50	38.395	
7,800.00	7,771.54	7,772.31	7,770.08	28.43	27.51	174.13	-1,645.00	120.94	2,090.79	2,035.54	55.25	37.839	
7,900.00	7,871.54	7,882.26	7,880.01	28.77	27.91	174.13	-1,642.56	120.94	2,088.59	2,032.58	56.01	37.291	
8,000.00	7,971.54	7,992.18	7,989.89	29.12	28.31	174.12	-1,639.60	120.94	2,085.91	2,029.15	56.76	36.750	
8,100.00	8,071.54	8,102.07	8,099.72	29.47	28.70	174.11	-1,636.12	120.94	2,082.76	2,025.25	57.51	36.215	
8,200.00	8,171.54	8,206.79	8,204.37	29.82	29.08	174.10	-1,632.40	120.94	2,079.23	2,020.99	58.24	35.699	
8,300.00	8,271.54	8,310.48	8,307.99	30.16	29.45	174.09	-1,628.53	120.94	2,075.52	2,016.55	58.97	35.195	
8,400.00	8,371.54	8,414.16	8,411.59	30.51	29.83	174.08	-1,624.47	120.94	2,071.62	2,011.92	59.70	34.701	
8,500.00	8,471.54	8,517.82	8,515.16	30.86	30.20	174.06	-1,620.22	120.94	2,067.55	2,007.12	60.43	34.216	
8,600.00	8,571.54	8,621.47	8,618.72	31.21	30.58	174.05	-1,615.79	120.94	2,063.29	2,002.14	61.15	33.739	
8,700.00	8,671.54	8,712.61	8,709.79	31.56	30.91	174.04	-1,612.01	120.94	2,059.17	1,997.33	61.84	33.300	
8,800.00	8,771.54	8,804.31	8,801.42	31.91	31.24	174.03	-1,608.58	120.94	2,055.45	1,992.93	62.52	32.875	
8,900.00	8,871.54	8,896.03	8,893.08	32.26	31.57	174.02	-1,605.52	120.94	2,052.13	1,988.92	63.21	32.467	
9,000.00	8,971.54	8,987.77	8,984.79	32.61	31.90	174.01	-1,602.83	120.94	2,049.21	1,985.32	63.89	32.074	
9,100.00	9,071.54	9,079.54	9,076.52	32.96	32.23	174.01	-1,600.50	120.94	2,046.69	1,982.11	64.57	31.695	
9,200.00	9,171.54	9,175.33	9,172.30	33.31	32.58	174.00	-1,598.40	120.94	2,044.51	1,979.23	65.27	31.323	
9,300.00	9,271.54	9,273.55	9,270.49	33.66	32.93	173.99	-1,596.36	120.94	2,042.43	1,976.45	65.98	30.955	
9,400.00	9,371.54	9,371.77	9,368.70	34.01	33.28	173.99	-1,594.39	120.94	2,040.45	1,973.76	66.69	30.597	
9,500.00	9,471.54	9,470.00	9,466.90	34.36	33.63	173.98	-1,592.52	120.94	2,038.55	1,971.15	67.40	30.247	
9,600.00	9,571.54	9,568.23	9,565.12	34.71	33.99	173.98	-1,590.72	120.94	2,036.73	1,968.63	68.10	29.906	
9,700.00	9,671.54	9,672.26	9,669.13	35.06	34.36	173.97	-1,588.83	120.94	2,034.92	1,966.09	68.83	29.562	
9,800.00	9,771.54	9,780.39	9,777.24	35.41	34.75	173.96	-1,586.47	120.94	2,032.75	1,963.17	69.58	29.214	
9,900.00	9,871.54	9,888.50	9,885.31	35.76	35.14	173.96	-1,583.67	120.94	2,030.18	1,959.85	70.33	28.867	
10,000.00	9,971.54	9,996.59	9,993.35	36.11	35.53	173.95	-1,580.44	120.94	2,027.21	1,956.13	71.07	28.523	
10,010.32	9,981.85	10,007.74	10,004.49	36.15	35.57	173.95	-1,580.08	120.94	2,026.88	1,955.73	71.15	28.487 SF	
10,100.00	10,071.54	9,960.00	9,956.78	36.46	35.40	173.95	-1,581.58	120.94	2,028.61	1,957.44	71.17	28.503	
10,200.00	10,171.54	9,960.00	9,956.78	36.81	35.40	173.95	-1,581.58	120.94	2,034.63	1,963.33	71.29	28.539	
10,300.00	10,271.54	9,960.00	9,956.78	37.17	35.40	173.95	-1,581.58	120.94	2,045.52	1,974.23	71.29	28.691	
10,400.00	10,371.54	9,960.00	9,956.78	37.52	35.40	173.95	-1,581.58	120.94	2,061.22	1,990.03	71.18	28.957	
10,500.00	10,471.54	9,960.00	9,956.78	37.87	35.40	173.95	-1,581.58	120.94	2,081.60	2,010.63	70.97	29.331	
10,600.00	10,571.54	9,960.00	9,956.78	38.22	35.40	173.95	-1,581.58	120.94	2,106.54	2,035.88	70.66	29.812	
10,700.00	10,671.54	9,960.00	9,956.78	38.57	35.40	173.95	-1,581.58	120.94	2,135.88	2,065.60	70.27	30.394	
10,800.00	10,771.54	9,960.00	9,956.78	38.93	35.40	173.95	-1,581.58	120.94	2,169.43	2,099.61	69.82	31.074	
10,900.00	10,871.54	9,960.00	9,956.78	39.28	35.40	173.95	-1,581.58	120.94	2,207.01	2,137.70	69.30	31.846	
11,000.00	10,971.54	9,960.00	9,956.78	39.63	35.40	173.95	-1,581.58	120.94	2,248.40	2,179.66	68.75	32.705	
11,100.00	11,071.54	9,960.00	9,956.78	39.98	35.40	173.95	-1,581.58	120.94	2,293.42	2,225.26	68.16	33.647	
11,200.00	11,171.54	9,960.00	9,956.78	40.34	35.40	173.95	-1,581.58	120.94	2,341.84	2,274.29	67.56	34.665	
11,300.00	11,271.54	9,960.00	9,956.78	40.69	35.40	173.95	-1,581.58	120.94	2,393.47	2,326.52	66.94	35.753	
11,400.00	11,371.54	9,960.00	9,956.78	41.04	35.40	173.95	-1,581.58	120.94	2,448.09	2,381.76	66.33	36.907	
11,500.00	11,471.54	9,960.00	9,956.78	41.40	35.40	173.95	-1,581.58	120.94	2,505.51	2,439.78	65.73	38.120	
11,525.27	11,496.81	9,960.00	9,956.78	41.48	35.40	173.95	-1,581.58	120.94	2,520.44	2,454.87	65.58	38.436	
11,550.00	11,521.53	9,960.00	9,956.78	41.57	35.40	173.95	-1,581.58	120.94	2,534.78	2,469.36	65.42	38.746	
11,600.00	11,571.33	9,960.00	9,956.78	41.72	35.40	173.96	-1,581.58	120.94	2,561.59	2,496.51	65.08	39.361	
11,650.00	11,620.56	9,960.00	9,956.78	41.85	35.40	173.98	-1,581.58	120.94	2,585.37	2,520.66	64.71	39.951	
11,700.00	11,668.84	9,960.00	9,956.78	41.98	35.40	174.02	-1,581.58	120.94	2,606.03	2,541.71	64.32	40.516	
11,750.00	11,715.82	9,960.00	9,956.78	42.10	35.40	174.06	-1,581.58	120.94	2,623.49	2,559.58	63.90	41.054	
11,800.00	11,761.13	9,960.00	9,956.78	42.20	35.40	174.11	-1,581.58	120.94	2,637.68	2,574.21	63.46	41.562	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 237-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,850.00	11,804.43	9,960.00	9,956.78	42.30	35.40	174.18	-1,581.58	120.94	2,648.54	2,585.54	63.00	42.040	
11,900.00	11,845.39	9,960.00	9,956.78	42.39	35.40	174.26	-1,581.58	120.94	2,656.04	2,593.52	62.52	42.485	
11,950.00	11,883.69	9,960.00	9,956.78	42.47	35.40	174.35	-1,581.58	120.94	2,660.14	2,598.13	62.01	42.896	
12,000.00	11,919.06	9,960.00	9,956.78	42.54	35.40	174.45	-1,581.58	120.94	2,660.83	2,599.34	61.49	43.271	
12,050.00	11,951.20	9,960.00	9,956.78	42.61	35.40	174.56	-1,581.58	120.94	2,658.11	2,597.15	60.96	43.605	
12,100.00	11,979.89	9,960.00	9,956.78	42.68	35.40	174.69	-1,581.58	120.94	2,651.99	2,591.58	60.41	43.898	
12,150.00	12,004.90	9,960.00	9,956.78	42.75	35.40	174.84	-1,581.58	120.94	2,642.49	2,582.63	59.86	44.146	
12,200.00	12,026.05	9,960.00	9,956.78	42.82	35.40	174.99	-1,581.58	120.94	2,629.64	2,570.34	59.30	44.345	
12,250.00	12,043.17	9,960.00	9,956.78	42.89	35.40	175.17	-1,581.58	120.94	2,613.50	2,554.76	58.74	44.493	
12,300.00	12,056.13	9,960.00	9,956.78	42.97	35.40	175.35	-1,581.58	120.94	2,594.13	2,535.95	58.18	44.586	
12,350.00	12,064.83	9,960.00	9,956.78	43.05	35.40	175.56	-1,581.58	120.94	2,571.61	2,513.97	57.63	44.621	
12,400.00	12,069.21	9,960.00	9,956.78	43.13	35.40	175.78	-1,581.58	120.94	2,546.02	2,488.92	57.09	44.594	
12,423.64	12,069.77	9,960.00	9,956.78	43.17	35.40	175.89	-1,581.58	120.94	2,532.88	2,476.03	56.84	44.558	
12,500.00	12,069.98	9,960.00	9,956.78	43.32	35.40	176.27	-1,581.58	120.94	2,490.18	2,434.15	56.03	44.444	
12,600.00	12,070.27	9,960.00	9,956.78	43.58	35.40	176.83	-1,581.58	120.94	2,436.75	2,381.79	54.96	44.337	
12,667.68	12,070.46	9,960.00	9,956.78	43.79	35.40	177.26	-1,581.58	120.94	2,402.28	2,348.04	54.24	44.290	
12,700.00	12,070.55	9,960.00	9,956.78	43.90	35.40	177.48	-1,581.58	120.94	2,386.31	2,332.41	53.90	44.274	
12,800.00	12,070.84	9,960.00	9,956.78	44.29	35.40	178.11	-1,581.58	120.94	2,338.88	2,286.02	52.86	44.248	
12,900.00	12,071.12	9,960.00	9,956.78	44.73	35.40	178.66	-1,581.58	120.94	2,294.64	2,242.78	51.85	44.251	
13,000.00	12,071.41	9,960.00	9,956.78	45.22	35.40	179.11	-1,581.58	120.94	2,253.84	2,202.92	50.91	44.271	
13,100.00	12,071.69	9,960.00	9,956.78	45.76	35.40	179.43	-1,581.58	120.94	2,216.71	2,166.66	50.05	44.290	
13,200.00	12,071.98	9,960.00	9,956.78	46.34	35.40	179.54	-1,581.58	120.94	2,183.50	2,134.20	49.30	44.289	
13,200.11	12,071.98	9,960.00	9,956.78	46.34	35.40	179.54	-1,581.58	120.94	2,183.47	2,134.17	49.30	44.289	
13,300.00	12,072.26	9,960.00	9,956.78	46.97	35.40	179.52	-1,581.58	120.94	2,154.42	2,105.72	48.69	44.247	
13,400.00	12,072.55	9,960.00	9,956.78	47.64	35.40	179.50	-1,581.58	120.94	2,129.63	2,081.39	48.25	44.139	
13,500.00	12,072.83	9,960.00	9,956.78	48.36	35.40	179.46	-1,581.58	120.94	2,109.31	2,061.31	48.00	43.948	
13,600.00	12,073.12	9,960.00	9,956.78	49.13	35.40	179.39	-1,581.58	120.94	2,093.56	2,045.61	47.95	43.661	
13,700.00	12,073.40	9,960.00	9,956.78	49.94	35.40	179.25	-1,581.58	120.94	2,082.51	2,034.39	48.12	43.273	
13,800.00	12,073.68	9,960.00	9,956.78	50.80	35.40	178.79	-1,581.58	120.94	2,076.22	2,027.70	48.52	42.789	
13,880.82	12,073.91	9,960.00	9,956.78	51.52	35.40	167.23	-1,581.58	120.94	2,074.64	2,025.64	49.00	42.337	
13,900.00	12,073.97	9,960.00	9,956.78	51.69	35.40	5.24	-1,581.58	120.94	2,074.73	2,025.60	49.14	42.224	
14,000.00	12,074.25	9,960.00	9,956.78	52.62	35.40	0.31	-1,581.58	120.94	2,078.06	2,028.11	49.96	41.598	
14,100.00	12,074.54	9,960.00	9,956.78	53.58	35.40	0.00	-1,581.58	120.94	2,086.19	2,035.23	50.96	40.940	
14,200.00	12,074.82	9,960.00	9,956.78	54.58	35.40	-0.11	-1,581.58	120.94	2,099.05	2,046.94	52.12	40.276	
14,300.00	12,075.11	9,960.00	9,956.78	55.61	35.40	-0.17	-1,581.58	120.94	2,116.57	2,063.17	53.40	39.635	
14,400.00	12,075.39	9,960.00	9,956.78	56.67	35.40	-0.21	-1,581.58	120.94	2,138.62	2,083.84	54.78	39.038	
14,500.00	12,075.68	9,960.00	9,956.78	57.76	35.40	-0.23	-1,581.58	120.94	2,165.07	2,108.84	56.23	38.504	
14,600.00	12,075.96	9,960.00	9,956.78	58.87	35.40	-0.25	-1,581.58	120.94	2,195.76	2,138.05	57.71	38.047	
14,700.00	12,076.24	9,960.00	9,956.78	60.01	35.40	-0.26	-1,581.58	120.94	2,230.52	2,171.31	59.21	37.674	
14,800.00	12,076.53	9,960.00	9,956.78	61.17	35.40	-0.27	-1,581.58	120.94	2,269.15	2,208.46	60.69	37.389	
14,900.00	12,076.81	9,960.00	9,956.78	62.36	35.40	-0.28	-1,581.58	120.94	2,311.47	2,249.32	62.15	37.194	
15,000.00	12,077.10	9,960.00	9,956.78	63.57	35.40	-0.28	-1,581.58	120.94	2,357.27	2,293.71	63.56	37.087	
15,100.00	12,077.38	9,960.00	9,956.78	64.79	35.40	-0.29	-1,581.58	120.94	2,406.35	2,341.43	64.92	37.065	
15,200.00	12,077.67	9,960.00	9,956.78	66.04	35.40	-0.29	-1,581.58	120.94	2,458.53	2,392.30	66.23	37.123	
15,300.00	12,077.95	9,960.00	9,956.78	67.30	35.40	-0.30	-1,581.58	120.94	2,513.61	2,446.14	67.47	37.256	
15,400.00	12,078.23	9,960.00	9,956.78	68.58	35.40	-0.30	-1,581.58	120.94	2,571.39	2,502.75	68.64	37.461	
15,500.00	12,078.52	9,960.00	9,956.78	69.88	35.40	-0.31	-1,581.58	120.94	2,631.71	2,561.96	69.75	37.730	
15,600.00	12,078.80	9,960.00	9,956.78	71.19	35.40	-0.31	-1,581.58	120.94	2,694.39	2,623.59	70.79	38.061	
15,700.00	12,079.09	9,960.00	9,956.78	72.51	35.40	-0.31	-1,581.58	120.94	2,759.27	2,687.50	71.77	38.446	
15,800.00	12,079.37	9,960.00	9,956.78	73.85	35.40	-0.31	-1,581.58	120.94	2,826.20	2,753.51	72.68	38.883	
15,900.00	12,079.66	9,960.00	9,956.78	75.21	35.40	-0.31	-1,581.58	120.94	2,895.03	2,821.49	73.54	39.367	
16,000.00	12,079.94	9,960.00	9,956.78	76.57	35.40	-0.32	-1,581.58	120.94	2,965.65	2,891.31	74.34	39.894	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 237-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
16,100.00	12,080.22	9,960.00	9,956.78	77.94	35.40	-0.32	-1,581.58	120.94	3,037.91	2,962.82	75.08	40.460	
16,200.00	12,080.51	9,960.00	9,956.78	79.33	35.40	-0.32	-1,581.58	120.94	3,111.71	3,035.93	75.78	41.062	
16,300.00	12,080.79	9,960.00	9,956.78	80.73	35.40	-0.32	-1,581.58	120.94	3,186.94	3,110.51	76.43	41.697	
16,400.00	12,081.08	9,960.00	9,956.78	82.13	35.40	-0.32	-1,581.58	120.94	3,263.49	3,186.46	77.04	42.362	
16,500.00	12,081.36	9,960.00	9,956.78	83.55	35.40	-0.32	-1,581.58	120.94	3,341.29	3,263.69	77.60	43.056	
16,600.00	12,081.65	9,960.00	9,956.78	84.97	35.40	-0.32	-1,581.58	120.94	3,420.24	3,342.11	78.13	43.774	
16,700.00	12,081.93	9,960.00	9,956.78	86.40	35.40	-0.33	-1,581.58	120.94	3,500.27	3,421.64	78.63	44.516	
16,800.00	12,082.22	9,960.00	9,956.78	87.84	35.40	-0.33	-1,581.58	120.94	3,581.30	3,502.21	79.09	45.280	
16,900.00	12,082.50	9,960.00	9,956.78	89.29	35.40	-0.33	-1,581.58	120.94	3,663.27	3,583.75	79.53	46.063	
17,000.00	12,082.78	9,960.00	9,956.78	90.75	35.40	-0.33	-1,581.58	120.94	3,746.12	3,666.19	79.93	46.865	
17,100.00	12,083.07	9,960.00	9,956.78	92.21	35.40	-0.33	-1,581.58	120.94	3,829.78	3,749.47	80.32	47.683	
17,200.00	12,083.35	9,960.00	9,956.78	93.68	35.40	-0.33	-1,581.58	120.94	3,914.22	3,833.54	80.68	48.517	
17,300.00	12,083.64	9,960.00	9,956.78	95.15	35.40	-0.33	-1,581.58	120.94	3,999.36	3,918.35	81.02	49.365	
17,400.00	12,083.92	9,960.00	9,956.78	96.63	35.40	-0.33	-1,581.58	120.94	4,085.19	4,003.85	81.34	50.226	
17,500.00	12,084.21	9,960.00	9,956.78	98.12	35.40	-0.33	-1,581.58	120.94	4,171.64	4,090.00	81.64	51.099	
17,600.00	12,084.49	9,960.00	9,956.78	99.61	35.40	-0.33	-1,581.58	120.94	4,258.69	4,176.76	81.92	51.983	
17,700.00	12,084.77	9,960.00	9,956.78	101.11	35.40	-0.33	-1,581.58	120.94	4,346.29	4,264.10	82.20	52.878	
17,800.00	12,085.06	9,960.00	9,956.78	102.61	35.40	-0.33	-1,581.58	120.94	4,434.42	4,351.97	82.45	53.782	
17,900.00	12,085.34	9,960.00	9,956.78	104.11	35.40	-0.33	-1,581.58	120.94	4,523.04	4,440.35	82.70	54.694	
18,000.00	12,085.63	9,960.00	9,956.78	105.63	35.40	-0.33	-1,581.58	120.94	4,612.13	4,529.20	82.93	55.615	
18,100.00	12,085.91	9,960.00	9,956.78	107.14	35.40	-0.33	-1,581.58	120.94	4,701.66	4,618.51	83.15	56.543	
18,200.00	12,086.20	9,960.00	9,956.78	108.66	35.40	-0.33	-1,581.58	120.94	4,791.60	4,708.24	83.36	57.478	
18,300.00	12,086.48	9,960.00	9,956.78	110.18	35.40	-0.33	-1,581.58	120.94	4,881.93	4,798.37	83.57	58.419	
18,400.00	12,086.76	9,960.00	9,956.78	111.71	35.40	-0.33	-1,581.58	120.94	4,972.64	4,888.87	83.76	59.366	
18,500.00	12,087.05	9,960.00	9,956.78	113.24	35.40	-0.34	-1,581.58	120.94	5,063.69	4,979.74	83.95	60.318	
18,600.00	12,087.33	9,960.00	9,956.78	114.78	35.40	-0.34	-1,581.58	120.94	5,155.07	5,070.94	84.13	61.275	
18,700.00	12,087.62	9,960.00	9,956.78	116.32	35.40	-0.34	-1,581.58	120.94	5,246.77	5,162.47	84.30	62.237	
18,800.00	12,087.90	9,960.00	9,956.78	117.86	35.40	-0.34	-1,581.58	120.94	5,338.77	5,254.30	84.47	63.203	
18,900.00	12,088.19	9,960.00	9,956.78	119.40	35.40	-0.34	-1,581.58	120.94	5,431.05	5,346.42	84.63	64.172	
19,000.00	12,088.47	9,960.00	9,956.78	120.95	35.40	-0.34	-1,581.58	120.94	5,523.60	5,438.81	84.79	65.145	
19,100.00	12,088.76	9,960.00	9,956.78	122.50	35.40	-0.34	-1,581.58	120.94	5,616.40	5,531.46	84.94	66.121	
19,200.00	12,089.04	9,960.00	9,956.78	124.05	35.40	-0.34	-1,581.58	120.94	5,709.45	5,624.36	85.09	67.100	
19,300.00	12,089.32	9,960.00	9,956.78	125.61	35.40	-0.34	-1,581.58	120.94	5,802.73	5,717.49	85.23	68.081	
19,400.00	12,089.61	9,960.00	9,956.78	127.17	35.40	-0.34	-1,581.58	120.94	5,896.22	5,810.85	85.37	69.064	
19,500.00	12,089.89	9,960.00	9,956.78	128.73	35.40	-0.34	-1,581.58	120.94	5,989.93	5,904.42	85.51	70.050	
19,600.00	12,090.18	9,960.00	9,956.78	130.29	35.40	-0.34	-1,581.58	120.94	6,083.84	5,998.20	85.64	71.037	
19,700.00	12,090.46	9,960.00	9,956.78	131.86	35.40	-0.34	-1,581.58	120.94	6,177.94	6,092.17	85.77	72.026	
19,800.00	12,090.75	9,960.00	9,956.78	133.42	35.40	-0.34	-1,581.58	120.94	6,272.22	6,186.32	85.90	73.016	
19,900.00	12,091.03	9,960.00	9,956.78	134.99	35.40	-0.34	-1,581.58	120.94	6,366.68	6,280.65	86.03	74.007	
20,000.00	12,091.31	9,960.00	9,956.78	136.57	35.40	-0.34	-1,581.58	120.94	6,461.31	6,375.15	86.15	75.000	
20,100.00	12,091.60	9,960.00	9,956.78	138.14	35.40	-0.34	-1,581.58	120.94	6,556.09	6,469.82	86.27	75.993	
20,200.00	12,091.88	9,960.00	9,956.78	139.72	35.40	-0.34	-1,581.58	120.94	6,651.03	6,564.63	86.39	76.987	
20,300.00	12,092.17	9,960.00	9,956.78	141.29	35.40	-0.34	-1,581.58	120.94	6,746.11	6,659.60	86.51	77.981	
20,400.00	12,092.45	9,960.00	9,956.78	142.87	35.40	-0.34	-1,581.58	120.94	6,841.33	6,754.70	86.63	78.975	
20,500.00	12,092.74	9,960.00	9,956.78	144.45	35.40	-0.34	-1,581.58	120.94	6,936.69	6,849.95	86.74	79.970	
20,600.00	12,093.02	9,960.00	9,956.78	146.04	35.40	-0.34	-1,581.58	120.94	7,032.17	6,945.32	86.85	80.965	
20,700.00	12,093.31	9,960.00	9,956.78	147.62	35.40	-0.34	-1,581.58	120.94	7,127.78	7,040.82	86.97	81.960	
20,800.00	12,093.59	9,960.00	9,956.78	149.21	35.40	-0.34	-1,581.58	120.94	7,223.51	7,136.44	87.08	82.955	
20,900.00	12,093.87	9,960.00	9,956.78	150.80	35.40	-0.34	-1,581.58	120.94	7,319.36	7,232.17	87.19	83.949	
21,000.00	12,094.16	9,960.00	9,956.78	152.39	35.40	-0.34	-1,581.58	120.94	7,415.31	7,328.01	87.30	84.943	
21,100.00	12,094.44	9,960.00	9,956.78	153.98	35.40	-0.34	-1,581.58	120.94	7,511.37	7,423.96	87.41	85.936	
21,200.00	12,094.73	9,960.00	9,956.78	155.57	35.40	-0.34	-1,581.58	120.94	7,607.53	7,520.01	87.51	86.929	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design BTBN 25 FED - #2 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 237-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
21,300.00	12,095.01	9,960.00	9,956.78	157.16	35.40	-0.34	-1,581.58	120.94	7,703.79	7,616.16	87.62	87.921	
21,400.00	12,095.30	9,960.00	9,956.78	158.76	35.40	-0.34	-1,581.58	120.94	7,800.14	7,712.41	87.73	88.912	
21,500.00	12,095.58	9,960.00	9,956.78	160.35	35.40	-0.34	-1,581.58	120.94	7,896.58	7,808.75	87.84	89.902	
21,600.00	12,095.86	9,960.00	9,956.78	161.95	35.40	-0.34	-1,581.58	120.94	7,993.11	7,905.17	87.94	90.892	
21,700.00	12,096.15	9,960.00	9,956.78	163.55	35.40	-0.34	-1,581.58	120.94	8,089.73	8,001.68	88.05	91.880	
21,800.00	12,096.43	9,960.00	9,956.78	165.15	35.40	-0.34	-1,581.58	120.94	8,186.42	8,098.27	88.15	92.867	
21,900.00	12,096.72	9,960.00	9,956.78	166.75	35.40	-0.34	-1,581.58	120.94	8,283.20	8,194.94	88.26	93.853	
22,000.00	12,097.00	9,960.00	9,956.78	168.35	35.40	-0.34	-1,581.58	120.94	8,380.05	8,291.68	88.36	94.838	
22,100.00	12,097.29	9,960.00	9,956.78	169.96	35.40	-0.34	-1,581.58	120.94	8,476.97	8,388.50	88.47	95.821	
22,175.33	12,097.50	9,960.00	9,956.78	171.16	35.40	-0.34	-1,581.58	120.94	8,550.03	8,461.48	88.55	96.561	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw - #99 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 52-GYRO-NS, 4310-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-160.30	-5,135.61	-1,838.74	5,454.95				
100.00	100.00	42.27	42.27	0.13	0.04	-160.30	-5,135.72	-1,838.70	5,455.00	5,454.83	0.17	N/A	
200.00	200.00	121.05	121.05	0.49	0.29	-160.30	-5,136.30	-1,838.67	5,455.67	5,454.88	0.78	6,959.874	
300.00	300.00	234.90	234.89	0.85	0.69	-160.30	-5,137.03	-1,839.28	5,456.47	5,454.93	1.54	3,541.655	
400.00	400.00	347.46	347.44	1.21	1.09	-160.29	-5,137.04	-1,840.82	5,456.93	5,454.64	2.30	2,377.514	
500.00	500.00	402.74	402.72	1.57	1.28	-160.28	-5,137.23	-1,841.69	5,457.76	5,454.91	2.85	1,916.358	
600.00	600.00	468.79	468.75	1.93	1.51	-160.27	-5,137.98	-1,842.58	5,459.26	5,455.82	3.44	1,587.991	
700.00	700.00	555.09	555.04	2.29	1.81	-160.27	-5,139.62	-1,843.27	5,461.30	5,457.20	4.10	1,332.673	
800.00	800.00	658.17	658.09	2.64	2.18	-160.26	-5,141.23	-1,844.43	5,463.15	5,458.33	4.82	1,134.101	
900.00	900.00	736.26	736.17	3.00	2.45	-160.26	-5,142.83	-1,845.21	5,465.39	5,459.94	5.45	1,003.015	
1,000.00	1,000.00	900.07	899.94	3.36	3.02	-160.25	-5,145.72	-1,847.01	5,467.58	5,461.19	6.38	856.757	
1,100.00	1,100.00	984.45	984.31	3.72	3.32	-160.25	-5,146.61	-1,847.94	5,468.93	5,461.90	7.04	777.319	
1,200.00	1,200.00	1,106.97	1,106.82	4.08	3.75	-160.24	-5,147.82	-1,849.22	5,470.22	5,462.39	7.82	699.226	
1,300.00	1,300.00	1,194.49	1,194.32	4.44	4.05	-160.24	-5,148.73	-1,849.89	5,471.45	5,462.96	8.49	644.603	
1,400.00	1,400.00	1,305.05	1,304.88	4.79	4.44	-160.24	-5,150.08	-1,850.16	5,472.68	5,463.44	9.23	592.662	
1,500.00	1,500.00	1,424.94	1,424.77	5.15	4.86	-160.24	-5,151.26	-1,850.36	5,473.67	5,463.66	10.01	546.693	
1,600.00	1,600.00	1,529.12	1,528.94	5.51	5.22	-160.23	-5,151.59	-1,851.44	5,474.32	5,463.58	10.74	509.946	
1,700.00	1,700.00	1,631.85	1,631.66	5.87	5.58	-160.22	-5,151.95	-1,852.57	5,475.02	5,463.57	11.45	478.052	
1,800.00	1,800.00	1,754.71	1,754.51	6.23	6.01	-160.21	-5,152.07	-1,853.91	5,475.48	5,463.24	12.24	447.334	
1,900.00	1,900.00	1,835.20	1,835.00	6.59	6.30	-160.20	-5,152.21	-1,854.50	5,475.90	5,463.02	12.88	425.143	
2,000.00	2,000.00	1,936.82	1,936.62	6.95	6.65	-160.20	-5,152.68	-1,854.98	5,476.49	5,462.89	13.59	402.850	
2,100.00	2,100.00	2,033.53	2,033.33	7.30	6.99	-160.20	-5,153.07	-1,855.54	5,477.07	5,462.78	14.29	383.244	
2,200.00	2,200.00	2,136.99	2,136.78	7.66	7.35	-160.19	-5,153.48	-1,856.18	5,477.65	5,462.64	15.01	364.888	
2,300.00	2,300.00	2,240.99	2,240.78	8.02	7.72	-160.18	-5,153.60	-1,857.36	5,478.15	5,462.41	15.73	348.175	
2,400.00	2,400.00	2,337.26	2,337.03	8.38	8.06	-160.17	-5,153.57	-1,858.91	5,478.66	5,462.23	16.43	333.481	
2,500.00	2,500.00	2,433.61	2,433.37	8.74	8.39	-160.15	-5,153.60	-1,860.40	5,479.21	5,462.09	17.12	319.975	
2,600.00	2,599.99	2,521.72	2,521.48	9.10	8.70	-160.15	-5,154.04	-1,861.09	5,480.69	5,462.90	17.79	308.070	
2,700.00	2,699.96	2,623.52	2,623.27	9.45	9.06	-160.16	-5,154.75	-1,861.62	5,483.75	5,465.24	18.51	296.337	
2,800.00	2,799.86	2,722.67	2,722.42	9.81	9.41	-160.18	-5,155.16	-1,862.54	5,488.16	5,468.95	19.21	285.692	
2,900.00	2,899.68	2,797.22	2,796.96	10.17	9.67	-160.21	-5,155.91	-1,862.79	5,494.39	5,474.56	19.83	277.097	
3,000.00	2,999.37	2,893.61	2,893.34	10.53	10.00	-160.26	-5,157.32	-1,862.54	5,502.34	5,481.81	20.52	268.093	
3,100.00	3,098.90	2,977.32	2,977.04	10.89	10.30	-160.32	-5,158.73	-1,862.24	5,511.94	5,490.77	21.17	260.306	
3,200.00	3,198.26	3,084.74	3,084.45	11.25	10.67	-160.39	-5,160.37	-1,862.60	5,523.12	5,501.21	21.91	252.080	
3,300.06	3,297.46	3,196.39	3,196.09	11.62	11.06	-160.45	-5,161.57	-1,863.43	5,535.48	5,512.82	22.66	244.267	
3,400.00	3,396.43	3,311.10	3,310.79	11.98	11.46	-160.53	-5,162.96	-1,863.93	5,548.64	5,525.21	23.42	236.879	
3,500.00	3,495.46	3,483.84	3,483.52	12.36	12.07	-160.59	-5,162.54	-1,865.45	5,560.41	5,536.02	24.39	227.992	
3,600.00	3,594.48	3,571.19	3,570.87	12.73	12.37	-160.66	-5,162.23	-1,865.87	5,572.10	5,547.05	25.05	222.395	
3,700.00	3,693.51	3,689.57	3,689.23	13.11	12.79	-160.71	-5,161.18	-1,867.36	5,583.55	5,557.72	25.83	216.157	
3,800.00	3,792.54	3,782.54	3,782.18	13.49	13.11	-160.77	-5,160.14	-1,868.94	5,594.97	5,568.45	26.52	210.973	
3,900.00	3,891.56	3,877.31	3,876.94	13.87	13.44	-160.83	-5,159.44	-1,869.97	5,606.53	5,579.31	27.22	206.005	
4,000.00	3,990.59	4,000.00	4,097.89	14.25	13.87	-160.97	-5,158.50	-1,862.86	5,616.94	5,588.94	28.01	200.551	
4,100.00	4,089.62	4,181.54	4,180.89	14.64	14.49	-161.09	-5,157.76	-1,858.19	5,626.28	5,597.27	29.01	193.931	
4,200.00	4,188.64	4,239.98	4,239.21	15.03	14.70	-161.20	-5,157.86	-1,854.44	5,636.35	5,606.76	29.59	190.509	
4,300.00	4,287.67	4,310.00	4,309.08	15.42	14.82	-161.31	-5,158.38	-1,849.98	5,647.00	5,616.92	30.08	187.749	
4,400.00	4,386.70	4,367.97	4,366.97	15.81	14.83	-161.42	-5,159.08	-1,846.84	5,658.38	5,627.93	30.45	185.824	
4,500.00	4,485.72	4,430.00	4,428.92	16.20	14.83	-161.52	-5,160.11	-1,844.02	5,670.48	5,639.66	30.82	183.972	
4,600.00	4,584.75	4,667.08	4,665.60	16.59	14.89	-161.72	-5,162.24	-1,830.79	5,681.42	5,650.17	31.26	181.753	
4,700.00	4,683.78	4,714.00	4,712.43	16.98	14.91	-161.82	-5,162.33	-1,827.83	5,691.80	5,660.15	31.65	179.857	
4,800.00	4,782.80	4,783.43	4,781.77	17.38	14.94	-161.93	-5,162.72	-1,824.28	5,702.85	5,670.80	32.05	177.956	
4,900.00	4,881.83	4,864.07	4,862.36	17.78	14.98	-162.02	-5,163.31	-1,821.74	5,714.60	5,682.14	32.46	176.072	
5,000.00	4,980.86	4,961.73	4,960.01	18.17	15.03	-162.11	-5,163.65	-1,819.93	5,726.42	5,693.53	32.88	174.150	
5,100.00	5,079.88	5,070.35	5,068.62	18.57	15.10	-162.19	-5,163.72	-1,818.79	5,738.23	5,704.91	33.32	172.194	

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MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw - #99 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 52-GYRO-NS, 4310-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	5,167.72	5,165.99	18.97	15.17	-162.27	-5,163.61	-1,817.88	5,749.91	5,716.14	33.77	170.283	
5,300.00	5,277.94	5,282.35	5,280.61	19.37	15.26	-162.35	-5,163.42	-1,816.75	5,761.55	5,727.32	34.23	168.304	
5,400.00	5,376.96	5,358.68	5,356.94	19.77	15.33	-162.42	-5,163.34	-1,815.93	5,773.23	5,738.55	34.67	166.511	
5,500.00	5,475.99	5,457.30	5,455.56	20.17	15.43	-162.50	-5,163.47	-1,814.93	5,785.15	5,750.01	35.14	164.637	
5,600.00	5,575.02	5,548.33	5,546.57	20.57	15.52	-162.58	-5,163.55	-1,814.15	5,797.10	5,761.49	35.60	162.819	
5,690.40	5,664.54	5,637.33	5,635.57	20.93	15.62	-162.64	-5,163.67	-1,813.58	5,808.00	5,771.96	36.04	161.156	
5,700.00	5,674.04	5,647.01	5,645.26	20.97	15.63	-162.65	-5,163.69	-1,813.50	5,809.15	5,773.06	36.09	160.980	
5,800.00	5,773.21	5,757.73	5,755.97	21.37	15.76	-162.72	-5,163.76	-1,812.68	5,820.22	5,783.63	36.59	159.068	
5,900.00	5,872.58	5,853.00	5,851.25	21.76	15.87	-162.78	-5,163.68	-1,812.18	5,829.72	5,792.64	37.08	157.229	
6,000.00	5,972.14	5,956.48	5,956.72	22.15	16.01	-162.83	-5,163.60	-1,811.51	5,837.68	5,800.09	37.59	155.318	
6,100.00	6,071.84	6,060.15	6,058.38	22.52	16.16	-162.88	-5,163.53	-1,810.60	5,844.06	5,805.96	38.09	153.421	
6,200.00	6,171.66	6,162.63	6,160.86	22.89	16.30	-162.91	-5,163.37	-1,809.96	5,848.91	5,810.30	38.60	151.514	
6,300.00	6,271.57	6,259.89	6,258.12	23.25	16.45	-162.94	-5,163.15	-1,809.25	5,852.14	5,813.03	39.11	149.636	
6,400.00	6,371.54	6,343.97	6,342.20	23.60	16.58	-162.95	-5,163.16	-1,808.76	5,854.12	5,814.53	39.59	147.852	
6,490.46	6,462.00	6,435.06	6,433.28	23.92	16.73	-162.96	-5,163.20	-1,808.29	5,854.64	5,814.58	40.06	146.140	
6,500.00	6,471.54	6,442.85	6,441.08	23.95	16.75	-162.96	-5,163.21	-1,808.25	5,854.64	5,814.53	40.11	145.972	
6,514.97	6,486.51	6,455.08	6,453.31	24.00	16.77	-162.96	-5,163.23	-1,808.17	5,854.63	5,814.45	40.18	145.708	
6,600.00	6,571.54	6,530.19	6,528.42	24.29	16.89	-162.97	-5,163.49	-1,807.66	5,854.74	5,814.14	40.60	144.191	
6,700.00	6,671.54	6,645.52	6,643.74	24.63	17.09	-162.98	-5,163.80	-1,806.81	5,854.79	5,813.63	41.16	142.245	
6,800.00	6,771.54	6,743.53	6,741.75	24.98	17.27	-162.98	-5,163.82	-1,806.23	5,854.63	5,812.94	41.69	140.439	
6,817.79	6,789.33	6,757.91	6,756.13	25.04	17.30	-162.98	-5,163.84	-1,806.17	5,854.63	5,812.85	41.78	140.142	
6,900.00	6,871.54	6,824.59	6,822.81	25.32	17.42	-162.99	-5,164.00	-1,805.93	5,854.74	5,812.55	42.19	138.785	
7,000.00	6,971.54	6,913.73	6,911.94	25.66	17.59	-162.99	-5,164.56	-1,805.37	5,855.15	5,812.44	42.70	137.111	
7,100.00	7,071.54	7,025.79	7,024.00	26.01	17.81	-163.00	-5,165.18	-1,804.60	5,855.47	5,812.20	43.28	135.306	
7,200.00	7,171.54	7,122.50	7,120.71	26.35	18.00	-163.01	-5,165.62	-1,803.95	5,855.71	5,811.89	43.82	133.629	
7,300.00	7,271.54	7,208.05	7,206.26	26.70	18.17	-163.01	-5,166.13	-1,803.46	5,856.12	5,811.78	44.34	132.064	
7,400.00	7,371.54	7,297.22	7,295.43	27.04	18.35	-163.02	-5,166.83	-1,803.29	5,856.80	5,811.93	44.87	130.514	
7,500.00	7,471.54	7,398.47	7,396.67	27.39	18.56	-163.02	-5,167.61	-1,803.13	5,857.50	5,812.06	45.44	128.914	
7,600.00	7,571.54	7,492.23	7,490.42	27.73	18.76	-163.03	-5,168.40	-1,802.99	5,858.26	5,812.27	45.99	127.390	
7,700.00	7,671.54	7,579.27	7,577.46	28.08	18.95	-163.03	-5,169.26	-1,802.84	5,859.16	5,812.64	46.52	125.938	
7,800.00	7,771.54	7,661.14	7,659.32	28.43	19.13	-163.03	-5,170.35	-1,802.73	5,860.39	5,813.34	47.05	124.552	
7,900.00	7,871.54	7,768.68	7,766.85	28.77	19.37	-163.04	-5,171.94	-1,802.24	5,861.66	5,814.01	47.65	123.021	
8,000.00	7,971.54	7,872.84	7,871.00	29.12	19.61	-163.05	-5,173.41	-1,801.64	5,862.85	5,814.61	48.24	121.533	
8,100.00	8,071.54	7,962.69	7,960.85	29.47	19.82	-163.06	-5,174.58	-1,801.37	5,864.02	5,815.22	48.80	120.165	
8,200.00	8,171.54	8,102.23	8,100.37	29.82	20.14	-163.06	-5,176.49	-1,801.39	5,865.46	5,815.97	49.48	118.531	
8,300.00	8,271.54	8,216.00	8,214.13	30.16	20.40	-163.06	-5,176.83	-1,802.04	5,865.90	5,815.80	50.10	117.084	
8,400.00	8,371.54	8,318.34	8,316.48	30.51	20.63	-163.06	-5,177.09	-1,802.45	5,866.26	5,815.57	50.69	115.724	
8,500.00	8,471.54	8,400.00	8,398.13	30.86	20.83	-163.05	-5,177.51	-1,802.61	5,866.80	5,815.56	51.24	114.502	
8,600.00	8,571.54	8,484.42	8,482.55	31.21	21.04	-163.05	-5,178.15	-1,802.90	5,867.63	5,815.84	51.79	113.288	
8,700.00	8,671.54	8,625.04	8,623.17	31.56	21.38	-163.05	-5,178.79	-1,803.59	5,868.19	5,815.70	52.50	111.781	
8,800.00	8,771.54	8,721.77	8,719.89	31.91	21.61	-163.04	-5,178.77	-1,804.39	5,868.42	5,815.33	53.09	110.547	
8,900.00	8,871.54	8,802.59	8,800.71	32.26	21.81	-163.04	-5,178.98	-1,805.02	5,868.89	5,815.26	53.63	109.424	
9,000.00	8,971.54	8,886.84	8,884.96	32.61	22.02	-163.03	-5,179.41	-1,805.94	5,869.70	5,815.51	54.20	108.306	
9,100.00	9,071.54	9,013.45	9,011.55	32.96	22.34	-163.01	-5,179.85	-1,807.69	5,870.45	5,815.58	54.87	106.981	
9,200.00	9,171.54	9,152.97	9,151.06	33.31	22.69	-163.00	-5,179.50	-1,809.29	5,870.54	5,814.95	55.59	105.608	
9,300.00	9,271.54	9,283.92	9,281.99	33.66	23.02	-162.99	-5,178.40	-1,810.35	5,869.94	5,813.66	56.28	104.294	
9,400.00	9,371.54	9,346.00	9,344.07	34.01	23.18	-162.98	-5,177.70	-1,811.16	5,869.35	5,812.56	56.79	103.347	
9,448.49	9,420.03	9,388.77	9,386.83	34.18	23.30	-162.97	-5,177.36	-1,811.82	5,869.21	5,812.14	57.08	102.830	
9,500.00	9,471.54	9,416.29	9,414.36	34.36	23.37	-162.97	-5,177.33	-1,812.12	5,869.32	5,811.99	57.33	102.382	
9,600.00	9,571.54	9,495.49	9,493.55	34.71	23.58	-162.96	-5,177.76	-1,812.63	5,870.01	5,812.12	57.89	101.399	
9,700.00	9,671.54	9,630.39	9,628.45	35.06	23.95	-162.96	-5,178.37	-1,813.17	5,870.58	5,811.97	58.62	100.153	
9,800.00	9,771.54	9,703.10	9,701.15	35.41	24.14	-162.96	-5,178.55	-1,813.59	5,870.99	5,811.82	59.16	99.234	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw - #99 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 52-GYRO-NS, 4310-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,900.00	9,871.54	9,816.93	9,814.98	35.76	24.45	-162.95	-5,179.06	-1,814.27	5,871.60	5,811.77	59.83	98.134	
10,000.00	9,971.54	9,883.39	9,881.44	36.11	24.64	-162.95	-5,179.46	-1,814.46	5,872.28	5,811.91	60.37	97.277	
10,100.00	10,071.54	10,055.96	10,054.01	36.46	25.12	-162.94	-5,179.73	-1,815.20	5,872.49	5,811.28	61.21	95.936	
10,130.70	10,102.24	10,071.00	10,069.04	36.57	25.16	-162.94	-5,179.69	-1,815.26	5,872.45	5,811.09	61.36	95.704	
10,200.00	10,171.54	10,124.93	10,122.97	36.81	25.31	-162.94	-5,179.68	-1,815.40	5,872.50	5,810.75	61.75	95.095	
10,300.00	10,271.54	10,216.42	10,214.46	37.17	25.57	-162.94	-5,179.93	-1,815.65	5,872.84	5,810.47	62.37	94.165	
10,400.00	10,371.54	10,306.31	10,304.35	37.52	25.82	-162.94	-5,180.26	-1,816.04	5,873.32	5,810.34	62.98	93.262	
10,500.00	10,471.54	10,396.43	10,388.47	37.87	26.06	-162.93	-5,180.72	-1,816.59	5,874.03	5,810.47	63.57	92.404	
10,600.00	10,571.54	10,474.35	10,472.38	38.22	26.30	-162.93	-5,181.35	-1,817.34	5,875.02	5,810.86	64.16	91.566	
10,700.00	10,671.54	10,592.41	10,590.44	38.57	26.65	-162.92	-5,182.26	-1,818.35	5,876.01	5,811.15	64.86	90.591	
10,800.00	10,771.54	10,690.97	10,688.99	38.93	26.93	-162.92	-5,182.84	-1,818.76	5,876.70	5,811.19	65.51	89.711	
10,900.00	10,871.54	10,750.00	10,748.02	39.28	27.11	-162.92	-5,183.28	-1,819.04	5,877.68	5,811.66	66.03	89.021	
11,000.00	10,971.54	10,750.00	10,748.02	39.63	27.11	-162.92	-5,183.28	-1,819.04	5,880.07	5,813.72	66.35	88.621	
11,100.00	11,071.54	10,750.00	10,748.02	39.98	27.11	-162.92	-5,183.28	-1,819.04	5,884.15	5,817.49	66.67	88.264	
11,200.00	11,171.54	10,750.00	10,748.02	40.34	27.11	-162.92	-5,183.28	-1,819.04	5,889.94	5,822.97	66.97	87.950	
11,300.00	11,271.54	10,750.00	10,748.02	40.69	27.11	-162.92	-5,183.28	-1,819.04	5,897.41	5,830.14	67.26	87.678	
11,400.00	11,371.54	10,750.00	10,748.02	41.04	27.11	-162.92	-5,183.28	-1,819.04	5,906.56	5,839.02	67.55	87.446	
11,500.00	11,471.54	10,750.00	10,748.02	41.40	27.11	-162.92	-5,183.28	-1,819.04	5,917.39	5,849.57	67.82	87.254	
11,525.27	11,496.81	10,750.00	10,748.02	41.48	27.11	-162.92	-5,183.28	-1,819.04	5,920.39	5,852.51	67.89	87.212	
11,550.00	11,521.53	10,750.00	10,748.02	41.57	27.11	-162.92	-5,183.28	-1,819.04	5,922.97	5,855.02	67.95	87.173	
11,600.00	11,571.33	10,750.00	10,748.02	41.72	27.11	-162.90	-5,183.28	-1,819.04	5,925.61	5,857.56	68.05	87.075	
11,650.00	11,620.56	10,750.00	10,748.02	41.85	27.11	-162.86	-5,183.28	-1,819.04	5,924.81	5,856.66	68.15	86.938	
11,700.00	11,668.84	10,750.00	10,748.02	41.98	27.11	-162.80	-5,183.28	-1,819.04	5,920.59	5,852.35	68.24	86.763	
11,750.00	11,715.82	10,750.00	10,748.02	42.10	27.11	-162.72	-5,183.28	-1,819.04	5,912.96	5,844.65	68.32	86.552	
11,800.00	11,761.13	10,750.00	10,748.02	42.20	27.11	-162.62	-5,183.28	-1,819.04	5,901.98	5,833.59	68.38	86.307	
11,850.00	11,804.43	10,750.00	10,748.02	42.30	27.11	-162.50	-5,183.28	-1,819.04	5,887.70	5,819.26	68.44	86.028	
11,900.00	11,845.39	10,750.00	10,748.02	42.39	27.11	-162.37	-5,183.28	-1,819.04	5,870.20	5,801.72	68.48	85.716	
11,950.00	11,883.69	10,750.00	10,748.02	42.47	27.11	-162.21	-5,183.28	-1,819.04	5,849.61	5,781.09	68.52	85.373	
12,000.00	11,919.06	10,750.00	10,748.02	42.54	27.11	-162.04	-5,183.28	-1,819.04	5,826.03	5,757.49	68.54	85.000	
12,050.00	11,951.20	10,750.00	10,748.02	42.61	27.11	-161.85	-5,183.28	-1,819.04	5,799.62	5,731.06	68.56	84.596	
12,100.00	11,979.89	10,750.00	10,748.02	42.68	27.11	-161.65	-5,183.28	-1,819.04	5,770.54	5,701.97	68.56	84.163	
12,150.00	12,004.90	10,750.00	10,748.02	42.75	27.11	-161.44	-5,183.28	-1,819.04	5,738.96	5,670.40	68.56	83.702	
12,200.00	12,026.05	10,750.00	10,748.02	42.82	27.11	-161.21	-5,183.28	-1,819.04	5,705.10	5,636.54	68.56	83.213	
12,250.00	12,043.17	10,750.00	10,748.02	42.89	27.11	-160.96	-5,183.28	-1,819.04	5,669.17	5,600.62	68.55	82.697	
12,300.00	12,056.13	10,750.00	10,748.02	42.97	27.11	-160.71	-5,183.28	-1,819.04	5,631.41	5,562.86	68.55	82.155	
12,350.00	12,064.83	10,750.00	10,748.02	43.05	27.11	-160.45	-5,183.28	-1,819.04	5,592.06	5,523.53	68.54	81.590	
12,400.00	12,069.21	10,750.00	10,748.02	43.13	27.11	-160.18	-5,183.28	-1,819.04	5,551.41	5,482.88	68.53	81.002	
12,423.64	12,069.77	10,750.00	10,748.02	43.17	27.11	-160.05	-5,183.28	-1,819.04	5,531.81	5,463.28	68.53	80.716	
12,500.00	12,069.98	10,750.00	10,748.02	43.32	27.11	-159.63	-5,183.28	-1,819.04	5,468.34	5,399.80	68.54	79.786	
12,600.00	12,070.27	10,750.00	10,748.02	43.58	27.11	-159.06	-5,183.28	-1,819.04	5,385.72	5,317.16	68.56	78.553	
12,667.68	12,070.46	10,750.00	10,748.02	43.79	27.11	-158.66	-5,183.28	-1,819.04	5,330.14	5,261.55	68.59	77.709	
12,700.00	12,070.55	10,750.00	10,748.02	43.90	27.11	-158.47	-5,183.28	-1,819.04	5,303.61	5,235.00	68.61	77.301	
12,800.00	12,070.84	10,750.00	10,748.02	44.29	27.11	-157.89	-5,183.28	-1,819.04	5,220.73	5,152.05	68.68	76.019	
12,900.00	12,071.12	10,750.00	10,748.02	44.73	27.11	-157.32	-5,183.28	-1,819.04	5,136.72	5,067.96	68.76	74.708	
13,000.00	12,071.41	10,750.00	10,748.02	45.22	27.11	-156.77	-5,183.28	-1,819.04	5,051.62	4,982.77	68.85	73.373	
13,100.00	12,071.69	10,750.00	10,748.02	45.76	27.11	-156.24	-5,183.28	-1,819.04	4,965.49	4,896.54	68.95	72.019	
13,200.00	12,071.98	10,750.00	10,748.02	46.34	27.11	-155.72	-5,183.28	-1,819.04	4,878.38	4,809.33	69.05	70.649	
13,200.11	12,071.98	10,750.00	10,748.02	46.34	27.11	-155.72	-5,183.28	-1,819.04	4,878.28	4,809.23	69.05	70.647	
13,300.00	12,072.26	10,750.00	10,748.02	46.97	27.11	-155.20	-5,183.28	-1,819.04	4,791.03	4,721.87	69.17	69.269	
13,400.00	12,072.55	10,750.00	10,748.02	47.64	27.11	-154.66	-5,183.28	-1,819.04	4,704.20	4,634.90	69.30	67.880	
13,500.00	12,072.83	10,750.00	10,748.02	48.36	27.11	-154.10	-5,183.28	-1,819.04	4,617.89	4,548.43	69.46	66.484	
13,600.00	12,073.12	10,750.00	10,748.02	49.13	27.11	-153.52	-5,183.28	-1,819.04	4,532.15	4,462.51	69.64	65.078	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw - #99 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 52-GYRO-NS, 4310-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.00	12,073.40	10,750.00	10,748.02	49.94	27.11	-152.91	-5,183.28	-1,819.04	4,447.00	4,377.15	69.85	63.664	
13,800.00	12,073.68	10,750.00	10,748.02	50.80	27.11	-152.28	-5,183.28	-1,819.04	4,362.48	4,292.39	70.09	62.242	
13,900.00	12,073.97	10,750.00	10,748.02	51.69	27.11	-151.62	-5,183.28	-1,819.04	4,278.63	4,208.27	70.36	60.812	
14,000.00	12,074.25	10,750.00	10,748.02	52.62	27.11	-150.93	-5,183.28	-1,819.04	4,195.49	4,124.83	70.66	59.374	
14,100.00	12,074.54	10,750.00	10,748.02	53.58	27.11	-150.21	-5,183.28	-1,819.04	4,113.10	4,042.10	71.00	57.930	
14,200.00	12,074.82	10,750.00	10,748.02	54.58	27.11	-149.45	-5,183.28	-1,819.04	4,031.51	3,960.13	71.38	56.481	
14,300.00	12,075.11	10,750.00	10,748.02	55.61	27.11	-148.67	-5,183.28	-1,819.04	3,950.76	3,878.96	71.80	55.026	
14,400.00	12,075.39	10,750.00	10,748.02	56.67	27.11	-147.84	-5,183.28	-1,819.04	3,870.91	3,798.65	72.26	53.568	
14,500.00	12,075.68	10,750.00	10,748.02	57.76	27.11	-146.98	-5,183.28	-1,819.04	3,792.02	3,719.25	72.77	52.108	
14,600.00	12,075.96	10,750.00	10,748.02	58.87	27.11	-146.07	-5,183.28	-1,819.04	3,714.14	3,640.81	73.33	50.648	
14,700.00	12,076.24	10,750.00	10,748.02	60.01	27.11	-145.12	-5,183.28	-1,819.04	3,637.35	3,563.40	73.95	49.189	
14,800.00	12,076.53	10,750.00	10,748.02	61.17	27.11	-144.13	-5,183.28	-1,819.04	3,561.70	3,487.09	74.62	47.734	
14,900.00	12,076.81	10,750.00	10,748.02	62.36	27.11	-143.08	-5,183.28	-1,819.04	3,487.29	3,411.94	75.34	46.285	
15,000.00	12,077.10	10,750.00	10,748.02	63.57	27.11	-141.98	-5,183.28	-1,819.04	3,414.18	3,338.05	76.13	44.844	
15,100.00	12,077.38	10,750.00	10,748.02	64.79	27.11	-140.83	-5,183.28	-1,819.04	3,342.47	3,265.48	76.99	43.416	
15,200.00	12,077.67	10,750.00	10,748.02	66.04	27.11	-139.61	-5,183.28	-1,819.04	3,272.24	3,194.33	77.91	42.001	
15,300.00	12,077.95	10,750.00	10,748.02	67.30	27.11	-138.34	-5,183.28	-1,819.04	3,203.59	3,124.69	78.90	40.605	
15,400.00	12,078.23	10,750.00	10,748.02	68.58	27.11	-136.99	-5,183.28	-1,819.04	3,136.63	3,056.67	79.95	39.230	
15,500.00	12,078.52	10,750.00	10,748.02	69.88	27.11	-135.58	-5,183.28	-1,819.04	3,071.46	2,990.38	81.08	37.880	
15,600.00	12,078.80	10,750.00	10,748.02	71.19	27.11	-134.09	-5,183.28	-1,819.04	3,008.21	2,925.92	82.28	36.559	
15,700.00	12,079.09	10,750.00	10,748.02	72.51	27.11	-132.53	-5,183.28	-1,819.04	2,946.99	2,863.44	83.56	35.270	
15,800.00	12,079.37	10,750.00	10,748.02	73.85	27.11	-130.88	-5,183.28	-1,819.04	2,887.94	2,803.05	84.90	34.017	
15,900.00	12,079.66	10,750.00	10,748.02	75.21	27.11	-129.15	-5,183.28	-1,819.04	2,831.20	2,744.89	86.31	32.803	
16,000.00	12,079.94	10,750.00	10,748.02	76.57	27.11	-127.33	-5,183.28	-1,819.04	2,776.89	2,689.11	87.78	31.633	
16,100.00	12,080.22	10,750.00	10,748.02	77.94	27.11	-125.42	-5,183.28	-1,819.04	2,725.17	2,635.85	89.32	30.510	
16,200.00	12,080.51	10,750.00	10,748.02	79.33	27.11	-123.42	-5,183.28	-1,819.04	2,676.19	2,585.28	90.91	29.437	
16,300.00	12,080.79	10,750.00	10,748.02	80.73	27.11	-121.32	-5,183.28	-1,819.04	2,630.11	2,537.55	92.55	28.417	
16,400.00	12,081.08	10,750.00	10,748.02	82.13	27.11	-119.12	-5,183.28	-1,819.04	2,587.07	2,492.83	94.24	27.453	
16,500.00	12,081.36	10,750.00	10,748.02	83.55	27.11	-116.83	-5,183.28	-1,819.04	2,547.23	2,451.28	95.95	26.548	
16,600.00	12,081.65	10,750.00	10,748.02	84.97	27.11	-114.44	-5,183.28	-1,819.04	2,510.74	2,413.05	97.68	25.703	
16,700.00	12,081.93	10,750.00	10,748.02	86.40	27.11	-111.96	-5,183.28	-1,819.04	2,477.75	2,378.32	99.43	24.920	
16,800.00	12,082.22	10,750.00	10,748.02	87.84	27.11	-109.39	-5,183.28	-1,819.04	2,448.41	2,347.24	101.17	24.202	
16,900.00	12,082.50	10,750.00	10,748.02	89.29	27.11	-106.73	-5,183.28	-1,819.04	2,422.84	2,319.95	102.89	23.548	
17,000.00	12,082.78	10,750.00	10,748.02	90.75	27.11	-104.01	-5,183.28	-1,819.04	2,401.17	2,296.59	104.58	22.960	
17,100.00	12,083.07	10,750.00	10,748.02	92.21	27.11	-101.22	-5,183.28	-1,819.04	2,383.49	2,277.27	106.22	22.439	
17,200.00	12,083.35	10,750.00	10,748.02	93.68	27.11	-98.38	-5,183.28	-1,819.04	2,369.91	2,262.11	107.81	21.983	
17,300.00	12,083.64	10,750.00	10,748.02	95.15	27.11	-95.49	-5,183.28	-1,819.04	2,360.50	2,251.18	109.32	21.593	
17,400.00	12,083.92	10,750.00	10,748.02	96.63	27.11	-92.58	-5,183.28	-1,819.04	2,355.29	2,244.55	110.74	21.268	
17,472.76	12,084.13	10,750.00	10,748.02	97.71	27.11	-90.46	-5,183.28	-1,819.04	2,354.17	2,242.45	111.72	21.072 CC	
17,500.00	12,084.21	10,750.00	10,748.02	98.12	27.11	-89.66	-5,183.28	-1,819.04	2,354.32	2,242.25	112.07	21.008 ES	
17,600.00	12,084.49	10,750.00	10,748.02	99.61	27.11	-86.75	-5,183.28	-1,819.04	2,357.60	2,244.31	113.29	20.810	
17,700.00	12,084.77	10,750.00	10,748.02	101.11	27.11	-83.85	-5,183.28	-1,819.04	2,365.11	2,250.71	114.40	20.674	
17,800.00	12,085.06	10,750.00	10,748.02	102.61	27.11	-80.98	-5,183.28	-1,819.04	2,376.80	2,261.41	115.39	20.598	
17,900.00	12,085.34	10,750.00	10,748.02	104.11	27.11	-78.16	-5,183.28	-1,819.04	2,392.62	2,276.36	116.26	20.581 SF	
18,000.00	12,085.63	10,750.00	10,748.02	105.63	27.11	-75.40	-5,183.28	-1,819.04	2,412.48	2,295.48	117.00	20.619	
18,100.00	12,085.91	10,750.00	10,748.02	107.14	27.11	-72.71	-5,183.28	-1,819.04	2,436.29	2,318.67	117.63	20.712	
18,200.00	12,086.20	10,750.00	10,748.02	108.66	27.11	-70.10	-5,183.28	-1,819.04	2,463.93	2,345.80	118.14	20.857	
18,300.00	12,086.48	10,750.00	10,748.02	110.18	27.11	-67.57	-5,183.28	-1,819.04	2,495.28	2,376.75	118.53	21.052	
18,400.00	12,086.76	10,750.00	10,748.02	111.71	27.11	-65.13	-5,183.28	-1,819.04	2,530.19	2,411.37	118.82	21.294	
18,500.00	12,087.05	10,750.00	10,748.02	113.24	27.11	-62.79	-5,183.28	-1,819.04	2,568.52	2,449.52	119.01	21.583	
18,600.00	12,087.33	10,750.00	10,748.02	114.78	27.11	-60.54	-5,183.28	-1,819.04	2,610.13	2,491.02	119.10	21.915	
18,700.00	12,087.62	10,750.00	10,748.02	116.32	27.11	-58.39	-5,183.28	-1,819.04	2,654.85	2,535.73	119.12	22.288	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw - #99 - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 52-GYRO-NS, 4310-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,800.00	12,087.90	10,750.00	10,748.02	117.86	27.11	-56.33	-5,183.28	-1,819.04	2,702.53	2,583.48	119.05	22.700	
18,900.00	12,088.19	10,750.00	10,748.02	119.40	27.11	-54.37	-5,183.28	-1,819.04	2,753.02	2,634.10	118.92	23.150	
19,000.00	12,088.47	10,750.00	10,748.02	120.95	27.11	-52.50	-5,183.28	-1,819.04	2,806.16	2,687.43	118.73	23.635	
19,100.00	12,088.76	10,750.00	10,748.02	122.50	27.11	-50.73	-5,183.28	-1,819.04	2,861.82	2,743.33	118.49	24.153	
19,200.00	12,089.04	10,750.00	10,748.02	124.05	27.11	-49.04	-5,183.28	-1,819.04	2,919.84	2,801.64	118.20	24.702	
19,300.00	12,089.32	10,750.00	10,748.02	125.61	27.11	-47.43	-5,183.28	-1,819.04	2,980.08	2,862.21	117.88	25.281	
19,400.00	12,089.61	10,750.00	10,748.02	127.17	27.11	-45.90	-5,183.28	-1,819.04	3,042.43	2,924.91	117.52	25.889	
19,500.00	12,089.89	10,750.00	10,748.02	128.73	27.11	-44.45	-5,183.28	-1,819.04	3,106.73	2,989.60	117.14	26.522	
19,600.00	12,090.18	10,750.00	10,748.02	130.29	27.11	-43.07	-5,183.28	-1,819.04	3,172.89	3,056.16	116.73	27.180	
19,700.00	12,090.46	10,750.00	10,748.02	131.86	27.11	-41.76	-5,183.28	-1,819.04	3,240.79	3,124.47	116.31	27.862	
19,800.00	12,090.75	10,750.00	10,748.02	133.42	27.11	-40.51	-5,183.28	-1,819.04	3,310.31	3,194.43	115.88	28.566	
19,900.00	12,091.03	10,750.00	10,748.02	134.99	27.11	-39.33	-5,183.28	-1,819.04	3,381.36	3,265.92	115.44	29.290	
20,000.00	12,091.31	10,750.00	10,748.02	136.57	27.11	-38.20	-5,183.28	-1,819.04	3,453.84	3,338.85	115.00	30.034	
20,100.00	12,091.60	10,750.00	10,748.02	138.14	27.11	-37.12	-5,183.28	-1,819.04	3,527.68	3,413.13	114.55	30.796	
20,200.00	12,091.88	10,750.00	10,748.02	139.72	27.11	-36.10	-5,183.28	-1,819.04	3,602.77	3,488.67	114.10	31.576	
20,300.00	12,092.17	10,750.00	10,748.02	141.29	27.11	-35.13	-5,183.28	-1,819.04	3,679.05	3,565.40	113.65	32.371	
20,400.00	12,092.45	10,750.00	10,748.02	142.87	27.11	-34.20	-5,183.28	-1,819.04	3,756.44	3,643.23	113.21	33.182	
20,500.00	12,092.74	10,750.00	10,748.02	144.45	27.11	-33.31	-5,183.28	-1,819.04	3,834.88	3,722.11	112.77	34.007	
20,600.00	12,093.02	10,750.00	10,748.02	146.04	27.11	-32.47	-5,183.28	-1,819.04	3,914.30	3,801.96	112.33	34.845	
20,700.00	12,093.31	10,750.00	10,748.02	147.62	27.11	-31.66	-5,183.28	-1,819.04	3,994.64	3,882.74	111.91	35.696	
20,800.00	12,093.59	10,750.00	10,748.02	149.21	27.11	-30.89	-5,183.28	-1,819.04	4,075.86	3,964.37	111.49	36.558	
20,900.00	12,093.87	10,750.00	10,748.02	150.80	27.11	-30.15	-5,183.28	-1,819.04	4,157.89	4,046.81	111.08	37.432	
21,000.00	12,094.16	10,750.00	10,748.02	152.39	27.11	-29.45	-5,183.28	-1,819.04	4,240.70	4,130.02	110.68	38.315	
21,100.00	12,094.44	10,750.00	10,748.02	153.98	27.11	-28.77	-5,183.28	-1,819.04	4,324.23	4,213.94	110.29	39.209	
21,200.00	12,094.73	10,750.00	10,748.02	155.57	27.11	-28.12	-5,183.28	-1,819.04	4,408.45	4,298.54	109.91	40.111	
21,300.00	12,095.01	10,750.00	10,748.02	157.16	27.11	-27.50	-5,183.28	-1,819.04	4,493.31	4,383.78	109.53	41.022	
21,400.00	12,095.30	10,750.00	10,748.02	158.76	27.11	-26.90	-5,183.28	-1,819.04	4,578.79	4,469.62	109.17	41.941	
21,500.00	12,095.58	10,750.00	10,748.02	160.35	27.11	-26.33	-5,183.28	-1,819.04	4,664.84	4,556.02	108.82	42.867	
21,600.00	12,095.86	10,750.00	10,748.02	161.95	27.11	-25.78	-5,183.28	-1,819.04	4,751.44	4,642.96	108.48	43.800	
21,700.00	12,096.15	10,750.00	10,748.02	163.55	27.11	-25.25	-5,183.28	-1,819.04	4,838.56	4,730.41	108.15	44.740	
21,800.00	12,096.43	10,750.00	10,748.02	165.15	27.11	-24.75	-5,183.28	-1,819.04	4,926.17	4,818.34	107.83	45.686	
21,900.00	12,096.72	10,750.00	10,748.02	166.75	27.11	-24.26	-5,183.28	-1,819.04	5,014.24	4,906.72	107.52	46.637	
22,000.00	12,097.00	10,750.00	10,748.02	168.35	27.11	-23.79	-5,183.28	-1,819.04	5,102.75	4,995.53	107.22	47.593	
22,100.00	12,097.29	10,750.00	10,748.02	169.96	27.11	-23.33	-5,183.28	-1,819.04	5,191.67	5,084.75	106.92	48.555	
22,175.33	12,097.50	10,750.00	10,748.02	171.16	27.11	-23.00	-5,183.28	-1,819.04	5,258.92	5,152.21	106.71	49.282	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 77-VESSI_GYRO_DROP, 7685-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	14,732.00	8,284.12	0.00	111.69	179.62	-3,029.77	19.95	8,876.71				
100.00	100.00	14,732.00	8,284.12	0.13	111.69	179.62	-3,029.77	19.95	8,782.78	8,730.31	52.46	167.405	
200.00	200.00	14,732.00	8,284.12	0.49	111.69	179.62	-3,029.77	19.95	8,688.98	8,636.58	52.41	165.796	
300.00	300.00	14,732.00	8,284.12	0.85	111.69	179.62	-3,029.77	19.95	8,595.33	8,542.97	52.36	164.153	
400.00	400.00	14,732.00	8,284.12	1.21	111.69	179.62	-3,029.77	19.95	8,501.82	8,449.50	52.33	162.479	
500.00	500.00	14,732.00	8,284.12	1.57	111.69	179.62	-3,029.77	19.95	8,408.47	8,356.17	52.30	160.774	
600.00	600.00	14,732.00	8,284.12	1.93	111.69	179.62	-3,029.77	19.95	8,315.26	8,262.98	52.28	159.041	
700.00	700.00	14,732.00	8,284.12	2.29	111.69	179.62	-3,029.77	19.95	8,222.22	8,169.94	52.28	157.282	
800.00	800.00	14,732.00	8,284.12	2.64	111.69	179.62	-3,029.77	19.95	8,129.34	8,077.06	52.28	155.500	
900.00	900.00	14,732.00	8,284.12	3.00	111.69	179.62	-3,029.77	19.95	8,036.63	7,984.34	52.29	153.698	
1,000.00	1,000.00	14,732.00	8,284.12	3.36	111.69	179.62	-3,029.77	19.95	7,944.10	7,891.79	52.31	151.878	
1,100.00	1,100.00	14,732.00	8,284.12	3.72	111.69	179.62	-3,029.77	19.95	7,851.75	7,799.42	52.33	150.045	
1,200.00	1,200.00	14,732.00	8,284.12	4.08	111.69	179.62	-3,029.77	19.95	7,759.59	7,707.23	52.36	148.199	
1,300.00	1,300.00	14,732.00	8,284.12	4.44	111.69	179.62	-3,029.77	19.95	7,667.63	7,615.23	52.39	146.344	
1,400.00	1,400.00	14,732.00	8,284.12	4.79	111.69	179.62	-3,029.77	19.95	7,575.87	7,523.43	52.43	144.482	
1,500.00	1,500.00	14,732.00	8,284.12	5.15	111.69	179.62	-3,029.77	19.95	7,484.32	7,431.84	52.48	142.615	
1,600.00	1,600.00	14,732.00	8,284.12	5.51	111.69	179.62	-3,029.77	19.95	7,392.99	7,340.46	52.53	140.745	
1,700.00	1,700.00	14,732.00	8,284.12	5.87	111.69	179.62	-3,029.77	19.95	7,301.89	7,249.31	52.58	138.874	
1,800.00	1,800.00	14,732.00	8,284.12	6.23	111.69	179.62	-3,029.77	19.95	7,211.02	7,158.39	52.63	137.004	
1,900.00	1,900.00	14,732.00	8,284.12	6.59	111.69	179.62	-3,029.77	19.95	7,120.40	7,067.71	52.69	135.136	
2,000.00	2,000.00	14,732.00	8,284.12	6.95	111.69	179.62	-3,029.77	19.95	7,030.04	6,977.29	52.75	133.271	
2,100.00	2,100.00	14,732.00	8,284.12	7.30	111.69	179.62	-3,029.77	19.95	6,939.93	6,887.12	52.81	131.411	
2,200.00	2,200.00	14,732.00	8,284.12	7.66	111.69	179.62	-3,029.77	19.95	6,850.11	6,797.23	52.87	129.557	
2,300.00	2,300.00	14,732.00	8,284.12	8.02	111.69	179.62	-3,029.77	19.95	6,760.57	6,707.63	52.94	127.709	
2,400.00	2,400.00	14,732.00	8,284.12	8.38	111.69	179.62	-3,029.77	19.95	6,671.32	6,618.32	53.00	125.870	
2,500.00	2,500.00	14,732.00	8,284.12	8.74	111.69	179.62	-3,029.77	19.95	6,582.39	6,529.32	53.07	124.039	
2,600.00	2,599.99	14,732.00	8,284.12	9.10	111.69	179.62	-3,029.77	19.95	6,494.18	6,441.05	53.13	122.234	
2,700.00	2,699.96	14,732.00	8,284.12	9.45	111.69	179.61	-3,029.77	19.95	6,407.15	6,353.96	53.19	120.463	
2,800.00	2,799.86	14,732.00	8,284.12	9.81	111.69	179.59	-3,029.77	19.95	6,321.38	6,268.13	53.25	118.722	
2,900.00	2,899.68	14,732.00	8,284.12	10.17	111.69	179.57	-3,029.77	19.95	6,236.94	6,183.64	53.30	117.011	
3,000.00	2,999.37	14,732.00	8,284.12	10.53	111.69	179.54	-3,029.77	19.95	6,153.93	6,100.57	53.36	115.332	
3,100.00	3,098.90	14,732.00	8,284.12	10.89	111.69	179.50	-3,029.77	19.95	6,072.41	6,019.00	53.41	113.689	
3,200.00	3,198.26	14,732.00	8,284.12	11.25	111.69	179.46	-3,029.77	19.95	5,992.49	5,939.02	53.46	112.084	
3,300.06	3,297.46	14,732.00	8,284.12	11.62	111.69	179.41	-3,029.77	19.95	5,914.19	5,860.68	53.51	110.517	
3,400.00	3,396.43	14,732.00	8,284.12	11.98	111.69	179.36	-3,029.77	19.95	5,837.20	5,783.64	53.56	108.976	
3,500.00	3,495.46	14,732.00	8,284.12	12.36	111.69	179.31	-3,029.77	19.95	5,760.87	5,707.26	53.61	107.451	
3,600.00	3,594.48	14,732.00	8,284.12	12.73	111.69	179.26	-3,029.77	19.95	5,685.28	5,631.62	53.66	105.949	
3,700.00	3,693.51	14,732.00	8,284.12	13.11	111.69	179.21	-3,029.77	19.95	5,610.45	5,556.74	53.70	104.472	
3,800.00	3,792.54	14,732.00	8,284.12	13.49	111.69	179.16	-3,029.77	19.95	5,536.41	5,482.67	53.74	103.020	
3,900.00	3,891.56	14,732.00	8,284.12	13.87	111.69	179.11	-3,029.77	19.95	5,463.20	5,409.43	53.77	101.595	
4,000.00	3,990.59	14,732.00	8,284.12	14.25	111.69	179.06	-3,029.77	19.95	5,390.85	5,337.05	53.80	100.199	
4,100.00	4,089.62	14,732.00	8,284.12	14.64	111.69	179.02	-3,029.77	19.95	5,319.40	5,265.58	53.82	98.832	
4,200.00	4,188.64	14,732.00	8,284.12	15.03	111.69	178.97	-3,029.77	19.95	5,248.88	5,195.05	53.84	97.496	
4,300.00	4,287.67	14,732.00	8,284.12	15.42	111.69	178.92	-3,029.77	19.95	5,179.33	5,125.49	53.84	96.192	
4,400.00	4,386.70	14,732.00	8,284.12	15.81	111.69	178.87	-3,029.77	19.95	5,110.80	5,056.95	53.84	94.921	
4,500.00	4,485.72	14,732.00	8,284.12	16.20	111.69	178.83	-3,029.77	19.95	5,043.31	4,989.48	53.83	93.684	
4,600.00	4,584.75	14,732.00	8,284.12	16.59	111.69	178.78	-3,029.77	19.95	4,976.92	4,923.10	53.81	92.483	
4,700.00	4,683.78	14,732.00	8,284.12	16.98	111.69	178.74	-3,029.77	19.95	4,911.66	4,857.88	53.79	91.320	
4,800.00	4,782.80	14,732.00	8,284.12	17.38	111.69	178.69	-3,029.77	19.95	4,847.59	4,793.85	53.75	90.195	
4,900.00	4,881.83	14,732.00	8,284.12	17.78	111.69	178.65	-3,029.77	19.95	4,784.75	4,731.06	53.69	89.111	
5,000.00	4,980.86	14,732.00	8,284.12	18.17	111.69	178.60	-3,029.77	19.95	4,723.20	4,669.57	53.63	88.068	
5,100.00	5,079.88	14,732.00	8,284.12	18.57	111.69	178.56	-3,029.77	19.95	4,662.97	4,609.42	53.56	87.068	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 77-VESSI_GYRO_DROP, 7685-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	14,732.00	8,284.12	18.97	111.69	178.51	-3,029.77	19.95	4,604.13	4,550.67	53.47	86.112	
5,300.00	5,277.94	14,732.00	8,284.12	19.37	111.69	178.47	-3,029.77	19.95	4,546.73	4,493.37	53.36	85.203	
5,400.00	5,376.96	14,732.00	8,284.12	19.77	111.69	178.43	-3,029.77	19.95	4,490.83	4,437.58	53.25	84.341	
5,500.00	5,475.99	14,732.00	8,284.12	20.17	111.69	178.38	-3,029.77	19.95	4,436.47	4,383.35	53.11	83.529	
5,600.00	5,575.02	14,732.00	8,284.12	20.57	111.69	178.34	-3,029.77	19.95	4,383.72	4,330.75	52.96	82.767	
5,690.40	5,664.54	14,732.00	8,284.12	20.93	111.69	178.30	-3,029.77	19.95	4,337.46	4,284.65	52.82	82.123	
5,700.00	5,674.04	14,732.00	8,284.12	20.97	111.69	178.30	-3,029.77	19.95	4,332.63	4,279.83	52.80	82.057	
5,800.00	5,773.21	14,732.00	8,284.12	21.37	111.69	178.26	-3,029.77	19.95	4,282.37	4,229.75	52.62	81.381	
5,900.00	5,872.58	14,732.00	8,284.12	21.76	111.69	178.23	-3,029.77	19.95	4,232.38	4,179.95	52.43	80.727	
6,000.00	5,972.14	14,732.00	8,284.12	22.15	111.69	178.20	-3,029.77	19.95	4,182.67	4,130.45	52.22	80.098	
6,100.00	6,071.84	14,732.00	8,284.12	22.52	111.69	178.18	-3,029.77	19.95	4,133.27	4,081.27	52.00	79.493	
6,200.00	6,171.66	14,732.00	8,284.12	22.89	111.69	178.16	-3,029.77	19.95	4,084.20	4,032.45	51.76	78.914	
6,300.00	6,271.57	14,732.00	8,284.12	23.25	111.69	178.15	-3,029.77	19.95	4,035.50	3,984.00	51.50	78.358	
6,400.00	6,371.54	14,732.00	8,284.12	23.60	111.69	178.14	-3,029.77	19.95	3,987.19	3,935.96	51.23	77.827	
6,490.46	6,462.00	14,732.00	8,284.12	23.92	111.69	178.14	-3,029.77	19.95	3,943.85	3,892.88	50.98	77.367	
6,500.00	6,471.54	14,732.00	8,284.12	23.95	111.69	178.14	-3,029.77	19.95	3,939.31	3,888.36	50.95	77.319	
6,600.00	6,571.54	14,732.00	8,284.12	24.29	111.69	178.14	-3,029.77	19.95	3,892.78	3,842.13	50.65	76.856	
6,700.00	6,671.54	14,732.00	8,284.12	24.63	111.69	178.14	-3,029.77	19.95	3,848.29	3,797.95	50.34	76.447	
6,800.00	6,771.54	14,732.00	8,284.12	24.98	111.69	178.14	-3,029.77	19.95	3,805.91	3,755.89	50.02	76.091	
6,900.00	6,871.54	14,732.00	8,284.12	25.32	111.69	178.14	-3,029.77	19.95	3,765.70	3,716.01	49.69	75.786	
7,000.00	6,971.54	14,732.00	8,284.12	25.66	111.69	178.14	-3,029.77	19.95	3,727.74	3,678.39	49.36	75.529	
7,100.00	7,071.54	14,732.00	8,284.12	26.01	111.69	178.14	-3,029.77	19.95	3,692.11	3,643.09	49.02	75.317	
7,200.00	7,171.54	14,732.00	8,284.12	26.35	111.69	178.14	-3,029.77	19.95	3,658.86	3,610.17	48.69	75.144	
7,300.00	7,271.54	14,732.00	8,284.12	26.70	111.69	178.14	-3,029.77	19.95	3,628.06	3,579.69	48.37	75.004	
7,400.00	7,371.54	14,732.00	8,284.12	27.04	111.69	178.14	-3,029.77	19.95	3,599.78	3,551.71	48.07	74.898	
7,500.00	7,471.54	14,732.00	8,284.12	27.39	111.69	178.14	-3,029.77	19.95	3,574.07	3,526.28	47.79	74.786	
7,600.00	7,571.54	14,732.00	8,284.12	27.73	111.69	178.14	-3,029.77	19.95	3,551.00	3,503.45	47.55	74.685	
7,700.00	7,671.54	14,732.00	8,284.12	28.08	111.69	178.14	-3,029.77	19.95	3,530.60	3,483.26	47.35	74.571	
7,800.00	7,771.54	14,732.00	8,284.12	28.43	111.69	178.14	-3,029.77	19.95	3,512.94	3,465.74	47.20	74.430	
7,900.00	7,871.54	14,732.00	8,284.12	28.77	111.69	178.14	-3,029.77	19.95	3,498.05	3,450.93	47.11	74.246	
8,000.00	7,971.54	14,732.00	8,284.12	29.12	111.69	178.14	-3,029.77	19.95	3,485.96	3,438.85	47.11	74.004	
8,100.00	8,071.54	14,732.00	8,284.12	29.47	111.69	178.14	-3,029.77	19.95	3,476.71	3,429.53	47.18	73.691	
8,200.00	8,171.54	14,732.00	8,284.12	29.82	111.69	178.14	-3,029.77	19.95	3,470.31	3,422.97	47.34	73.299	
8,300.00	8,271.54	14,732.00	8,284.12	30.16	111.69	178.14	-3,029.77	19.95	3,466.79	3,419.19	47.61	72.824	
8,372.08	8,343.62	14,732.00	8,284.12	30.42	111.69	178.14	-3,029.77	19.95	3,466.05	3,418.19	47.85	72.429	CC, ES
8,400.00	8,371.54	14,732.00	8,284.12	30.51	111.69	178.14	-3,029.77	19.95	3,466.16	3,418.19	47.96	72.265	
8,500.00	8,471.54	14,732.00	8,284.12	30.86	111.69	178.14	-3,029.77	19.95	3,468.40	3,419.98	48.42	71.631	
8,600.00	8,571.54	14,732.00	8,284.12	31.21	111.69	178.14	-3,029.77	19.95	3,473.53	3,424.56	48.97	70.933	
8,700.00	8,671.54	14,732.00	8,284.12	31.56	111.69	178.14	-3,029.77	19.95	3,481.52	3,431.92	49.60	70.188	
8,800.00	8,771.54	14,732.00	8,284.12	31.91	111.69	178.14	-3,029.77	19.95	3,492.36	3,442.05	50.31	69.411	
8,900.00	8,871.54	14,732.00	8,284.12	32.26	111.69	178.14	-3,029.77	19.95	3,506.02	3,454.93	51.09	68.623	
9,000.00	8,971.54	14,732.00	8,284.12	32.61	111.69	178.14	-3,029.77	19.95	3,522.46	3,470.54	51.92	67.839	
9,100.00	9,071.54	14,732.00	8,284.12	32.96	111.69	178.14	-3,029.77	19.95	3,541.66	3,488.86	52.80	67.077	
9,200.00	9,171.54	14,732.00	8,284.12	33.31	111.69	178.14	-3,029.77	19.95	3,563.55	3,509.84	53.71	66.348	
9,300.00	9,271.54	14,732.00	8,284.12	33.66	111.69	178.14	-3,029.77	19.95	3,588.11	3,533.46	54.64	65.663	
9,400.00	9,371.54	14,732.00	8,284.12	34.01	111.69	178.14	-3,029.77	19.95	3,615.26	3,559.66	55.59	65.031	
9,500.00	9,471.54	14,732.00	8,284.12	34.36	111.69	178.14	-3,029.77	19.95	3,644.95	3,588.40	56.55	64.457	
9,600.00	9,571.54	14,732.00	8,284.12	34.71	111.69	178.14	-3,029.77	19.95	3,677.13	3,619.62	57.51	63.944	
9,700.00	9,671.54	14,732.00	8,284.12	35.06	111.69	178.14	-3,029.77	19.95	3,711.72	3,653.26	58.46	63.495	
9,800.00	9,771.54	14,732.00	8,284.12	35.41	111.69	178.14	-3,029.77	19.95	3,748.66	3,689.26	59.40	63.110	
9,900.00	9,871.54	14,732.00	8,284.12	35.76	111.69	178.14	-3,029.77	19.95	3,787.88	3,727.55	60.33	62.789	
10,000.00	9,971.54	14,732.00	8,284.12	36.11	111.69	178.14	-3,029.77	19.95	3,829.31	3,768.07	61.24	62.530	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 77-VESSI_GYRO_DROP, 7685-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,071.54	14,732.00	8,284.12	36.46	111.69	178.14	-3,029.77	19.95	3,872.88	3,810.74	62.13	62.332	
10,200.00	10,171.54	14,732.00	8,284.12	36.81	111.69	178.14	-3,029.77	19.95	3,918.51	3,855.51	63.01	62.192	
10,300.00	10,271.54	14,732.00	8,284.12	37.17	111.69	178.14	-3,029.77	19.95	3,966.15	3,902.29	63.86	62.109	
10,400.00	10,371.54	14,732.00	8,284.12	37.52	111.69	178.14	-3,029.77	19.95	4,015.71	3,951.02	64.69	62.078	
10,500.00	10,471.54	14,732.00	8,284.12	37.87	111.69	178.14	-3,029.77	19.95	4,067.12	4,001.63	65.50	62.097	
10,600.00	10,571.54	14,732.00	8,284.12	38.22	111.69	178.14	-3,029.77	19.95	4,120.33	4,054.04	66.28	62.164	
10,700.00	10,671.54	14,732.00	8,284.12	38.57	111.69	178.14	-3,029.77	19.95	4,175.24	4,108.20	67.04	62.276	
10,800.00	10,771.54	14,732.00	8,284.12	38.93	111.69	178.14	-3,029.77	19.95	4,231.81	4,164.03	67.79	62.429	
10,900.00	10,871.54	14,732.00	8,284.12	39.28	111.69	178.14	-3,029.77	19.95	4,289.97	4,221.46	68.51	62.622	
11,000.00	10,971.54	14,732.00	8,284.12	39.63	111.69	178.14	-3,029.77	19.95	4,349.65	4,280.44	69.21	62.850	
11,100.00	11,071.54	14,732.00	8,284.12	39.98	111.69	178.14	-3,029.77	19.95	4,410.78	4,340.90	69.89	63.113	
11,200.00	11,171.54	14,732.00	8,284.12	40.34	111.69	178.14	-3,029.77	19.95	4,473.32	4,402.77	70.55	63.407	
11,300.00	11,271.54	14,732.00	8,284.12	40.69	111.69	178.14	-3,029.77	19.95	4,537.20	4,466.00	71.19	63.730	
11,400.00	11,371.54	14,732.00	8,284.12	41.04	111.69	178.14	-3,029.77	19.95	4,602.36	4,530.54	71.82	64.080	
11,500.00	11,471.54	14,732.00	8,284.12	41.40	111.69	178.14	-3,029.77	19.95	4,668.76	4,596.33	72.43	64.455	
11,525.27	11,496.81	14,732.00	8,284.12	41.48	111.69	178.14	-3,029.77	19.95	4,685.73	4,613.14	72.59	64.553	
11,550.00	11,521.53	14,732.00	8,284.12	41.57	111.69	178.14	-3,029.77	19.95	4,702.01	4,629.28	72.73	64.648	
11,600.00	11,571.33	14,732.00	8,284.12	41.72	111.69	178.15	-3,029.77	19.95	4,732.68	4,659.66	73.02	64.812	
11,650.00	11,620.56	14,732.00	8,284.12	41.85	111.69	178.17	-3,029.77	19.95	4,760.19	4,686.88	73.31	64.931	
11,700.00	11,668.84	14,732.00	8,284.12	41.98	111.69	178.21	-3,029.77	19.95	4,784.38	4,710.78	73.60	65.005	
11,750.00	11,715.82	14,732.00	8,284.12	42.10	111.69	178.25	-3,029.77	19.95	4,805.13	4,731.25	73.89	65.035	
11,800.00	11,761.13	14,732.00	8,284.12	42.20	111.69	178.31	-3,029.77	19.95	4,822.32	4,748.16	74.16	65.023	
11,850.00	11,804.43	14,732.00	8,284.12	42.30	111.69	178.38	-3,029.77	19.95	4,835.86	4,761.43	74.43	64.969	
11,900.00	11,845.39	14,732.00	8,284.12	42.39	111.69	178.46	-3,029.77	19.95	4,845.68	4,770.99	74.69	64.876	
11,950.00	11,883.69	14,732.00	8,284.12	42.47	111.69	178.55	-3,029.77	19.95	4,851.72	4,776.78	74.94	64.743	
12,000.00	11,919.06	14,732.00	8,284.12	42.54	111.69	178.65	-3,029.77	19.95	4,853.96	4,778.79	75.17	64.573	
12,050.00	11,951.20	14,732.00	8,284.12	42.61	111.69	178.77	-3,029.77	19.95	4,852.37	4,776.99	75.39	64.366	
12,100.00	11,979.89	14,732.00	8,284.12	42.68	111.69	178.89	-3,029.77	19.95	4,846.98	4,771.39	75.59	64.123	
12,150.00	12,004.90	14,732.00	8,284.12	42.75	111.69	179.02	-3,029.77	19.95	4,837.81	4,762.03	75.77	63.844	
12,200.00	12,026.05	14,732.00	8,284.12	42.82	111.69	179.17	-3,029.77	19.95	4,824.90	4,748.95	75.95	63.531	
12,250.00	12,043.17	14,732.00	8,284.12	42.89	111.69	179.32	-3,029.77	19.95	4,808.33	4,732.23	76.10	63.185	
12,300.00	12,056.13	14,732.00	8,284.12	42.97	111.69	179.49	-3,029.77	19.95	4,788.18	4,711.94	76.24	62.805	
12,350.00	12,064.83	14,732.00	8,284.12	43.05	111.69	179.66	-3,029.77	19.95	4,764.56	4,688.20	76.36	62.394	
12,400.00	12,069.21	14,732.00	8,284.12	43.13	111.69	179.84	-3,029.77	19.95	4,737.61	4,661.14	76.47	61.952	
12,423.64	12,069.77	14,732.00	8,284.12	43.17	111.69	179.93	-3,029.77	19.95	4,723.75	4,647.23	76.52	61.732	
12,500.00	12,069.98	14,732.00	8,284.12	43.32	111.69	-179.78	-3,029.77	19.95	4,678.23	4,601.57	76.66	61.024	
12,600.00	12,070.27	14,732.00	8,284.12	43.58	111.69	-179.37	-3,029.77	19.95	4,619.86	4,543.00	76.86	60.105	
12,667.68	12,070.46	14,732.00	8,284.12	43.79	111.69	-179.08	-3,029.77	19.95	4,581.17	4,504.16	77.01	59.486	
12,700.00	12,070.55	14,732.00	8,284.12	43.90	111.69	-178.94	-3,029.77	19.95	4,562.91	4,485.83	77.09	59.192	
12,800.00	12,070.84	14,732.00	8,284.12	44.29	111.69	-178.53	-3,029.77	19.95	4,507.16	4,429.84	77.33	58.288	
12,900.00	12,071.12	14,732.00	8,284.12	44.73	111.69	-178.17	-3,029.77	19.95	4,452.62	4,375.04	77.58	57.395	
13,000.00	12,071.41	14,732.00	8,284.12	45.22	111.69	-177.86	-3,029.77	19.95	4,399.40	4,321.55	77.85	56.514	
13,100.00	12,071.69	14,732.00	8,284.12	45.76	111.69	-177.61	-3,029.77	19.95	4,347.61	4,269.49	78.13	55.649	
13,200.00	12,071.98	14,732.00	8,284.12	46.34	111.69	-177.44	-3,029.77	19.95	4,297.38	4,218.96	78.42	54.800	
13,200.11	12,071.98	14,732.00	8,284.12	46.34	111.69	-177.44	-3,029.77	19.95	4,297.33	4,218.91	78.42	54.799	
13,300.00	12,072.26	14,732.00	8,284.12	46.97	111.69	-177.30	-3,029.77	19.95	4,248.85	4,170.12	78.73	53.966	
13,400.00	12,072.55	14,732.00	8,284.12	47.64	111.69	-177.14	-3,029.77	19.95	4,202.15	4,123.07	79.07	53.143	
13,500.00	12,072.83	14,732.00	8,284.12	48.36	111.69	-176.96	-3,029.77	19.95	4,157.32	4,077.88	79.44	52.332	
13,600.00	12,073.12	14,732.00	8,284.12	49.13	111.69	-176.77	-3,029.77	19.95	4,114.43	4,034.59	79.84	51.533	
13,700.00	12,073.40	14,732.00	8,284.12	49.94	111.69	-176.55	-3,029.77	19.95	4,073.55	3,993.28	80.27	50.748	
13,800.00	12,073.68	14,732.00	8,284.12	50.80	111.69	-176.30	-3,029.77	19.95	4,034.74	3,954.01	80.73	49.978	
13,900.00	12,073.97	14,732.00	8,284.12	51.69	111.69	-176.02	-3,029.77	19.95	3,998.05	3,916.82	81.22	49.223	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 77-VESSI_GYRO_DROP, 7685-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	12,074.25	14,732.00	8,284.12	52.62	111.69	-175.70	-3,029.77	19.95	3,963.54	3,881.79	81.75	48.485	
14,100.00	12,074.54	14,732.00	8,284.12	53.58	111.69	-175.32	-3,029.77	19.95	3,931.27	3,848.97	82.30	47.765	
14,200.00	12,074.82	14,732.00	8,284.12	54.58	111.69	-174.88	-3,029.77	19.95	3,901.31	3,818.41	82.89	47.065	
14,300.00	12,075.11	14,732.00	8,284.12	55.61	111.69	-174.36	-3,029.77	19.95	3,873.69	3,790.18	83.51	46.387	
14,400.00	12,075.39	14,732.00	8,284.12	56.67	111.69	-173.72	-3,029.77	19.95	3,848.47	3,764.32	84.15	45.733	
14,500.00	12,075.68	14,732.00	8,284.12	57.76	111.69	-172.94	-3,029.77	19.95	3,825.70	3,740.89	84.82	45.105	
14,600.00	12,075.96	14,732.00	8,284.12	58.87	111.69	-171.94	-3,029.77	19.95	3,805.43	3,719.92	85.50	44.505	
14,700.00	12,076.24	14,732.00	8,284.12	60.01	111.69	-170.64	-3,029.77	19.95	3,787.68	3,701.47	86.21	43.935	
14,800.00	12,076.53	14,732.00	8,284.12	61.17	111.69	-168.86	-3,029.77	19.95	3,772.51	3,685.58	86.93	43.397	
14,900.00	12,076.81	14,732.00	8,284.12	62.36	111.69	-166.31	-3,029.77	19.95	3,759.93	3,672.27	87.66	42.893	
15,000.00	12,077.10	14,732.00	8,284.12	63.57	111.69	-162.36	-3,029.77	19.95	3,749.98	3,661.59	88.39	42.424	
15,100.00	12,077.38	14,732.00	8,284.12	64.79	111.69	-155.48	-3,029.77	19.95	3,742.68	3,653.55	89.13	41.993	
15,200.00	12,077.67	14,732.00	8,284.12	66.04	111.69	-141.39	-3,029.77	19.95	3,738.03	3,648.18	89.86	41.599	
15,300.00	12,077.95	14,732.00	8,284.12	67.30	111.69	-107.87	-3,029.77	19.95	3,736.06	3,645.48	90.58	41.246	
15,323.65	12,078.02	14,732.00	8,284.12	67.60	111.69	-95.94	-3,029.77	19.95	3,735.99	3,645.24	90.75	41.167	
15,400.00	12,078.23	14,685.51	8,283.89	68.58	110.93	-80.34	-3,076.26	19.81	3,736.48	3,645.60	90.88	41.116	
15,500.00	12,078.52	14,619.33	8,283.38	69.88	109.85	-64.51	-3,142.43	19.62	3,737.62	3,646.63	91.00	41.074	
15,600.00	12,078.80	14,559.92	8,282.18	71.19	108.87	-49.96	-3,201.83	19.50	3,739.91	3,648.73	91.18	41.015	
15,700.00	12,079.09	14,449.92	8,279.31	72.51	107.07	-53.31	-3,311.80	19.34	3,742.86	3,651.93	90.93	41.162	
15,800.00	12,079.37	14,324.94	8,277.75	73.85	105.03	-63.05	-3,436.75	17.16	3,744.31	3,653.76	90.56	41.348	
15,900.00	12,079.66	14,099.00	8,276.85	75.21	101.32	-120.47	-3,662.65	16.71	3,745.69	3,656.43	89.26	41.962	
16,000.00	12,079.94	14,021.68	8,278.11	76.57	100.05	-111.40	-3,739.96	17.41	3,744.38	3,655.05	89.33	41.917	
16,100.00	12,080.22	13,948.56	8,278.70	77.94	98.85	-99.00	-3,813.08	17.88	3,743.84	3,654.41	89.44	41.860	
16,126.91	12,080.30	13,928.56	8,278.78	78.32	98.53	-95.62	-3,833.07	17.97	3,743.82	3,654.35	89.47	41.847	
16,200.00	12,080.51	13,864.28	8,278.86	79.33	97.47	-91.26	-3,897.36	18.14	3,743.94	3,654.49	89.45	41.855	
16,300.00	12,080.79	13,710.99	8,279.71	80.73	94.96	-115.64	-4,050.64	18.16	3,743.80	3,654.96	88.84	42.141	
16,400.00	12,081.08	13,597.41	8,281.59	82.13	93.10	-120.66	-4,164.20	18.00	3,742.47	3,653.87	88.60	42.240	
16,500.00	12,081.36	13,493.93	8,283.70	83.55	91.41	-121.71	-4,267.66	17.75	3,740.73	3,652.27	88.46	42.287	
16,600.00	12,081.65	13,414.85	8,285.04	84.97	90.12	-113.67	-4,346.73	17.84	3,739.35	3,650.80	88.55	42.229	
16,700.00	12,081.93	13,343.00	8,285.80	86.40	88.94	-101.32	-4,418.58	18.17	3,738.60	3,649.89	88.71	42.144	
16,744.84	12,082.06	13,321.05	8,285.88	87.05	88.58	-90.42	-4,440.53	18.35	3,738.57	3,649.69	88.88	42.065	
16,800.00	12,082.22	13,296.45	8,285.77	87.84	88.18	-75.98	-4,465.13	18.65	3,738.95	3,649.85	89.10	41.963	
16,900.00	12,082.50	16,900.00	8,284.58	89.29	147.27	-65.07	-4,539.91	20.05	3,740.69	3,624.15	116.55	32.096	
17,000.00	12,082.78	13,039.77	8,283.69	90.75	83.97	-103.03	-4,721.75	22.23	3,741.50	3,653.09	88.41	42.320	
17,100.00	12,083.07	12,931.22	8,284.72	92.21	82.20	-106.82	-4,830.30	21.86	3,740.86	3,652.60	88.26	42.385	
17,200.00	12,083.35	12,872.00	8,285.22	93.68	81.24	-87.45	-4,889.51	21.68	3,740.50	3,651.94	88.56	42.237	
17,200.94	12,083.36	12,854.43	8,285.31	93.69	80.95	-95.48	-4,907.08	21.68	3,740.43	3,652.02	88.41	42.308	
17,300.00	12,083.64	12,802.37	8,285.13	95.15	80.10	-73.27	-4,959.14	21.99	3,741.05	3,652.29	88.77	42.145	
17,400.00	12,083.92	12,647.59	8,284.23	96.63	77.58	-99.23	-5,113.91	23.46	3,742.09	3,653.88	88.21	42.422	
17,500.00	12,084.21	12,504.40	8,285.86	98.12	75.24	-117.99	-5,257.08	24.59	3,741.20	3,653.44	87.76	42.628	
17,599.91	12,084.49	12,455.44	8,286.42	99.61	74.44	-95.52	-5,306.04	25.01	3,740.44	3,652.26	88.18	42.419	
17,600.00	12,084.49	12,455.40	8,286.42	99.61	74.44	-95.50	-5,306.08	25.01	3,740.44	3,652.26	88.18	42.419	
17,700.00	12,084.77	12,396.00	8,285.91	101.11	73.47	-75.95	-5,365.47	25.88	3,741.31	3,652.81	88.50	42.277	
17,800.00	12,085.06	12,310.19	8,284.57	102.61	72.07	-69.49	-5,451.26	27.28	3,743.05	3,654.47	88.58	42.257	
17,900.00	12,085.34	12,114.00	8,285.45	104.11	68.88	-114.85	-5,647.40	30.64	3,742.48	3,654.80	87.68	42.683	
18,000.00	12,085.63	12,051.19	8,286.48	105.63	67.86	-97.77	-5,710.19	31.88	3,741.38	3,653.39	87.99	42.521	
18,006.44	12,085.65	12,048.64	8,286.49	105.72	67.81	-95.82	-5,712.74	31.94	3,741.38	3,653.36	88.02	42.505	
18,100.00	12,085.91	11,919.62	8,286.56	107.14	65.71	-113.03	-5,841.72	35.03	3,741.77	3,654.10	87.68	42.676	
18,200.00	12,086.20	18,200.00	8,288.34	108.66	167.44	-127.62	-5,978.21	37.83	3,740.85	3,608.32	132.53	28.227 SF	
18,300.00	12,086.48	11,674.59	8,291.34	110.18	61.75	-130.19	-6,086.65	37.94	3,738.35	3,651.10	87.25	42.846	
18,400.00	12,086.76	11,605.61	8,292.64	111.71	60.64	-118.90	-6,155.61	37.10	3,736.74	3,649.21	87.53	42.689	
18,500.00	12,087.05	11,547.00	8,293.60	113.24	59.70	-99.89	-6,214.21	36.46	3,735.67	3,647.76	87.91	42.495	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 77-VESSL_GYRO_DROP, 7685-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,547.49	12,087.18	11,507.65	8,293.97	113.97	59.06	-95.76	-6,253.56	36.14	3,735.41	3,647.43	87.99	42.455	
18,600.00	12,087.33	11,483.69	8,293.96	114.78	58.68	-81.29	-6,277.51	36.00	3,735.61	3,647.37	88.24	42.335	
18,700.00	12,087.62	11,452.00	8,293.65	116.32	58.17	-52.94	-6,309.20	35.88	3,737.16	3,648.32	88.84	42.068	
18,800.00	12,087.90	11,397.72	8,292.30	117.86	57.30	-40.96	-6,363.47	35.81	3,740.14	3,650.91	89.23	41.913	
18,900.00	12,088.19	11,358.00	8,290.61	119.40	56.66	-30.87	-6,403.15	35.84	3,744.73	3,654.99	89.74	41.727	
19,000.00	12,088.47	11,277.97	8,286.36	120.95	55.38	-28.58	-6,483.07	35.69	3,750.37	3,660.45	89.93	41.705	
19,100.00	12,088.76	10,987.47	8,276.55	122.50	50.77	-79.85	-6,773.33	32.01	3,754.67	3,666.25	88.42	42.465	
19,200.00	12,089.04	10,851.70	8,276.58	124.05	48.60	-96.91	-6,909.08	33.96	3,754.85	3,666.68	88.17	42.586	
19,300.00	12,089.32	10,588.58	8,283.66	125.61	44.42	-147.60	-7,171.98	40.37	3,752.04	3,665.20	86.84	43.208	
19,400.00	12,089.61	10,492.36	8,288.12	127.17	42.90	-147.46	-7,268.06	42.89	3,747.64	3,660.68	86.96	43.098	
19,500.00	12,089.89	10,415.00	8,291.48	128.73	41.69	-143.98	-7,345.34	44.57	3,743.54	3,656.29	87.25	42.907	
19,600.00	12,090.18	10,368.21	8,293.06	130.29	40.96	-131.63	-7,392.10	45.14	3,740.49	3,652.69	87.80	42.602	
19,700.00	12,090.46	10,320.00	8,293.92	131.86	40.21	-112.45	-7,440.30	45.02	3,738.94	3,650.61	88.34	42.326	
19,800.00	12,090.75	10,229.58	8,294.81	133.42	38.81	-107.88	-7,530.71	44.36	3,738.28	3,649.74	88.54	42.222	
19,870.95	12,090.95	10,183.30	8,295.11	134.54	38.09	-95.76	-7,576.99	44.24	3,738.04	3,649.21	88.83	42.081	
19,900.00	12,091.03	10,164.73	8,295.14	134.99	37.81	-90.42	-7,595.56	44.26	3,738.08	3,649.13	88.95	42.025	
20,000.00	12,091.31	10,022.45	8,295.66	136.57	35.63	-110.98	-7,737.83	44.75	3,738.09	3,649.32	88.77	42.110	
20,099.65	12,091.60	9,954.59	8,296.13	138.13	34.59	-95.75	-7,805.69	45.37	3,737.67	3,648.50	89.17	41.914	
20,100.00	12,091.60	9,954.35	8,296.13	138.14	34.59	-95.69	-7,805.93	45.37	3,737.67	3,648.50	89.18	41.913	
20,200.00	12,091.88	9,878.25	8,296.07	139.72	33.44	-83.51	-7,882.01	46.61	3,738.01	3,648.48	89.53	41.753	
20,300.00	12,092.17	9,804.22	8,295.54	141.29	32.32	-70.80	-7,956.03	47.88	3,738.98	3,649.08	89.90	41.590	
20,400.00	12,092.45	9,539.18	8,297.69	142.87	28.41	-139.53	-8,221.00	51.87	3,738.95	3,650.00	88.94	42.038	
20,500.00	12,092.74	9,473.00	8,300.06	144.45	27.45	-130.56	-8,287.13	52.22	3,735.89	3,646.45	89.44	41.771	
20,600.00	12,093.02	9,421.02	8,301.35	146.04	26.71	-112.26	-8,339.10	52.38	3,734.01	3,643.98	90.04	41.472	
20,638.97	12,093.13	9,407.44	8,301.46	146.66	26.52	-99.91	-8,352.67	52.43	3,733.80	3,643.49	90.31	41.343	
20,700.00	12,093.31	9,378.00	8,301.39	147.62	26.11	-83.40	-8,382.11	52.52	3,734.02	3,643.34	90.69	41.175	
20,800.00	12,093.59	9,332.78	8,300.76	149.21	25.48	-58.39	-8,427.33	52.56	3,735.54	3,644.22	91.32	40.905	
20,900.00	12,093.87	9,269.92	8,299.28	150.80	24.61	-46.56	-8,490.17	52.28	3,738.18	3,646.34	91.85	40.700	
21,000.00	12,094.16	9,209.00	8,297.47	152.39	23.79	-37.78	-8,551.06	51.95	3,741.60	3,649.22	92.39	40.499	
21,100.00	12,094.44	9,140.71	8,294.79	153.98	22.89	-32.59	-8,619.30	51.78	3,745.95	3,653.05	92.90	40.323	
21,200.00	12,094.73	8,882.70	8,286.92	155.57	19.67	-81.08	-8,877.16	52.71	3,750.02	3,657.52	92.50	40.540	
21,300.00	12,095.01	8,771.71	8,286.81	157.16	18.42	-86.66	-8,988.14	52.82	3,750.39	3,657.48	92.91	40.365	
21,400.00	12,095.30	8,690.68	8,286.45	158.76	17.56	-77.18	-9,069.17	53.61	3,751.10	3,657.62	93.49	40.124	
21,500.00	12,095.58	8,658.00	8,286.03	160.35	17.23	-50.36	-9,101.84	54.25	3,752.88	3,658.61	94.27	39.810	
21,600.00	12,095.86	8,627.00	8,284.95	161.95	16.93	-34.57	-9,132.80	55.40	3,756.57	3,661.52	95.05	39.524	
21,700.00	12,096.15	8,627.00	8,284.95	163.55	16.93	-23.19	-9,132.80	55.40	3,762.50	3,666.60	95.90	39.234	
21,800.00	12,096.43	8,596.00	8,282.60	165.15	16.63	-18.58	-9,163.67	56.94	3,770.54	3,673.91	96.63	39.022	
21,900.00	12,096.72	8,596.00	8,282.60	166.75	16.63	-14.55	-9,163.67	56.94	3,780.93	3,683.52	97.41	38.815	
22,000.00	12,097.00	8,564.00	8,278.52	168.35	16.34	-12.48	-9,195.34	58.89	3,793.62	3,695.53	98.09	38.677	
22,100.00	12,097.29	8,564.00	8,278.52	169.96	16.34	-10.51	-9,195.34	58.89	3,808.37	3,709.57	98.79	38.549	
22,175.33	12,097.50	8,548.62	8,275.99	171.16	16.20	-9.51	-9,210.47	60.02	3,820.98	3,721.70	99.28	38.488	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 182H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 172-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-146.33	-2,364.58	-1,575.29	2,841.29				
100.00	100.00	87.40	87.40	0.13	0.13	-146.33	-2,364.53	-1,575.36	2,841.26	2,841.00	0.27	N/A	
200.00	200.00	187.28	187.28	0.49	0.28	-146.32	-2,364.37	-1,575.62	2,841.27	2,840.49	0.78	3,662.008	
300.00	300.00	269.38	269.38	0.85	0.61	-146.31	-2,364.45	-1,576.20	2,841.72	2,840.26	1.46	1,948.765	
400.00	400.00	367.34	367.33	1.21	0.95	-146.31	-2,364.89	-1,576.81	2,842.44	2,840.27	2.16	1,313.892	
500.00	500.00	478.48	478.47	1.57	1.35	-146.29	-2,364.99	-1,577.60	2,842.90	2,839.98	2.92	974.843	
600.00	600.00	572.16	572.15	1.93	1.68	-146.28	-2,364.90	-1,578.46	2,843.33	2,839.72	3.61	787.745	
700.00	700.00	666.92	666.90	2.29	2.02	-146.27	-2,365.08	-1,579.28	2,843.97	2,839.66	4.31	660.320	
800.00	800.00	764.73	764.71	2.64	2.37	-146.25	-2,365.28	-1,580.36	2,844.75	2,839.74	5.02	567.188	
900.00	900.00	865.69	865.67	3.00	2.73	-146.24	-2,365.71	-1,581.15	2,845.54	2,839.81	5.73	496.194	
1,000.00	1,000.00	971.18	971.15	3.36	3.10	-146.24	-2,366.31	-1,581.56	2,846.23	2,839.77	6.46	440.536	
1,100.00	1,100.00	1,077.98	1,077.94	3.72	3.47	-146.27	-2,367.45	-1,580.73	2,846.68	2,839.49	7.19	395.999	
1,200.00	1,200.00	1,200.00	1,231.45	4.08	3.88	-146.31	-2,366.67	-1,577.68	2,844.67	2,836.71	7.96	357.493	
1,300.00	1,300.00	1,361.00	1,360.86	4.44	4.43	-146.32	-2,363.86	-1,575.58	2,841.77	2,832.91	8.86	320.755	
1,400.00	1,400.00	1,429.86	1,429.69	4.79	4.67	-146.29	-2,361.90	-1,575.85	2,839.66	2,830.20	9.46	300.209	
1,500.00	1,500.00	1,489.41	1,489.21	5.15	4.88	-146.26	-2,360.60	-1,576.90	2,838.85	2,828.82	10.03	283.116	
1,503.88	1,503.88	1,491.57	1,491.38	5.17	4.88	-146.26	-2,360.57	-1,576.95	2,838.85	2,828.80	10.05	282.509	CC
1,600.00	1,600.00	1,553.00	1,552.78	5.51	5.10	-146.23	-2,360.20	-1,578.45	2,839.58	2,828.97	10.61	267.638	
1,700.00	1,700.00	1,623.58	1,623.35	5.87	5.35	-146.21	-2,360.79	-1,580.08	2,841.50	2,830.28	11.22	253.323	
1,800.00	1,800.00	1,738.93	1,738.66	6.23	5.76	-146.22	-2,363.30	-1,580.77	2,843.66	2,831.68	11.98	237.366	
1,900.00	1,900.00	1,900.00	1,896.24	6.59	6.31	-146.28	-2,364.44	-1,578.34	2,842.85	2,829.96	12.89	220.494	
2,000.00	2,000.00	2,025.99	2,025.66	6.95	6.75	-146.29	-2,363.19	-1,576.93	2,841.27	2,827.58	13.69	207.596	
2,100.00	2,100.00	2,103.50	2,103.15	7.30	7.02	-146.26	-2,361.75	-1,577.76	2,840.32	2,826.01	14.31	198.418	
2,158.19	2,158.19	2,144.19	2,143.82	7.51	7.16	-146.23	-2,360.98	-1,578.70	2,840.16	2,825.50	14.67	193.654	
2,200.00	2,200.00	2,171.42	2,171.04	7.66	7.25	-146.22	-2,360.65	-1,579.35	2,840.30	2,825.39	14.91	190.472	ES
2,300.00	2,300.00	2,236.56	2,236.16	8.02	7.48	-146.19	-2,360.54	-1,580.92	2,841.49	2,825.99	15.50	183.342	
2,400.00	2,400.00	2,311.00	2,310.57	8.38	7.75	-146.17	-2,361.58	-1,582.72	2,843.94	2,827.82	16.12	176.462	
2,500.00	2,500.00	2,448.00	2,447.53	8.74	8.22	-146.19	-2,364.72	-1,583.71	2,846.34	2,829.38	16.96	167.867	
2,600.00	2,599.99	2,625.80	2,625.26	9.10	8.84	-146.30	-2,367.55	-1,579.78	2,847.09	2,829.16	17.93	158.804	
2,683.25	2,683.22	2,734.92	2,734.33	9.39	9.22	-146.37	-2,366.76	-1,576.96	2,846.76	2,828.16	18.60	153.050	
2,700.00	2,699.96	2,750.14	2,749.55	9.45	9.27	-146.38	-2,366.54	-1,576.68	2,846.78	2,828.07	18.71	152.128	
2,800.00	2,799.86	2,841.05	2,840.44	9.81	9.58	-146.43	-2,364.82	-1,575.95	2,847.81	2,828.42	19.39	146.892	
2,900.00	2,899.68	2,916.81	2,916.17	10.17	9.85	-146.49	-2,362.97	-1,576.56	2,850.53	2,830.52	20.01	142.447	
3,000.00	2,999.37	2,976.00	2,975.34	10.53	10.05	-146.57	-2,361.83	-1,577.81	2,855.64	2,835.07	20.58	138.774	
3,100.00	3,098.90	3,051.62	3,050.93	10.89	10.32	-146.67	-2,361.32	-1,579.53	2,863.09	2,841.89	21.20	135.048	
3,200.00	3,198.26	3,121.76	3,121.06	11.25	10.57	-146.82	-2,362.12	-1,580.56	2,872.79	2,850.98	21.80	131.762	
3,300.06	3,297.46	3,256.09	3,255.35	11.62	11.03	-147.04	-2,365.52	-1,580.65	2,884.33	2,861.69	22.64	127.416	
3,400.00	3,396.43	3,413.49	3,412.69	11.98	11.58	-147.31	-2,367.03	-1,577.19	2,893.58	2,870.03	23.55	122.873	
3,500.00	3,495.46	3,508.60	3,507.79	12.36	11.91	-147.50	-2,366.28	-1,576.74	2,902.57	2,878.32	24.25	119.715	
3,600.00	3,594.48	3,585.59	3,584.77	12.73	12.18	-147.67	-2,365.03	-1,577.80	2,911.91	2,887.02	24.88	117.034	
3,700.00	3,693.51	3,650.49	3,649.66	13.11	12.41	-147.84	-2,364.88	-1,578.63	2,922.35	2,896.88	25.47	114.725	
3,800.00	3,792.54	3,715.07	3,714.24	13.49	12.63	-148.03	-2,365.76	-1,579.24	2,933.98	2,907.92	26.06	112.582	
3,900.00	3,891.56	3,896.18	3,895.28	13.87	13.26	-148.28	-2,369.34	-1,577.59	2,945.49	2,918.41	27.07	108.794	
4,000.00	3,990.59	4,003.31	4,002.38	14.25	13.64	-148.52	-2,369.82	-1,574.88	2,954.60	2,926.79	27.82	106.207	
4,100.00	4,089.62	4,092.24	4,091.29	14.64	13.95	-148.69	-2,368.83	-1,575.40	2,964.07	2,935.57	28.50	103.997	
4,200.00	4,188.64	4,148.77	4,147.80	15.03	14.14	-148.84	-2,367.95	-1,576.83	2,974.29	2,945.22	29.07	102.327	
4,300.00	4,287.67	4,206.00	4,205.01	15.42	14.34	-149.02	-2,368.89	-1,577.62	2,986.36	2,956.73	29.63	100.789	
4,400.00	4,386.70	4,316.17	4,315.13	15.81	14.73	-149.23	-2,372.26	-1,577.65	2,999.21	2,968.82	30.39	98.682	
4,500.00	4,485.72	4,495.87	4,494.79	16.20	15.36	-149.47	-2,374.96	-1,575.51	3,010.17	2,978.76	31.41	95.836	
4,600.00	4,584.75	4,635.05	4,633.95	16.59	15.84	-149.68	-2,373.77	-1,573.20	3,018.79	2,986.52	32.27	93.547	
4,700.00	4,683.78	4,739.46	4,738.32	16.98	16.20	-149.88	-2,372.37	-1,571.02	3,026.90	2,993.89	33.01	91.697	
4,800.00	4,782.80	4,832.85	4,831.69	17.38	16.52	-150.07	-2,371.04	-1,569.37	3,035.13	3,001.42	33.71	90.032	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 182H - Wellbore #1 - Surveys

Survey Program: 172-MWD

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,881.83	4,923.40	4,922.22	17.78	16.84	-150.25	-2,369.86	-1,568.00	3,043.62	3,009.21	34.41	88.464	
5,000.00	4,980.86	5,013.42	5,012.23	18.17	17.15	-150.44	-2,369.03	-1,566.57	3,052.44	3,017.34	35.10	86.973	
5,100.00	5,079.88	5,116.59	5,115.38	18.57	17.51	-150.64	-2,368.24	-1,564.92	3,061.42	3,025.59	35.83	85.431	
5,200.00	5,178.91	5,224.02	5,222.79	18.97	17.89	-150.82	-2,367.02	-1,563.36	3,070.19	3,033.60	36.59	83.910	
5,300.00	5,277.94	5,315.66	5,314.42	19.37	18.21	-151.00	-2,365.87	-1,562.18	3,078.97	3,041.68	37.29	82.572	
5,400.00	5,376.96	5,407.13	5,405.88	19.77	18.53	-151.18	-2,364.90	-1,561.18	3,088.03	3,050.04	37.99	81.293	
5,500.00	5,475.99	5,515.46	5,514.19	20.17	18.91	-151.35	-2,363.67	-1,560.10	3,097.12	3,058.37	38.75	79.933	
5,600.00	5,575.02	5,625.47	5,624.18	20.57	19.29	-151.52	-2,362.00	-1,559.01	3,105.89	3,066.38	39.51	78.606	
5,690.40	5,664.54	5,710.37	5,709.07	20.93	19.59	-151.68	-2,360.63	-1,558.22	3,113.80	3,073.65	40.15	77.548	
5,700.00	5,674.04	5,719.66	5,718.36	20.97	19.62	-151.69	-2,360.48	-1,558.14	3,114.64	3,074.41	40.22	77.436	
5,800.00	5,773.21	5,816.77	5,815.46	21.37	19.96	-151.84	-2,358.94	-1,557.35	3,122.70	3,081.76	40.94	76.274	
5,900.00	5,872.58	5,914.96	5,913.63	21.76	20.31	-151.97	-2,357.27	-1,556.87	3,129.50	3,087.84	41.66	75.122	
6,000.00	5,972.14	6,011.35	6,010.00	22.15	20.64	-152.07	-2,355.48	-1,556.79	3,135.04	3,092.67	42.37	73.996	
6,100.00	6,071.84	6,102.41	6,101.05	22.52	20.96	-152.14	-2,353.91	-1,556.88	3,139.46	3,096.41	43.05	72.921	
6,200.00	6,171.66	6,193.95	6,192.58	22.89	21.28	-152.20	-2,352.59	-1,557.05	3,142.83	3,099.09	43.74	71.860	
6,300.00	6,271.57	6,287.45	6,286.07	23.25	21.61	-152.23	-2,351.48	-1,557.23	3,145.09	3,100.67	44.42	70.801	
6,400.00	6,371.54	6,381.64	6,380.25	23.60	21.94	-152.25	-2,350.61	-1,557.35	3,146.22	3,101.11	45.11	69.752	
6,490.46	6,462.00	6,470.23	6,468.84	23.92	22.26	-152.25	-2,349.89	-1,557.50	3,146.18	3,100.45	45.73	68.793	
6,500.00	6,471.54	6,479.57	6,478.18	23.95	22.29	-152.25	-2,349.82	-1,557.52	3,146.13	3,100.32	45.80	68.693	
6,600.00	6,571.54	6,578.77	6,577.38	24.29	22.64	-152.24	-2,349.03	-1,557.78	3,145.55	3,099.05	46.50	67.649	
6,700.00	6,671.54	6,682.77	6,681.37	24.63	23.00	-152.23	-2,348.20	-1,557.92	3,144.90	3,097.68	47.21	66.609	
6,800.00	6,771.54	6,778.33	6,776.94	24.98	23.34	-152.23	-2,347.43	-1,557.89	3,144.18	3,096.28	47.90	65.642	
6,900.00	6,871.54	6,864.16	6,862.76	25.32	23.64	-152.21	-2,346.93	-1,558.30	3,143.88	3,095.33	48.55	64.760	
7,000.00	6,971.54	6,963.50	6,962.10	25.66	23.99	-152.20	-2,346.45	-1,558.98	3,143.77	3,094.53	49.24	63.840	
7,100.00	7,071.54	7,061.90	7,060.49	26.01	24.33	-152.18	-2,345.99	-1,559.67	3,143.69	3,093.75	49.94	62.951	
7,139.28	7,110.82	7,099.73	7,098.32	26.14	24.47	-152.18	-2,345.83	-1,559.97	3,143.68	3,093.47	50.21	62.612	
7,200.00	7,171.54	7,158.21	7,156.80	26.35	24.67	-152.17	-2,345.59	-1,560.47	3,143.70	3,093.08	50.63	62.097	
7,300.00	7,271.54	7,251.44	7,250.03	26.70	25.00	-152.15	-2,345.26	-1,561.38	3,143.85	3,092.55	51.30	61.284	
7,400.00	7,371.54	7,338.37	7,336.95	27.04	25.30	-152.14	-2,345.35	-1,562.12	3,144.34	3,092.40	51.95	60.529	
7,500.00	7,471.54	7,426.75	7,425.32	27.39	25.61	-152.14	-2,345.96	-1,562.70	3,145.25	3,092.65	52.60	59.795	
7,600.00	7,571.54	7,522.38	7,520.95	27.73	25.94	-152.14	-2,346.95	-1,563.19	3,146.40	3,093.12	53.28	59.054	
7,700.00	7,671.54	7,630.57	7,629.14	28.08	26.31	-152.14	-2,348.11	-1,563.58	3,147.53	3,093.52	54.01	58.278	
7,800.00	7,771.54	7,656.00	7,654.56	28.43	26.40	-152.14	-2,348.49	-1,563.71	3,149.52	3,095.12	54.40	57.892	
7,900.00	7,871.54	7,688.00	7,686.54	28.77	26.51	-152.15	-2,349.68	-1,563.91	3,153.65	3,098.84	54.80	57.545	
8,000.00	7,971.54	7,719.00	7,717.44	29.12	26.61	-152.16	-2,352.07	-1,564.17	3,160.41	3,105.23	55.18	57.277	
8,100.00	8,071.54	7,719.00	7,717.44	29.47	26.61	-152.16	-2,352.07	-1,564.17	3,169.62	3,114.25	55.37	57.242	
8,200.00	8,171.54	7,751.00	7,749.19	29.82	26.72	-152.19	-2,356.02	-1,564.60	3,181.37	3,125.67	55.70	57.113	
8,300.00	8,271.54	7,751.00	7,749.19	30.16	26.72	-152.19	-2,356.02	-1,564.60	3,195.79	3,139.96	55.83	57.243	
8,400.00	8,371.54	7,783.00	7,780.70	30.51	26.83	-152.23	-2,361.52	-1,565.30	3,212.53	3,156.42	56.11	57.252	
8,500.00	8,471.54	7,783.00	7,780.70	30.86	26.83	-152.23	-2,361.52	-1,565.30	3,232.03	3,175.86	56.17	57.538	
8,600.00	8,571.54	7,815.00	7,811.91	31.21	26.94	-152.26	-2,368.47	-1,566.56	3,253.73	3,197.32	56.41	57.677	
8,700.00	8,671.54	7,815.00	7,811.91	31.56	26.94	-152.26	-2,368.47	-1,566.56	3,278.14	3,221.72	56.41	58.109	
8,800.00	8,771.54	7,846.00	7,841.76	31.91	27.04	-152.30	-2,376.62	-1,568.35	3,304.68	3,248.07	56.61	58.377	
8,900.00	8,871.54	7,846.00	7,841.76	32.26	27.04	-152.30	-2,376.62	-1,568.35	3,333.83	3,277.27	56.56	58.945	
9,000.00	8,971.54	7,878.00	7,872.07	32.61	27.15	-152.35	-2,386.63	-1,570.62	3,365.14	3,308.41	56.73	59.320	
9,100.00	9,071.54	7,878.00	7,872.07	32.96	27.15	-152.35	-2,386.63	-1,570.62	3,398.75	3,342.12	56.63	60.015	
9,200.00	9,171.54	7,910.00	7,901.82	33.31	27.26	-152.40	-2,398.07	-1,573.37	3,434.53	3,377.76	56.78	60.493	
9,300.00	9,271.54	7,910.00	7,901.82	33.66	27.26	-152.40	-2,398.07	-1,573.37	3,472.39	3,415.74	56.64	61.302	
9,400.00	9,371.54	7,925.38	7,915.90	34.01	27.31	-152.43	-2,404.06	-1,574.93	3,512.36	3,455.74	56.62	62.029	
9,500.00	9,471.54	7,941.00	7,929.96	34.36	27.36	-152.45	-2,410.62	-1,576.74	3,554.55	3,497.95	56.60	62.802	
9,600.00	9,571.54	7,941.00	7,929.96	34.71	27.36	-152.45	-2,410.62	-1,576.74	3,598.70	3,542.27	56.43	63.777	
9,700.00	9,671.54	7,958.37	7,945.33	35.06	27.42	-152.48	-2,418.42	-1,578.89	3,644.76	3,588.37	56.40	64.627	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 182H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 172-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,800.00	9,771.54	7,973.00	7,958.08	35.41	27.47	-152.51	-2,425.36	-1,580.70	3,692.70	3,636.36	56.34	65.543	
9,900.00	9,871.54	7,973.00	7,958.08	35.76	27.47	-152.51	-2,425.36	-1,580.70	3,742.49	3,686.34	56.14	66.658	
10,000.00	9,971.54	8,005.00	7,985.40	36.11	27.57	-152.58	-2,441.55	-1,584.62	3,793.73	3,737.49	56.24	67.457	
10,100.00	10,071.54	8,005.00	7,985.40	36.46	27.57	-152.58	-2,441.55	-1,584.62	3,846.70	3,790.66	56.04	68.643	
10,200.00	10,171.54	8,036.00	8,011.03	36.81	27.68	-152.66	-2,458.55	-1,588.45	3,901.35	3,845.23	56.12	69.512	
10,300.00	10,271.54	8,036.00	8,011.03	37.17	27.68	-152.66	-2,458.55	-1,588.45	3,957.29	3,901.37	55.93	70.759	
10,400.00	10,371.54	8,036.00	8,011.03	37.52	27.68	-152.66	-2,458.55	-1,588.45	4,014.94	3,959.21	55.73	72.044	
10,500.00	10,471.54	8,068.00	8,036.54	37.87	27.79	-152.75	-2,477.49	-1,592.24	4,073.87	4,018.04	55.83	72.967	
10,600.00	10,571.54	8,068.00	8,036.54	38.22	27.79	-152.75	-2,477.49	-1,592.24	4,134.12	4,078.48	55.64	74.297	
10,700.00	10,671.54	8,083.69	8,048.71	38.57	27.85	-152.81	-2,487.26	-1,593.95	4,195.70	4,140.09	55.60	75.456	
10,800.00	10,771.54	8,100.00	8,061.11	38.93	27.90	-152.86	-2,497.70	-1,595.67	4,258.54	4,202.96	55.58	76.622	
10,900.00	10,871.54	8,100.00	8,061.11	39.28	27.90	-152.86	-2,497.70	-1,595.67	4,322.58	4,267.18	55.41	78.012	
11,000.00	10,971.54	8,117.52	8,074.14	39.63	27.97	-152.93	-2,509.29	-1,597.38	4,387.73	4,332.32	55.41	79.191	
11,100.00	11,071.54	8,132.00	8,084.66	39.98	28.02	-152.98	-2,519.15	-1,598.66	4,454.04	4,398.66	55.39	80.419	
11,200.00	11,171.54	8,132.00	8,084.66	40.34	28.02	-152.98	-2,519.15	-1,598.66	4,521.44	4,466.19	55.24	81.848	
11,300.00	11,271.54	8,147.30	8,095.52	40.69	28.07	-153.05	-2,529.85	-1,599.91	4,589.83	4,534.58	55.24	83.082	
11,400.00	11,371.54	8,163.00	8,106.40	41.04	28.13	-153.12	-2,541.11	-1,601.13	4,659.28	4,604.02	55.26	84.317	
11,500.00	11,471.54	8,163.00	8,106.40	41.40	28.13	-153.12	-2,541.11	-1,601.13	4,729.63	4,674.49	55.15	85.765	
11,525.27	11,496.81	8,163.00	8,106.40	41.48	28.13	-153.12	-2,541.11	-1,601.13	4,747.58	4,692.46	55.12	86.132	
11,550.00	11,521.53	8,163.00	8,106.40	41.57	28.13	-153.11	-2,541.11	-1,601.13	4,764.91	4,709.82	55.09	86.496	
11,600.00	11,571.33	8,181.65	8,119.03	41.72	28.20	-153.15	-2,554.75	-1,602.50	4,798.04	4,742.87	55.17	86.971	
11,650.00	11,620.56	8,195.00	8,127.94	41.85	28.25	-153.12	-2,564.66	-1,603.43	4,828.71	4,773.52	55.19	87.497	
11,700.00	11,668.84	8,195.00	8,127.94	41.98	28.25	-152.99	-2,564.66	-1,603.43	4,856.62	4,801.55	55.08	88.178	
11,750.00	11,715.82	8,210.30	8,138.01	42.10	28.31	-152.88	-2,576.13	-1,604.45	4,881.61	4,826.53	55.09	88.620	
11,800.00	11,761.13	8,227.00	8,148.88	42.20	28.37	-152.74	-2,588.76	-1,605.54	4,903.53	4,848.44	55.09	89.007	
11,850.00	11,804.43	8,227.00	8,148.88	42.30	28.37	-152.47	-2,588.76	-1,605.54	4,922.22	4,867.28	54.94	89.588	
11,900.00	11,845.39	8,227.00	8,148.88	42.39	28.37	-152.16	-2,588.76	-1,605.54	4,937.69	4,882.91	54.78	90.131	
11,950.00	11,883.69	8,245.16	8,160.45	42.47	28.45	-151.90	-2,602.72	-1,606.61	4,949.63	4,894.86	54.77	90.375	
12,000.00	11,919.06	8,259.00	8,169.03	42.54	28.50	-151.59	-2,613.56	-1,607.29	4,958.23	4,903.53	54.71	90.633	
12,050.00	11,951.20	8,259.00	8,169.03	42.61	28.50	-151.16	-2,613.56	-1,607.29	4,963.28	4,908.76	54.52	91.029	
12,100.00	11,979.89	8,259.00	8,169.03	42.68	28.50	-150.69	-2,613.56	-1,607.29	4,964.88	4,910.54	54.34	91.371	
12,150.00	12,004.90	8,259.00	8,169.03	42.75	28.50	-150.18	-2,613.56	-1,607.29	4,963.02	4,908.87	54.15	91.654	
12,200.00	12,026.05	8,259.00	8,169.03	42.82	28.50	-149.64	-2,613.56	-1,607.29	4,957.70	4,903.74	53.96	91.874	
12,250.00	12,043.17	8,276.03	8,179.18	42.89	28.57	-149.19	-2,627.22	-1,607.99	4,948.63	4,894.71	53.92	91.781	
12,300.00	12,056.13	8,290.00	8,187.09	42.97	28.63	-148.69	-2,638.72	-1,608.50	4,936.45	4,882.60	53.85	91.664	
12,350.00	12,064.83	8,290.00	8,187.09	43.05	28.63	-148.07	-2,638.72	-1,608.50	4,920.76	4,867.08	53.68	91.663	
12,400.00	12,069.21	8,290.00	8,187.09	43.13	28.63	-147.42	-2,638.72	-1,608.50	4,901.86	4,848.33	53.52	91.583	
12,423.64	12,069.77	8,290.00	8,187.09	43.17	28.63	-147.11	-2,638.72	-1,608.50	4,891.83	4,838.38	53.45	91.516	
12,500.00	12,069.98	8,290.00	8,187.09	43.32	28.63	-146.08	-2,638.72	-1,608.50	4,858.83	4,805.60	53.23	91.276	
12,600.00	12,070.27	8,290.00	8,187.09	43.58	28.63	-144.66	-2,638.72	-1,608.50	4,817.11	4,764.13	52.98	90.926	
12,667.68	12,070.46	8,304.92	8,195.09	43.79	28.69	-143.81	-2,651.30	-1,609.00	4,789.54	4,736.60	52.95	90.455	
12,700.00	12,070.55	8,307.04	8,196.18	43.90	28.70	-143.35	-2,653.11	-1,609.06	4,776.64	4,723.74	52.90	90.293	
12,800.00	12,070.84	8,322.00	8,203.62	44.29	28.76	-142.01	-2,666.08	-1,609.53	4,736.91	4,684.07	52.84	89.652	
12,900.00	12,071.12	8,322.00	8,203.62	44.73	28.76	-140.49	-2,666.08	-1,609.53	4,697.18	4,644.50	52.68	89.166	
13,000.00	12,071.41	8,322.00	8,203.62	45.22	28.76	-138.94	-2,666.08	-1,609.53	4,657.82	4,605.28	52.54	88.646	
13,100.00	12,071.69	8,322.00	8,203.62	45.76	28.76	-137.37	-2,666.08	-1,609.53	4,618.88	4,566.45	52.43	88.095	
13,200.00	12,071.98	8,354.00	8,217.63	46.34	28.90	-136.21	-2,694.83	-1,610.16	4,580.09	4,527.53	52.57	87.129	
13,200.11	12,071.98	8,354.00	8,217.63	46.34	28.90	-136.21	-2,694.83	-1,610.16	4,580.05	4,527.49	52.57	87.128	
13,300.00	12,072.26	8,354.00	8,217.63	46.97	28.90	-134.56	-2,694.83	-1,610.16	4,542.20	4,489.70	52.50	86.512	
13,400.00	12,072.55	8,354.00	8,217.63	47.64	28.90	-132.82	-2,694.83	-1,610.16	4,506.21	4,453.72	52.49	85.852	
13,500.00	12,072.83	8,354.00	8,217.63	48.36	28.90	-130.97	-2,694.83	-1,610.16	4,472.16	4,419.64	52.52	85.148	
13,600.00	12,073.12	8,385.00	8,228.56	49.13	29.03	-129.59	-2,723.83	-1,610.21	4,439.92	4,387.12	52.80	84.096	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 182H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 172-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.00	12,073.40	8,385.00	8,228.56	49.94	29.03	-127.55	-2,723.83	-1,610.21	4,409.24	4,356.31	52.93	83.308	
13,800.00	12,073.68	8,385.00	8,228.56	50.80	29.03	-125.40	-2,723.83	-1,610.21	4,380.63	4,327.52	53.11	82.481	
13,900.00	12,073.97	8,385.00	8,228.56	51.69	29.03	-123.13	-2,723.83	-1,610.21	4,354.13	4,300.78	53.35	81.618	
14,000.00	12,074.25	8,401.25	8,233.18	52.62	29.10	-121.12	-2,739.41	-1,610.09	4,329.37	4,275.65	53.72	80.595	
14,100.00	12,074.54	8,417.00	8,236.89	53.58	29.17	-119.01	-2,754.71	-1,609.94	4,306.86	4,252.73	54.13	79.567	
14,200.00	12,074.82	8,417.00	8,236.89	54.58	29.17	-116.41	-2,754.71	-1,609.94	4,286.19	4,231.67	54.52	78.623	
14,300.00	12,075.11	8,422.69	8,238.04	55.61	29.20	-113.84	-2,760.28	-1,609.89	4,267.70	4,212.72	54.98	77.628	
14,400.00	12,075.39	8,428.00	8,239.02	56.67	29.22	-111.16	-2,765.50	-1,609.86	4,251.33	4,195.85	55.48	76.626	
14,500.00	12,075.68	8,428.00	8,239.02	57.76	29.22	-108.22	-2,765.50	-1,609.86	4,237.22	4,181.20	56.01	75.645	
14,600.00	12,075.96	8,445.54	8,241.65	58.87	29.29	-105.72	-2,782.84	-1,609.75	4,224.97	4,168.32	56.65	74.584	
14,700.00	12,076.24	8,460.00	8,243.12	60.01	29.36	-103.06	-2,797.23	-1,609.65	4,215.07	4,157.76	57.30	73.556	
14,800.00	12,076.53	8,460.00	8,243.12	61.17	29.36	-99.89	-2,797.23	-1,609.65	4,207.21	4,149.25	57.96	72.588	
14,900.00	12,076.81	8,533.80	8,246.96	62.36	29.71	-99.05	-2,870.83	-1,606.31	4,201.05	4,142.24	58.81	71.435	
15,000.00	12,077.10	8,704.89	8,253.83	63.57	30.66	-101.40	-3,040.96	-1,589.79	4,193.72	4,133.84	59.89	70.026	
15,100.00	12,077.38	8,757.40	8,255.47	64.79	31.00	-99.89	-3,093.08	-1,583.65	4,186.54	4,125.81	60.73	68.934	
15,200.00	12,077.67	8,777.00	8,255.93	66.04	31.13	-97.26	-3,112.55	-1,581.36	4,180.74	4,119.23	61.52	67.961	
15,300.00	12,077.95	8,839.65	8,256.72	67.30	31.57	-96.03	-3,174.84	-1,574.74	4,176.03	4,113.58	62.44	66.876	
15,400.00	12,078.23	8,872.00	8,256.74	68.58	31.80	-93.78	-3,207.06	-1,571.86	4,172.97	4,109.66	63.31	65.912	
15,500.00	12,078.52	8,872.00	8,256.74	69.88	31.80	-90.41	-3,207.06	-1,571.86	4,171.99	4,107.88	64.12	65.069	
15,525.08	12,078.59	8,905.83	8,256.39	70.21	32.07	-90.70	-3,240.81	-1,569.59	4,171.55	4,107.13	64.42	64.754	
15,525.41	12,078.59	8,905.90	8,256.38	70.21	32.07	-90.70	-3,240.89	-1,569.58	4,171.55	4,107.13	64.42	64.751	
15,600.00	12,078.80	8,923.79	8,256.01	71.19	32.21	-88.78	-3,258.76	-1,568.83	4,172.07	4,106.97	65.09	64.093	
15,700.00	12,079.09	8,967.00	8,254.59	72.51	32.55	-86.87	-3,301.93	-1,568.29	4,174.54	4,108.46	66.07	63.180	
15,800.00	12,079.37	8,983.24	8,253.91	73.85	32.68	-84.07	-3,318.16	-1,568.45	4,178.43	4,111.44	66.99	62.377	
15,900.00	12,079.66	9,480.82	8,253.63	75.21	37.47	-97.39	-3,815.31	-1,568.30	4,181.22	4,111.05	70.17	59.590	
16,000.00	12,079.94	9,562.14	8,257.30	76.57	38.37	-96.77	-3,896.52	-1,566.34	4,176.63	4,105.16	71.47	58.435	
16,100.00	12,080.22	9,632.00	8,259.60	77.94	39.16	-95.77	-3,966.30	-1,563.78	4,172.65	4,099.93	72.72	57.376	
16,200.00	12,080.51	9,677.93	8,260.46	79.33	39.69	-93.96	-4,012.18	-1,561.79	4,169.69	4,095.84	73.85	56.459	
16,300.00	12,080.79	9,727.00	8,260.70	80.73	40.26	-92.24	-4,061.21	-1,559.79	4,168.05	4,093.04	75.00	55.570	
16,400.00	12,081.08	9,856.27	8,259.71	82.13	41.81	-93.24	-4,190.24	-1,552.12	4,166.92	4,090.32	76.59	54.404	
16,500.00	12,081.36	9,953.37	8,259.93	83.55	43.02	-93.14	-4,287.15	-1,546.11	4,164.72	4,086.69	78.03	53.372	
16,600.00	12,081.65	10,012.00	8,259.71	84.97	43.75	-91.74	-4,345.72	-1,543.52	4,163.67	4,084.39	79.28	52.520	
16,646.40	12,081.78	10,026.72	8,259.59	85.64	43.94	-90.66	-4,360.44	-1,543.04	4,163.55	4,083.76	79.79	52.183	
16,700.00	12,081.93	10,059.76	8,259.38	86.40	44.36	-89.95	-4,393.47	-1,542.37	4,163.71	4,083.23	80.48	51.735	
16,800.00	12,082.22	10,222.16	8,260.62	87.84	46.45	-92.08	-4,555.85	-1,543.44	4,163.96	4,081.46	82.50	50.473	
16,885.26	12,082.46	10,267.53	8,261.40	89.08	47.04	-90.72	-4,601.20	-1,544.09	4,163.55	4,079.94	83.61	49.800	
16,900.00	12,082.50	10,275.37	8,261.50	89.29	47.14	-90.49	-4,609.05	-1,544.24	4,163.56	4,079.76	83.80	49.686	
17,000.00	12,082.78	10,336.20	8,262.12	90.75	47.95	-89.15	-4,669.85	-1,545.93	4,164.24	4,079.07	85.17	48.894	
17,100.00	12,083.07	10,392.00	8,262.62	92.21	48.68	-87.65	-4,725.59	-1,548.35	4,165.77	4,079.25	86.52	48.149	
17,200.00	12,083.35	10,461.71	8,263.18	93.68	49.61	-86.63	-4,795.16	-1,552.78	4,168.18	4,080.17	88.01	47.363	
17,300.00	12,083.64	10,487.00	8,263.37	95.15	49.95	-84.13	-4,820.36	-1,554.81	4,171.80	4,082.66	89.14	46.802	
17,400.00	12,083.92	10,541.05	8,263.22	96.63	50.67	-82.61	-4,874.18	-1,559.82	4,176.66	4,086.14	90.52	46.140	
17,500.00	12,084.21	10,845.26	8,262.11	98.12	54.85	-89.43	-5,177.59	-1,578.70	4,180.13	4,086.11	94.01	44.463	
17,600.00	12,084.49	10,895.50	8,262.28	99.61	55.56	-87.77	-5,227.80	-1,580.24	4,181.61	4,086.24	95.37	43.845	
17,700.00	12,084.77	11,200.97	8,261.82	101.11	59.97	-94.60	-5,533.00	-1,573.92	4,181.70	4,083.15	98.55	42.433	
17,800.00	12,085.06	11,247.00	8,262.09	102.61	60.65	-92.81	-5,578.99	-1,571.96	4,179.72	4,079.86	99.86	41.855	
17,900.00	12,085.34	11,297.47	8,261.87	104.11	61.39	-91.16	-5,629.42	-1,570.19	4,179.00	4,077.79	101.20	41.293	
18,000.00	12,085.63	11,403.09	8,261.15	105.63	62.95	-91.35	-5,734.99	-1,566.85	4,178.85	4,075.91	102.95	40.593	
18,100.00	12,085.91	11,544.45	8,261.63	107.14	65.05	-92.73	-5,876.28	-1,562.52	4,177.75	4,072.79	104.96	39.803	
18,200.00	12,086.20	11,612.75	8,261.81	108.66	66.08	-91.67	-5,944.55	-1,560.29	4,176.69	4,070.24	106.45	39.235	
18,287.91	12,086.45	11,672.20	8,261.72	110.00	66.97	-90.72	-6,003.98	-1,558.85	4,176.39	4,068.62	107.77	38.753	
18,300.00	12,086.48	11,680.35	8,261.70	110.18	67.09	-90.58	-6,012.13	-1,558.71	4,176.40	4,068.45	107.95	38.688	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 182H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 172-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,400.00	12,086.76	11,751.99	8,261.45	111.71	68.17	-89.63	-6,083.76	-1,558.10	4,176.86	4,067.37	109.50	38.146	
18,500.00	12,087.05	11,829.48	8,261.02	113.24	69.33	-88.87	-6,161.25	-1,558.12	4,177.89	4,066.79	111.10	37.604	
18,600.00	12,087.33	11,899.71	8,260.13	114.78	70.40	-87.88	-6,231.47	-1,558.12	4,179.56	4,066.91	112.65	37.103	
18,700.00	12,087.62	11,962.83	8,258.81	116.32	71.35	-86.64	-6,294.58	-1,558.16	4,182.01	4,067.88	114.13	36.643	
18,800.00	12,087.90	12,254.34	8,258.66	117.86	75.81	-93.07	-6,585.94	-1,552.84	4,180.29	4,062.89	117.40	35.607	
18,900.00	12,088.19	12,313.00	8,258.48	119.40	76.72	-91.68	-6,644.58	-1,551.44	4,179.69	4,060.83	118.86	35.164	
18,928.53	12,088.27	12,313.00	8,258.48	119.84	76.72	-90.72	-6,644.58	-1,551.44	4,179.59	4,060.44	119.15	35.078	
19,000.00	12,088.47	12,326.59	8,258.26	120.95	76.93	-88.77	-6,658.16	-1,551.23	4,180.18	4,060.21	119.97	34.844	
19,100.00	12,088.76	12,405.75	8,257.00	122.50	78.15	-88.07	-6,737.31	-1,550.60	4,181.81	4,060.22	121.59	34.391	
19,200.00	12,089.04	12,470.80	8,255.82	124.05	79.15	-86.89	-6,802.35	-1,550.79	4,184.10	4,060.99	123.12	33.985	
19,300.00	12,089.32	12,557.42	8,253.93	125.61	80.49	-86.45	-6,888.95	-1,551.91	4,187.12	4,062.28	124.84	33.541	
19,400.00	12,089.61	12,654.40	8,252.13	127.17	81.99	-86.35	-6,985.89	-1,553.83	4,190.13	4,063.46	126.67	33.079	
19,500.00	12,089.89	12,737.11	8,250.67	128.73	83.27	-85.78	-7,068.55	-1,556.16	4,193.41	4,065.02	128.39	32.661	
19,600.00	12,090.18	12,998.92	8,248.47	130.29	87.34	-91.19	-7,330.28	-1,560.78	4,196.06	4,064.36	131.70	31.861	
19,700.00	12,090.46	13,208.24	8,251.43	131.86	90.64	-94.84	-7,539.47	-1,554.77	4,193.76	4,059.43	134.33	31.221	
19,800.00	12,090.75	13,282.89	8,252.86	133.42	91.82	-94.00	-7,614.06	-1,552.33	4,191.17	4,055.22	135.95	30.828	
19,900.00	12,091.03	13,360.00	8,254.22	134.99	93.04	-93.23	-7,691.13	-1,550.02	4,188.91	4,051.31	137.60	30.443	
20,000.00	12,091.31	13,422.40	8,255.11	136.57	94.02	-91.97	-7,753.51	-1,548.79	4,187.41	4,048.26	139.14	30.094	
20,081.50	12,091.55	13,466.46	8,255.53	137.85	94.72	-90.72	-7,797.57	-1,548.73	4,187.06	4,046.70	140.36	29.831	
20,100.00	12,091.60	13,478.21	8,255.61	138.14	94.91	-90.49	-7,809.31	-1,548.78	4,187.07	4,046.42	140.65	29.769	
20,200.00	12,091.88	13,550.00	8,255.79	139.72	96.04	-89.54	-7,881.10	-1,549.44	4,187.68	4,045.38	142.30	29.428	
20,300.00	12,092.17	13,592.69	8,255.63	141.29	96.71	-87.62	-7,923.79	-1,550.30	4,189.27	4,045.58	143.69	29.155	
20,400.00	12,092.45	13,644.00	8,255.15	142.87	97.52	-86.00	-7,975.06	-1,552.17	4,192.08	4,046.92	145.17	28.878	
20,500.00	12,092.74	13,858.64	8,253.41	144.45	100.90	-89.83	-8,189.57	-1,557.80	4,194.78	4,046.60	148.18	28.308	
20,600.00	12,093.02	13,943.69	8,253.06	146.04	102.25	-89.33	-8,274.61	-1,557.50	4,195.53	4,045.60	149.93	27.984	
20,700.00	12,093.31	14,006.29	8,252.58	147.62	103.25	-88.08	-8,337.21	-1,557.83	4,196.97	4,045.48	151.49	27.705	
20,800.00	12,093.59	14,109.93	8,251.04	149.21	104.90	-88.21	-8,440.84	-1,558.10	4,198.94	4,045.54	153.40	27.372	
20,900.00	12,093.87	14,227.99	8,248.73	150.80	106.78	-88.80	-8,558.86	-1,555.69	4,200.38	4,045.02	155.36	27.036	
21,000.00	12,094.16	14,290.77	8,247.28	152.39	107.79	-87.56	-8,621.60	-1,554.45	4,202.19	4,045.32	156.88	26.787	
21,100.00	12,094.44	14,529.15	8,244.85	153.98	111.61	-92.18	-8,859.93	-1,551.34	4,203.51	4,043.66	159.85	26.296	
21,200.00	12,094.73	14,595.00	8,245.23	155.57	112.67	-91.04	-8,925.77	-1,550.24	4,202.84	4,041.39	161.44	26.033	
21,209.64	12,094.75	14,595.00	8,245.23	155.72	112.67	-90.72	-8,925.77	-1,550.24	4,202.83	4,041.28	161.55	26.016	
21,300.00	12,095.01	14,638.39	8,245.07	157.16	113.36	-89.15	-8,969.15	-1,549.72	4,203.25	4,040.41	162.84	25.812	
21,400.00	12,095.30	14,950.92	8,241.92	158.76	118.41	-96.26	-9,281.05	-1,533.65	4,204.16	4,038.19	165.97	25.331	
21,500.00	12,095.58	15,063.83	8,243.01	160.35	120.25	-96.71	-9,393.48	-1,523.30	4,200.07	4,032.38	167.69	25.047	
21,600.00	12,095.86	15,117.96	8,243.63	161.95	121.13	-95.18	-9,447.43	-1,518.99	4,196.35	4,027.21	169.14	24.811	
21,700.00	12,096.15	15,171.70	8,244.13	163.55	122.00	-93.62	-9,501.09	-1,516.09	4,193.80	4,023.20	170.60	24.582	
21,800.00	12,096.43	15,261.00	8,244.90	165.15	123.45	-93.26	-9,590.30	-1,512.19	4,191.78	4,019.46	172.32	24.326	
21,900.00	12,096.72	15,330.00	8,245.32	166.75	124.57	-92.20	-9,659.26	-1,509.79	4,190.34	4,016.44	173.90	24.096	
22,000.00	12,097.00	15,400.00	8,245.57	168.35	125.70	-91.18	-9,729.23	-1,507.98	4,189.54	4,014.03	175.50	23.872	
22,013.34	12,097.04	15,400.00	8,245.57	168.57	125.70	-90.72	-9,729.23	-1,507.98	4,189.52	4,013.87	175.64	23.852	
22,100.00	12,097.29	15,400.00	8,245.57	169.96	125.70	-87.77	-9,729.23	-1,507.98	4,190.41	4,013.89	176.52	23.739	
22,175.33	12,097.50	15,400.00	8,245.57	171.16	125.70	-85.21	-9,729.23	-1,507.98	4,192.65	4,015.41	177.24	23.656 SF	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 242H - Wellbore #1 - Surveys

Survey Program: 165-MWD

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,000.00	12,071.41	17,847.00	10,409.33	45.22	134.25	-170.84	-10,374.01	-1,454.25	9,925.02	9,839.89	85.13	116.592	
13,100.00	12,071.69	17,847.00	10,409.33	45.76	134.25	-170.71	-10,374.01	-1,454.25	9,828.67	9,743.41	85.26	115.278	
13,200.00	12,071.98	17,847.00	10,409.33	46.34	134.25	-170.60	-10,374.01	-1,454.25	9,731.69	9,646.31	85.38	113.980	
13,200.11	12,071.98	17,847.00	10,409.33	46.34	134.25	-170.60	-10,374.01	-1,454.25	9,731.59	9,646.21	85.38	113.979	
13,300.00	12,072.26	17,847.00	10,409.33	46.97	134.25	-170.50	-10,374.01	-1,454.25	9,634.46	9,548.97	85.49	112.690	
13,400.00	12,072.55	17,847.00	10,409.33	47.64	134.25	-170.39	-10,374.01	-1,454.25	9,537.29	9,451.68	85.62	111.396	
13,500.00	12,072.83	17,847.00	10,409.33	48.36	134.25	-170.28	-10,374.01	-1,454.25	9,440.18	9,354.43	85.74	110.097	
13,600.00	12,073.12	17,847.00	10,409.33	49.13	134.25	-170.18	-10,374.01	-1,454.25	9,343.12	9,257.24	85.88	108.794	
13,700.00	12,073.40	17,847.00	10,409.33	49.94	134.25	-170.07	-10,374.01	-1,454.25	9,246.13	9,160.11	86.02	107.485	
13,800.00	12,073.68	17,847.00	10,409.33	50.80	134.25	-169.95	-10,374.01	-1,454.25	9,149.21	9,063.03	86.17	106.172	
13,900.00	12,073.97	17,847.00	10,409.33	51.69	134.25	-169.84	-10,374.01	-1,454.25	9,052.35	8,966.02	86.33	104.854	
14,000.00	12,074.25	17,847.00	10,409.33	52.62	134.25	-169.72	-10,374.01	-1,454.25	8,955.56	8,869.06	86.50	103.531	
14,100.00	12,074.54	17,847.00	10,409.33	53.58	134.25	-169.60	-10,374.01	-1,454.25	8,858.84	8,772.16	86.68	102.203	
14,200.00	12,074.82	17,847.00	10,409.33	54.58	134.25	-169.47	-10,374.01	-1,454.25	8,762.20	8,675.33	86.87	100.870	
14,300.00	12,075.11	17,847.00	10,409.33	55.61	134.25	-169.35	-10,374.01	-1,454.25	8,665.63	8,578.57	87.06	99.533	
14,400.00	12,075.39	17,847.00	10,409.33	56.67	134.25	-169.22	-10,374.01	-1,454.25	8,569.14	8,481.87	87.27	98.191	
14,500.00	12,075.68	17,847.00	10,409.33	57.76	134.25	-169.08	-10,374.01	-1,454.25	8,472.73	8,385.24	87.49	96.845	
14,600.00	12,075.96	17,847.00	10,409.33	58.87	134.25	-168.95	-10,374.01	-1,454.25	8,376.41	8,288.69	87.72	95.493	
14,700.00	12,076.24	17,847.00	10,409.33	60.01	134.25	-168.81	-10,374.01	-1,454.25	8,280.17	8,192.21	87.96	94.138	
14,800.00	12,076.53	17,847.00	10,409.33	61.17	134.25	-168.66	-10,374.01	-1,454.25	8,184.02	8,095.81	88.21	92.777	
14,900.00	12,076.81	17,847.00	10,409.33	62.36	134.25	-168.52	-10,374.01	-1,454.25	8,087.97	7,999.49	88.48	91.412	
15,000.00	12,077.10	17,847.00	10,409.33	63.57	134.25	-168.37	-10,374.01	-1,454.25	7,992.01	7,903.26	88.76	90.043	
15,100.00	12,077.38	17,847.00	10,409.33	64.79	134.25	-168.21	-10,374.01	-1,454.25	7,896.16	7,807.11	89.05	88.670	
15,200.00	12,077.67	17,847.00	10,409.33	66.04	134.25	-168.06	-10,374.01	-1,454.25	7,800.41	7,711.05	89.36	87.292	
15,300.00	12,077.95	17,847.00	10,409.33	67.30	134.25	-167.90	-10,374.01	-1,454.25	7,704.76	7,615.08	89.68	85.911	
15,400.00	12,078.23	17,847.00	10,409.33	68.58	134.25	-167.73	-10,374.01	-1,454.25	7,609.23	7,519.21	90.02	84.525	
15,500.00	12,078.52	17,847.00	10,409.33	69.88	134.25	-167.56	-10,374.01	-1,454.25	7,513.81	7,423.43	90.38	83.136	
15,600.00	12,078.80	17,847.00	10,409.33	71.19	134.25	-167.38	-10,374.01	-1,454.25	7,418.52	7,327.76	90.75	81.743	
15,700.00	12,079.09	17,847.00	10,409.33	72.51	134.25	-167.20	-10,374.01	-1,454.25	7,323.35	7,232.20	91.15	80.347	
15,800.00	12,079.37	17,847.00	10,409.33	73.85	134.25	-167.02	-10,374.01	-1,454.25	7,228.31	7,136.75	91.56	78.947	
15,900.00	12,079.66	17,847.00	10,409.33	75.21	134.25	-166.83	-10,374.01	-1,454.25	7,133.41	7,041.41	91.99	77.544	
16,000.00	12,079.94	17,847.00	10,409.33	76.57	134.25	-166.64	-10,374.01	-1,454.25	7,038.64	6,946.20	92.45	76.138	
16,100.00	12,080.22	17,847.00	10,409.33	77.94	134.25	-166.43	-10,374.01	-1,454.25	6,944.03	6,851.11	92.92	74.730	
16,200.00	12,080.51	17,847.00	10,409.33	79.33	134.25	-166.23	-10,374.01	-1,454.25	6,849.57	6,756.14	93.42	73.319	
16,300.00	12,080.79	17,847.00	10,409.33	80.73	134.25	-166.02	-10,374.01	-1,454.25	6,755.26	6,661.32	93.94	71.907	
16,400.00	12,081.08	17,847.00	10,409.33	82.13	134.25	-165.80	-10,374.01	-1,454.25	6,661.13	6,566.63	94.49	70.492	
16,500.00	12,081.36	17,847.00	10,409.33	83.55	134.25	-165.57	-10,374.01	-1,454.25	6,567.16	6,472.09	95.07	69.076	
16,600.00	12,081.65	17,847.00	10,409.33	84.97	134.25	-165.34	-10,374.01	-1,454.25	6,473.38	6,377.70	95.68	67.659	
16,700.00	12,081.93	17,847.00	10,409.33	86.40	134.25	-165.10	-10,374.01	-1,454.25	6,379.79	6,283.47	96.31	66.242	
16,800.00	12,082.22	17,847.00	10,409.33	87.84	134.25	-164.85	-10,374.01	-1,454.25	6,286.39	6,189.41	96.98	64.824	
16,900.00	12,082.50	17,847.00	10,409.33	89.29	134.25	-164.60	-10,374.01	-1,454.25	6,193.20	6,095.52	97.68	63.406	
17,000.00	12,082.78	17,847.00	10,409.33	90.75	134.25	-164.33	-10,374.01	-1,454.25	6,100.22	6,001.82	98.41	61.989	
17,100.00	12,083.07	17,847.00	10,409.33	92.21	134.25	-164.06	-10,374.01	-1,454.25	6,007.47	5,908.30	99.18	60.573	
17,200.00	12,083.35	17,847.00	10,409.33	93.68	134.25	-163.78	-10,374.01	-1,454.25	5,914.96	5,814.98	99.98	59.159	
17,300.00	12,083.64	17,847.00	10,409.33	95.15	134.25	-163.49	-10,374.01	-1,454.25	5,822.70	5,721.87	100.83	57.747	
17,400.00	12,083.92	17,847.00	10,409.33	96.63	134.25	-163.18	-10,374.01	-1,454.25	5,730.69	5,628.97	101.72	56.339	
17,500.00	12,084.21	17,847.00	10,409.33	98.12	134.25	-162.87	-10,374.01	-1,454.25	5,638.96	5,536.31	102.65	54.933	
17,600.00	12,084.49	17,847.00	10,409.33	99.61	134.25	-162.55	-10,374.01	-1,454.25	5,547.51	5,443.88	103.63	53.533	
17,700.00	12,084.77	17,847.00	10,409.33	101.11	134.25	-162.21	-10,374.01	-1,454.25	5,456.36	5,351.71	104.66	52.137	
17,800.00	12,085.06	17,847.00	10,409.33	102.61	134.25	-161.87	-10,374.01	-1,454.25	5,365.53	5,259.80	105.73	50.746	
17,900.00	12,085.34	17,847.00	10,409.33	104.11	134.25	-161.51	-10,374.01	-1,454.25	5,275.03	5,168.17	106.86	49.363	
18,000.00	12,085.63	17,847.00	10,409.33	105.63	134.25	-161.13	-10,374.01	-1,454.25	5,184.88	5,076.83	108.05	47.987	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 242H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 165-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,100.00	12,085.91	17,847.00	10,409.33	107.14	134.25	-160.74	-10,374.01	-1,454.25	5,095.09	4,985.80	109.29	46.619	
18,200.00	12,086.20	17,847.00	10,409.33	108.66	134.25	-160.34	-10,374.01	-1,454.25	5,005.70	4,895.10	110.60	45.260	
18,300.00	12,086.48	17,847.00	10,409.33	110.18	134.25	-159.92	-10,374.01	-1,454.25	4,916.71	4,804.74	111.97	43.911	
18,400.00	12,086.76	17,847.00	10,409.33	111.71	134.25	-159.48	-10,374.01	-1,454.25	4,828.15	4,714.74	113.41	42.573	
18,500.00	12,087.05	17,847.00	10,409.33	113.24	134.25	-159.02	-10,374.01	-1,454.25	4,740.05	4,625.13	114.92	41.247	
18,600.00	12,087.33	17,847.00	10,409.33	114.78	134.25	-158.55	-10,374.01	-1,454.25	4,652.43	4,535.93	116.50	39.935	
18,700.00	12,087.62	17,847.00	10,409.33	116.32	134.25	-158.05	-10,374.01	-1,454.25	4,565.32	4,447.15	118.16	38.636	
18,800.00	12,087.90	17,847.00	10,409.33	117.86	134.25	-157.54	-10,374.01	-1,454.25	4,478.74	4,358.84	119.90	37.353	
18,900.00	12,088.19	17,847.00	10,409.33	119.40	134.25	-156.99	-10,374.01	-1,454.25	4,392.74	4,271.01	121.73	36.085	
19,000.00	12,088.47	17,847.00	10,409.33	120.95	134.25	-156.43	-10,374.01	-1,454.25	4,307.34	4,183.69	123.65	34.836	
19,100.00	12,088.76	17,847.00	10,409.33	122.50	134.25	-155.84	-10,374.01	-1,454.25	4,222.58	4,096.93	125.66	33.604	
19,200.00	12,089.04	17,847.00	10,409.33	124.05	134.25	-155.22	-10,374.01	-1,454.25	4,138.51	4,010.74	127.76	32.392	
19,300.00	12,089.32	17,847.00	10,409.33	125.61	134.25	-154.57	-10,374.01	-1,454.25	4,055.15	3,925.18	129.97	31.201	
19,400.00	12,089.61	17,847.00	10,409.33	127.17	134.25	-153.88	-10,374.01	-1,454.25	3,972.57	3,840.29	132.28	30.032	
19,500.00	12,089.89	17,847.00	10,409.33	128.73	134.25	-153.17	-10,374.01	-1,454.25	3,890.80	3,756.10	134.70	28.885	
19,600.00	12,090.18	17,847.00	10,409.33	130.29	134.25	-152.41	-10,374.01	-1,454.25	3,809.90	3,672.67	137.23	27.763	
19,700.00	12,090.46	17,847.00	10,409.33	131.86	134.25	-151.62	-10,374.01	-1,454.25	3,729.93	3,590.05	139.88	26.666	
19,800.00	12,090.75	17,847.00	10,409.33	133.42	134.25	-150.78	-10,374.01	-1,454.25	3,650.94	3,508.30	142.64	25.595	
19,900.00	12,091.03	17,847.00	10,409.33	134.99	134.25	-149.90	-10,374.01	-1,454.25	3,573.01	3,427.47	145.53	24.551	
20,000.00	12,091.31	17,847.00	10,409.33	136.57	134.25	-148.98	-10,374.01	-1,454.25	3,496.20	3,347.65	148.55	23.535	
20,100.00	12,091.60	17,847.00	10,409.33	138.14	134.25	-148.00	-10,374.01	-1,454.25	3,420.59	3,268.89	151.69	22.549	
20,200.00	12,091.88	17,847.00	10,409.33	139.72	134.25	-146.96	-10,374.01	-1,454.25	3,346.26	3,191.29	154.97	21.593	
20,300.00	12,092.17	17,847.00	10,409.33	141.29	134.25	-145.86	-10,374.01	-1,454.25	3,273.30	3,114.92	158.37	20.668	
20,400.00	12,092.45	17,847.00	10,409.33	142.87	134.25	-144.70	-10,374.01	-1,454.25	3,201.80	3,039.89	161.91	19.775	
20,500.00	12,092.74	17,847.00	10,409.33	144.45	134.25	-143.47	-10,374.01	-1,454.25	3,131.86	2,966.28	165.57	18.915	
20,600.00	12,093.02	17,847.00	10,409.33	146.04	134.25	-142.16	-10,374.01	-1,454.25	3,063.58	2,894.22	169.37	18.088	
20,700.00	12,093.31	17,847.00	10,409.33	147.62	134.25	-140.78	-10,374.01	-1,454.25	2,997.09	2,823.81	173.28	17.296	
20,800.00	12,093.59	17,847.00	10,409.33	149.21	134.25	-139.30	-10,374.01	-1,454.25	2,932.51	2,755.19	177.31	16.538	
20,900.00	12,093.87	17,847.00	10,409.33	150.80	134.25	-137.74	-10,374.01	-1,454.25	2,869.95	2,688.50	181.45	15.816	
21,000.00	12,094.16	17,847.00	10,409.33	152.39	134.25	-136.07	-10,374.01	-1,454.25	2,809.56	2,623.87	185.69	15.130	
21,100.00	12,094.44	17,847.00	10,409.33	153.98	134.25	-134.30	-10,374.01	-1,454.25	2,751.48	2,561.47	190.02	14.480	
21,200.00	12,094.73	17,847.00	10,409.33	155.57	134.25	-132.42	-10,374.01	-1,454.25	2,695.86	2,501.46	194.41	13.867	
21,300.00	12,095.01	17,847.00	10,409.33	157.16	134.25	-130.42	-10,374.01	-1,454.25	2,642.86	2,444.02	198.84	13.291	
21,400.00	12,095.30	17,847.00	10,409.33	158.76	134.25	-128.30	-10,374.01	-1,454.25	2,592.63	2,389.32	203.30	12.752	
21,500.00	12,095.58	17,847.00	10,409.33	160.35	134.25	-126.04	-10,374.01	-1,454.25	2,545.34	2,337.57	207.76	12.251	
21,600.00	12,095.86	17,847.00	10,409.33	161.95	134.25	-123.65	-10,374.01	-1,454.25	2,501.15	2,288.96	212.19	11.787	
21,700.00	12,096.15	17,847.00	10,409.33	163.55	134.25	-121.13	-10,374.01	-1,454.25	2,460.24	2,243.69	216.55	11.361	
21,800.00	12,096.43	17,847.00	10,409.33	165.15	134.25	-118.46	-10,374.01	-1,454.25	2,422.77	2,201.96	220.81	10.972	
21,900.00	12,096.72	17,847.00	10,409.33	166.75	134.25	-115.65	-10,374.01	-1,454.25	2,388.90	2,163.97	224.93	10.621	
22,000.00	12,097.00	17,847.00	10,409.33	168.35	134.25	-112.70	-10,374.01	-1,454.25	2,358.78	2,129.93	228.86	10.307	
22,100.00	12,097.29	17,847.00	10,409.33	169.96	134.25	-109.63	-10,374.01	-1,454.25	2,332.57	2,100.00	232.57	10.030	
22,175.33	12,097.50	17,847.00	10,409.33	171.16	134.25	-107.23	-10,374.01	-1,454.25	2,315.48	2,080.29	235.19	9.845	CC, ES, SF

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 290H - Wellbore #1 - Surveys

Offset Site Error: 0.00 usft

Survey Program: 205-MWD, 7500-GYRO-NS, 9902-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-175.20	-4,997.30	-419.90	5,014.97				
100.00	100.00	57.96	57.96	0.13	0.09	-175.20	-4,997.39	-419.88	5,015.03	5,014.80	0.23	N/A	
200.00	200.00	135.76	135.76	0.49	0.21	-175.20	-4,997.83	-419.78	5,015.58	5,014.88	0.70	7,117.782	
300.00	300.00	215.92	215.92	0.85	0.36	-175.20	-4,998.65	-419.60	5,016.57	5,015.36	1.21	4,145.589	
400.00	400.00	316.62	316.60	1.21	0.72	-175.21	-4,999.88	-419.04	5,017.74	5,015.81	1.93	2,600.838	
500.00	500.00	417.23	417.21	1.57	1.08	-175.22	-5,001.12	-418.46	5,018.92	5,016.28	2.65	1,895.048	
600.00	600.00	523.78	523.75	1.93	1.47	-175.22	-5,002.25	-418.10	5,019.95	5,016.56	3.39	1,481.297	
700.00	700.00	625.14	625.11	2.29	1.83	-175.23	-5,003.30	-417.77	5,020.95	5,016.84	4.11	1,221.408	
800.00	800.00	738.36	738.32	2.64	2.24	-175.23	-5,004.30	-417.37	5,021.80	5,016.93	4.88	1,030.078	
900.00	900.00	845.51	845.46	3.00	2.62	-175.24	-5,005.03	-416.94	5,022.45	5,016.84	5.62	894.176	
1,000.00	1,000.00	952.67	952.62	3.36	3.00	-175.24	-5,005.62	-416.43	5,022.96	5,016.60	6.36	789.950	
1,100.00	1,100.00	1,059.57	1,059.52	3.72	3.38	-175.25	-5,006.06	-415.90	5,023.33	5,016.23	7.10	707.726	
1,200.00	1,200.00	1,166.47	1,166.41	4.08	3.76	-175.26	-5,006.35	-415.39	5,023.56	5,015.72	7.84	641.003	
1,300.00	1,300.00	1,265.41	1,265.35	4.44	4.12	-175.26	-5,006.57	-415.00	5,023.75	5,015.20	8.55	587.693	
1,400.00	1,400.00	1,367.10	1,367.05	4.79	4.48	-175.27	-5,006.77	-414.68	5,023.92	5,014.65	9.27	542.024	
1,500.00	1,500.00	1,471.29	1,471.24	5.15	4.85	-175.27	-5,006.92	-414.27	5,024.03	5,014.03	10.00	502.528	
1,600.00	1,600.00	1,569.32	1,569.26	5.51	5.20	-175.28	-5,007.01	-413.81	5,024.08	5,013.38	10.70	469.369	
1,700.00	1,700.00	1,661.51	1,661.45	5.87	5.52	-175.28	-5,007.20	-413.55	5,024.26	5,012.87	11.39	441.144	
1,800.00	1,800.00	1,759.35	1,759.29	6.23	5.87	-175.28	-5,007.51	-413.46	5,024.58	5,012.48	12.09	415.427	
1,900.00	1,900.00	1,864.03	1,863.97	6.59	6.24	-175.28	-5,007.81	-413.08	5,024.83	5,012.01	12.83	391.779	
2,000.00	2,000.00	1,963.18	1,963.12	6.95	6.60	-175.29	-5,008.06	-412.51	5,025.03	5,011.49	13.54	371.202	
2,100.00	2,100.00	2,059.20	2,059.14	7.30	6.94	-175.30	-5,008.34	-412.20	5,025.30	5,011.06	14.24	352.956	
2,200.00	2,200.00	2,157.58	2,157.51	7.66	7.29	-175.30	-5,008.67	-412.12	5,025.63	5,010.68	14.95	336.258	
2,300.00	2,300.00	2,257.17	2,257.11	8.02	7.64	-175.30	-5,009.01	-412.12	5,025.97	5,010.31	15.66	320.992	
2,400.00	2,400.00	2,364.22	2,364.16	8.38	8.02	-175.30	-5,009.33	-412.14	5,026.26	5,009.87	16.39	306.575	
2,500.00	2,500.00	2,473.74	2,473.68	8.74	8.41	-175.30	-5,009.46	-412.02	5,026.37	5,009.23	17.14	293.244	
2,600.00	2,599.99	2,561.57	2,561.51	9.10	8.72	-175.30	-5,009.60	-411.82	5,027.35	5,009.54	17.81	282.249	
2,700.00	2,699.96	2,649.50	2,649.44	9.45	9.03	-175.32	-5,009.95	-411.53	5,030.23	5,011.75	18.48	272.153	
2,800.00	2,799.86	2,744.97	2,744.90	9.81	9.38	-175.34	-5,010.52	-411.04	5,034.96	5,015.78	19.18	262.473	
2,900.00	2,899.68	2,841.69	2,841.62	10.17	9.72	-175.37	-5,011.18	-410.27	5,041.42	5,021.54	19.89	253.502	
3,000.00	2,999.37	2,941.75	2,941.67	10.53	10.08	-175.40	-5,011.90	-409.38	5,049.58	5,028.98	20.60	245.086	
3,100.00	3,098.90	3,042.09	3,042.00	10.89	10.44	-175.44	-5,012.59	-408.71	5,059.39	5,038.07	21.32	237.303	
3,200.00	3,198.26	3,147.46	3,147.38	11.25	10.82	-175.49	-5,013.23	-408.06	5,070.80	5,048.74	22.06	229.913	
3,300.06	3,297.46	3,252.90	3,252.81	11.62	11.20	-175.54	-5,013.76	-407.32	5,083.76	5,060.97	22.79	223.065	
3,400.00	3,396.43	3,359.02	3,358.93	11.98	11.58	-175.59	-5,014.14	-406.56	5,097.40	5,073.87	23.53	216.665	
3,500.00	3,495.46	3,460.05	3,459.95	12.36	11.94	-175.64	-5,014.38	-405.88	5,110.93	5,086.68	24.25	210.801	
3,600.00	3,594.48	3,553.19	3,553.09	12.73	12.27	-175.69	-5,014.66	-405.31	5,124.53	5,099.60	24.94	205.503	
3,700.00	3,693.51	3,645.97	3,645.86	13.11	12.60	-175.74	-5,015.04	-404.80	5,138.26	5,112.63	25.63	200.499	
3,800.00	3,792.54	3,738.11	3,738.01	13.49	12.93	-175.79	-5,015.53	-404.43	5,152.11	5,125.79	26.32	195.775	
3,900.00	3,891.56	3,833.36	3,833.25	13.87	13.27	-175.84	-5,016.14	-404.19	5,166.09	5,139.07	27.02	191.212	
4,000.00	3,990.59	3,936.02	3,935.91	14.25	13.64	-175.88	-5,016.79	-403.70	5,180.04	5,152.30	27.75	186.693	
4,100.00	4,089.62	4,034.77	4,034.66	14.64	13.99	-175.94	-5,017.39	-402.88	5,193.95	5,165.49	28.46	182.490	
4,200.00	4,188.64	4,128.63	4,128.51	15.03	14.33	-175.99	-5,018.04	-401.95	5,207.94	5,178.78	29.16	178.600	
4,300.00	4,287.67	4,221.81	4,221.68	15.42	14.66	-176.04	-5,018.78	-400.91	5,222.02	5,192.17	29.86	174.907	
4,400.00	4,386.70	4,314.18	4,314.04	15.81	14.99	-176.10	-5,019.62	-399.94	5,236.23	5,205.68	30.55	171.401	
4,500.00	4,485.72	4,406.64	4,406.50	16.20	15.33	-176.15	-5,020.57	-399.09	5,250.57	5,219.33	31.24	168.052	
4,600.00	4,584.75	4,500.17	4,500.02	16.59	15.66	-176.20	-5,021.64	-398.35	5,265.03	5,233.09	31.94	164.829	
4,700.00	4,683.78	4,602.60	4,602.44	16.98	16.03	-176.25	-5,022.80	-397.63	5,279.50	5,246.83	32.67	161.579	
4,800.00	4,782.80	4,705.13	4,704.95	17.38	16.40	-176.30	-5,023.90	-396.96	5,293.91	5,260.50	33.41	158.466	
4,900.00	4,881.83	4,807.87	4,807.69	17.78	16.77	-176.35	-5,024.93	-396.15	5,308.25	5,274.11	34.14	155.478	
5,000.00	4,980.86	4,912.71	4,912.52	18.17	17.14	-176.40	-5,025.91	-395.11	5,322.51	5,287.63	34.88	152.579	
5,100.00	5,079.88	5,020.78	5,020.58	18.57	17.53	-176.45	-5,026.76	-393.99	5,336.63	5,300.99	35.64	149.744	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 290H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD, 7500-GYRO-NS, 9902-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	5,183.96	5,183.75	18.97	18.11	-176.52	-5,027.12	-391.98	5,350.25	5,313.66	36.59	146.220	
5,300.00	5,277.94	5,401.97	5,401.67	19.37	18.86	-176.61	-5,023.83	-387.16	5,362.08	5,324.36	37.72	142.156	
5,400.00	5,376.96	5,713.42	5,712.51	19.77	19.92	-176.77	-5,009.38	-374.65	5,370.42	5,331.30	39.13	137.251	
5,500.00	5,475.99	5,857.32	5,855.77	20.17	20.41	-176.90	-4,999.38	-365.68	5,376.53	5,336.55	39.98	134.482	
5,600.00	5,575.02	5,943.22	5,941.27	20.57	20.71	-176.99	-4,993.33	-359.94	5,382.59	5,341.94	40.65	132.417	
5,690.40	5,664.54	6,023.62	6,021.31	20.93	20.98	-177.08	-4,987.85	-354.63	5,388.30	5,347.04	41.26	130.585	
5,700.00	5,674.04	6,033.97	6,031.60	20.97	21.02	-177.09	-4,987.15	-353.94	5,388.90	5,347.57	41.33	130.375	
5,800.00	5,773.21	6,141.74	6,138.87	21.37	21.39	-177.20	-4,979.79	-346.53	5,394.21	5,352.13	42.07	128.206	
5,900.00	5,872.58	6,251.17	6,247.74	21.76	21.77	-177.32	-4,972.16	-338.51	5,397.68	5,354.86	42.82	126.052	
6,000.00	5,972.14	6,362.44	6,358.38	22.15	22.17	-177.43	-4,964.21	-329.67	5,399.27	5,355.70	43.57	123.913	
6,100.00	6,071.84	6,470.25	6,465.50	22.52	22.55	-177.55	-4,956.33	-320.47	5,399.00	5,354.69	44.31	121.834	
6,200.00	6,171.66	6,576.87	6,571.39	22.89	22.93	-177.66	-4,948.41	-310.92	5,396.93	5,351.88	45.05	119.798	
6,300.00	6,271.57	6,653.98	6,647.98	23.25	23.21	-177.74	-4,942.79	-303.95	5,393.32	5,347.63	45.69	118.043	
6,400.00	6,371.54	6,730.23	6,723.76	23.60	23.48	-177.82	-4,937.55	-297.27	5,388.46	5,342.13	46.32	116.325	
6,490.46	6,462.00	6,800.24	6,793.37	23.92	23.73	-177.88	-4,933.02	-291.35	5,382.98	5,336.09	46.90	114.784	
6,500.00	6,471.54	6,807.78	6,800.87	23.95	23.76	-177.89	-4,932.55	-290.72	5,382.35	5,335.39	46.96	114.622	
6,600.00	6,571.54	6,886.82	6,879.51	24.29	24.04	-177.95	-4,927.73	-284.39	5,375.95	5,328.36	47.60	112.949	
6,700.00	6,671.54	6,966.45	6,958.78	24.63	24.33	-178.02	-4,923.17	-278.36	5,369.95	5,321.71	48.24	111.325	
6,800.00	6,771.54	7,053.38	7,045.36	24.98	24.64	-178.08	-4,918.43	-272.17	5,364.24	5,315.34	48.90	109.693	
6,900.00	6,871.54	7,140.38	7,132.04	25.32	24.96	-178.14	-4,913.88	-266.35	5,358.79	5,309.22	49.57	108.110	
7,000.00	6,971.54	7,304.69	7,295.54	25.66	25.56	-178.28	-4,904.67	-253.02	5,352.95	5,302.44	50.50	105.993	
7,100.00	7,071.54	7,421.53	7,411.45	26.01	25.85	-178.41	-4,897.15	-240.37	5,346.15	5,295.01	51.14	104.549	
7,200.00	7,171.54	7,514.85	7,504.00	26.35	26.00	-178.52	-4,891.09	-230.06	5,339.32	5,287.68	51.64	103.394	
7,300.00	7,271.54	7,581.45	7,570.09	26.70	26.01	-178.60	-4,887.04	-222.84	5,332.93	5,280.92	52.01	102.530	
7,400.00	7,371.54	7,650.39	7,638.53	27.04	26.03	-178.68	-4,883.25	-215.53	5,327.16	5,274.77	52.39	101.689	
7,500.00	7,471.54	7,721.11	7,708.77	27.39	26.04	-178.76	-4,879.76	-208.04	5,321.95	5,269.19	52.76	100.869	
7,600.00	7,571.54	7,800.00	7,787.18	27.73	26.07	-178.84	-4,876.27	-200.13	5,317.27	5,264.13	53.14	100.065	
7,700.00	7,671.54	7,856.87	7,843.75	28.08	26.08	-178.90	-4,874.08	-194.77	5,313.19	5,259.67	53.51	99.290	
7,800.00	7,771.54	7,927.88	7,914.44	28.43	26.11	-178.97	-4,871.82	-188.44	5,309.80	5,255.91	53.89	98.533	
7,900.00	7,871.54	8,025.22	8,011.41	28.77	26.14	-179.05	-4,868.94	-180.40	5,306.69	5,252.42	54.28	97.774	
8,000.00	7,971.54	8,194.55	8,180.10	29.12	26.21	-179.20	-4,863.11	-166.81	5,303.25	5,248.55	54.69	96.966	
8,100.00	8,071.54	8,258.74	8,244.01	29.47	26.24	-179.25	-4,860.54	-161.59	5,299.13	5,244.05	55.08	96.210	
8,200.00	8,171.54	8,320.18	8,305.24	29.82	26.26	-179.31	-4,858.54	-156.88	5,295.77	5,240.31	55.46	95.482	
8,300.00	8,271.54	8,384.76	8,369.64	30.16	26.30	-179.35	-4,856.87	-152.32	5,293.10	5,237.25	55.85	94.775	
8,400.00	8,371.54	8,447.31	8,432.05	30.51	26.33	-179.40	-4,855.68	-148.31	5,291.12	5,234.88	56.23	94.092	
8,500.00	8,471.54	8,500.00	8,484.65	30.86	26.36	-179.43	-4,855.01	-145.25	5,289.86	5,233.25	56.61	93.445	
8,600.00	8,571.54	8,573.62	8,558.18	31.21	26.40	-179.47	-4,854.59	-141.53	5,289.28	5,232.28	57.00	92.794	
8,638.49	8,610.03	8,600.00	8,584.53	31.34	26.41	-179.48	-4,854.58	-140.37	5,289.24	5,232.09	57.15	92.552	
8,700.00	8,671.54	8,656.63	8,641.12	31.56	26.44	-179.51	-4,854.64	-138.18	5,289.29	5,231.89	57.40	92.149	
8,800.00	8,771.54	8,733.48	8,717.93	31.91	26.49	-179.53	-4,854.82	-135.79	5,289.51	5,231.72	57.79	91.522	
8,900.00	8,871.54	8,800.00	8,784.42	32.26	26.53	-179.55	-4,855.45	-133.99	5,290.42	5,232.24	58.18	90.929	
9,000.00	8,971.54	8,870.08	8,854.47	32.61	26.58	-179.57	-4,856.54	-132.28	5,291.93	5,233.36	58.57	90.347	
9,100.00	9,071.54	8,969.08	8,953.44	32.96	26.64	-179.59	-4,858.36	-130.21	5,293.75	5,234.75	59.00	89.729	
9,200.00	9,171.54	9,100.29	9,084.61	33.31	26.74	-179.62	-4,860.33	-128.30	5,295.25	5,235.79	59.46	89.056	
9,300.00	9,271.54	9,197.65	9,181.96	33.66	26.82	-179.63	-4,861.49	-127.35	5,296.44	5,236.55	59.89	88.434	
9,400.00	9,371.54	9,295.58	9,279.88	34.01	26.90	-179.63	-4,862.70	-126.50	5,297.67	5,237.34	60.33	87.815	
9,500.00	9,471.54	9,371.93	9,356.22	34.36	26.96	-179.64	-4,863.82	-125.97	5,299.13	5,238.39	60.74	87.240	
9,600.00	9,571.54	9,452.14	9,436.42	34.71	27.04	-179.65	-4,865.34	-125.55	5,301.03	5,239.86	61.16	86.671	
9,700.00	9,671.54	9,537.31	9,521.56	35.06	27.12	-179.65	-4,867.24	-125.51	5,303.25	5,241.65	61.59	86.102	
9,800.00	9,771.54	9,632.25	9,616.47	35.41	27.21	-179.64	-4,869.56	-125.75	5,305.69	5,243.65	62.04	85.522	
9,900.00	9,871.54	9,900.00	9,732.66	35.76	27.48	-179.64	-4,872.20	-125.76	5,307.96	5,245.29	62.67	84.691	
10,000.00	9,971.54	9,829.77	9,813.94	36.11	27.37	-179.64	-4,874.01	-125.67	5,310.20	5,247.29	62.91	84.403	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 290H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD, 7500-GYRO-NS, 9902-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,071.54	9,902.00	9,886.15	36.46	27.41	-179.65	-4,875.98	-125.53	5,312.93	5,249.64	63.29	83.941	
10,200.00	10,171.54	9,902.00	9,886.15	36.81	27.41	-179.65	-4,875.98	-125.53	5,316.88	5,253.29	63.59	83.609	
10,300.00	10,271.54	9,953.54	9,937.64	37.17	27.41	-179.65	-4,878.23	-125.50	5,321.72	5,257.81	63.92	83.258	
10,400.00	10,371.54	9,997.00	9,980.99	37.52	27.41	-179.65	-4,881.27	-125.62	5,328.34	5,264.10	64.23	82.951	
10,500.00	10,471.54	9,997.00	9,980.99	37.87	27.41	-179.65	-4,881.27	-125.62	5,336.12	5,271.62	64.51	82.724	
10,600.00	10,571.54	9,997.00	9,980.99	38.22	27.41	-179.65	-4,881.27	-125.62	5,345.77	5,281.00	64.76	82.545	
10,700.00	10,671.54	10,021.34	10,005.20	38.57	27.41	-179.64	-4,883.72	-125.68	5,356.74	5,291.71	65.04	82.366	
10,800.00	10,771.54	10,044.00	10,027.65	38.93	27.41	-179.65	-4,886.83	-125.65	5,369.65	5,304.35	65.30	82.230	
10,900.00	10,871.54	10,044.00	10,027.65	39.28	27.41	-179.65	-4,886.83	-125.65	5,383.94	5,318.42	65.52	82.168	
11,000.00	10,971.54	10,044.00	10,027.65	39.63	27.41	-179.65	-4,886.83	-125.65	5,400.05	5,334.31	65.73	82.150	
11,100.00	11,071.54	10,044.00	10,027.65	39.98	27.41	-179.65	-4,886.83	-125.65	5,417.95	5,352.02	65.93	82.175	
11,200.00	11,171.54	10,092.00	10,074.72	40.34	27.42	-179.65	-4,896.15	-125.52	5,437.28	5,371.08	66.21	82.124	
11,300.00	11,271.54	10,092.00	10,074.72	40.69	27.42	-179.65	-4,896.15	-125.52	5,457.87	5,391.48	66.39	82.210	
11,400.00	11,371.54	10,092.00	10,074.72	41.04	27.42	-179.65	-4,896.15	-125.52	5,480.20	5,413.64	66.56	82.336	
11,500.00	11,471.54	10,092.00	10,074.72	41.40	27.42	-179.65	-4,896.15	-125.52	5,504.26	5,437.54	66.72	82.500	
11,525.27	11,496.81	10,092.00	10,074.72	41.48	27.42	-179.65	-4,896.15	-125.52	5,510.61	5,443.85	66.76	82.547	
11,550.00	11,521.53	10,092.00	10,074.72	41.57	27.42	-179.65	-4,896.15	-125.52	5,516.42	5,449.63	66.79	82.595	
11,600.00	11,571.33	10,113.43	10,095.48	41.72	27.42	-179.64	-4,901.46	-125.67	5,525.00	5,458.11	66.89	82.601	
11,650.00	11,620.56	10,139.00	10,120.02	41.85	27.42	-179.61	-4,908.61	-126.38	5,530.25	5,463.26	66.99	82.555	
11,700.00	11,668.84	10,139.00	10,120.02	41.98	27.42	-179.58	-4,908.61	-126.38	5,531.15	5,464.13	67.02	82.527	
11,750.00	11,715.82	10,139.00	10,120.02	42.10	27.42	-179.55	-4,908.61	-126.38	5,528.22	5,461.18	67.05	82.455	
11,800.00	11,761.13	10,139.00	10,120.02	42.20	27.42	-179.50	-4,908.61	-126.38	5,521.49	5,454.43	67.06	82.341	
11,850.00	11,804.43	10,139.00	10,120.02	42.30	27.42	-179.45	-4,908.61	-126.38	5,510.97	5,443.92	67.06	82.184	
11,900.00	11,845.39	10,139.00	10,120.02	42.39	27.42	-179.38	-4,908.61	-126.38	5,496.74	5,429.70	67.04	81.987	
11,950.00	11,883.69	10,139.00	10,120.02	42.47	27.42	-179.31	-4,908.61	-126.38	5,478.88	5,411.86	67.02	81.750	
12,000.00	11,919.06	10,160.10	10,140.07	42.54	27.42	-179.22	-4,915.12	-127.29	5,457.16	5,390.12	67.04	81.400	
12,050.00	11,951.20	10,165.69	10,145.35	42.61	27.42	-179.13	-4,916.92	-127.55	5,432.16	5,365.15	67.01	81.062	
12,100.00	11,979.89	10,187.00	10,165.37	42.68	27.42	-179.03	-4,924.14	-128.67	5,404.03	5,337.02	67.02	80.635	
12,150.00	12,004.90	10,187.00	10,165.37	42.75	27.42	-178.93	-4,924.14	-128.67	5,372.51	5,305.55	66.96	80.236	
12,200.00	12,026.05	10,187.00	10,165.37	42.82	27.42	-178.82	-4,924.14	-128.67	5,338.08	5,271.19	66.89	79.800	
12,250.00	12,043.17	10,187.00	10,165.37	42.89	27.42	-178.70	-4,924.14	-128.67	5,300.96	5,234.14	66.82	79.328	
12,300.00	12,056.13	10,187.00	10,165.37	42.97	27.42	-178.58	-4,924.14	-128.67	5,261.39	5,194.64	66.75	78.821	
12,350.00	12,064.83	10,187.00	10,165.37	43.05	27.42	-178.46	-4,924.14	-128.67	5,219.60	5,152.92	66.68	78.279	
12,400.00	12,069.21	10,187.00	10,165.37	43.13	27.42	-178.33	-4,924.14	-128.67	5,175.86	5,109.25	66.61	77.705	
12,423.64	12,069.77	10,187.00	10,165.37	43.17	27.42	-178.27	-4,924.14	-128.67	5,154.59	5,088.01	66.58	77.420	
12,500.00	12,069.98	10,187.00	10,165.37	43.32	27.42	-178.07	-4,924.14	-128.67	5,085.41	5,018.94	66.47	76.501	
12,600.00	12,070.27	10,187.00	10,165.37	43.58	27.42	-177.79	-4,924.14	-128.67	4,995.13	4,928.80	66.34	75.298	
12,667.68	12,070.46	10,209.33	10,186.14	43.79	27.42	-177.58	-4,932.24	-129.87	4,933.91	4,867.59	66.32	74.392	
12,700.00	12,070.55	10,211.10	10,187.78	43.90	27.42	-177.49	-4,932.91	-129.96	4,904.80	4,838.52	66.29	73.994	
12,800.00	12,070.84	10,234.00	10,208.85	44.29	27.42	-177.22	-4,941.81	-131.06	4,814.71	4,748.47	66.23	72.693	
12,900.00	12,071.12	10,234.00	10,208.85	44.73	27.42	-176.98	-4,941.81	-131.06	4,724.01	4,657.91	66.10	71.471	
13,000.00	12,071.41	10,234.00	10,208.85	45.22	27.42	-176.79	-4,941.81	-131.06	4,633.16	4,567.21	65.95	70.250	
13,100.00	12,071.69	10,234.00	10,208.85	45.76	27.42	-176.63	-4,941.81	-131.06	4,542.26	4,476.46	65.80	69.031	
13,200.00	12,071.98	10,234.00	10,208.85	46.34	27.42	-176.51	-4,941.81	-131.06	4,451.43	4,385.79	65.64	67.816	
13,200.11	12,071.98	10,234.00	10,208.85	46.34	27.42	-176.51	-4,941.81	-131.06	4,451.34	4,385.70	65.64	67.815	
13,300.00	12,072.26	10,234.00	10,208.85	46.97	27.42	-176.42	-4,941.81	-131.06	4,360.88	4,295.40	65.47	66.607	
13,400.00	12,072.55	10,234.00	10,208.85	47.64	27.42	-176.32	-4,941.81	-131.06	4,270.74	4,205.44	65.30	65.403	
13,500.00	12,072.83	10,258.11	10,230.74	48.36	27.43	-176.20	-4,951.86	-132.11	4,180.57	4,115.33	65.23	64.087	
13,600.00	12,073.12	10,283.00	10,252.96	49.13	27.43	-176.09	-4,963.03	-133.08	4,091.35	4,026.18	65.17	62.779	
13,700.00	12,073.40	10,283.00	10,252.96	49.94	27.43	-175.97	-4,963.03	-133.08	4,002.11	3,937.12	64.99	61.577	
13,800.00	12,073.68	10,283.00	10,252.96	50.80	27.43	-175.84	-4,963.03	-133.08	3,913.39	3,848.57	64.81	60.379	
13,900.00	12,073.97	10,283.00	10,252.96	51.69	27.43	-175.71	-4,963.03	-133.08	3,825.22	3,760.59	64.63	59.187	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 290H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD, 7500-GYRO-NS, 9802-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	12,074.25	10,283.00	10,252.96	52.62	27.43	-175.57	-4,963.03	-133.08	3,737.65	3,673.21	64.44	58.000	
14,100.00	12,074.54	10,283.00	10,252.96	53.58	27.43	-175.42	-4,963.03	-133.08	3,650.72	3,586.47	64.25	56.818	
14,200.00	12,074.82	10,307.35	10,274.29	54.58	27.44	-175.26	-4,974.74	-133.97	3,563.95	3,499.76	64.19	55.519	
14,300.00	12,075.11	10,330.00	10,293.73	55.61	27.45	-175.09	-4,986.32	-134.80	3,478.22	3,414.09	64.13	54.239	
14,400.00	12,075.39	10,330.00	10,293.73	56.67	27.45	-174.91	-4,986.32	-134.80	3,392.79	3,328.85	63.94	53.064	
14,500.00	12,075.68	10,330.00	10,293.73	57.76	27.45	-174.72	-4,986.32	-134.80	3,308.18	3,244.43	63.75	51.895	
14,600.00	12,075.96	10,347.20	10,308.28	58.87	27.45	-174.51	-4,995.48	-135.44	3,224.27	3,160.61	63.66	50.649	
14,700.00	12,076.24	10,377.00	10,333.13	60.01	27.47	-174.30	-5,011.89	-136.59	3,141.24	3,077.58	63.65	49.351	
14,800.00	12,076.53	10,377.00	10,333.13	61.17	27.47	-174.06	-5,011.89	-136.59	3,058.64	2,995.17	63.47	48.189	
14,900.00	12,076.81	10,377.00	10,333.13	62.36	27.47	-173.80	-5,011.89	-136.59	2,977.11	2,913.81	63.30	47.035	
15,000.00	12,077.10	10,397.05	10,349.52	63.57	27.48	-173.53	-5,023.40	-137.48	2,896.36	2,833.11	63.25	45.792	
15,100.00	12,077.38	10,424.00	10,371.00	64.79	27.49	-173.24	-5,039.60	-138.99	2,816.94	2,753.68	63.26	44.530	
15,200.00	12,077.67	10,424.00	10,371.00	66.04	27.49	-172.91	-5,039.60	-138.99	2,738.15	2,675.04	63.11	43.385	
15,300.00	12,077.95	10,424.00	10,371.00	67.30	27.49	-172.55	-5,039.60	-138.99	2,660.79	2,597.81	62.98	42.248	
15,400.00	12,078.23	10,444.22	10,386.66	68.58	27.50	-172.17	-5,052.32	-140.27	2,584.58	2,521.59	62.99	41.030	
15,500.00	12,078.52	10,473.00	10,408.22	69.88	27.53	-171.76	-5,071.29	-142.15	2,510.04	2,446.96	63.08	39.793	
15,600.00	12,078.80	10,473.00	10,408.22	71.19	27.53	-171.29	-5,071.29	-142.15	2,436.45	2,373.44	63.01	38.668	
15,700.00	12,079.09	10,488.74	10,419.68	72.51	27.54	-170.78	-5,082.04	-143.19	2,364.61	2,301.54	63.07	37.494	
15,800.00	12,079.37	10,520.00	10,441.88	73.85	27.57	-170.25	-5,103.94	-145.20	2,294.40	2,231.15	63.25	36.277	
15,900.00	12,079.66	10,520.00	10,441.88	75.21	27.57	-169.59	-5,103.94	-145.20	2,225.69	2,162.41	63.28	35.172	
16,000.00	12,079.94	10,547.99	10,461.07	76.57	27.60	-168.93	-5,124.23	-147.01	2,158.76	2,095.24	63.52	33.987	
16,100.00	12,080.22	10,567.00	10,473.69	77.94	27.63	-168.17	-5,138.40	-148.28	2,093.83	2,030.08	63.75	32.845	
16,200.00	12,080.51	10,567.00	10,473.69	79.33	27.63	-167.22	-5,138.40	-148.28	2,031.42	1,967.48	63.94	31.771	
16,300.00	12,080.79	10,599.00	10,493.34	80.73	27.68	-166.30	-5,163.55	-150.43	1,971.49	1,907.15	64.34	30.640	
16,400.00	12,081.08	10,599.00	10,493.34	82.13	27.68	-165.04	-5,163.55	-150.43	1,914.23	1,849.56	64.67	29.600	
16,500.00	12,081.36	10,599.00	10,493.34	83.55	27.68	-163.55	-5,163.55	-150.43	1,860.59	1,795.51	65.08	28.589	
16,600.00	12,081.65	10,631.00	10,510.12	84.97	27.74	-162.13	-5,190.69	-152.54	1,810.03	1,744.35	65.68	27.559	
16,700.00	12,081.93	10,631.00	10,510.12	86.40	27.74	-160.02	-5,190.69	-152.54	1,763.03	1,696.77	66.26	26.607	
16,800.00	12,082.22	10,647.95	10,517.78	87.84	27.77	-157.73	-5,205.77	-153.59	1,720.04	1,653.07	66.97	25.683	
16,900.00	12,082.50	10,662.00	10,523.51	89.29	27.81	-154.87	-5,218.57	-154.41	1,681.15	1,613.39	67.76	24.810	
17,000.00	12,082.78	10,694.00	10,535.11	90.75	27.89	-151.96	-5,248.35	-156.05	1,646.31	1,577.67	68.64	23.986	
17,100.00	12,083.07	10,712.92	10,541.18	92.21	27.94	-147.85	-5,266.25	-156.92	1,615.39	1,545.81	69.57	23.219	
17,200.00	12,083.35	10,739.72	10,548.76	93.68	28.02	-143.10	-5,291.92	-158.18	1,588.69	1,518.12	70.57	22.512	
17,300.00	12,083.64	10,758.00	10,553.33	95.15	28.06	-136.42	-5,309.60	-159.04	1,566.31	1,494.67	71.64	21.865	
17,400.00	12,083.92	10,790.00	10,559.87	96.63	28.19	-129.20	-5,340.88	-160.52	1,548.30	1,475.57	72.73	21.289	
17,500.00	12,084.21	10,806.27	10,562.22	98.12	28.25	-118.15	-5,356.96	-161.25	1,535.45	1,461.57	73.88	20.784	
17,600.00	12,084.49	10,826.04	10,563.90	99.61	28.33	-105.04	-5,376.64	-162.14	1,527.99	1,452.95	75.04	20.363	
17,700.00	12,084.77	10,885.00	10,566.84	101.11	28.58	-97.53	-5,435.47	-164.62	1,524.36	1,448.25	76.11	20.027	
17,800.00	12,085.06	10,958.39	10,568.43	102.61	28.95	-92.60	-5,508.82	-165.89	1,522.98	1,445.85	77.13	19.745	
17,900.00	12,085.34	11,058.23	10,569.58	104.11	29.51	-92.55	-5,608.65	-166.81	1,522.45	1,444.36	78.09	19.496	
18,000.00	12,085.63	11,153.80	10,570.30	105.63	30.13	-91.74	-5,704.21	-166.57	1,522.06	1,442.99	79.07	19.250	
18,035.36	12,085.73	11,185.86	10,570.39	106.16	30.36	-91.13	-5,736.28	-166.22	1,522.02	1,442.60	79.42	19.164	CC
18,100.00	12,085.91	11,247.01	10,570.38	107.14	30.81	-90.49	-5,797.42	-165.51	1,522.14	1,442.08	80.06	19.013	
18,184.67	12,086.15	11,342.31	10,570.96	108.43	31.55	-92.44	-5,892.72	-165.83	1,522.04	1,441.13	80.91	18.811	
18,200.00	12,086.20	11,345.31	10,570.91	108.66	31.58	-90.17	-5,895.72	-165.82	1,522.09	1,440.99	81.10	18.768	ES
18,300.00	12,086.48	11,405.37	10,570.16	110.18	32.09	-82.89	-5,955.77	-165.89	1,523.74	1,441.52	82.22	18.532	
18,400.00	12,086.76	11,488.89	10,567.15	111.71	32.83	-79.93	-6,039.23	-165.29	1,527.48	1,444.19	83.29	18.339	
18,500.00	12,087.05	11,598.62	10,563.35	113.24	33.85	-81.68	-6,148.89	-165.70	1,531.36	1,446.99	84.37	18.151	
18,600.00	12,087.33	11,721.61	10,561.08	114.78	35.08	-85.86	-6,271.83	-168.56	1,534.07	1,448.53	85.53	17.935	
18,700.00	12,087.62	11,832.82	10,561.28	116.32	36.25	-87.90	-6,382.94	-173.24	1,535.13	1,448.32	86.81	17.684	
18,800.00	12,087.90	11,907.39	10,560.93	117.86	37.05	-83.48	-6,457.38	-177.42	1,537.16	1,449.04	88.12	17.444	
18,900.00	12,088.19	11,991.21	10,559.28	119.40	37.99	-80.82	-6,541.09	-181.46	1,540.53	1,451.10	89.43	17.226	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 290H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD, 7500-GYRO-NS, 9902-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	12,121.88	10,556.91	120.95	39.51	-86.07	-6,671.68	-185.14	1,543.30	1,452.53	90.76	17.004	
19,100.00	12,088.76	12,223.39	10,555.68	122.50	40.74	-86.34	-6,773.18	-185.50	1,544.96	1,452.93	92.03	16.787	
19,200.00	12,089.04	12,326.53	10,553.36	124.05	42.02	-86.84	-6,876.25	-182.62	1,546.97	1,453.74	93.23	16.593	
19,300.00	12,089.32	12,455.07	10,551.75	125.61	43.66	-91.72	-7,004.65	-176.99	1,547.66	1,453.29	94.37	16.399	
19,349.17	12,089.46	12,500.66	10,551.67	126.37	44.26	-91.10	-7,050.21	-175.19	1,547.54	1,452.56	94.97	16.294	
19,400.00	12,089.61	12,542.15	10,551.40	127.17	44.80	-89.46	-7,091.67	-173.72	1,547.69	1,452.09	95.60	16.189	
19,500.00	12,089.89	12,662.81	10,550.93	128.73	46.40	-93.09	-7,212.28	-170.52	1,547.98	1,451.13	96.85	15.983	
19,544.89	12,090.02	12,696.45	10,551.03	129.43	46.85	-91.11	-7,245.92	-169.84	1,547.84	1,450.40	97.44	15.885	
19,600.00	12,090.18	12,739.23	10,550.82	130.29	47.43	-88.93	-7,288.69	-168.88	1,548.06	1,449.90	98.15	15.772	
19,700.00	12,090.46	12,822.33	10,549.54	131.86	48.57	-85.92	-7,371.75	-166.78	1,549.44	1,450.00	99.44	15.582	
19,800.00	12,090.75	12,929.59	10,547.32	133.42	50.05	-87.17	-7,478.95	-163.91	1,551.33	1,450.61	100.72	15.402	
19,900.00	12,091.03	13,020.07	10,545.58	134.99	51.31	-85.43	-7,569.36	-160.87	1,552.95	1,450.95	102.00	15.225	
20,000.00	12,091.31	13,116.65	10,542.85	136.57	52.68	-84.73	-7,665.80	-156.42	1,555.17	1,451.94	103.24	15.064	
20,100.00	12,091.60	13,217.96	10,540.20	138.14	54.13	-84.90	-7,767.00	-152.66	1,557.40	1,452.89	104.51	14.901	
20,200.00	12,091.88	13,347.70	10,537.84	139.72	56.00	-90.35	-7,896.61	-147.46	1,558.84	1,453.04	105.79	14.735	
20,300.00	12,092.17	13,452.95	10,538.11	141.29	57.54	-91.34	-8,001.78	-143.32	1,558.18	1,451.08	107.10	14.548	
20,302.21	12,092.17	13,454.30	10,538.11	141.33	57.56	-91.18	-8,003.13	-143.28	1,558.18	1,451.05	107.13	14.544	
20,400.00	12,092.45	13,515.00	10,537.23	142.87	58.45	-84.14	-8,063.79	-141.49	1,559.38	1,450.96	108.42	14.382	
20,500.00	12,092.74	13,603.27	10,534.70	144.45	59.75	-81.90	-8,152.01	-139.69	1,562.19	1,452.42	109.77	14.232	
20,600.00	12,093.02	13,712.02	10,531.38	146.04	61.36	-83.47	-8,260.66	-136.84	1,565.08	1,453.96	111.12	14.084	
20,700.00	12,093.31	13,793.94	10,528.52	147.62	62.58	-79.98	-8,342.50	-134.20	1,568.29	1,455.86	112.43	13.949	
20,800.00	12,093.59	13,873.23	10,525.10	149.21	63.76	-76.11	-8,421.70	-133.09	1,572.66	1,458.88	113.77	13.823	
20,900.00	12,093.87	14,005.08	10,520.30	150.80	65.73	-82.11	-8,553.44	-135.14	1,577.00	1,461.62	115.37	13.668	
21,000.00	12,094.16	14,102.42	10,518.30	152.39	67.19	-81.70	-8,650.71	-138.20	1,580.01	1,463.07	116.95	13.511	
21,100.00	12,094.44	14,210.34	10,515.91	153.98	68.80	-83.28	-8,758.45	-143.92	1,583.66	1,465.01	118.65	13.347	
21,200.00	12,094.73	14,388.36	10,519.42	155.57	71.49	-97.46	-8,936.21	-152.55	1,582.45	1,461.80	120.65	13.116	
21,300.00	12,095.01	14,486.91	10,522.78	157.16	72.98	-97.09	-9,034.63	-156.04	1,580.23	1,457.89	122.34	12.917	
21,400.00	12,095.30	14,573.06	10,525.11	158.76	74.30	-94.60	-9,120.74	-157.70	1,578.40	1,454.45	123.95	12.735	
21,452.63	12,095.45	14,606.03	10,525.55	159.60	74.81	-91.13	-9,153.70	-158.16	1,578.07	1,453.32	124.75	12.650	
21,500.00	12,095.58	14,635.71	10,525.59	160.35	75.26	-88.01	-9,183.38	-158.57	1,578.34	1,452.88	125.46	12.580	
21,600.00	12,095.86	14,695.68	10,524.62	161.95	76.19	-81.06	-9,243.33	-159.60	1,580.70	1,453.78	126.92	12.455	
21,700.00	12,096.15	14,756.70	10,522.15	163.55	77.12	-74.63	-9,304.27	-161.47	1,585.65	1,457.31	128.35	12.355	
21,800.00	12,096.43	14,861.85	10,517.18	165.15	78.73	-75.67	-9,409.18	-166.42	1,591.67	1,461.59	130.08	12.236	
21,900.00	12,096.72	14,995.67	10,512.61	166.75	80.79	-81.37	-9,542.75	-173.31	1,596.55	1,464.50	132.05	12.090	
22,000.00	12,097.00	15,104.65	10,510.75	168.35	82.47	-82.94	-9,651.60	-178.35	1,599.61	1,465.74	133.87	11.949	
22,100.00	12,097.29	15,191.00	10,509.40	169.96	83.80	-80.85	-9,737.81	-182.97	1,602.78	1,467.19	135.59	11.821	
22,175.33	12,097.50	15,191.00	10,509.40	171.16	83.80	-69.49	-9,737.81	-182.97	1,607.53	1,471.18	136.35	11.790 SF	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-163.23	-4,572.75	-1,377.69	4,775.85				
100.00	100.00	87.21	87.21	0.13	0.22	-163.23	-4,572.67	-1,377.65	4,775.71	4,775.35	0.35	N/A	
200.00	200.00	175.14	175.14	0.49	0.53	-163.23	-4,572.37	-1,377.57	4,775.38	4,774.36	1.02	4,671.214	
205.06	205.06	178.36	178.36	0.51	0.54	-163.23	-4,572.37	-1,377.57	4,775.38	4,774.33	1.05	4,540.998	
300.00	300.00	243.26	243.26	0.85	0.76	-163.23	-4,572.52	-1,377.93	4,775.72	4,774.10	1.62	2,954.201	
400.00	400.00	336.17	336.16	1.21	1.09	-163.23	-4,573.05	-1,378.32	4,776.39	4,774.10	2.29	2,081.294	
500.00	500.00	413.76	413.76	1.57	1.36	-163.22	-4,573.73	-1,378.79	4,777.41	4,774.48	2.92	1,633.460	
600.00	600.00	526.34	526.33	1.93	1.75	-163.22	-4,574.90	-1,379.30	4,778.54	4,774.86	3.68	1,298.632	
700.00	700.00	632.94	632.92	2.29	2.13	-163.22	-4,575.90	-1,379.37	4,779.45	4,775.04	4.42	1,082.543	
800.00	800.00	732.51	732.49	2.64	2.49	-163.23	-4,576.69	-1,379.51	4,780.25	4,775.12	5.13	932.364	
900.00	900.00	873.33	873.30	3.00	2.98	-163.22	-4,577.39	-1,379.90	4,780.86	4,774.89	5.98	799.666	
1,000.00	1,000.00	973.33	973.30	3.36	3.32	-163.22	-4,577.39	-1,379.90	4,780.86	4,774.19	6.68	715.872	
1,100.00	1,100.00	1,073.33	1,073.30	3.72	3.66	-163.22	-4,577.39	-1,379.90	4,780.86	4,773.48	7.38	647.707	
1,200.00	1,200.00	1,173.33	1,173.30	4.08	4.01	-163.22	-4,577.39	-1,379.90	4,780.86	4,772.78	8.09	591.213	
1,300.00	1,300.00	1,273.33	1,273.30	4.44	4.36	-163.22	-4,577.39	-1,379.90	4,780.86	4,772.07	8.79	543.666	
1,400.00	1,400.00	1,373.33	1,373.30	4.79	4.71	-163.22	-4,577.39	-1,379.90	4,780.86	4,771.36	9.50	503.120	
1,500.00	1,500.00	1,473.33	1,473.30	5.15	5.06	-163.22	-4,577.39	-1,379.90	4,780.86	4,770.65	10.21	468.149	
1,600.00	1,600.00	1,573.63	1,573.60	5.51	5.41	-163.23	-4,577.53	-1,379.45	4,780.86	4,769.94	10.92	437.754	
1,700.00	1,700.00	1,673.99	1,673.94	5.87	5.76	-163.26	-4,578.14	-1,377.37	4,780.85	4,769.22	11.63	411.140	
1,800.00	1,800.00	1,774.25	1,774.12	6.23	6.11	-163.30	-4,579.26	-1,373.61	4,780.84	4,768.50	12.34	387.561	
1,900.00	1,900.00	1,874.34	1,874.05	6.59	6.46	-163.37	-4,580.87	-1,368.18	4,780.82	4,767.77	13.05	366.486	
2,000.00	2,000.00	1,974.20	1,973.63	6.95	6.81	-163.46	-4,582.96	-1,361.09	4,780.81	4,767.05	13.76	347.530	
2,046.56	2,046.56	2,020.60	2,019.86	7.11	6.98	-163.51	-4,584.10	-1,357.24	4,780.81	4,766.72	14.09	339.337	
2,100.00	2,100.00	2,073.78	2,072.79	7.30	7.17	-163.57	-4,585.54	-1,352.37	4,780.81	4,766.34	14.47	330.375	
2,200.00	2,200.00	2,173.02	2,171.45	7.66	7.53	-163.70	-4,588.60	-1,342.04	4,780.83	4,765.64	15.19	314.773	
2,300.00	2,300.00	2,272.35	2,270.11	8.02	7.89	-163.84	-4,591.87	-1,331.00	4,780.89	4,764.97	15.91	300.476	
2,400.00	2,400.00	2,371.68	2,368.76	8.38	8.26	-163.97	-4,595.14	-1,319.96	4,780.97	4,764.33	16.64	287.369	
2,500.00	2,500.00	2,471.00	2,467.42	8.74	8.63	-164.11	-4,598.41	-1,308.91	4,781.08	4,763.71	17.37	275.313	
2,600.00	2,599.99	2,570.27	2,566.02	9.10	9.00	-164.25	-4,601.68	-1,297.87	4,781.98	4,763.89	18.10	264.240	
2,700.00	2,699.96	2,669.42	2,664.49	9.45	9.38	-164.41	-4,604.94	-1,286.85	4,784.47	4,765.64	18.83	254.088	
2,800.00	2,799.86	2,768.41	2,762.81	9.81	9.75	-164.57	-4,608.20	-1,275.84	4,788.54	4,768.97	19.56	244.760	
2,900.00	2,899.68	2,867.21	2,860.95	10.17	10.13	-164.74	-4,611.46	-1,264.86	4,794.19	4,773.89	20.30	236.174	
3,000.00	2,999.37	2,965.79	2,958.87	10.53	10.51	-164.92	-4,614.70	-1,253.90	4,801.43	4,780.40	21.04	228.255	
3,100.00	3,098.90	3,064.13	3,056.54	10.89	10.89	-165.11	-4,617.94	-1,242.96	4,810.28	4,788.50	21.77	220.940	
3,200.00	3,198.26	3,162.18	3,153.94	11.25	11.27	-165.30	-4,621.17	-1,232.06	4,820.72	4,798.21	22.51	214.170	
3,300.06	3,297.46	3,260.00	3,251.09	11.62	11.65	-165.51	-4,624.39	-1,221.18	4,832.78	4,809.53	23.25	207.893	
3,400.00	3,396.43	3,357.52	3,347.96	11.98	12.02	-165.71	-4,627.60	-1,210.34	4,845.66	4,821.67	23.98	202.037	
3,500.00	3,495.46	3,455.11	3,444.89	12.36	12.40	-165.92	-4,630.81	-1,199.49	4,858.61	4,833.88	24.72	196.517	
3,600.00	3,594.48	3,552.70	3,541.82	12.73	12.79	-166.12	-4,634.02	-1,188.64	4,871.62	4,846.16	25.46	191.307	
3,700.00	3,693.51	3,650.29	3,638.74	13.11	13.17	-166.33	-4,637.23	-1,177.79	4,884.70	4,858.49	26.21	186.384	
3,800.00	3,792.54	3,747.87	3,735.67	13.49	13.55	-166.53	-4,640.45	-1,166.94	4,897.84	4,870.88	26.95	181.724	
3,900.00	3,891.56	3,845.46	3,832.60	13.87	13.93	-166.73	-4,643.66	-1,156.09	4,911.04	4,883.34	27.70	177.308	
4,000.00	3,990.59	3,943.05	3,929.53	14.25	14.32	-166.93	-4,646.87	-1,145.24	4,924.30	4,895.86	28.44	173.120	
4,100.00	4,089.62	4,040.63	4,026.46	14.64	14.70	-167.13	-4,650.09	-1,134.38	4,937.62	4,908.43	29.19	169.141	
4,200.00	4,188.64	4,138.22	4,123.39	15.03	15.09	-167.33	-4,653.30	-1,123.53	4,951.01	4,921.07	29.94	165.359	
4,300.00	4,287.67	4,235.81	4,220.32	15.42	15.47	-167.53	-4,656.51	-1,112.68	4,964.45	4,933.76	30.69	161.758	
4,400.00	4,386.70	4,333.40	4,317.25	15.81	15.86	-167.73	-4,659.72	-1,101.83	4,977.95	4,946.51	31.44	158.327	
4,500.00	4,485.72	4,430.98	4,414.18	16.20	16.24	-167.92	-4,662.94	-1,090.98	4,991.52	4,959.33	32.19	155.055	
4,600.00	4,584.75	4,528.57	4,511.11	16.59	16.63	-168.12	-4,666.15	-1,080.13	5,005.14	4,972.19	32.94	151.930	
4,700.00	4,683.78	4,626.16	4,608.04	16.98	17.02	-168.31	-4,669.36	-1,069.28	5,018.82	4,985.12	33.70	148.944	
4,800.00	4,782.80	4,723.75	4,704.96	17.38	17.40	-168.50	-4,672.57	-1,058.43	5,032.55	4,998.10	34.45	146.089	
4,900.00	4,881.83	4,821.33	4,801.89	17.78	17.79	-168.69	-4,675.79	-1,047.58	5,046.35	5,011.14	35.20	143.355	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,980.86	4,918.92	4,898.82	18.17	18.18	-168.88	-4,679.00	-1,036.73	5,060.20	5,024.24	35.96	140.736	
5,100.00	5,079.88	5,016.51	4,995.75	18.57	18.57	-169.07	-4,682.21	-1,025.88	5,074.10	5,037.39	36.71	138.224	
5,200.00	5,178.91	5,114.10	5,092.68	18.97	18.95	-169.26	-4,685.42	-1,015.03	5,088.06	5,050.60	37.46	135.814	
5,300.00	5,277.94	5,211.68	5,189.61	19.37	19.34	-169.45	-4,688.64	-1,004.18	5,102.08	5,063.86	38.22	133.499	
5,400.00	5,376.96	5,309.27	5,286.54	19.77	19.73	-169.63	-4,691.85	-993.32	5,116.15	5,077.18	38.97	131.275	
5,500.00	5,475.99	5,406.86	5,383.47	20.17	20.12	-169.82	-4,695.06	-982.47	5,130.28	5,090.55	39.73	129.136	
5,600.00	5,575.02	15,322.76	10,599.38	20.57	87.76	-109.60	151.30	-686.02	5,092.07	5,038.19	53.88	94.506	
5,690.40	5,664.54	15,322.76	10,599.38	20.93	87.76	-110.70	151.30	-686.02	5,003.51	4,949.42	54.09	92.497	
5,700.00	5,674.04	15,322.76	10,599.38	20.97	87.76	-110.82	151.30	-686.02	4,994.11	4,939.99	54.12	92.284	
5,800.00	5,773.21	15,322.76	10,599.38	21.37	87.76	-111.94	151.30	-686.02	4,896.07	4,841.71	54.36	90.069	
5,900.00	5,872.58	15,322.76	10,599.38	21.76	87.76	-112.91	151.30	-686.02	4,797.87	4,743.26	54.61	87.858	
6,000.00	5,972.14	15,322.76	10,599.38	22.15	87.76	-113.72	151.30	-686.02	4,699.51	4,644.64	54.87	85.653	
6,100.00	6,071.84	15,322.76	10,599.38	22.52	87.76	-114.38	151.30	-686.02	4,601.02	4,545.89	55.13	83.456	
6,200.00	6,171.66	15,322.76	10,599.38	22.89	87.76	-114.89	151.30	-686.02	4,502.42	4,447.02	55.40	81.267	
6,300.00	6,271.57	15,322.76	10,599.38	23.25	87.76	-115.24	151.30	-686.02	4,403.74	4,348.06	55.68	79.086	
6,400.00	6,371.54	15,322.76	10,599.38	23.60	87.76	-115.45	151.30	-686.02	4,305.00	4,249.03	55.97	76.915	
6,490.46	6,462.00	15,322.76	10,599.38	23.92	87.76	-115.51	151.30	-686.02	4,215.65	4,159.41	56.24	74.959	
6,500.00	6,471.54	15,322.76	10,599.38	23.95	87.76	-115.51	151.30	-686.02	4,206.23	4,149.96	56.27	74.753	
6,600.00	6,571.54	15,322.76	10,599.38	24.29	87.76	-115.51	151.30	-686.02	4,107.49	4,050.91	56.58	72.603	
6,700.00	6,671.54	15,322.76	10,599.38	24.63	87.76	-115.51	151.30	-686.02	4,008.81	3,951.92	56.89	70.465	
6,800.00	6,771.54	15,322.76	10,599.38	24.98	87.76	-115.51	151.30	-686.02	3,910.20	3,852.98	57.22	68.340	
6,900.00	6,871.54	15,322.76	10,599.38	25.32	87.76	-115.51	151.30	-686.02	3,811.66	3,754.11	57.55	66.228	
7,000.00	6,971.54	15,322.76	10,599.38	25.66	87.76	-115.51	151.30	-686.02	3,713.20	3,655.30	57.90	64.129	
7,100.00	7,071.54	15,322.76	10,599.38	26.01	87.76	-115.51	151.30	-686.02	3,614.82	3,556.56	58.26	62.043	
7,200.00	7,171.54	15,322.76	10,599.38	26.35	87.76	-115.51	151.30	-686.02	3,516.54	3,457.90	58.64	59.971	
7,300.00	7,271.54	15,322.76	10,599.38	26.70	87.76	-115.51	151.30	-686.02	3,418.35	3,359.32	59.03	57.912	
7,400.00	7,371.54	15,322.76	10,599.38	27.04	87.76	-115.51	151.30	-686.02	3,320.27	3,260.84	59.43	55.868	
7,500.00	7,471.54	15,322.76	10,599.38	27.39	87.76	-115.51	151.30	-686.02	3,222.31	3,162.46	59.85	53.837	
7,600.00	7,571.54	15,322.76	10,599.38	27.73	87.76	-115.51	151.30	-686.02	3,124.48	3,064.19	60.29	51.820	
7,700.00	7,671.54	15,322.76	10,599.38	28.08	87.76	-115.51	151.30	-686.02	3,026.79	2,966.04	60.76	49.818	
7,800.00	7,771.54	15,322.76	10,599.38	28.43	87.76	-115.51	151.30	-686.02	2,929.26	2,868.02	61.24	47.831	
7,900.00	7,871.54	15,322.76	10,599.38	28.77	87.76	-115.51	151.30	-686.02	2,831.90	2,770.15	61.75	45.859	
8,000.00	7,971.54	15,322.76	10,599.38	29.12	87.76	-115.51	151.30	-686.02	2,734.73	2,672.44	62.29	43.902	
8,100.00	8,071.54	15,322.76	10,599.38	29.47	87.76	-115.51	151.30	-686.02	2,637.77	2,574.91	62.86	41.960	
8,200.00	8,171.54	15,322.76	10,599.38	29.82	87.76	-115.51	151.30	-686.02	2,541.05	2,477.58	63.47	40.035	
8,300.00	8,271.54	15,322.76	10,599.38	30.16	87.76	-115.51	151.30	-686.02	2,444.59	2,380.47	64.12	38.127	
8,400.00	8,371.54	15,322.76	10,599.38	30.51	87.76	-115.51	151.30	-686.02	2,348.43	2,283.62	64.81	36.235	
8,500.00	8,471.54	15,322.76	10,599.38	30.86	87.76	-115.51	151.30	-686.02	2,252.60	2,187.05	65.56	34.361	
8,600.00	8,571.54	15,322.76	10,599.38	31.21	87.76	-115.51	151.30	-686.02	2,157.15	2,090.79	66.36	32.506	
8,700.00	8,671.54	15,322.76	10,599.38	31.56	87.76	-115.51	151.30	-686.02	2,062.13	1,994.90	67.23	30.671	
8,800.00	8,771.54	15,322.76	10,599.38	31.91	87.76	-115.51	151.30	-686.02	1,967.61	1,899.42	68.19	28.856	
8,900.00	8,871.54	15,322.76	10,599.38	32.26	87.76	-115.51	151.30	-686.02	1,873.65	1,804.42	69.23	27.064	
9,000.00	8,971.54	15,322.76	10,599.38	32.61	87.76	-115.51	151.30	-686.02	1,780.36	1,709.98	70.38	25.296	
9,100.00	9,071.54	15,322.76	10,599.38	32.96	87.76	-115.51	151.30	-686.02	1,687.83	1,616.17	71.65	23.555	
9,200.00	9,171.54	15,322.76	10,599.38	33.31	87.76	-115.51	151.30	-686.02	1,596.20	1,523.13	73.07	21.844	
9,300.00	9,271.54	15,322.76	10,599.38	33.66	87.76	-115.51	151.30	-686.02	1,505.64	1,430.97	74.67	20.165	
9,400.00	9,371.54	15,322.76	10,599.38	34.01	87.76	-115.51	151.30	-686.02	1,416.35	1,339.89	76.46	18.525	
9,500.00	9,471.54	15,322.76	10,599.38	34.36	87.76	-115.51	151.30	-686.02	1,328.58	1,250.10	78.48	16.928	
9,600.00	9,571.54	15,322.76	10,599.38	34.71	87.76	-115.51	151.30	-686.02	1,242.67	1,161.88	80.79	15.382	
9,700.00	9,671.54	15,322.76	10,599.38	35.06	87.76	-115.51	151.30	-686.02	1,159.01	1,075.61	83.41	13.896	
9,800.00	9,771.54	15,322.76	10,599.38	35.41	87.76	-115.51	151.30	-686.02	1,078.15	991.76	86.39	12.480	
9,900.00	9,871.54	15,322.76	10,599.38	35.76	87.76	-115.51	151.30	-686.02	1,000.75	910.99	89.76	11.149	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,971.54	15,322.76	10,599.38	36.11	87.76	-115.51	151.30	-686.02	927.68	834.13	93.55	9.917	
10,100.00	10,071.54	15,322.76	10,599.38	36.46	87.76	-115.51	151.30	-686.02	860.05	762.34	97.71	8.802	
10,200.00	10,171.54	15,322.76	10,599.38	36.81	87.76	-115.51	151.30	-686.02	799.23	697.10	102.13	7.825	
10,300.00	10,271.54	15,322.76	10,599.38	37.17	87.76	-115.51	151.30	-686.02	746.90	640.31	106.59	7.007	
10,400.00	10,371.54	15,322.76	10,599.38	37.52	87.76	-115.51	151.30	-686.02	704.95	594.26	110.69	6.368	
10,500.00	10,471.54	15,322.76	10,599.38	37.87	87.76	-115.51	151.30	-686.02	675.31	561.40	113.92	5.928	
10,600.00	10,571.54	15,322.76	10,599.38	38.22	87.76	-115.51	151.30	-686.02	659.65	543.93	115.72	5.700	
10,654.54	10,626.08	15,322.76	10,599.38	38.41	87.76	-115.51	151.30	-686.02	657.39	541.42	115.97	5.669	CC, ES, SF
10,700.00	10,671.54	15,322.76	10,599.38	38.57	87.76	-115.51	151.30	-686.02	658.96	543.20	115.76	5.692	
10,800.00	10,771.54	15,322.76	10,599.38	38.93	87.76	-115.51	151.30	-686.02	673.29	559.25	114.05	5.904	
10,900.00	10,871.54	15,322.76	10,599.38	39.28	87.76	-115.51	151.30	-686.02	701.72	590.77	110.95	6.325	
11,000.00	10,971.54	15,322.76	10,599.38	39.63	87.76	-115.51	151.30	-686.02	742.64	635.61	107.03	6.939	
11,100.00	11,071.54	15,322.76	10,599.38	39.98	87.76	-115.51	151.30	-686.02	794.10	691.28	102.82	7.723	
11,200.00	11,171.54	15,322.76	10,599.38	40.34	87.76	-115.51	151.30	-686.02	854.22	755.49	98.73	8.652	
11,300.00	11,271.54	15,322.76	10,599.38	40.69	87.76	-115.51	151.30	-686.02	921.29	826.31	94.98	9.700	
11,400.00	11,371.54	15,322.76	10,599.38	41.04	87.76	-115.51	151.30	-686.02	993.92	902.23	91.68	10.841	
11,500.00	11,471.54	15,322.76	10,599.38	41.40	87.76	-115.51	151.30	-686.02	1,070.97	982.11	88.86	12.052	
11,525.27	11,496.81	15,322.76	10,599.38	41.48	87.76	-115.51	151.30	-686.02	1,091.03	1,002.81	88.22	12.367	
11,550.00	11,521.53	15,322.76	10,599.38	41.57	87.76	-115.47	151.30	-686.02	1,110.78	1,023.16	87.62	12.677	
11,600.00	11,571.33	15,322.76	10,599.38	41.72	87.76	-115.10	151.30	-686.02	1,150.69	1,064.16	86.53	13.298	
11,650.00	11,620.56	15,322.76	10,599.38	41.85	87.76	-114.37	151.30	-686.02	1,190.33	1,104.74	85.58	13.908	
11,700.00	11,668.84	15,322.76	10,599.38	41.98	87.76	-113.26	151.30	-686.02	1,229.43	1,144.66	84.78	14.502	
11,750.00	11,715.82	15,322.76	10,599.38	42.10	87.76	-111.78	151.30	-686.02	1,267.78	1,183.68	84.09	15.076	
11,800.00	11,761.13	15,322.76	10,599.38	42.20	87.76	-109.94	151.30	-686.02	1,305.14	1,221.62	83.52	15.626	
11,850.00	11,804.43	15,322.76	10,599.38	42.30	87.76	-107.73	151.30	-686.02	1,341.34	1,258.28	83.06	16.149	
11,900.00	11,845.39	15,322.76	10,599.38	42.39	87.76	-105.18	151.30	-686.02	1,376.19	1,293.49	82.70	16.641	
11,950.00	11,883.69	15,322.76	10,599.38	42.47	87.76	-102.30	151.30	-686.02	1,409.55	1,327.12	82.43	17.101	
12,000.00	11,919.06	15,322.76	10,599.38	42.54	87.76	-99.12	151.30	-686.02	1,441.27	1,359.02	82.24	17.524	
12,050.00	11,951.20	15,322.76	10,599.38	42.61	87.76	-95.68	151.30	-686.02	1,471.22	1,389.07	82.15	17.910	
12,100.00	11,979.89	15,322.76	10,599.38	42.68	87.76	-92.06	151.30	-686.02	1,499.29	1,417.16	82.13	18.255	
12,150.00	12,004.90	15,317.85	10,599.33	42.75	87.69	-88.73	146.39	-686.02	1,525.36	1,443.23	82.14	18.571	
12,200.00	12,026.05	15,273.62	10,598.87	42.82	87.03	-88.73	102.16	-686.02	1,548.59	1,466.83	81.77	18.939	
12,250.00	12,043.17	15,227.70	10,598.38	42.89	86.35	-88.73	56.25	-686.02	1,568.33	1,486.88	81.45	19.255	
12,300.00	12,056.13	15,180.45	10,597.89	42.97	85.65	-88.74	9.00	-686.02	1,584.44	1,503.25	81.19	19.516	
12,350.00	12,064.83	15,132.23	10,597.39	43.05	84.93	-88.74	-39.22	-686.02	1,596.79	1,515.81	80.98	19.719	
12,400.00	12,069.21	15,083.40	10,596.87	43.13	84.21	-88.76	-88.05	-686.02	1,605.31	1,524.48	80.83	19.861	
12,423.64	12,069.77	15,060.21	10,596.63	43.17	83.87	-88.76	-111.24	-686.02	1,607.99	1,527.22	80.77	19.907	
12,500.00	12,069.98	14,985.26	10,595.85	43.32	82.77	-88.79	-186.18	-686.02	1,615.31	1,534.67	80.64	20.031	
12,600.00	12,070.27	14,887.11	10,594.82	43.58	81.33	-88.82	-284.33	-686.02	1,625.03	1,544.55	80.48	20.191	
12,667.68	12,070.46	14,820.67	10,594.12	43.79	80.36	-88.84	-350.76	-686.02	1,631.71	1,551.32	80.39	20.296	
12,700.00	12,070.55	14,788.92	10,593.79	43.90	79.90	-88.85	-382.51	-686.02	1,634.85	1,554.50	80.35	20.347	
12,800.00	12,070.84	14,709.74	10,592.76	44.29	78.75	-88.87	-481.16	-686.02	1,643.58	1,563.24	80.33	20.460	
12,900.00	12,071.12	14,591.10	10,591.72	44.73	77.04	-88.89	-580.32	-686.02	1,650.79	1,570.90	79.89	20.664	
13,000.00	12,071.41	14,508.45	10,590.68	45.22	75.86	-88.90	-679.87	-686.02	1,656.40	1,576.70	79.70	20.784	
13,100.00	12,071.69	14,408.27	10,589.63	45.76	74.43	-88.91	-779.68	-686.02	1,660.38	1,581.10	79.28	20.943	
13,200.00	12,071.98	14,308.23	10,588.58	46.34	73.02	-88.91	-879.63	-686.02	1,662.68	1,583.88	78.80	21.099	
13,200.11	12,071.98	14,308.33	10,588.58	46.34	73.02	-88.91	-879.73	-686.02	1,662.68	1,583.88	78.80	21.099	
13,300.00	12,072.26	14,208.22	10,587.54	46.97	71.61	-88.91	-979.61	-686.02	1,664.14	1,585.84	78.31	21.251	
13,400.00	12,072.55	14,108.20	10,586.49	47.64	70.22	-88.91	-1,079.60	-686.02	1,665.61	1,587.76	77.85	21.395	
13,500.00	12,072.83	14,008.19	10,585.44	48.36	68.83	-88.91	-1,179.58	-686.02	1,667.07	1,589.64	77.43	21.531	
13,600.00	12,073.12	13,908.18	10,584.40	49.13	67.46	-88.91	-1,279.56	-686.02	1,668.53	1,591.49	77.04	21.658	
13,700.00	12,073.40	13,791.83	10,583.35	49.94	65.89	-88.91	-1,379.55	-686.02	1,669.99	1,593.45	76.55	21.817	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2

Offset Site Error: 0.00 usft

Survey Program: 26-MWD, 700-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	12,073.68	13,708.16	10,582.30	50.80	64.76	-88.91	-1,479.53	-686.02	1,671.46	1,595.09	76.36	21.888	
13,900.00	12,073.97	13,608.15	10,581.25	51.69	63.44	-88.91	-1,579.51	-686.02	1,672.92	1,596.85	76.07	21.991	
14,000.00	12,074.25	13,491.86	10,580.21	52.62	61.91	-88.91	-1,679.50	-686.02	1,674.38	1,598.70	75.68	22.123	
14,100.00	12,074.54	13,408.13	10,579.16	53.58	60.83	-88.91	-1,779.48	-686.02	1,675.84	1,600.25	75.59	22.169	
14,200.00	12,074.82	13,291.88	10,578.11	54.58	59.34	-88.91	-1,879.47	-686.02	1,677.31	1,602.03	75.27	22.283	
14,300.00	12,075.11	13,191.89	10,577.07	55.61	58.08	-88.91	-1,979.45	-686.02	1,678.77	1,603.65	75.11	22.349	
14,400.00	12,075.39	13,108.10	10,576.02	56.67	57.05	-88.91	-2,079.43	-686.02	1,680.23	1,605.12	75.11	22.370	
14,500.00	12,075.68	13,008.09	10,574.97	57.76	55.83	-88.91	-2,179.42	-686.02	1,681.69	1,606.68	75.02	22.418	
14,600.00	12,075.96	12,891.93	10,573.93	58.87	54.44	-88.91	-2,279.40	-686.02	1,683.16	1,608.32	74.83	22.492	
14,700.00	12,076.24	12,808.06	10,572.88	60.01	53.46	-88.91	-2,379.38	-686.02	1,684.62	1,609.70	74.92	22.486	
14,800.00	12,076.53	12,691.95	10,571.83	61.17	52.13	-88.91	-2,479.37	-686.02	1,686.08	1,611.27	74.81	22.539	
14,900.00	12,076.81	12,608.04	10,570.78	62.36	51.20	-88.91	-2,579.35	-686.02	1,687.54	1,612.59	74.95	22.515	
15,000.00	12,077.10	12,491.97	10,569.74	63.57	49.94	-88.91	-2,679.34	-686.02	1,689.01	1,614.09	74.91	22.547	
15,100.00	12,077.38	12,408.02	10,568.69	64.79	49.05	-88.91	-2,779.32	-686.02	1,690.47	1,615.35	75.12	22.504	
15,200.00	12,077.67	12,308.01	10,567.64	66.04	48.03	-88.91	-2,879.30	-686.02	1,691.93	1,616.68	75.25	22.483	
15,300.00	12,077.95	12,208.00	10,566.60	67.30	47.04	-88.91	-2,979.29	-686.02	1,693.39	1,617.97	75.42	22.451	
15,400.00	12,078.23	12,107.99	10,565.55	68.58	46.09	-88.91	-3,079.27	-686.02	1,694.85	1,619.22	75.63	22.409	
15,500.00	12,078.52	12,007.98	10,564.50	69.88	45.18	-88.91	-3,179.25	-686.02	1,696.32	1,620.44	75.88	22.356	
15,600.00	12,078.80	11,892.03	10,563.45	71.19	44.18	-88.91	-3,279.24	-686.02	1,697.78	1,621.70	76.08	22.315	
15,700.00	12,079.09	11,807.96	10,562.41	72.51	43.49	-88.91	-3,379.22	-686.02	1,699.24	1,622.75	76.49	22.216	
15,800.00	12,079.37	11,707.95	10,561.36	73.85	42.71	-88.91	-3,479.21	-686.02	1,700.70	1,623.85	76.85	22.129	
15,900.00	12,079.66	11,592.06	10,560.31	75.21	41.88	-88.91	-3,579.19	-686.02	1,702.17	1,624.97	77.20	22.049	
16,000.00	12,079.94	11,507.93	10,559.27	76.57	41.32	-88.91	-3,679.17	-686.02	1,703.63	1,625.91	77.72	21.921	
16,100.00	12,080.22	11,392.09	10,558.22	77.94	40.61	-88.90	-3,779.16	-686.02	1,705.09	1,626.93	78.16	21.815	
16,200.00	12,080.51	11,292.10	10,557.17	79.33	40.06	-88.90	-3,879.14	-686.02	1,706.55	1,627.84	78.71	21.681	
16,300.00	12,080.79	11,192.11	10,556.12	80.73	39.58	-88.90	-3,979.12	-686.02	1,708.02	1,628.71	79.31	21.536	
16,400.00	12,081.08	11,107.88	10,555.08	82.13	39.24	-88.90	-4,079.11	-686.02	1,709.48	1,629.49	79.99	21.372	
16,500.00	12,081.36	10,992.13	10,554.03	83.55	38.86	-88.90	-4,179.09	-686.02	1,710.94	1,630.29	80.65	21.214	
16,600.00	12,081.65	10,907.86	10,552.98	84.97	38.68	-88.90	-4,279.08	-686.02	1,712.40	1,630.99	81.41	21.034	
16,700.00	12,081.93	10,850.00	10,552.42	86.40	38.60	-84.89	-4,321.21	-686.02	1,714.95	1,632.60	82.35	20.824	
16,800.00	12,082.22	10,825.00	10,550.94	87.84	38.58	-79.77	-4,346.16	-686.02	1,721.64	1,638.28	83.37	20.651	
16,900.00	12,082.50	10,800.00	10,548.15	89.29	38.56	-74.81	-4,371.01	-686.02	1,732.72	1,648.35	84.37	20.538	
17,000.00	12,082.78	10,775.00	10,544.07	90.75	38.55	-70.07	-4,395.67	-686.02	1,748.12	1,662.77	85.34	20.483	
17,100.00	12,083.07	10,750.00	10,538.70	92.21	38.54	-65.58	-4,420.08	-686.02	1,767.76	1,681.47	86.29	20.486	
17,200.00	12,083.35	10,725.00	10,532.06	93.68	38.53	-61.39	-4,444.18	-686.02	1,791.56	1,704.37	87.19	20.547	
17,300.00	12,083.64	10,700.00	10,524.17	95.15	38.52	-57.49	-4,467.90	-686.02	1,819.41	1,731.36	88.05	20.663	
17,400.00	12,083.92	10,684.87	10,518.79	96.63	38.51	-53.47	-4,482.04	-686.02	1,851.08	1,762.14	88.94	20.813	
17,500.00	12,084.21	10,664.47	10,510.84	98.12	38.50	-50.03	-4,500.83	-686.02	1,886.54	1,796.82	89.73	21.026	
17,600.00	12,084.49	10,650.00	10,504.72	99.61	38.50	-46.69	-4,513.94	-686.02	1,925.63	1,835.13	90.50	21.277	
17,700.00	12,084.77	10,625.00	10,493.22	101.11	38.48	-44.00	-4,536.13	-686.02	1,968.09	1,876.95	91.14	21.594	
17,800.00	12,085.06	10,600.00	10,480.57	102.61	38.47	-41.52	-4,557.69	-686.02	2,013.93	1,922.21	91.72	21.958	
17,900.00	12,085.34	10,600.00	10,480.57	104.11	38.47	-38.68	-4,557.69	-686.02	2,062.82	1,970.40	92.43	22.319	
18,000.00	12,085.63	10,575.00	10,466.80	105.63	38.45	-36.66	-4,578.56	-686.02	2,114.52	2,021.62	92.89	22.763	
18,100.00	12,085.91	10,550.00	10,451.97	107.14	38.42	-34.81	-4,598.68	-686.02	2,169.16	2,075.86	93.31	23.248	
18,200.00	12,086.20	10,550.00	10,451.97	108.66	38.42	-32.70	-4,598.68	-686.02	2,226.30	2,132.47	93.84	23.726	
18,300.00	12,086.48	10,525.00	10,436.10	110.18	38.40	-31.17	-4,617.99	-686.02	2,285.89	2,191.73	94.16	24.277	
18,400.00	12,086.76	10,525.00	10,436.10	111.71	38.40	-29.44	-4,617.99	-686.02	2,347.89	2,253.31	94.58	24.825	
18,500.00	12,087.05	10,500.00	10,419.25	113.24	38.37	-28.15	-4,636.45	-686.02	2,411.85	2,317.03	94.82	25.436	
18,600.00	12,087.33	10,500.00	10,419.25	114.78	38.37	-26.71	-4,636.45	-686.02	2,478.03	2,382.88	95.15	26.043	
18,700.00	12,087.62	10,475.00	10,401.45	116.32	38.34	-25.63	-4,654.00	-686.02	2,545.90	2,450.57	95.33	26.705	
18,800.00	12,087.90	10,475.00	10,401.45	117.86	38.34	-24.42	-4,654.00	-686.02	2,615.67	2,520.08	95.59	27.364	
18,900.00	12,088.19	10,450.00	10,382.76	119.40	38.30	-23.49	-4,670.60	-686.02	2,687.02	2,591.30	95.72	28.071	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	10,450.00	10,382.76	120.95	38.30	-22.47	-4,670.60	-686.02	2,759.87	2,663.96	95.92	28.774	
19,100.00	12,088.76	10,437.46	10,373.06	122.50	38.28	-21.59	-4,678.55	-686.02	2,834.19	2,738.14	96.05	29.508	
19,200.00	12,089.04	10,425.00	10,363.22	124.05	38.26	-20.78	-4,686.19	-686.02	2,909.88	2,813.71	96.16	30.260	
19,300.00	12,089.32	10,425.00	10,363.22	125.61	38.26	-19.97	-4,686.19	-686.02	2,986.82	2,890.53	96.29	31.019	
19,400.00	12,089.61	10,411.46	10,352.30	127.17	38.23	-19.28	-4,694.21	-686.02	3,064.87	2,968.51	96.37	31.804	
19,500.00	12,089.89	10,400.00	10,342.89	128.73	38.21	-18.62	-4,700.75	-686.02	3,144.07	3,047.63	96.44	32.601	
19,600.00	12,090.18	10,400.00	10,342.89	130.29	38.21	-17.96	-4,700.75	-686.02	3,224.28	3,127.76	96.52	33.405	
19,700.00	12,090.46	10,388.91	10,333.64	131.86	38.19	-17.38	-4,706.85	-686.02	3,305.43	3,208.85	96.57	34.228	
19,800.00	12,090.75	10,375.00	10,321.83	133.42	38.16	-16.85	-4,714.21	-686.02	3,387.54	3,290.93	96.61	35.062	
19,900.00	12,091.03	10,375.00	10,321.83	134.99	38.16	-16.30	-4,714.21	-686.02	3,470.38	3,373.72	96.66	35.902	
20,000.00	12,091.31	10,375.00	10,321.83	136.57	38.16	-15.80	-4,714.21	-686.02	3,554.11	3,457.41	96.70	36.754	
20,100.00	12,091.60	10,363.28	10,311.73	138.14	38.13	-15.35	-4,720.14	-686.02	3,638.49	3,541.77	96.73	37.616	
20,200.00	12,091.88	10,350.00	10,300.10	139.72	38.10	-14.92	-4,726.56	-686.02	3,723.68	3,626.93	96.75	38.487	
20,300.00	12,092.17	10,350.00	10,300.10	141.29	38.10	-14.50	-4,726.56	-686.02	3,809.39	3,712.61	96.77	39.364	
20,400.00	12,092.45	10,350.00	10,300.10	142.87	38.10	-14.09	-4,726.56	-686.02	3,895.78	3,798.99	96.79	40.249	
20,500.00	12,092.74	10,350.00	10,300.10	144.45	38.10	-13.71	-4,726.56	-686.02	3,982.81	3,886.00	96.81	41.142	
20,600.00	12,093.02	10,336.88	10,288.44	146.04	38.07	-13.37	-4,732.58	-686.02	4,070.23	3,973.41	96.82	42.038	
20,700.00	12,093.31	10,325.00	10,277.75	147.62	38.05	-13.05	-4,737.75	-686.02	4,158.31	4,061.47	96.84	42.941	
20,800.00	12,093.59	10,325.00	10,277.75	149.21	38.05	-12.72	-4,737.75	-686.02	4,246.76	4,149.91	96.85	43.850	
20,900.00	12,093.87	10,325.00	10,277.75	150.80	38.05	-12.41	-4,737.75	-686.02	4,335.71	4,238.86	96.86	44.765	
21,000.00	12,094.16	10,325.00	10,277.75	152.39	38.05	-12.11	-4,737.75	-686.02	4,425.14	4,328.28	96.86	45.685	
21,100.00	12,094.44	10,325.00	10,277.75	153.98	38.05	-11.83	-4,737.75	-686.02	4,515.01	4,418.14	96.87	46.610	
21,200.00	12,094.73	10,311.44	10,265.39	155.57	38.01	-11.58	-4,743.33	-686.02	4,605.08	4,508.20	96.89	47.531	
21,300.00	12,095.01	10,300.00	10,254.84	157.16	37.98	-11.33	-4,747.76	-686.02	4,695.70	4,598.80	96.90	48.458	
21,400.00	12,095.30	10,300.00	10,254.84	158.76	37.98	-11.09	-4,747.76	-686.02	4,786.55	4,689.64	96.91	49.392	
21,500.00	12,095.58	10,300.00	10,254.84	160.35	37.98	-10.85	-4,747.76	-686.02	4,877.75	4,780.84	96.92	50.329	
21,600.00	12,095.86	10,300.00	10,254.84	161.95	37.98	-10.62	-4,747.76	-686.02	4,969.30	4,872.37	96.93	51.269	
21,700.00	12,096.15	10,300.00	10,254.84	163.55	37.98	-10.41	-4,747.76	-686.02	5,061.16	4,964.23	96.93	52.212	
21,800.00	12,096.43	10,300.00	10,254.84	165.15	37.98	-10.20	-4,747.76	-686.02	5,153.33	5,056.39	96.94	53.158	
21,900.00	12,096.72	10,288.04	10,243.70	166.75	37.95	-10.01	-4,752.12	-686.02	5,245.62	5,148.65	96.97	54.096	
22,000.00	12,097.00	10,275.00	10,231.44	168.35	37.92	-9.83	-4,756.55	-686.02	5,338.38	5,241.38	97.00	55.036	
22,100.00	12,097.29	10,275.00	10,231.44	169.96	37.92	-9.64	-4,756.55	-686.02	5,431.20	5,334.19	97.01	55.985	
22,175.33	12,097.50	10,275.00	10,231.44	171.16	37.92	-9.51	-4,756.55	-686.02	5,501.30	5,404.27	97.02	56.701	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 292H - Wellbore #1 - Surveys

Survey Program: 205-MWD

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-174.63	-4,997.58	-469.90	5,019.69				
100.00	100.00	72.77	72.77	0.13	0.11	-174.63	-4,997.58	-469.92	5,019.63	5,019.38	0.25	N/A	
200.00	200.00	171.77	171.77	0.49	0.27	-174.63	-4,997.60	-470.01	5,019.65	5,018.89	0.76	6,602.776	
300.00	300.00	280.48	280.48	0.85	0.58	-174.63	-4,997.57	-470.06	5,019.63	5,018.20	1.43	3,508.292	
341.68	341.68	315.18	315.18	1.00	0.70	-174.63	-4,997.56	-470.01	5,019.61	5,017.91	1.70	2,955.894	
400.00	400.00	372.94	372.94	1.21	0.90	-174.63	-4,997.58	-469.95	5,019.62	5,017.52	2.11	2,381.873	
500.00	500.00	480.67	480.67	1.57	1.28	-174.63	-4,997.50	-470.14	5,019.57	5,016.72	2.84	1,764.762	
600.00	600.00	577.32	577.31	1.93	1.62	-174.62	-4,997.33	-470.39	5,019.42	5,015.88	3.55	1,415.835	
700.00	700.00	675.04	675.03	2.29	1.97	-174.62	-4,997.24	-470.51	5,019.35	5,015.10	4.25	1,180.793	
720.12	720.12	693.62	693.62	2.36	2.03	-174.62	-4,997.24	-470.54	5,019.34	5,014.95	4.39	1,143.670	
800.00	800.00	774.40	774.40	2.64	2.31	-174.62	-4,997.25	-470.60	5,019.36	5,014.40	4.96	1,012.463	
900.00	900.00	881.69	881.69	3.00	2.69	-174.62	-4,997.19	-470.20	5,019.27	5,013.58	5.69	882.423	
1,000.00	1,000.00	982.59	982.58	3.36	3.03	-174.63	-4,997.07	-469.55	5,019.09	5,012.70	6.40	784.826	
1,100.00	1,100.00	1,083.22	1,083.21	3.72	3.38	-174.64	-4,996.94	-468.99	5,018.91	5,011.81	7.10	706.736	
1,200.00	1,200.00	1,190.52	1,190.51	4.08	3.76	-174.64	-4,996.70	-468.51	5,018.64	5,010.80	7.84	640.409	
1,300.00	1,300.00	1,295.82	1,295.81	4.44	4.13	-174.65	-4,996.30	-468.16	5,018.24	5,009.67	8.57	585.871	
1,400.00	1,400.00	1,396.37	1,396.36	4.79	4.48	-174.65	-4,995.86	-468.06	5,017.79	5,008.51	9.28	540.747	
1,500.00	1,500.00	1,493.69	1,493.68	5.15	4.83	-174.65	-4,995.40	-468.21	5,017.34	5,007.36	9.98	502.659	
1,600.00	1,600.00	1,586.11	1,586.10	5.51	5.15	-174.64	-4,995.08	-468.43	5,017.01	5,006.34	10.67	470.371	
1,700.00	1,700.00	1,679.80	1,679.79	5.87	5.48	-174.64	-4,994.88	-468.70	5,016.83	5,005.48	11.35	441.896	
1,800.00	1,800.00	1,775.96	1,775.94	6.23	5.82	-174.64	-4,994.79	-468.86	5,016.74	5,004.70	12.04	416.517	
1,863.51	1,863.51	1,837.02	1,837.01	6.46	6.03	-174.64	-4,994.77	-468.89	5,016.73	5,004.24	12.48	401.862	
1,900.00	1,900.00	1,870.57	1,870.56	6.59	6.14	-174.64	-4,994.78	-468.89	5,016.74	5,004.01	12.73	394.093	
2,000.00	2,000.00	1,962.52	1,962.51	6.95	6.46	-174.64	-4,994.90	-468.95	5,016.88	5,003.47	13.40	374.276	
2,100.00	2,100.00	2,059.07	2,059.05	7.30	6.79	-174.64	-4,995.17	-469.06	5,017.16	5,003.07	14.10	355.947	
2,200.00	2,200.00	2,166.41	2,166.40	7.66	7.16	-174.64	-4,995.40	-469.07	5,017.38	5,002.55	14.83	338.434	
2,300.00	2,300.00	2,266.31	2,266.30	8.02	7.51	-174.64	-4,995.52	-468.95	5,017.49	5,001.96	15.53	323.081	
2,400.00	2,400.00	2,359.56	2,359.55	8.38	7.83	-174.64	-4,995.72	-468.92	5,017.70	5,001.48	16.21	309.497	
2,500.00	2,500.00	2,451.97	2,451.96	8.74	8.15	-174.64	-4,996.04	-468.97	5,018.05	5,001.15	16.89	297.058	
2,600.00	2,599.99	2,543.50	2,543.49	9.10	8.47	-174.64	-4,996.50	-469.06	5,019.39	5,001.82	17.57	285.681	
2,700.00	2,699.96	2,643.00	2,642.98	9.45	8.82	-174.65	-4,997.14	-469.17	5,022.54	5,004.26	18.28	274.819	
2,800.00	2,799.86	2,753.71	2,753.69	9.81	9.21	-174.66	-4,997.68	-469.32	5,027.20	5,008.18	19.02	264.286	
2,900.00	2,899.68	2,850.97	2,850.95	10.17	9.55	-174.68	-4,998.03	-469.48	5,033.40	5,013.68	19.72	255.228	
3,000.00	2,999.37	2,942.34	2,942.32	10.53	9.87	-174.71	-4,998.49	-469.68	5,041.41	5,021.01	20.40	247.130	
3,100.00	3,098.90	3,045.10	3,045.07	10.89	10.23	-174.74	-4,999.11	-469.90	5,051.18	5,030.06	21.12	239.178	
3,200.00	3,198.26	3,154.75	3,154.72	11.25	10.62	-174.78	-4,999.59	-469.91	5,062.42	5,040.56	21.86	231.558	
3,300.06	3,297.46	3,267.32	3,267.29	11.62	11.01	-174.82	-4,999.84	-469.78	5,075.10	5,052.49	22.61	224.430	
3,400.00	3,396.43	3,380.08	3,380.05	11.98	11.41	-174.87	-4,999.78	-469.65	5,088.32	5,064.96	23.36	217.784	
3,500.00	3,495.46	3,467.38	3,467.35	12.36	11.71	-174.92	-4,999.76	-469.57	5,101.59	5,077.56	24.03	212.330	
3,600.00	3,594.48	3,559.67	3,559.65	12.73	12.03	-174.96	-4,999.86	-469.50	5,115.00	5,090.29	24.71	207.020	
3,700.00	3,693.51	3,656.58	3,656.56	13.11	12.37	-175.01	-5,000.03	-469.62	5,128.48	5,103.08	25.41	201.846	
3,800.00	3,792.54	3,753.50	3,753.48	13.49	12.71	-175.05	-5,000.22	-470.00	5,142.01	5,115.91	26.11	196.946	
3,900.00	3,891.56	3,845.41	3,845.38	13.87	13.04	-175.09	-5,000.48	-470.46	5,155.64	5,128.85	26.79	192.429	
4,000.00	3,990.59	3,938.13	3,938.10	14.25	13.36	-175.13	-5,000.85	-470.94	5,169.40	5,141.92	27.48	188.117	
4,100.00	4,089.62	4,031.82	4,031.79	14.64	13.69	-175.17	-5,001.33	-471.32	5,183.26	5,155.09	28.17	183.986	
4,200.00	4,188.64	4,125.51	4,125.47	15.03	14.02	-175.21	-5,001.94	-471.49	5,197.23	5,168.37	28.86	180.054	
4,300.00	4,287.67	4,219.57	4,219.53	15.42	14.36	-175.26	-5,002.64	-471.55	5,211.30	5,181.74	29.56	176.297	
4,400.00	4,386.70	4,312.80	4,312.76	15.81	14.69	-175.30	-5,003.43	-471.54	5,225.46	5,195.21	30.25	172.730	
4,500.00	4,485.72	4,403.88	4,403.84	16.20	15.01	-175.35	-5,004.32	-471.64	5,239.77	5,208.83	30.94	169.367	
4,600.00	4,584.75	4,685.46	4,685.31	16.59	16.00	-175.33	-5,003.61	-476.78	5,254.05	5,221.74	32.31	162.633	
4,700.00	4,683.78	4,911.15	4,910.40	16.98	16.78	-175.23	-4,993.81	-489.80	5,263.23	5,229.79	33.45	157.356	
4,800.00	4,782.80	5,005.55	5,004.47	17.38	17.11	-175.20	-4,988.80	-495.92	5,271.83	5,237.68	34.14	154.398	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 292H - Wellbore #1 - Surveys

Offset Site Error: 0.00 usft

Survey Program: 206-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,881.83	5,125.82	5,124.32	17.78	17.53	-175.15	-4,982.38	-503.69	5,280.42	5,245.49	34.93	151.171	
5,000.00	4,980.86	5,279.98	5,277.78	18.17	18.07	-175.07	-4,972.79	-514.78	5,288.16	5,252.33	35.83	147.588	
5,100.00	5,079.88	5,338.75	5,336.29	18.57	18.28	-175.06	-4,969.24	-519.02	5,295.96	5,259.54	36.41	145.439	
5,200.00	5,178.91	5,413.45	5,410.67	18.97	18.54	-175.05	-4,964.96	-524.31	5,304.19	5,267.15	37.05	143.167	
5,300.00	5,277.94	5,499.88	5,496.77	19.37	18.85	-175.02	-4,960.37	-530.35	5,312.83	5,275.10	37.73	140.828	
5,400.00	5,376.96	5,592.05	5,588.57	19.77	19.18	-174.99	-4,955.59	-537.03	5,321.62	5,283.20	38.42	138.502	
5,500.00	5,475.99	5,681.97	5,678.12	20.17	19.50	-174.96	-4,951.04	-543.80	5,330.56	5,291.45	39.11	136.285	
5,600.00	5,575.02	5,770.43	5,766.20	20.57	19.82	-174.92	-4,946.73	-550.74	5,339.71	5,299.91	39.80	134.164	
5,690.40	5,664.54	5,852.45	5,847.86	20.93	20.11	-174.89	-4,942.86	-557.40	5,348.16	5,307.73	40.43	132.286	
5,700.00	5,674.04	5,861.49	5,856.86	20.97	20.15	-174.88	-4,942.44	-558.15	5,349.05	5,308.55	40.50	132.085	
5,800.00	5,773.21	5,955.68	5,950.63	21.37	20.49	-174.84	-4,938.10	-565.96	5,357.53	5,316.32	41.21	130.020	
5,900.00	5,872.58	6,043.87	6,038.42	21.76	20.80	-174.79	-4,934.14	-573.38	5,364.47	5,322.58	41.89	128.058	
6,000.00	5,972.14	6,124.20	6,118.41	22.15	21.10	-174.74	-4,930.80	-579.94	5,370.07	5,327.52	42.55	126.216	
6,100.00	6,071.84	6,205.46	6,199.36	22.52	21.39	-174.70	-4,927.74	-586.34	5,374.37	5,331.17	43.20	124.396	
6,200.00	6,171.66	6,298.58	6,292.15	22.89	21.73	-174.64	-4,924.46	-593.54	5,377.24	5,333.34	43.90	122.481	
6,300.00	6,271.57	6,392.08	6,385.31	23.25	22.07	-174.57	-4,921.29	-600.73	5,378.58	5,333.98	44.60	120.594	
6,400.00	6,371.54	6,498.07	6,490.93	23.60	22.45	-174.49	-4,917.68	-608.89	5,378.26	5,332.92	45.34	118.611	
6,490.46	6,462.00	6,593.89	6,586.39	23.92	22.80	-174.41	-4,914.31	-616.32	5,376.44	5,330.43	46.01	116.845	
6,500.00	6,471.54	6,603.99	6,596.46	23.95	22.84	-174.40	-4,913.95	-617.10	5,376.17	5,330.09	46.08	116.660	
6,600.00	6,571.54	6,673.95	6,666.17	24.29	23.10	-174.34	-4,911.71	-622.63	5,373.71	5,327.02	46.69	115.092	
6,700.00	6,671.54	6,750.55	6,742.49	24.63	23.38	-174.27	-4,909.53	-628.78	5,371.68	5,324.36	47.32	113.515	
6,800.00	6,771.54	6,829.97	6,821.62	24.98	23.67	-174.20	-4,907.60	-635.20	5,370.07	5,322.11	47.96	111.964	
6,900.00	6,871.54	6,910.40	6,901.79	25.32	23.96	-174.13	-4,905.96	-641.48	5,368.83	5,320.22	48.61	110.453	
7,000.00	6,971.54	7,004.67	6,995.77	25.66	24.31	-174.06	-4,904.35	-648.63	5,367.90	5,318.60	49.31	108.870	
7,100.00	7,071.54	7,121.08	7,111.80	26.01	24.73	-173.96	-4,902.12	-657.72	5,366.81	5,316.72	50.09	107.144	
7,200.00	7,171.54	7,214.78	7,205.18	26.35	25.08	-173.87	-4,900.15	-665.28	5,365.57	5,314.79	50.79	105.647	
7,300.00	7,271.54	7,300.99	7,291.10	26.70	25.39	-173.80	-4,898.55	-672.22	5,364.58	5,313.13	51.46	104.254	
7,400.00	7,371.54	7,381.75	7,371.58	27.04	25.69	-173.73	-4,897.27	-678.66	5,363.89	5,311.78	52.10	102.946	
7,500.00	7,471.54	7,458.02	7,447.64	27.39	25.97	-173.67	-4,896.43	-684.44	5,363.61	5,310.88	52.73	101.712	
7,510.88	7,482.42	7,466.32	7,455.92	27.43	26.00	-173.66	-4,896.36	-685.05	5,363.61	5,310.81	52.80	101.580	
7,600.00	7,571.54	7,535.15	7,524.57	27.73	26.25	-173.61	-4,895.95	-689.96	5,363.79	5,310.42	53.36	100.512	
7,700.00	7,671.54	7,629.58	7,618.77	28.08	26.60	-173.54	-4,895.63	-696.45	5,364.22	5,310.16	54.06	99.220	
7,800.00	7,771.54	7,724.03	7,713.01	28.43	26.94	-173.47	-4,895.42	-702.79	5,364.77	5,310.00	54.76	97.963	
7,900.00	7,871.54	7,810.98	7,799.78	28.77	27.26	-173.41	-4,895.41	-708.43	5,365.49	5,310.06	55.43	96.795	
8,000.00	7,971.54	7,898.19	7,886.81	29.12	27.58	-173.35	-4,895.62	-713.88	5,366.45	5,310.35	56.10	95.657	
8,100.00	8,071.54	8,082.75	8,071.05	29.47	28.25	-173.24	-4,895.03	-724.75	5,366.89	5,309.73	57.15	93.903	
8,200.00	8,171.54	8,228.96	8,217.03	29.82	28.78	-173.15	-4,892.70	-732.64	5,365.93	5,307.88	58.05	92.437	
8,300.00	8,271.54	8,334.17	8,322.08	30.16	29.16	-173.09	-4,890.45	-737.86	5,364.39	5,305.60	58.79	91.250	
8,400.00	8,371.54	8,411.39	8,399.20	30.51	29.44	-173.05	-4,889.05	-741.59	5,363.17	5,303.75	59.42	90.258	
8,500.00	8,471.54	8,488.69	8,476.40	30.86	29.72	-173.01	-4,887.98	-745.27	5,362.37	5,302.32	60.05	89.296	
8,600.00	8,571.54	8,566.58	8,554.22	31.21	30.00	-172.97	-4,887.27	-748.65	5,361.99	5,301.31	60.68	88.360	
8,641.47	8,613.01	8,598.89	8,586.51	31.35	30.12	-172.96	-4,887.09	-749.90	5,361.96	5,301.01	60.95	87.980	
8,700.00	8,671.54	8,644.52	8,632.10	31.56	30.29	-172.94	-4,886.94	-751.52	5,362.03	5,300.72	61.31	87.451	
8,800.00	8,771.54	8,714.08	8,701.63	31.91	30.53	-172.92	-4,887.03	-753.58	5,362.53	5,300.62	61.91	86.622	
8,900.00	8,871.54	8,779.34	8,766.88	32.26	30.76	-172.91	-4,887.62	-754.82	5,363.66	5,301.18	62.48	85.847	
9,000.00	8,971.54	8,860.00	8,847.52	32.61	31.04	-172.90	-4,889.06	-755.39	5,365.48	5,302.37	63.11	85.019	
9,100.00	9,071.54	8,995.95	8,983.46	32.96	31.50	-172.91	-4,891.43	-755.11	5,367.26	5,303.32	63.94	83.944	
9,200.00	9,171.54	9,136.83	9,124.33	33.31	31.97	-172.92	-4,892.51	-754.27	5,367.92	5,303.14	64.78	82.862	
9,300.00	9,271.54	9,261.54	9,249.04	33.66	32.39	-172.93	-4,892.77	-753.75	5,368.08	5,302.51	65.56	81.879	
9,309.33	9,280.87	9,273.18	9,260.67	33.69	32.43	-172.93	-4,892.77	-753.71	5,368.07	5,302.43	65.63	81.788	
9,400.00	9,371.54	9,318.85	9,306.34	34.01	32.59	-172.93	-4,893.09	-753.60	5,368.51	5,302.41	66.10	81.217	
9,500.00	9,471.54	9,386.08	9,373.57	34.36	32.82	-172.93	-4,893.79	-753.50	5,369.53	5,302.86	66.67	80.535	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 292H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,600.00	9,571.54	9,458.86	9,446.34	34.71	33.06	-172.93	-4,894.99	-753.48	5,371.15	5,303.88	67.27	79.849	
9,700.00	9,671.54	9,542.12	9,529.58	35.06	33.35	-172.93	-4,896.65	-753.60	5,373.14	5,305.24	67.90	79.131	
9,800.00	9,771.54	9,627.88	9,615.32	35.41	33.64	-172.93	-4,898.61	-753.89	5,375.45	5,306.90	68.55	78.420	
9,900.00	9,871.54	9,712.00	9,699.42	35.76	33.93	-172.93	-4,900.59	-754.21	5,377.86	5,308.68	69.19	77.731	
10,000.00	9,971.54	9,731.20	9,718.60	36.11	34.00	-172.93	-4,901.27	-754.07	5,381.31	5,311.75	69.56	77.361	
10,100.00	10,071.54	9,759.00	9,746.34	36.46	34.09	-172.95	-4,902.89	-753.13	5,386.32	5,316.36	69.96	76.990	
10,200.00	10,171.54	9,759.00	9,746.34	36.81	34.09	-172.95	-4,902.89	-753.13	5,392.79	5,322.56	70.23	76.784	
10,300.00	10,271.54	9,759.00	9,746.34	37.17	34.09	-172.95	-4,902.89	-753.13	5,401.11	5,330.62	70.49	76.623	
10,400.00	10,371.54	9,807.00	9,793.83	37.52	34.24	-173.00	-4,908.01	-748.68	5,410.72	5,339.78	70.94	76.274	
10,500.00	10,471.54	9,807.00	9,793.83	37.87	34.24	-173.00	-4,908.01	-748.68	5,421.82	5,350.65	71.17	76.183	
10,600.00	10,571.54	9,807.00	9,793.83	38.22	34.24	-173.00	-4,908.01	-748.68	5,434.74	5,363.36	71.38	76.135	
10,700.00	10,671.54	9,807.00	9,793.83	38.57	34.24	-173.00	-4,908.01	-748.68	5,449.46	5,377.88	71.58	76.130	
10,800.00	10,771.54	9,854.00	9,839.26	38.93	34.38	-173.10	-4,916.34	-740.12	5,465.39	5,393.41	71.98	75.927	
10,900.00	10,871.54	9,854.00	9,839.26	39.28	34.38	-173.10	-4,916.34	-740.12	5,482.85	5,410.70	72.16	75.985	
11,000.00	10,971.54	9,854.00	9,839.26	39.63	34.38	-173.10	-4,916.34	-740.12	5,502.08	5,429.76	72.32	76.083	
11,100.00	11,071.54	9,854.00	9,839.26	39.98	34.38	-173.10	-4,916.34	-740.12	5,523.04	5,450.58	72.46	76.219	
11,200.00	11,171.54	9,902.00	9,883.99	40.34	34.51	-173.25	-4,928.23	-727.47	5,545.40	5,472.57	72.83	76.142	
11,300.00	11,271.54	9,902.00	9,883.99	40.69	34.51	-173.25	-4,928.23	-727.47	5,568.99	5,496.04	72.96	76.334	
11,400.00	11,371.54	9,902.00	9,883.99	41.04	34.51	-173.25	-4,928.23	-727.47	5,594.27	5,521.20	73.07	76.563	
11,500.00	11,471.54	9,902.00	9,883.99	41.40	34.51	-173.25	-4,928.23	-727.47	5,621.22	5,548.05	73.17	76.826	
11,525.27	11,496.81	9,902.00	9,883.99	41.48	34.51	-173.25	-4,928.23	-727.47	5,628.29	5,555.09	73.19	76.897	
11,550.00	11,521.53	9,902.00	9,883.99	41.57	34.51	-173.25	-4,928.23	-727.47	5,634.82	5,561.61	73.21	76.969	
11,600.00	11,571.33	9,923.74	9,903.67	41.72	34.56	-173.31	-4,934.67	-720.87	5,644.94	5,571.60	73.34	76.970	
11,650.00	11,620.56	9,949.00	9,926.15	41.85	34.63	-173.38	-4,942.96	-712.88	5,651.87	5,578.39	73.48	76.916	
11,700.00	11,668.84	9,949.00	9,926.15	41.98	34.63	-173.34	-4,942.96	-712.88	5,654.58	5,581.10	73.48	76.952	
11,750.00	11,715.82	9,949.00	9,926.15	42.10	34.63	-173.28	-4,942.96	-712.88	5,653.56	5,580.09	73.47	76.949	
11,800.00	11,761.13	9,949.00	9,926.15	42.20	34.63	-173.21	-4,942.96	-712.88	5,648.81	5,575.36	73.45	76.908	
11,850.00	11,804.43	9,949.00	9,926.15	42.30	34.63	-173.13	-4,942.96	-712.88	5,640.36	5,566.95	73.42	76.828	
11,900.00	11,845.39	9,949.00	9,926.15	42.39	34.63	-173.04	-4,942.96	-712.88	5,628.26	5,554.89	73.37	76.711	
11,950.00	11,883.69	9,949.00	9,926.15	42.47	34.63	-172.93	-4,942.96	-712.88	5,612.58	5,539.26	73.31	76.556	
12,000.00	11,919.06	9,949.00	9,926.15	42.54	34.63	-172.81	-4,942.96	-712.88	5,593.40	5,520.15	73.25	76.364	
12,050.00	11,951.20	9,949.00	9,926.15	42.61	34.63	-172.68	-4,942.96	-712.88	5,570.84	5,497.67	73.17	76.135	
12,100.00	11,979.89	9,949.00	9,926.15	42.68	34.63	-172.53	-4,942.96	-712.88	5,545.02	5,471.94	73.09	75.868	
12,150.00	12,004.90	9,949.00	9,926.15	42.75	34.63	-172.38	-4,942.96	-712.88	5,516.11	5,443.11	73.00	75.565	
12,200.00	12,026.05	9,973.01	9,947.06	42.82	34.68	-172.32	-4,951.84	-705.12	5,483.59	5,410.54	73.04	75.073	
12,250.00	12,043.17	9,997.00	9,967.42	42.89	34.74	-172.25	-4,961.87	-697.36	5,449.39	5,376.30	73.09	74.559	
12,300.00	12,056.13	9,997.00	9,967.42	42.97	34.74	-172.07	-4,961.87	-697.36	5,412.01	5,339.01	73.00	74.140	
12,350.00	12,064.83	9,997.00	9,967.42	43.05	34.74	-171.89	-4,961.87	-697.36	5,372.36	5,299.45	72.91	73.686	
12,400.00	12,069.21	9,997.00	9,967.42	43.13	34.74	-171.70	-4,961.87	-697.36	5,330.71	5,257.88	72.83	73.198	
12,423.64	12,069.77	9,997.00	9,967.42	43.17	34.74	-171.60	-4,961.87	-697.36	5,310.39	5,237.60	72.79	72.954	
12,500.00	12,069.98	9,997.00	9,967.42	43.32	34.74	-171.30	-4,961.87	-697.36	5,244.32	5,171.65	72.67	72.164	
12,600.00	12,070.27	9,997.00	9,967.42	43.58	34.74	-170.89	-4,961.87	-697.36	5,158.23	5,085.70	72.52	71.127	
12,667.68	12,070.46	9,997.00	9,967.42	43.79	34.74	-170.61	-4,961.87	-697.36	5,100.24	5,027.82	72.42	70.424	
12,700.00	12,070.55	9,997.00	9,967.42	43.90	34.74	-170.47	-4,961.87	-697.36	5,072.58	5,000.20	72.38	70.087	
12,800.00	12,070.84	9,997.00	9,967.42	44.29	34.74	-170.06	-4,961.87	-697.36	4,986.63	4,914.40	72.23	69.037	
12,900.00	12,071.12	9,997.00	9,967.42	44.73	34.74	-169.68	-4,961.87	-697.36	4,900.21	4,828.12	72.08	67.980	
13,000.00	12,071.41	9,997.00	9,967.42	45.22	34.74	-169.32	-4,961.87	-697.36	4,813.38	4,741.45	71.93	66.918	
13,100.00	12,071.69	9,997.00	9,967.42	45.76	34.74	-168.99	-4,961.87	-697.36	4,726.24	4,654.48	71.77	65.856	
13,200.00	12,071.98	9,997.00	9,967.42	46.34	34.74	-168.70	-4,961.87	-697.36	4,638.89	4,567.29	71.59	64.795	
13,200.11	12,071.98	9,997.00	9,967.42	46.34	34.74	-168.70	-4,961.87	-697.36	4,638.80	4,567.20	71.59	64.794	
13,300.00	12,072.26	10,019.94	9,986.33	46.97	34.79	-168.55	-4,972.51	-689.92	4,551.08	4,479.52	71.57	63.592	
13,400.00	12,072.55	10,044.00	10,005.51	47.64	34.85	-168.40	-4,984.74	-682.10	4,464.62	4,393.07	71.55	62.398	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 292H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,500.00	12,072.83	10,044.00	10,005.51	48.36	34.85	-168.09	-4,984.74	-682.10	4,378.02	4,306.64	71.37	61.339	
13,600.00	12,073.12	10,044.00	10,005.51	49.13	34.85	-167.77	-4,984.74	-682.10	4,291.99	4,220.79	71.20	60.282	
13,700.00	12,073.40	10,044.00	10,005.51	49.94	34.85	-167.43	-4,984.74	-682.10	4,206.59	4,135.56	71.02	59.227	
13,800.00	12,073.68	10,044.00	10,005.51	50.80	34.85	-167.07	-4,984.74	-682.10	4,121.84	4,050.99	70.85	58.176	
13,900.00	12,073.97	10,044.00	10,005.51	51.69	34.85	-166.69	-4,984.74	-682.10	4,037.79	3,967.11	70.68	57.127	
14,000.00	12,074.25	10,044.00	10,005.51	52.62	34.85	-166.29	-4,984.74	-682.10	3,954.48	3,883.97	70.51	56.081	
14,100.00	12,074.54	10,044.00	10,005.51	53.58	34.85	-165.87	-4,984.74	-682.10	3,871.97	3,801.62	70.35	55.037	
14,200.00	12,074.82	10,070.18	10,025.48	54.58	34.90	-165.64	-4,999.19	-673.30	3,789.53	3,719.16	70.38	53.846	
14,300.00	12,075.11	10,092.00	10,041.31	55.61	34.95	-165.37	-5,012.06	-665.53	3,708.54	3,638.16	70.38	52.696	
14,400.00	12,075.39	10,092.00	10,041.31	56.67	34.95	-164.88	-5,012.06	-665.53	3,627.94	3,557.70	70.23	51.655	
14,500.00	12,075.68	10,092.00	10,041.31	57.76	34.95	-164.36	-5,012.06	-665.53	3,548.32	3,478.22	70.10	50.617	
14,600.00	12,075.96	10,092.00	10,041.31	58.87	34.95	-163.80	-5,012.06	-665.53	3,469.77	3,399.79	69.98	49.583	
14,700.00	12,076.24	10,092.00	10,041.31	60.01	34.95	-163.20	-5,012.06	-665.53	3,392.34	3,322.47	69.87	48.552	
14,800.00	12,076.53	10,116.55	10,058.15	61.17	34.99	-162.85	-5,027.37	-656.35	3,315.44	3,245.51	69.93	47.411	
14,900.00	12,076.81	10,139.00	10,072.62	62.36	35.04	-162.46	-5,042.11	-647.55	3,240.15	3,170.16	69.98	46.300	
15,000.00	12,077.10	10,139.00	10,072.62	63.57	35.04	-161.75	-5,042.11	-647.55	3,165.63	3,095.71	69.92	45.275	
15,100.00	12,077.38	10,139.00	10,072.62	64.79	35.04	-160.98	-5,042.11	-647.55	3,092.54	3,022.66	69.88	44.255	
15,200.00	12,077.67	10,139.00	10,072.62	66.04	35.04	-160.15	-5,042.11	-647.55	3,021.00	2,951.14	69.86	43.241	
15,300.00	12,077.95	10,166.39	10,089.09	67.30	35.09	-159.69	-5,060.93	-636.40	2,950.32	2,880.32	70.00	42.145	
15,400.00	12,078.23	10,187.00	10,100.65	68.58	35.14	-159.09	-5,075.65	-627.77	2,881.48	2,811.36	70.12	41.092	
15,500.00	12,078.52	10,187.00	10,100.65	69.88	35.14	-158.07	-5,075.65	-627.77	2,814.04	2,743.85	70.19	40.094	
15,600.00	12,078.80	10,187.00	10,100.65	71.19	35.14	-156.95	-5,075.65	-627.77	2,748.58	2,678.30	70.29	39.105	
15,700.00	12,079.09	10,234.00	10,124.53	72.51	35.25	-156.72	-5,110.65	-607.48	2,684.49	2,613.94	70.55	38.052	
15,800.00	12,079.37	10,234.00	10,124.53	73.85	35.25	-155.43	-5,110.65	-607.48	2,622.08	2,551.37	70.71	37.081	
15,900.00	12,079.66	10,234.00	10,124.53	75.21	35.25	-154.00	-5,110.65	-607.48	2,562.06	2,491.14	70.92	36.125	
16,000.00	12,079.94	10,282.00	10,145.61	76.57	35.38	-153.69	-5,148.09	-586.08	2,503.66	2,432.45	71.21	35.157	
16,100.00	12,080.22	10,282.00	10,145.61	77.94	35.38	-152.01	-5,148.09	-586.08	2,447.38	2,375.88	71.50	34.230	
16,200.00	12,080.51	10,306.25	10,154.87	79.33	35.45	-150.89	-5,167.45	-574.80	2,393.43	2,321.61	71.81	33.328	
16,300.00	12,080.79	10,324.00	10,160.93	80.73	35.50	-149.45	-5,181.71	-566.15	2,341.88	2,269.72	72.16	32.456	
16,400.00	12,081.08	10,338.99	10,165.59	82.13	35.55	-147.74	-5,193.89	-558.76	2,292.96	2,220.42	72.54	31.610	
16,500.00	12,081.36	10,355.00	10,170.15	83.55	35.60	-145.85	-5,207.16	-551.04	2,246.91	2,173.95	72.96	30.797	
16,600.00	12,081.65	10,368.48	10,173.67	84.97	35.65	-143.60	-5,218.54	-544.73	2,203.87	2,130.43	73.43	30.013	
16,700.00	12,081.93	10,387.00	10,178.11	86.40	35.71	-141.27	-5,234.51	-536.47	2,164.00	2,090.07	73.93	29.271	
16,800.00	12,082.22	10,419.00	10,185.09	87.84	35.82	-139.29	-5,262.77	-523.20	2,127.34	2,052.92	74.42	28.587	
16,900.00	12,082.50	10,451.00	10,191.69	89.29	35.94	-137.03	-5,291.55	-510.87	2,093.40	2,018.45	74.95	27.931	
17,000.00	12,082.78	10,482.00	10,197.58	90.75	36.07	-134.39	-5,319.90	-499.79	2,062.35	1,986.82	75.53	27.304	
17,100.00	12,083.07	10,498.57	10,200.43	92.21	36.13	-130.46	-5,335.31	-494.42	2,034.47	1,958.25	76.23	26.690	
17,200.00	12,083.35	10,514.00	10,202.94	93.68	36.20	-125.85	-5,349.84	-489.89	2,010.17	1,933.19	76.98	26.114	
17,300.00	12,083.64	10,545.00	10,207.55	95.15	36.32	-121.70	-5,379.52	-482.24	1,989.20	1,911.47	77.73	25.591	
17,400.00	12,083.92	10,577.00	10,211.84	96.63	36.46	-117.09	-5,410.71	-476.58	1,971.70	1,893.14	78.56	25.098	
17,500.00	12,084.21	10,608.00	10,215.67	98.12	36.58	-111.83	-5,441.31	-473.47	1,957.66	1,878.18	79.48	24.632	
17,600.00	12,084.49	10,660.34	10,221.49	99.61	36.80	-107.92	-5,493.28	-471.49	1,946.55	1,866.07	80.48	24.187	
17,700.00	12,084.77	10,703.00	10,224.97	101.11	36.98	-102.95	-5,535.79	-470.36	1,938.34	1,856.84	81.50	23.784	
17,800.00	12,085.06	10,735.00	10,226.47	102.61	37.13	-96.78	-5,567.74	-469.86	1,933.46	1,850.92	82.53	23.426	
17,900.00	12,085.34	10,790.02	10,227.50	104.11	37.39	-92.61	-5,622.75	-469.46	1,931.65	1,848.05	83.60	23.107	
18,000.00	12,085.63	10,861.00	10,228.25	105.63	37.74	-89.90	-5,693.73	-468.81	1,930.99	1,846.32	84.67	22.806	
18,011.53	12,085.66	10,879.11	10,228.34	105.80	37.85	-90.52	-5,711.84	-468.66	1,930.92	1,846.12	84.80	22.770	CC, ES
18,100.00	12,085.91	10,924.91	10,227.95	107.14	38.11	-86.54	-5,757.63	-468.67	1,932.05	1,846.28	85.77	22.526	
18,200.00	12,086.20	10,989.50	10,226.09	108.66	38.49	-83.28	-5,822.18	-469.52	1,935.55	1,848.66	86.89	22.275	
18,300.00	12,086.48	11,073.81	10,223.09	110.18	39.03	-81.87	-5,906.42	-471.61	1,940.18	1,852.10	88.07	22.029	
18,400.00	12,086.76	11,176.54	10,218.94	111.71	39.74	-82.15	-6,009.01	-474.90	1,945.50	1,856.17	89.33	21.778	
18,500.00	12,087.05	11,321.11	10,216.43	113.24	40.84	-86.24	-6,153.44	-480.59	1,948.73	1,857.94	90.78	21.465	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 292H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 205-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,600.00	12,087.33	11,442.75	10,215.46	114.78	41.84	-88.21	-6,275.04	-483.72	1,950.78	1,858.59	92.19	21.161	
18,700.00	12,087.62	11,535.91	10,214.52	116.32	42.67	-87.60	-6,368.19	-484.73	1,952.55	1,859.04	93.51	20.880	
18,800.00	12,087.90	11,645.21	10,213.40	117.86	43.70	-88.44	-6,477.47	-484.62	1,953.94	1,859.07	94.86	20.598	
18,900.00	12,088.19	11,727.43	10,212.21	119.40	44.50	-86.84	-6,559.68	-484.71	1,955.80	1,859.63	96.17	20.337	
19,000.00	12,088.47	11,837.00	10,210.44	120.95	45.62	-87.70	-6,669.25	-484.99	1,957.88	1,860.31	97.57	20.066	
19,100.00	12,088.76	11,946.49	10,209.11	122.50	46.78	-88.56	-6,778.72	-484.04	1,959.20	1,860.23	98.97	19.796	
19,200.00	12,089.04	12,035.22	10,207.79	124.05	47.75	-87.54	-6,867.43	-483.14	1,960.75	1,860.43	100.32	19.545	
19,300.00	12,089.32	12,120.80	10,206.20	125.61	48.71	-86.24	-6,953.01	-483.07	1,962.96	1,861.25	101.70	19.301	
19,400.00	12,089.61	12,232.68	10,203.71	127.17	49.99	-87.32	-7,064.85	-484.16	1,965.92	1,862.70	103.22	19.046	
19,500.00	12,089.89	12,367.71	10,203.58	128.73	51.59	-90.46	-7,199.88	-483.85	1,966.18	1,861.36	104.82	18.758	
19,600.00	12,090.18	12,465.04	10,203.65	130.29	52.77	-90.22	-7,297.21	-483.48	1,966.46	1,860.16	106.30	18.499	
19,700.00	12,090.46	12,561.62	10,203.94	131.86	53.96	-89.91	-7,393.78	-484.20	1,966.89	1,859.04	107.84	18.238	
19,800.00	12,090.75	12,677.58	10,204.45	133.42	55.41	-91.34	-7,509.73	-484.64	1,967.07	1,857.61	109.46	17.970	
19,900.00	12,091.03	12,793.91	10,205.13	134.99	56.91	-92.81	-7,626.02	-481.85	1,966.19	1,855.20	110.98	17.716	
20,000.00	12,091.31	12,887.14	10,205.77	136.57	58.13	-92.20	-7,719.22	-479.58	1,965.22	1,852.76	112.45	17.476	
20,097.07	12,091.59	12,968.90	10,206.21	138.09	59.22	-90.83	-7,800.98	-478.34	1,964.72	1,850.84	113.88	17.252	
20,100.00	12,091.60	12,970.79	10,206.21	138.14	59.24	-90.73	-7,802.86	-478.32	1,964.72	1,850.80	113.93	17.246	
20,200.00	12,091.88	13,034.96	10,205.62	139.72	60.10	-87.51	-7,867.02	-477.59	1,965.69	1,850.36	115.33	17.045	
20,300.00	12,092.17	13,111.36	10,203.70	141.29	61.13	-85.39	-7,943.40	-476.93	1,968.23	1,851.48	116.76	16.858	
20,400.00	12,092.45	13,196.93	10,200.90	142.87	62.29	-84.10	-8,028.92	-476.78	1,971.73	1,853.49	118.24	16.676	
20,500.00	12,092.74	13,284.59	10,197.80	144.45	63.48	-83.01	-8,116.53	-477.52	1,975.82	1,856.06	119.77	16.497	
20,600.00	12,093.02	13,401.20	10,193.60	146.04	65.09	-84.50	-8,233.04	-479.36	1,980.27	1,858.78	121.49	16.300	
20,700.00	12,093.31	13,574.88	10,192.29	147.62	67.52	-91.07	-8,406.70	-479.69	1,981.16	1,857.69	123.47	16.046	
20,753.45	12,093.46	13,626.01	10,192.41	148.47	68.24	-90.86	-8,457.83	-479.19	1,981.12	1,856.80	124.32	15.936	
20,800.00	12,093.59	13,668.73	10,192.49	149.21	68.84	-90.52	-8,500.55	-478.91	1,981.16	1,856.10	125.06	15.842	
20,900.00	12,093.87	13,762.22	10,192.63	150.80	70.17	-89.94	-8,594.03	-478.98	1,981.51	1,854.83	126.69	15.641	
21,000.00	12,094.16	13,865.97	10,192.80	152.39	71.65	-90.27	-8,697.79	-479.64	1,982.03	1,853.64	128.39	15.437	
21,100.00	12,094.44	13,983.59	10,193.76	153.98	73.35	-91.84	-8,815.39	-480.39	1,981.94	1,851.76	130.19	15.224	
21,186.14	12,094.69	14,058.32	10,194.18	155.35	74.43	-90.83	-8,890.12	-479.60	1,981.61	1,850.06	131.55	15.063	
21,200.00	12,094.73	14,069.59	10,194.18	155.57	74.60	-90.60	-8,901.39	-479.47	1,981.62	1,849.85	131.77	15.039	
21,300.00	12,095.01	14,147.04	10,193.59	157.16	75.73	-88.59	-8,978.83	-478.23	1,982.29	1,849.01	133.28	14.874	
21,400.00	12,095.30	14,225.72	10,191.64	158.76	76.89	-86.68	-9,057.45	-475.91	1,984.13	1,849.42	134.71	14.729	
21,500.00	12,095.58	14,307.01	10,188.70	160.35	78.10	-84.99	-9,138.63	-473.15	1,986.94	1,850.82	136.12	14.597	
21,600.00	12,095.86	14,414.56	10,183.98	161.95	79.70	-85.63	-9,246.03	-469.99	1,990.66	1,853.03	137.63	14.464	
21,700.00	12,096.15	14,560.72	10,181.82	163.55	81.89	-89.77	-9,392.14	-466.85	1,991.58	1,852.19	139.39	14.288	
21,800.00	12,096.43	14,655.09	10,181.19	165.15	83.30	-89.26	-9,486.50	-465.70	1,992.30	1,851.30	141.00	14.130	
21,900.00	12,096.72	14,736.08	10,180.24	166.75	84.52	-87.54	-9,567.48	-465.05	1,993.62	1,851.07	142.56	13.985	
22,000.00	12,097.00	14,814.76	10,178.66	168.35	85.70	-85.63	-9,646.15	-465.01	1,995.98	1,851.87	144.11	13.850	
22,100.00	12,097.29	14,897.28	10,176.11	169.96	86.95	-84.06	-9,728.62	-465.01	1,999.36	1,853.69	145.67	13.726	
22,175.33	12,097.50	14,965.82	10,173.56	171.16	87.98	-83.46	-9,797.11	-465.01	2,002.37	1,855.50	146.87	13.634 SF	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 293H - Wellbore #1 - Design #2

Offset Site Error: 0.00 usft

Survey Program: 26-MWD, 698-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-162.89	-4,573.05	-1,407.62	4,784.86				
100.00	100.00	100.00	92.93	0.13	0.27	-162.89	-4,572.77	-1,407.51	4,784.54	4,784.14	0.40	N/A	
167.30	167.30	139.39	139.39	0.38	0.40	-162.89	-4,572.55	-1,407.60	4,784.30	4,783.53	0.78	6,140.519	
200.00	200.00	159.85	159.84	0.49	0.47	-162.89	-4,572.55	-1,407.71	4,784.35	4,783.38	0.97	4,949.491	
300.00	300.00	261.14	261.13	0.85	0.83	-162.89	-4,572.58	-1,408.01	4,784.47	4,782.79	1.68	2,851.803	
400.00	400.00	369.47	369.47	1.21	1.21	-162.88	-4,572.68	-1,408.47	4,784.69	4,782.27	2.42	1,980.755	
490.14	490.14	462.24	462.24	1.53	1.53	-162.88	-4,572.67	-1,408.11	4,784.57	4,781.51	3.06	1,563.635	
500.00	500.00	467.39	467.38	1.57	1.54	-162.89	-4,572.69	-1,408.05	4,784.57	4,781.46	3.11	1,536.971	
600.00	600.00	534.23	534.21	1.93	1.78	-162.90	-4,573.38	-1,407.27	4,785.14	4,781.44	3.70	1,292.499	
700.00	700.00	650.98	650.95	2.29	2.18	-162.92	-4,574.70	-1,405.51	4,785.79	4,781.32	4.47	1,071.096	
800.00	800.00	734.66	734.61	2.64	2.48	-162.94	-4,575.59	-1,404.50	4,786.45	4,781.33	5.12	934.631	
900.00	900.00	856.64	856.58	3.00	2.91	-162.96	-4,576.86	-1,403.18	4,787.15	4,781.24	5.91	810.187	
1,000.00	1,000.00	972.16	972.10	3.36	3.31	-162.96	-4,576.96	-1,403.07	4,787.19	4,780.52	6.67	717.756	
1,100.00	1,100.00	1,072.16	1,072.10	3.72	3.66	-162.96	-4,576.96	-1,403.07	4,787.19	4,779.81	7.38	648.913	
1,200.00	1,200.00	1,172.16	1,172.10	4.08	4.01	-162.96	-4,576.96	-1,403.07	4,787.19	4,779.10	8.09	591.999	
1,300.00	1,300.00	1,272.16	1,272.10	4.44	4.36	-162.96	-4,576.96	-1,403.07	4,787.19	4,778.39	8.80	544.185	
1,400.00	1,400.00	1,372.16	1,372.10	4.79	4.71	-162.96	-4,576.96	-1,403.07	4,787.19	4,777.68	9.51	503.466	
1,500.00	1,500.00	1,472.16	1,472.10	5.15	5.07	-162.96	-4,576.96	-1,403.07	4,787.19	4,776.97	10.22	468.381	
1,600.00	1,600.00	1,572.16	1,572.10	5.51	5.42	-162.96	-4,576.96	-1,403.07	4,787.19	4,776.26	10.93	437.843	
1,700.00	1,700.00	1,672.16	1,672.10	5.87	5.78	-162.96	-4,576.96	-1,403.07	4,787.19	4,775.54	11.65	411.025	
1,800.00	1,800.00	1,772.16	1,772.10	6.23	6.13	-162.96	-4,576.96	-1,403.07	4,787.19	4,774.83	12.36	387.290	
1,900.00	1,900.00	1,872.16	1,872.10	6.59	6.49	-162.96	-4,576.96	-1,403.07	4,787.19	4,774.11	13.07	366.137	
2,000.00	2,000.00	1,972.16	1,972.10	6.95	6.84	-162.96	-4,576.96	-1,403.07	4,787.19	4,773.40	13.79	347.167	
2,100.00	2,100.00	2,072.16	2,072.10	7.30	7.20	-162.96	-4,576.96	-1,403.07	4,787.19	4,772.68	14.50	330.060	
2,200.00	2,200.00	2,172.16	2,172.10	7.66	7.56	-162.96	-4,576.96	-1,403.07	4,787.19	4,771.97	15.22	314.556	
2,300.00	2,300.00	2,272.16	2,272.10	8.02	7.91	-162.96	-4,576.96	-1,403.07	4,787.19	4,771.25	15.93	300.440	
2,400.00	2,400.00	2,372.16	2,372.10	8.38	8.27	-162.96	-4,576.96	-1,403.07	4,787.19	4,770.54	16.65	287.533	
2,500.00	2,500.00	2,472.16	2,472.10	8.74	8.63	-162.96	-4,576.96	-1,403.07	4,787.19	4,769.82	17.36	275.687	
2,600.00	2,599.99	2,572.16	2,572.09	9.10	8.98	-162.96	-4,576.96	-1,403.07	4,787.95	4,769.87	18.08	264.823	
2,700.00	2,699.96	2,672.12	2,672.06	9.45	9.34	-162.98	-4,576.96	-1,403.07	4,790.24	4,771.44	18.79	254.868	
2,800.00	2,799.86	2,772.02	2,771.96	9.81	9.70	-163.00	-4,576.96	-1,403.07	4,794.05	4,774.54	19.51	245.723	
2,900.00	2,899.68	2,871.84	2,871.78	10.17	10.05	-163.04	-4,576.96	-1,403.07	4,799.39	4,779.16	20.22	237.303	
3,000.00	2,999.37	2,971.53	2,971.47	10.53	10.41	-163.08	-4,576.96	-1,403.07	4,806.25	4,785.31	20.94	229.534	
3,100.00	3,098.90	3,054.14	3,054.08	10.89	10.70	-163.14	-4,576.98	-1,403.32	4,814.77	4,793.18	21.59	223.023	
3,200.00	3,198.26	3,129.82	3,129.75	11.25	10.96	-163.19	-4,577.09	-1,404.53	4,825.27	4,803.06	22.21	217.263	
3,300.06	3,297.46	3,205.38	3,205.27	11.62	11.22	-163.24	-4,577.28	-1,406.73	4,837.79	4,814.96	22.83	211.934	
3,400.00	3,396.43	3,280.71	3,280.54	11.98	11.48	-163.28	-4,577.56	-1,409.91	4,851.53	4,828.09	23.44	206.944	
3,500.00	3,495.46	3,356.03	3,355.74	12.36	11.75	-163.32	-4,577.92	-1,414.08	4,865.77	4,841.71	24.06	202.223	
3,600.00	3,594.48	3,431.26	3,430.79	12.73	12.01	-163.34	-4,578.37	-1,419.22	4,880.49	4,855.81	24.68	197.750	
3,700.00	3,693.51	3,506.38	3,505.66	13.11	12.27	-163.35	-4,578.91	-1,425.34	4,895.68	4,870.38	25.30	193.511	
3,800.00	3,792.54	3,581.36	3,580.30	13.49	12.53	-163.35	-4,579.53	-1,432.42	4,911.36	4,885.44	25.92	189.484	
3,900.00	3,891.56	3,656.17	3,654.67	13.87	12.80	-163.34	-4,580.23	-1,440.45	4,927.52	4,900.98	26.54	185.658	
4,000.00	3,990.59	3,747.07	3,744.94	14.25	13.12	-163.30	-4,581.17	-1,451.12	4,944.04	4,916.82	27.23	181.597	
4,100.00	4,089.62	3,845.60	3,842.78	14.64	13.47	-163.25	-4,582.18	-1,462.75	4,960.60	4,932.66	27.94	177.531	
4,200.00	4,188.64	3,944.14	3,940.62	15.03	13.83	-163.21	-4,583.20	-1,474.37	4,977.16	4,948.49	28.66	173.651	
4,300.00	4,287.67	4,042.67	4,038.46	15.42	14.19	-163.16	-4,584.22	-1,485.99	4,993.72	4,964.33	29.38	169.945	
4,400.00	4,386.70	4,141.20	4,136.30	15.81	14.55	-163.11	-4,585.23	-1,497.61	5,010.28	4,980.17	30.11	166.402	
4,500.00	4,485.72	4,239.73	4,234.14	16.20	14.91	-163.07	-4,586.25	-1,509.23	5,026.85	4,996.01	30.84	163.014	
4,600.00	4,584.75	4,338.26	4,331.98	16.59	15.28	-163.02	-4,587.27	-1,520.86	5,043.42	5,011.85	31.57	159.770	
4,700.00	4,683.78	4,436.80	4,429.82	16.98	15.64	-162.97	-4,588.28	-1,532.48	5,060.00	5,027.70	32.30	156.663	
4,800.00	4,782.80	4,535.33	4,527.66	17.38	16.01	-162.93	-4,589.30	-1,544.10	5,076.57	5,043.54	33.03	153.684	
4,900.00	4,881.83	4,633.86	4,625.50	17.78	16.38	-162.88	-4,590.32	-1,555.72	5,093.15	5,059.39	33.77	150.827	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
'ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 293H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

urvey Program: 26-MWD, 698-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,980.86	4,732.39	4,723.33	18.17	16.75	-162.84	-4,591.33	-1,567.35	5,109.74	5,075.23	34.51	148.085	
5,100.00	5,079.88	4,830.93	4,821.17	18.57	17.12	-162.79	-4,592.35	-1,578.97	5,126.33	5,091.08	35.24	145.450	
5,200.00	5,178.91	4,929.46	4,919.01	18.97	17.50	-162.75	-4,593.37	-1,590.59	5,142.92	5,106.93	35.99	142.918	
5,300.00	5,277.94	5,027.99	5,016.85	19.37	17.87	-162.70	-4,594.38	-1,602.21	5,159.51	5,122.78	36.73	140.483	
5,400.00	5,376.96	5,126.52	5,114.69	19.77	18.25	-162.66	-4,595.40	-1,613.83	5,176.11	5,138.64	37.47	138.139	
5,500.00	5,475.99	5,225.06	5,212.53	20.17	18.63	-162.62	-4,596.42	-1,625.46	5,192.71	5,154.49	38.21	135.882	
5,600.00	5,575.02	5,323.59	5,310.37	20.57	19.00	-162.57	-4,597.43	-1,637.08	5,209.31	5,170.35	38.96	133.707	
5,690.40	5,664.54	5,412.66	5,398.82	20.93	19.34	-162.53	-4,598.35	-1,647.59	5,224.32	5,184.69	39.64	131.809	
5,700.00	5,674.04	5,422.12	5,408.21	20.97	19.38	-162.53	-4,598.45	-1,648.70	5,225.91	5,186.20	39.71	131.611	
5,800.00	5,773.21	5,520.78	5,506.17	21.37	19.76	-162.48	-4,599.47	-1,660.34	5,241.63	5,201.18	40.45	129.570	
5,900.00	5,872.58	5,619.61	5,604.31	21.76	20.14	-162.42	-4,600.49	-1,672.00	5,255.86	5,214.66	41.20	127.569	
6,000.00	5,972.14	5,718.60	5,702.61	22.15	20.53	-162.36	-4,601.51	-1,683.67	5,268.60	5,226.65	41.94	125.607	
6,100.00	6,071.84	5,817.72	5,801.02	22.52	20.91	-162.28	-4,602.53	-1,695.36	5,279.84	5,237.15	42.69	123.683	
6,200.00	6,171.66	5,916.92	5,899.53	22.89	21.29	-162.19	-4,603.56	-1,707.07	5,289.58	5,246.16	43.43	121.796	
6,300.00	6,271.57	6,016.19	5,998.10	23.25	21.68	-162.10	-4,604.58	-1,718.77	5,297.84	5,253.67	44.17	119.945	
6,400.00	6,371.54	6,115.49	6,096.70	23.60	22.07	-161.99	-4,605.61	-1,730.49	5,304.60	5,259.70	44.91	118.129	
6,490.46	6,462.00	6,205.32	6,185.90	23.92	22.42	-161.89	-4,606.53	-1,741.08	5,309.44	5,263.87	45.57	116.514	
6,500.00	6,471.54	6,214.80	6,195.31	23.95	22.45	-161.88	-4,606.63	-1,742.20	5,309.89	5,264.25	45.64	116.345	
6,600.00	6,571.54	6,314.09	6,293.91	24.29	22.84	-161.76	-4,607.66	-1,753.91	5,314.58	5,268.20	46.37	114.607	
6,700.00	6,671.54	6,413.39	6,392.51	24.63	23.23	-161.65	-4,608.68	-1,765.63	5,319.29	5,272.18	47.11	112.922	
6,800.00	6,771.54	6,512.69	6,491.10	24.98	23.62	-161.53	-4,609.71	-1,777.34	5,324.02	5,276.18	47.84	111.288	
6,900.00	6,871.54	6,611.98	6,589.70	25.32	24.01	-161.42	-4,610.73	-1,789.05	5,328.77	5,280.20	48.57	109.703	
7,000.00	6,971.54	6,711.28	6,688.30	25.66	24.40	-161.30	-4,611.75	-1,800.76	5,333.55	5,284.24	49.31	108.164	
7,100.00	7,071.54	6,810.58	6,786.90	26.01	24.79	-161.18	-4,612.78	-1,812.47	5,338.35	5,288.30	50.05	106.670	
7,200.00	7,171.54	6,909.87	6,885.50	26.35	25.18	-161.07	-4,613.80	-1,824.19	5,343.17	5,292.39	50.78	105.219	
7,300.00	7,271.54	7,009.17	6,984.09	26.70	25.57	-160.95	-4,614.83	-1,835.90	5,348.01	5,296.49	51.52	103.809	
7,400.00	7,371.54	7,108.47	7,082.69	27.04	25.96	-160.84	-4,615.85	-1,847.61	5,352.87	5,300.62	52.25	102.438	
7,500.00	7,471.54	7,207.76	7,181.29	27.39	26.35	-160.72	-4,616.88	-1,859.32	5,357.76	5,304.77	52.99	101.106	
7,600.00	7,571.54	7,307.06	7,279.89	27.73	26.74	-160.61	-4,617.90	-1,871.04	5,362.67	5,308.94	53.73	99.809	
7,700.00	7,671.54	7,406.36	7,378.49	28.08	27.14	-160.49	-4,618.93	-1,882.75	5,367.60	5,313.13	54.47	98.548	
7,800.00	7,771.54	7,505.65	7,477.08	28.43	27.53	-160.38	-4,619.95	-1,894.46	5,372.55	5,317.34	55.20	97.320	
7,900.00	7,871.54	7,604.95	7,575.68	28.77	27.92	-160.27	-4,620.98	-1,906.17	5,377.52	5,321.58	55.94	96.125	
8,000.00	7,971.54	7,704.24	7,674.28	29.12	28.32	-160.15	-4,622.00	-1,917.89	5,382.51	5,325.83	56.68	94.960	
8,100.00	8,071.54	7,852.27	7,821.41	29.47	28.89	-160.00	-4,623.42	-1,934.06	5,387.20	5,329.57	57.63	93.483	
8,200.00	8,171.54	8,018.29	7,986.85	29.82	29.53	-159.86	-4,624.61	-1,947.75	5,390.71	5,332.08	58.63	91.946	
8,300.00	8,271.54	8,184.97	8,153.28	30.16	30.14	-159.78	-4,625.40	-1,956.68	5,393.01	5,333.40	59.61	90.476	
8,400.00	8,371.54	8,352.03	8,320.29	30.51	30.72	-159.74	-4,625.76	-1,960.80	5,394.06	5,333.50	60.56	89.071	
8,500.00	8,471.54	8,475.38	8,443.64	30.86	31.14	-159.73	-4,625.78	-1,961.09	5,394.14	5,332.80	61.34	87.944	
8,600.00	8,571.54	8,575.38	8,543.64	31.21	31.48	-159.73	-4,625.78	-1,961.09	5,394.14	5,332.11	62.03	86.964	
8,700.00	8,671.54	8,675.38	8,643.64	31.56	31.81	-159.73	-4,625.78	-1,961.09	5,394.14	5,331.42	62.72	86.004	
8,800.00	8,771.54	8,775.38	8,743.64	31.91	32.15	-159.73	-4,625.78	-1,961.09	5,394.14	5,330.72	63.41	85.065	
8,900.00	8,871.54	8,875.38	8,843.64	32.26	32.48	-159.73	-4,625.78	-1,961.09	5,394.14	5,330.03	64.11	84.145	
9,000.00	8,971.54	8,975.38	8,943.64	32.61	32.82	-159.73	-4,625.78	-1,961.09	5,394.14	5,329.34	64.80	83.244	
9,100.00	9,071.54	9,075.38	9,043.64	32.96	33.16	-159.73	-4,625.78	-1,961.09	5,394.14	5,328.64	65.49	82.362	
9,200.00	9,171.54	9,175.38	9,143.64	33.31	33.50	-159.73	-4,625.78	-1,961.09	5,394.14	5,327.95	66.19	81.498	
9,300.00	9,271.54	9,275.38	9,243.64	33.66	33.84	-159.73	-4,625.78	-1,961.09	5,394.14	5,327.25	66.88	80.651	
9,400.00	9,371.54	9,375.38	9,343.64	34.01	34.17	-159.73	-4,625.78	-1,961.09	5,394.14	5,326.56	67.58	79.821	
9,500.00	9,471.54	9,475.38	9,443.64	34.36	34.51	-159.73	-4,625.78	-1,961.09	5,394.14	5,325.86	68.27	79.007	
9,600.00	9,571.54	9,575.38	9,543.64	34.71	34.85	-159.73	-4,625.78	-1,961.09	5,394.14	5,325.17	68.97	78.209	
9,700.00	9,671.54	9,675.38	9,643.64	35.06	35.19	-159.73	-4,625.78	-1,961.09	5,394.14	5,324.47	69.67	77.427	
9,800.00	9,771.54	9,775.38	9,743.64	35.41	35.53	-159.73	-4,625.78	-1,961.09	5,394.14	5,323.77	70.36	76.660	
9,900.00	9,871.54	9,875.38	9,843.64	35.76	35.87	-159.73	-4,625.78	-1,961.09	5,394.14	5,323.07	71.06	75.907	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 293H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 698-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,971.54	9,975.38	9,943.64	36.11	36.21	-159.73	-4,625.78	-1,961.09	5,394.14	5,322.38	71.76	75.169	
10,005.10	9,976.64	9,980.48	9,948.74	36.13	36.23	-159.73	-4,625.78	-1,961.09	5,394.14	5,322.34	71.80	75.132	
10,100.00	10,071.54	10,026.74	9,995.00	36.46	36.39	-159.73	-4,625.78	-1,961.09	5,394.36	5,322.07	72.28	74.626	
10,200.00	10,171.54	10,050.00	10,018.25	36.81	36.47	-159.74	-4,626.30	-1,961.05	5,396.06	5,323.36	72.70	74.225	
10,300.00	10,271.54	10,050.00	10,018.25	37.17	36.47	-159.74	-4,626.30	-1,961.05	5,399.31	5,326.30	73.01	73.949	
10,400.00	10,371.54	10,050.00	10,018.25	37.52	36.47	-159.74	-4,626.30	-1,961.05	5,404.41	5,331.10	73.31	73.718	
10,500.00	10,471.54	10,050.00	10,018.25	37.87	36.47	-159.74	-4,626.30	-1,961.05	5,411.35	5,337.76	73.59	73.532	
10,600.00	10,571.54	10,100.00	10,068.02	38.22	36.63	-159.76	-4,630.91	-1,960.65	5,419.70	5,345.64	74.06	73.178	
10,700.00	10,671.54	10,100.00	10,068.02	38.57	36.63	-159.76	-4,630.91	-1,960.65	5,429.39	5,355.07	74.32	73.059	
10,800.00	10,771.54	10,100.00	10,068.02	38.93	36.63	-159.76	-4,630.91	-1,960.65	5,440.90	5,366.35	74.55	72.982	
10,900.00	10,871.54	10,100.00	10,068.02	39.28	36.63	-159.76	-4,630.91	-1,960.65	5,454.22	5,379.45	74.77	72.945	
11,000.00	10,971.54	10,100.00	10,068.02	39.63	36.63	-159.76	-4,630.91	-1,960.65	5,469.34	5,394.36	74.97	72.949	
11,100.00	11,071.54	10,126.64	10,094.28	39.98	36.72	-159.78	-4,635.30	-1,960.27	5,485.55	5,410.26	75.29	72.860	
11,200.00	11,171.54	10,150.00	10,117.11	40.34	36.79	-159.80	-4,640.24	-1,959.84	5,503.85	5,428.27	75.58	72.822	
11,300.00	11,271.54	10,150.00	10,117.11	40.69	36.79	-159.80	-4,640.24	-1,959.84	5,523.37	5,447.63	75.74	72.922	
11,400.00	11,371.54	10,150.00	10,117.11	41.04	36.79	-159.80	-4,640.24	-1,959.84	5,544.63	5,468.74	75.89	73.059	
11,500.00	11,471.54	10,150.00	10,117.11	41.40	36.79	-159.80	-4,640.24	-1,959.84	5,567.61	5,491.58	76.03	73.231	
11,525.27	11,496.81	10,150.00	10,117.11	41.48	36.79	-159.80	-4,640.24	-1,959.84	5,573.68	5,497.62	76.06	73.280	
11,550.00	11,521.53	10,150.00	10,117.11	41.57	36.79	-159.80	-4,640.24	-1,959.84	5,579.29	5,503.20	76.08	73.330	
11,600.00	11,571.33	10,172.30	10,138.67	41.72	36.86	-159.80	-4,645.91	-1,959.35	5,587.72	5,511.48	76.24	73.293	
11,650.00	11,620.56	10,176.91	10,143.10	41.85	36.87	-159.76	-4,647.20	-1,959.23	5,593.13	5,516.84	76.29	73.316	
11,700.00	11,668.84	10,200.00	10,165.08	41.98	36.95	-159.72	-4,654.23	-1,958.62	5,595.51	5,519.08	76.43	73.213	
11,750.00	11,715.82	10,200.00	10,165.08	42.10	36.95	-159.62	-4,654.23	-1,958.62	5,594.05	5,517.62	76.43	73.190	
11,800.00	11,761.13	10,200.00	10,165.08	42.20	36.95	-159.51	-4,654.23	-1,958.62	5,589.27	5,512.85	76.43	73.134	
11,850.00	11,804.43	10,200.00	10,165.08	42.30	36.95	-159.37	-4,654.23	-1,958.62	5,581.20	5,504.79	76.41	73.046	
11,900.00	11,845.39	10,200.00	10,165.08	42.39	36.95	-159.20	-4,654.23	-1,958.62	5,569.88	5,493.50	76.38	72.926	
11,950.00	11,883.69	10,200.00	10,165.08	42.47	36.95	-159.02	-4,654.23	-1,958.62	5,555.39	5,479.05	76.34	72.773	
12,000.00	11,919.06	10,200.00	10,165.08	42.54	36.95	-158.82	-4,654.23	-1,958.62	5,537.80	5,461.51	76.29	72.588	
12,050.00	11,951.20	10,200.00	10,165.08	42.61	36.95	-158.59	-4,654.23	-1,958.62	5,517.23	5,440.99	76.24	72.370	
12,100.00	11,979.89	10,200.00	10,165.08	42.68	36.95	-158.35	-4,654.23	-1,958.62	5,493.79	5,417.62	76.18	72.120	
12,150.00	12,004.90	10,200.00	10,165.08	42.75	36.95	-158.09	-4,654.23	-1,958.62	5,467.64	5,391.52	76.11	71.836	
12,200.00	12,026.05	10,223.47	10,187.08	42.82	37.02	-157.86	-4,662.35	-1,957.92	5,438.39	5,362.21	76.19	71.382	
12,250.00	12,043.17	10,226.67	10,190.05	42.89	37.03	-157.58	-4,663.54	-1,957.82	5,407.15	5,331.00	76.14	71.011	
12,300.00	12,056.13	10,250.00	10,211.48	42.97	37.10	-157.32	-4,672.72	-1,957.02	5,374.11	5,297.89	76.23	70.502	
12,350.00	12,064.83	10,250.00	10,211.48	43.05	37.10	-157.01	-4,672.72	-1,957.02	5,338.62	5,262.45	76.18	70.083	
12,400.00	12,069.21	10,250.00	10,211.48	43.13	37.10	-156.69	-4,672.72	-1,957.02	5,301.43	5,225.29	76.13	69.635	
12,423.64	12,069.77	10,250.00	10,211.48	43.17	37.10	-156.54	-4,672.72	-1,957.02	5,283.32	5,207.20	76.12	69.412	
12,500.00	12,069.98	10,250.00	10,211.48	43.32	37.10	-156.03	-4,672.72	-1,957.02	5,224.56	5,148.49	76.07	68.684	
12,600.00	12,070.27	10,250.00	10,211.48	43.58	37.10	-155.35	-4,672.72	-1,957.02	5,148.31	5,072.28	76.02	67.719	
12,667.68	12,070.46	10,250.00	10,211.48	43.79	37.10	-154.87	-4,672.72	-1,957.02	5,097.17	5,021.16	76.01	67.058	
12,700.00	12,070.55	10,250.00	10,211.48	43.90	37.10	-154.64	-4,672.72	-1,957.02	5,072.78	4,996.77	76.01	66.739	
12,800.00	12,070.84	10,250.00	10,211.48	44.29	37.10	-153.94	-4,672.72	-1,957.02	4,996.64	4,920.63	76.01	65.733	
12,900.00	12,071.12	10,250.00	10,211.48	44.73	37.10	-153.25	-4,672.72	-1,957.02	4,919.49	4,843.46	76.03	64.702	
13,000.00	12,071.41	10,250.00	10,211.48	45.22	37.10	-152.57	-4,672.72	-1,957.02	4,841.38	4,765.31	76.06	63.649	
13,100.00	12,071.69	10,250.00	10,211.48	45.76	37.10	-151.91	-4,672.72	-1,957.02	4,762.35	4,686.25	76.10	62.579	
13,200.00	12,071.98	10,250.00	10,211.48	46.34	37.10	-151.25	-4,672.72	-1,957.02	4,682.47	4,606.33	76.15	61.494	
13,200.11	12,071.98	10,250.00	10,211.48	46.34	37.10	-151.25	-4,672.72	-1,957.02	4,682.39	4,606.24	76.15	61.493	
13,300.00	12,072.26	10,275.56	10,234.47	46.97	37.17	-150.68	-4,683.87	-1,956.05	4,601.95	4,525.58	76.37	60.256	
13,400.00	12,072.55	10,300.00	10,255.89	47.64	37.24	-150.09	-4,695.57	-1,955.04	4,522.89	4,446.27	76.62	59.030	
13,500.00	12,072.83	10,300.00	10,255.89	48.36	37.24	-149.38	-4,695.57	-1,955.04	4,444.09	4,367.36	76.73	57.918	
13,600.00	12,073.12	10,300.00	10,255.89	49.13	37.24	-148.64	-4,695.57	-1,955.04	4,366.17	4,289.30	76.87	56.800	
13,700.00	12,073.40	10,300.00	10,255.89	49.94	37.24	-147.86	-4,695.57	-1,955.04	4,289.15	4,212.12	77.04	55.676	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
WWW.MSENERGYSERVICES.COM

ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 293H - Wellbore #1 - Design #2

Offset Site Error: 0.00 usft

urvey Program: 26-MWD, 698-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	12,073.68	10,300.00	10,255.89	50.80	37.24	-147.06	-4,695.57	-1,955.04	4,213.11	4,135.87	77.24	54.546	
13,900.00	12,073.97	10,300.00	10,255.89	51.69	37.24	-146.21	-4,695.57	-1,955.04	4,138.08	4,060.60	77.48	53.411	
14,000.00	12,074.25	10,300.00	10,255.89	52.62	37.24	-145.33	-4,695.57	-1,955.04	4,064.13	3,986.38	77.75	52.271	
14,100.00	12,074.54	10,326.59	10,278.56	53.58	37.31	-144.55	-4,709.42	-1,953.84	3,990.67	3,912.42	78.25	50.997	
14,200.00	12,074.82	10,350.00	10,297.90	54.58	37.37	-143.74	-4,722.55	-1,952.70	3,918.86	3,840.08	78.78	49.747	
14,300.00	12,075.11	10,350.00	10,297.90	55.61	37.37	-142.74	-4,722.55	-1,952.70	3,847.79	3,768.61	79.18	48.595	
14,400.00	12,075.39	10,350.00	10,297.90	56.67	37.37	-141.70	-4,722.55	-1,952.70	3,778.03	3,698.39	79.63	47.443	
14,500.00	12,075.68	10,350.00	10,297.90	57.76	37.37	-140.60	-4,722.55	-1,952.70	3,709.65	3,629.51	80.14	46.292	
14,600.00	12,075.96	10,350.00	10,297.90	58.87	37.37	-139.46	-4,722.55	-1,952.70	3,642.73	3,562.05	80.69	45.146	
14,700.00	12,076.24	10,378.54	10,320.66	60.01	37.45	-138.48	-4,739.71	-1,951.21	3,576.65	3,495.15	81.49	43.890	
14,800.00	12,076.53	10,400.00	10,337.12	61.17	37.50	-137.42	-4,753.42	-1,950.02	3,512.42	3,430.12	82.30	42.680	
14,900.00	12,076.81	10,400.00	10,337.12	62.36	37.50	-136.12	-4,753.42	-1,950.02	3,449.48	3,366.46	83.02	41.551	
15,000.00	12,077.10	10,400.00	10,337.12	63.57	37.50	-134.75	-4,753.42	-1,950.02	3,388.32	3,304.53	83.80	40.435	
15,100.00	12,077.38	10,422.26	10,353.59	64.79	37.55	-133.55	-4,768.33	-1,948.72	3,328.62	3,243.84	84.78	39.263	
15,200.00	12,077.67	10,450.00	10,373.19	66.04	37.62	-132.38	-4,787.88	-1,947.03	3,270.94	3,185.09	85.85	38.103	
15,300.00	12,077.95	10,450.00	10,373.19	67.30	37.62	-130.83	-4,787.88	-1,947.03	3,214.64	3,127.84	86.80	37.033	
15,400.00	12,078.23	10,450.00	10,373.19	68.58	37.62	-129.20	-4,787.88	-1,947.03	3,160.51	3,072.69	87.82	35.988	
15,500.00	12,078.52	10,475.27	10,390.11	69.88	37.68	-127.84	-4,806.58	-1,945.41	3,108.12	3,019.07	89.04	34.905	
15,600.00	12,078.80	10,500.00	10,405.78	71.19	37.74	-126.43	-4,825.64	-1,943.75	3,057.92	2,967.61	90.31	33.859	
15,700.00	12,079.09	10,500.00	10,405.78	72.51	37.74	-124.59	-4,825.64	-1,943.75	3,009.69	2,918.19	91.50	32.892	
15,800.00	12,079.37	10,522.22	10,419.06	73.85	37.79	-123.04	-4,843.38	-1,942.21	2,963.64	2,870.78	92.86	31.915	
15,900.00	12,079.66	10,550.00	10,434.58	75.21	37.85	-121.53	-4,866.33	-1,940.22	2,919.94	2,825.66	94.28	30.970	
16,000.00	12,079.94	10,550.00	10,434.58	76.57	37.85	-119.47	-4,866.33	-1,940.22	2,878.41	2,782.78	95.63	30.100	
16,100.00	12,080.22	10,576.03	10,447.99	77.94	37.91	-117.83	-4,888.56	-1,938.29	2,839.25	2,742.12	97.12	29.233	
16,200.00	12,080.51	10,600.00	10,459.34	79.33	37.97	-116.11	-4,909.59	-1,936.47	2,802.57	2,703.93	98.64	28.412	
16,300.00	12,080.79	10,600.00	10,459.34	80.73	37.97	-113.83	-4,909.59	-1,936.47	2,768.56	2,668.46	100.10	27.658	
16,400.00	12,081.08	10,650.00	10,479.82	82.13	38.10	-112.59	-4,955.01	-1,932.53	2,736.84	2,635.09	101.75	26.897	
16,500.00	12,081.36	10,650.00	10,479.82	83.55	38.10	-110.18	-4,955.01	-1,932.53	2,707.71	2,604.45	103.26	26.222	
16,600.00	12,081.65	10,681.20	10,490.35	84.97	38.19	-108.45	-4,984.26	-1,929.99	2,681.24	2,576.37	104.87	25.567	
16,700.00	12,081.93	10,700.00	10,495.84	86.40	38.24	-106.39	-5,002.18	-1,928.43	2,657.53	2,551.08	106.45	24.965	
16,800.00	12,082.22	10,728.06	10,502.82	87.84	38.32	-104.52	-5,029.25	-1,926.09	2,636.52	2,528.47	108.04	24.402	
16,900.00	12,082.50	10,750.00	10,507.25	89.29	38.39	-102.46	-5,050.66	-1,924.23	2,618.29	2,508.67	109.61	23.887	
17,000.00	12,082.78	10,776.89	10,511.43	90.75	38.48	-100.51	-5,077.11	-1,921.93	2,602.84	2,491.67	111.17	23.413	
17,100.00	12,083.07	10,800.00	10,513.93	92.21	38.56	-98.43	-5,100.00	-1,919.95	2,590.23	2,477.53	112.69	22.984	
17,200.00	12,083.35	10,826.92	10,515.56	93.68	38.66	-96.43	-5,126.77	-1,917.62	2,580.46	2,466.27	114.19	22.598	
17,300.00	12,083.64	10,866.66	10,515.78	95.15	38.81	-94.77	-5,166.35	-1,914.19	2,573.52	2,457.86	115.65	22.252	
17,400.00	12,083.92	10,966.33	10,515.35	96.63	39.23	-94.77	-5,265.65	-1,905.57	2,567.52	2,450.33	117.19	21.910	
17,500.00	12,084.21	11,066.00	10,514.91	98.12	39.72	-94.77	-5,364.95	-1,896.96	2,561.53	2,442.76	118.77	21.567	
17,600.00	12,084.49	11,165.68	10,514.48	99.61	40.28	-94.77	-5,464.25	-1,888.34	2,555.55	2,435.14	120.40	21.225	
17,700.00	12,084.77	11,265.35	10,514.05	101.11	40.90	-94.77	-5,563.55	-1,879.73	2,549.58	2,427.49	122.09	20.883	
17,800.00	12,085.06	11,365.03	10,513.62	102.61	41.58	-94.77	-5,662.85	-1,871.11	2,543.63	2,419.81	123.82	20.543	
17,900.00	12,085.34	11,464.70	10,513.18	104.11	42.31	-94.77	-5,762.15	-1,862.50	2,537.68	2,412.09	125.59	20.206	
18,000.00	12,085.63	11,564.38	10,512.75	105.63	43.10	-94.77	-5,861.46	-1,853.88	2,531.75	2,404.35	127.41	19.872	
18,100.00	12,085.91	11,664.05	10,512.32	107.14	43.94	-94.77	-5,960.76	-1,845.26	2,525.83	2,396.57	129.26	19.541	
18,200.00	12,086.20	11,763.72	10,511.88	108.66	44.82	-94.77	-6,060.06	-1,836.65	2,519.92	2,388.78	131.15	19.214	
18,300.00	12,086.48	11,863.40	10,511.45	110.18	45.75	-94.76	-6,159.36	-1,828.03	2,514.03	2,380.96	133.07	18.892	
18,400.00	12,086.76	11,963.07	10,511.02	111.71	46.72	-94.76	-6,258.66	-1,819.42	2,508.14	2,373.12	135.03	18.575	
18,500.00	12,087.05	12,062.75	10,510.58	113.24	47.73	-94.76	-6,357.96	-1,810.80	2,502.27	2,365.27	137.01	18.264	
18,600.00	12,087.33	12,162.42	10,510.15	114.78	48.78	-94.76	-6,457.26	-1,802.18	2,496.41	2,357.40	139.02	17.958	
18,700.00	12,087.62	12,262.10	10,509.72	116.32	49.86	-94.76	-6,556.56	-1,793.57	2,490.57	2,349.52	141.05	17.657	
18,800.00	12,087.90	12,361.77	10,509.28	117.86	50.98	-94.76	-6,655.86	-1,784.95	2,484.73	2,341.63	143.10	17.363	
18,900.00	12,088.19	12,461.44	10,508.85	119.40	52.12	-94.76	-6,755.16	-1,776.34	2,478.91	2,333.73	145.18	17.075	

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

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MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 293H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 698-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	12,561.12	10,508.42	120.95	53.29	-94.76	-6,854.46	-1,767.72	2,473.10	2,325.83	147.27	16.793	
19,100.00	12,088.76	12,660.79	10,507.98	122.50	54.49	-94.76	-6,953.76	-1,759.11	2,467.30	2,317.92	149.38	16.517	
19,200.00	12,089.04	12,760.47	10,507.55	124.05	55.72	-94.76	-7,053.06	-1,750.49	2,461.52	2,310.01	151.51	16.247	
19,300.00	12,089.32	12,860.14	10,507.12	125.61	56.97	-94.76	-7,152.36	-1,741.87	2,455.75	2,302.10	153.65	15.983	
19,400.00	12,089.61	12,959.82	10,506.68	127.17	58.24	-94.75	-7,251.66	-1,733.26	2,449.99	2,294.19	155.80	15.725	
19,500.00	12,089.89	13,059.49	10,506.25	128.73	59.53	-94.75	-7,350.96	-1,724.64	2,444.24	2,286.28	157.96	15.473	
19,600.00	12,090.18	13,159.16	10,505.82	130.29	60.84	-94.75	-7,450.26	-1,716.03	2,438.51	2,278.38	160.14	15.228	
19,700.00	12,090.46	13,258.84	10,505.38	131.86	62.16	-94.75	-7,549.56	-1,707.41	2,432.79	2,270.47	162.32	14.988	
19,800.00	12,090.75	13,358.51	10,504.95	133.42	63.51	-94.75	-7,648.86	-1,698.80	2,427.09	2,262.58	164.51	14.754	
19,900.00	12,091.03	13,458.19	10,504.52	134.99	64.87	-94.75	-7,748.16	-1,690.18	2,421.40	2,254.69	166.70	14.525	
20,000.00	12,091.31	13,557.86	10,504.08	136.57	66.24	-94.75	-7,847.46	-1,681.56	2,415.72	2,246.81	168.90	14.302	
20,100.00	12,091.60	13,657.54	10,503.65	138.14	67.63	-94.75	-7,946.76	-1,672.95	2,410.05	2,238.94	171.11	14.085	
20,200.00	12,091.88	13,757.21	10,503.22	139.72	69.03	-94.75	-8,046.06	-1,664.33	2,404.40	2,231.08	173.32	13.873	
20,300.00	12,092.17	13,856.88	10,502.79	141.29	70.45	-94.75	-8,145.36	-1,655.72	2,398.76	2,223.23	175.53	13.666	
20,400.00	12,092.45	13,956.56	10,502.35	142.87	71.87	-94.74	-8,244.66	-1,647.10	2,393.14	2,215.39	177.75	13.464	
20,500.00	12,092.74	14,056.23	10,501.92	144.45	73.31	-94.74	-8,343.96	-1,638.49	2,387.53	2,207.56	179.97	13.267	
20,600.00	12,093.02	14,155.91	10,501.49	146.04	74.76	-94.74	-8,443.26	-1,629.87	2,381.94	2,199.75	182.18	13.074	
20,700.00	12,093.31	14,255.58	10,501.05	147.62	76.21	-94.74	-8,542.56	-1,621.25	2,376.35	2,191.95	184.40	12.887	
20,800.00	12,093.59	14,355.26	10,500.62	149.21	77.68	-94.74	-8,641.86	-1,612.64	2,370.79	2,184.17	186.62	12.704	
20,900.00	12,093.87	14,454.93	10,500.19	150.80	79.15	-94.74	-8,741.16	-1,604.02	2,365.23	2,176.40	188.84	12.525	
21,000.00	12,094.16	14,554.60	10,499.75	152.39	80.63	-94.74	-8,840.46	-1,595.41	2,359.70	2,168.64	191.05	12.351	
21,100.00	12,094.44	14,654.28	10,499.32	153.98	82.12	-94.74	-8,939.76	-1,586.79	2,354.17	2,160.90	193.27	12.181	
21,200.00	12,094.73	14,753.95	10,498.89	155.57	83.62	-94.74	-9,039.06	-1,578.17	2,348.66	2,153.18	195.48	12.015	
21,300.00	12,095.01	14,853.63	10,498.45	157.16	85.12	-94.73	-9,138.36	-1,569.56	2,343.17	2,145.48	197.69	11.853	
21,400.00	12,095.30	14,953.30	10,498.02	158.76	86.63	-94.73	-9,237.66	-1,560.94	2,337.69	2,137.79	199.90	11.695	
21,500.00	12,095.58	15,052.98	10,497.59	160.35	88.15	-94.73	-9,336.96	-1,552.33	2,332.23	2,130.13	202.10	11.540	
21,600.00	12,095.86	15,152.65	10,497.15	161.95	89.67	-94.73	-9,436.26	-1,543.71	2,326.78	2,122.48	204.30	11.389	
21,700.00	12,096.15	15,252.32	10,496.72	163.55	91.20	-94.73	-9,535.56	-1,535.10	2,321.34	2,114.85	206.49	11.242	
21,800.00	12,096.43	15,352.00	10,496.29	165.15	92.73	-94.73	-9,634.87	-1,526.48	2,315.92	2,107.24	208.68	11.098	
21,900.00	12,096.72	15,451.67	10,495.85	166.75	94.27	-94.73	-9,734.17	-1,517.86	2,310.52	2,099.66	210.86	10.957	
22,000.00	12,097.00	15,551.35	10,495.42	168.35	95.82	-94.73	-9,833.47	-1,509.25	2,305.13	2,092.09	213.05	10.820	
22,100.00	12,097.29	15,615.58	10,495.16	169.96	96.81	-93.51	-9,897.51	-1,504.36	2,300.51	2,085.43	215.08	10.696	
22,175.33	12,097.50	15,663.42	10,494.98	171.16	97.55	-92.58	-9,945.27	-1,501.65	2,298.08	2,081.45	216.62	10.609	CC, ES, SF

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MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 294H - Wellbore #1 - Design #2

Offset Site Error: 0.00 usft

Survey Program: 26-MWD, 728-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-162.55	-4,573.16	-1,437.69	4,793.90				
100.00	100.00	60.43	60.43	0.13	0.12	-162.55	-4,573.20	-1,437.68	4,793.87	4,793.62	0.25	N/A	
200.00	200.00	175.44	175.44	0.49	0.52	-162.55	-4,573.53	-1,437.66	4,794.17	4,793.15	1.02	4,720.827	
208.64	208.64	180.24	180.24	0.52	0.54	-162.55	-4,573.52	-1,437.66	4,794.16	4,793.10	1.06	4,509.188	
300.00	300.00	235.96	235.96	0.85	0.74	-162.55	-4,573.74	-1,437.72	4,794.51	4,792.93	1.59	3,021.796	
400.00	400.00	351.30	351.29	1.21	1.14	-162.56	-4,574.56	-1,437.33	4,795.09	4,792.74	2.35	2,038.715	
500.00	500.00	448.92	448.90	1.57	1.49	-162.57	-4,575.34	-1,436.66	4,795.65	4,792.59	3.06	1,568.577	
600.00	600.00	539.80	539.78	1.93	1.81	-162.58	-4,576.14	-1,435.56	4,796.13	4,792.39	3.74	1,282.635	
700.00	700.00	629.54	629.51	2.29	2.13	-162.60	-4,577.35	-1,434.50	4,797.06	4,792.64	4.42	1,085.763	
800.00	800.00	717.24	717.18	2.64	2.45	-162.62	-4,578.36	-1,433.21	4,797.76	4,792.67	5.09	942.576	
900.00	900.00	800.15	800.08	3.00	2.75	-162.63	-4,579.89	-1,432.41	4,799.20	4,793.45	5.75	835.302	
1,000.00	1,000.00	971.69	971.60	3.36	3.35	-162.65	-4,581.53	-1,431.56	4,799.97	4,793.27	6.71	715.704	
1,100.00	1,100.00	1,071.69	1,071.60	3.72	3.68	-162.65	-4,581.53	-1,431.56	4,799.97	4,792.57	7.40	648.502	
1,200.00	1,200.00	1,171.69	1,171.60	4.08	4.02	-162.65	-4,581.53	-1,431.56	4,799.97	4,791.87	8.10	592.580	
1,300.00	1,300.00	1,271.69	1,271.60	4.44	4.37	-162.65	-4,581.53	-1,431.56	4,799.97	4,791.17	8.80	545.354	
1,400.00	1,400.00	1,371.69	1,371.60	4.79	4.71	-162.65	-4,581.53	-1,431.56	4,799.97	4,790.47	9.51	504.976	
1,500.00	1,500.00	1,471.69	1,471.60	5.15	5.06	-162.65	-4,581.53	-1,431.56	4,799.97	4,789.76	10.21	470.080	
1,600.00	1,600.00	1,571.69	1,571.60	5.51	5.41	-162.65	-4,581.53	-1,431.56	4,799.97	4,789.06	10.92	439.636	
1,700.00	1,700.00	1,671.69	1,671.60	5.87	5.76	-162.65	-4,581.53	-1,431.56	4,799.97	4,788.35	11.63	412.852	
1,800.00	1,800.00	1,771.69	1,771.60	6.23	6.11	-162.65	-4,581.53	-1,431.56	4,799.97	4,787.64	12.34	389.113	
1,900.00	1,900.00	1,871.69	1,871.60	6.59	6.46	-162.65	-4,581.53	-1,431.56	4,799.97	4,786.93	13.05	367.932	
2,000.00	2,000.00	1,971.69	1,971.60	6.95	6.81	-162.65	-4,581.53	-1,431.56	4,799.97	4,786.22	13.76	348.919	
2,100.00	2,100.00	2,043.33	2,043.25	7.30	7.06	-162.65	-4,581.62	-1,431.70	4,800.19	4,785.82	14.37	334.146	
2,200.00	2,200.00	2,100.00	2,099.91	7.66	7.26	-162.64	-4,582.01	-1,432.29	4,801.19	4,786.27	14.92	321.795	
2,300.00	2,300.00	2,164.19	2,164.08	8.02	7.48	-162.63	-4,582.84	-1,433.51	4,803.01	4,787.52	15.50	309.927	
2,400.00	2,400.00	2,224.57	2,224.42	8.38	7.69	-162.62	-4,583.99	-1,435.21	4,805.67	4,789.61	16.06	299.222	
2,500.00	2,500.00	2,284.90	2,284.69	8.74	7.90	-162.60	-4,585.49	-1,437.43	4,809.14	4,792.52	16.62	289.306	
2,600.00	2,599.99	2,345.15	2,344.85	9.10	8.10	-162.58	-4,587.34	-1,440.18	4,814.20	4,797.01	17.18	280.146	
2,700.00	2,699.96	2,400.00	2,399.59	9.45	8.29	-162.56	-4,589.33	-1,443.13	4,821.60	4,803.87	17.73	272.015	
2,800.00	2,799.86	2,465.23	2,464.63	9.81	8.52	-162.55	-4,592.08	-1,447.21	4,831.32	4,813.01	18.30	263.957	
2,900.00	2,899.68	2,524.97	2,524.15	10.17	8.73	-162.55	-4,594.96	-1,451.49	4,843.37	4,824.51	18.86	256.807	
3,000.00	2,999.37	2,584.45	2,583.35	10.53	8.94	-162.55	-4,598.18	-1,456.25	4,857.72	4,838.31	19.41	250.213	
3,100.00	3,098.90	2,672.74	2,671.16	10.89	9.26	-162.54	-4,603.33	-1,463.89	4,874.17	4,854.09	20.08	242.768	
3,200.00	3,198.26	2,771.11	2,768.99	11.25	9.61	-162.53	-4,609.08	-1,472.41	4,892.12	4,871.34	20.78	235.421	
3,300.06	3,297.46	2,869.26	2,866.60	11.62	9.97	-162.53	-4,614.82	-1,480.92	4,911.58	4,890.10	21.48	228.609	
3,400.00	3,396.43	2,967.14	2,963.95	11.98	10.33	-162.54	-4,620.54	-1,489.40	4,931.75	4,909.57	22.19	222.257	
3,500.00	3,495.46	3,065.08	3,061.35	12.36	10.69	-162.54	-4,626.26	-1,497.89	4,951.94	4,929.04	22.90	216.275	
3,600.00	3,594.48	3,163.02	3,158.76	12.73	11.05	-162.55	-4,631.99	-1,506.37	4,972.13	4,948.52	23.61	210.628	
3,700.00	3,693.51	3,260.96	3,256.16	13.11	11.41	-162.56	-4,637.71	-1,514.86	4,992.31	4,967.99	24.32	205.292	
3,800.00	3,792.54	3,358.90	3,353.56	13.49	11.78	-162.56	-4,643.44	-1,523.35	5,012.50	4,987.47	25.03	200.243	
3,900.00	3,891.56	3,456.84	3,450.97	13.87	12.15	-162.57	-4,649.16	-1,531.84	5,032.68	5,006.94	25.75	195.460	
4,000.00	3,990.59	3,554.78	3,548.37	14.25	12.51	-162.57	-4,654.89	-1,540.32	5,052.87	5,026.40	26.47	190.923	
4,100.00	4,089.62	3,652.72	3,645.77	14.64	12.88	-162.58	-4,660.61	-1,548.81	5,073.06	5,045.87	27.18	186.614	
4,200.00	4,188.64	3,750.66	3,743.18	15.03	13.25	-162.58	-4,666.34	-1,557.30	5,093.24	5,065.34	27.91	182.518	
4,300.00	4,287.67	3,848.60	3,840.58	15.42	13.62	-162.59	-4,672.06	-1,565.78	5,113.43	5,084.80	28.63	178.619	
4,400.00	4,386.70	3,946.54	3,937.99	15.81	14.00	-162.59	-4,677.79	-1,574.27	5,133.61	5,104.26	29.35	174.905	
4,500.00	4,485.72	4,044.49	4,035.39	16.20	14.37	-162.60	-4,683.51	-1,582.76	5,153.80	5,123.73	30.08	171.363	
4,600.00	4,584.75	4,142.43	4,132.79	16.59	14.74	-162.60	-4,689.23	-1,591.25	5,173.99	5,143.19	30.80	167.981	
4,700.00	4,683.78	4,240.37	4,230.20	16.98	15.12	-162.61	-4,694.96	-1,599.73	5,194.17	5,162.65	31.53	164.749	
4,800.00	4,782.80	4,338.31	4,327.60	17.38	15.49	-162.61	-4,700.68	-1,608.22	5,214.36	5,182.10	32.26	161.658	
4,900.00	4,881.83	4,436.25	4,425.00	17.78	15.87	-162.62	-4,706.41	-1,616.71	5,234.55	5,201.56	32.98	158.700	
5,000.00	4,980.86	4,534.19	4,522.41	18.17	16.25	-162.62	-4,712.13	-1,625.20	5,254.73	5,221.02	33.71	155.865	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 294H - Wellbore #1 - Design #2

Offset Site Error: 0.00 usft

Survey Program: 26-MWD, 728-MWD

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	4,632.13	4,619.81	18.57	16.63	-162.63	-4,717.86	-1,633.68	5,274.92	5,240.48	34.44	153.146	
5,200.00	5,178.91	4,730.07	4,717.22	18.97	17.00	-162.63	-4,723.58	-1,642.17	5,295.11	5,259.93	35.17	150.538	
5,300.00	5,277.94	4,828.01	4,814.62	19.37	17.38	-162.64	-4,729.31	-1,650.66	5,315.29	5,279.39	35.91	148.032	
5,400.00	5,376.96	4,925.95	4,912.02	19.77	17.76	-162.64	-4,735.03	-1,659.15	5,335.48	5,298.84	36.64	145.624	
5,500.00	5,475.99	5,023.89	5,009.43	20.17	18.14	-162.65	-4,740.76	-1,667.63	5,355.67	5,318.29	37.37	143.308	
5,600.00	5,575.02	15,283.47	10,572.72	20.57	87.43	-97.19	145.19	-1,841.25	5,330.91	5,271.25	59.66	89.354	
5,690.40	5,664.54	15,283.47	10,572.72	20.93	87.43	-97.60	145.19	-1,841.25	5,246.25	5,186.15	60.10	87.291	
5,700.00	5,674.04	15,283.47	10,572.72	20.97	87.43	-97.64	145.19	-1,841.25	5,237.27	5,177.12	60.15	87.072	
5,800.00	5,773.21	15,283.47	10,572.72	21.37	87.43	-98.05	145.19	-1,841.25	5,143.76	5,083.10	60.66	84.803	
5,900.00	5,872.58	15,283.47	10,572.72	21.76	87.43	-98.41	145.19	-1,841.25	5,050.34	4,989.16	61.18	82.547	
6,000.00	5,972.14	15,283.47	10,572.72	22.15	87.43	-98.72	145.19	-1,841.25	4,957.05	4,895.32	61.73	80.305	
6,100.00	6,071.84	15,283.47	10,572.72	22.52	87.43	-98.96	145.19	-1,841.25	4,863.92	4,801.63	62.29	78.079	
6,200.00	6,171.66	15,283.47	10,572.72	22.89	87.43	-99.16	145.19	-1,841.25	4,770.99	4,708.11	62.88	75.870	
6,300.00	6,271.57	15,283.47	10,572.72	23.25	87.43	-99.29	145.19	-1,841.25	4,678.30	4,614.80	63.50	73.679	
6,400.00	6,371.54	15,283.47	10,572.72	23.60	87.43	-99.37	145.19	-1,841.25	4,585.89	4,521.76	64.13	71.507	
6,490.46	6,462.00	15,283.47	10,572.72	23.92	87.43	-99.39	145.19	-1,841.25	4,502.59	4,437.86	64.73	69.560	
6,500.00	6,471.54	15,283.47	10,572.72	23.95	87.43	-99.39	145.19	-1,841.25	4,493.82	4,429.03	64.79	69.355	
6,600.00	6,571.54	15,283.47	10,572.72	24.29	87.43	-99.39	145.19	-1,841.25	4,402.10	4,336.62	65.48	67.224	
6,700.00	6,671.54	15,283.47	10,572.72	24.63	87.43	-99.39	145.19	-1,841.25	4,310.75	4,244.55	66.20	65.115	
6,800.00	6,771.54	15,283.47	10,572.72	24.98	87.43	-99.39	145.19	-1,841.25	4,219.80	4,152.84	66.95	63.028	
6,900.00	6,871.54	15,283.47	10,572.72	25.32	87.43	-99.39	145.19	-1,841.25	4,129.26	4,061.52	67.73	60.964	
7,000.00	6,971.54	15,283.47	10,572.72	25.66	87.43	-99.39	145.19	-1,841.25	4,039.16	3,970.62	68.55	58.925	
7,100.00	7,071.54	15,283.47	10,572.72	26.01	87.43	-99.39	145.19	-1,841.25	3,949.55	3,880.15	69.40	56.910	
7,200.00	7,171.54	15,283.47	10,572.72	26.35	87.43	-99.39	145.19	-1,841.25	3,860.44	3,790.15	70.29	54.922	
7,300.00	7,271.54	15,283.47	10,572.72	26.70	87.43	-99.39	145.19	-1,841.25	3,771.88	3,700.66	71.22	52.960	
7,400.00	7,371.54	15,283.47	10,572.72	27.04	87.43	-99.39	145.19	-1,841.25	3,683.91	3,611.71	72.20	51.027	
7,500.00	7,471.54	15,283.47	10,572.72	27.39	87.43	-99.39	145.19	-1,841.25	3,596.56	3,523.35	73.21	49.124	
7,600.00	7,571.54	15,283.47	10,572.72	27.73	87.43	-99.39	145.19	-1,841.25	3,509.89	3,435.61	74.28	47.251	
7,700.00	7,671.54	15,283.47	10,572.72	28.08	87.43	-99.39	145.19	-1,841.25	3,423.95	3,348.55	75.40	45.410	
7,800.00	7,771.54	15,283.47	10,572.72	28.43	87.43	-99.39	145.19	-1,841.25	3,338.79	3,262.22	76.57	43.602	
7,900.00	7,871.54	15,283.47	10,572.72	28.77	87.43	-99.39	145.19	-1,841.25	3,254.47	3,176.67	77.80	41.830	
8,000.00	7,971.54	15,283.47	10,572.72	29.12	87.43	-99.39	145.19	-1,841.25	3,171.07	3,091.98	79.09	40.094	
8,100.00	8,071.54	15,283.47	10,572.72	29.47	87.43	-99.39	145.19	-1,841.25	3,088.65	3,008.21	80.44	38.396	
8,200.00	8,171.54	15,283.47	10,572.72	29.82	87.43	-99.39	145.19	-1,841.25	3,007.30	2,925.44	81.86	36.737	
8,300.00	8,271.54	15,283.47	10,572.72	30.16	87.43	-99.39	145.19	-1,841.25	2,927.10	2,843.76	83.34	35.121	
8,400.00	8,371.54	15,283.47	10,572.72	30.51	87.43	-99.39	145.19	-1,841.25	2,848.16	2,763.26	84.90	33.548	
8,500.00	8,471.54	15,283.47	10,572.72	30.86	87.43	-99.39	145.19	-1,841.25	2,770.58	2,684.05	86.53	32.020	
8,600.00	8,571.54	15,283.47	10,572.72	31.21	87.43	-99.39	145.19	-1,841.25	2,694.47	2,606.24	88.23	30.540	
8,700.00	8,671.54	15,283.47	10,572.72	31.56	87.43	-99.39	145.19	-1,841.25	2,619.98	2,529.97	90.01	29.109	
8,800.00	8,771.54	15,283.47	10,572.72	31.91	87.43	-99.39	145.19	-1,841.25	2,547.22	2,455.37	91.86	27.730	
8,900.00	8,871.54	15,283.47	10,572.72	32.26	87.43	-99.39	145.19	-1,841.25	2,476.38	2,382.59	93.78	26.405	
9,000.00	8,971.54	15,283.47	10,572.72	32.61	87.43	-99.39	145.19	-1,841.25	2,407.60	2,311.81	95.78	25.136	
9,100.00	9,071.54	15,283.47	10,572.72	32.96	87.43	-99.39	145.19	-1,841.25	2,341.07	2,243.22	97.85	23.926	
9,200.00	9,171.54	15,283.47	10,572.72	33.31	87.43	-99.39	145.19	-1,841.25	2,276.99	2,177.02	99.97	22.776	
9,300.00	9,271.54	15,283.47	10,572.72	33.66	87.43	-99.39	145.19	-1,841.25	2,215.58	2,113.43	102.15	21.690	
9,400.00	9,371.54	15,283.47	10,572.72	34.01	87.43	-99.39	145.19	-1,841.25	2,157.05	2,052.68	104.37	20.668	
9,500.00	9,471.54	15,283.47	10,572.72	34.36	87.43	-99.39	145.19	-1,841.25	2,101.65	1,995.05	106.60	19.714	
9,600.00	9,571.54	15,283.47	10,572.72	34.71	87.43	-99.39	145.19	-1,841.25	2,049.64	1,940.79	108.85	18.830	
9,700.00	9,671.54	15,283.47	10,572.72	35.06	87.43	-99.39	145.19	-1,841.25	2,001.28	1,890.20	111.08	18.017	
9,800.00	9,771.54	15,283.47	10,572.72	35.41	87.43	-99.39	145.19	-1,841.25	1,956.83	1,843.57	113.26	17.278	
9,900.00	9,871.54	15,283.47	10,572.72	35.76	87.43	-99.39	145.19	-1,841.25	1,916.58	1,801.21	115.36	16.613	
10,000.00	9,971.54	15,283.47	10,572.72	36.11	87.43	-99.39	145.19	-1,841.25	1,880.79	1,763.42	117.36	16.025	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 294H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 728-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,071.54	15,283.47	10,572.72	36.46	87.43	-99.39	145.19	-1,841.25	1,849.71	1,730.49	119.22	15.515	
10,200.00	10,171.54	15,283.47	10,572.72	36.81	87.43	-99.39	145.19	-1,841.25	1,823.60	1,702.70	120.90	15.083	
10,300.00	10,271.54	15,283.47	10,572.72	37.17	87.43	-99.39	145.19	-1,841.25	1,802.67	1,680.29	122.37	14.731	
10,400.00	10,371.54	15,283.47	10,572.72	37.52	87.43	-99.39	145.19	-1,841.25	1,787.09	1,663.49	123.60	14.458	
10,500.00	10,471.54	15,283.47	10,572.72	37.87	87.43	-99.39	145.19	-1,841.25	1,777.01	1,652.44	124.57	14.265	
10,600.00	10,571.54	15,283.47	10,572.72	38.22	87.43	-99.39	145.19	-1,841.25	1,772.53	1,647.28	125.25	14.151	
10,629.58	10,601.12	15,283.47	10,572.72	38.33	87.43	-99.39	145.19	-1,841.25	1,772.28	1,646.88	125.40	14.133	CC, ES
10,700.00	10,671.54	15,283.47	10,572.72	38.57	87.43	-99.39	145.19	-1,841.25	1,773.68	1,648.03	125.65	14.116	SF
10,800.00	10,771.54	15,283.47	10,572.72	38.93	87.43	-99.39	145.19	-1,841.25	1,780.46	1,654.71	125.75	14.159	
10,900.00	10,871.54	15,283.47	10,572.72	39.28	87.43	-99.39	145.19	-1,841.25	1,792.79	1,667.23	125.56	14.278	
11,000.00	10,971.54	15,283.47	10,572.72	39.63	87.43	-99.39	145.19	-1,841.25	1,810.58	1,685.46	125.12	14.471	
11,100.00	11,071.54	15,283.47	10,572.72	39.98	87.43	-99.39	145.19	-1,841.25	1,833.65	1,709.23	124.42	14.737	
11,200.00	11,171.54	15,283.47	10,572.72	40.34	87.43	-99.39	145.19	-1,841.25	1,861.82	1,738.30	123.52	15.073	
11,300.00	11,271.54	15,283.47	10,572.72	40.69	87.43	-99.39	145.19	-1,841.25	1,894.85	1,772.41	122.43	15.476	
11,400.00	11,371.54	15,283.47	10,572.72	41.04	87.43	-99.39	145.19	-1,841.25	1,932.49	1,811.29	121.20	15.944	
11,500.00	11,471.54	15,283.47	10,572.72	41.40	87.43	-99.39	145.19	-1,841.25	1,974.49	1,854.63	119.86	16.474	
11,525.27	11,496.81	15,283.47	10,572.72	41.48	87.43	-99.39	145.19	-1,841.25	1,985.76	1,866.26	119.50	16.617	
11,550.00	11,521.53	15,283.47	10,572.72	41.57	87.43	-99.38	145.19	-1,841.25	1,997.05	1,877.90	119.15	16.761	
11,600.00	11,571.33	15,283.47	10,572.72	41.72	87.43	-99.24	145.19	-1,841.25	2,020.59	1,902.17	118.42	17.062	
11,650.00	11,620.56	15,283.47	10,572.72	41.85	87.43	-98.96	145.19	-1,841.25	2,044.94	1,927.24	117.70	17.374	
11,700.00	11,668.84	15,283.47	10,572.72	41.98	87.43	-98.54	145.19	-1,841.25	2,069.87	1,952.88	116.98	17.694	
11,750.00	11,715.82	15,283.47	10,572.72	42.10	87.43	-97.99	145.19	-1,841.25	2,095.18	1,978.89	116.29	18.017	
11,800.00	11,761.13	15,283.47	10,572.72	42.20	87.43	-97.31	145.19	-1,841.25	2,120.66	2,005.05	115.62	18.342	
11,850.00	11,804.43	15,283.47	10,572.72	42.30	87.43	-96.51	145.19	-1,841.25	2,146.13	2,031.16	114.97	18.666	
11,900.00	11,845.39	15,283.47	10,572.72	42.39	87.43	-95.59	145.19	-1,841.25	2,171.39	2,057.02	114.37	18.986	
11,950.00	11,883.69	15,283.47	10,572.72	42.47	87.43	-94.56	145.19	-1,841.25	2,196.25	2,082.44	113.81	19.298	
12,000.00	11,919.06	15,283.47	10,572.72	42.54	87.43	-93.43	145.19	-1,841.25	2,220.56	2,107.26	113.29	19.600	
12,050.00	11,951.20	15,283.47	10,572.72	42.61	87.43	-92.22	145.19	-1,841.25	2,244.13	2,131.30	112.83	19.890	
12,100.00	11,979.89	15,283.47	10,572.72	42.68	87.43	-90.93	145.19	-1,841.25	2,266.82	2,154.40	112.42	20.164	
12,150.00	12,004.90	15,283.53	10,572.72	42.75	87.44	-89.58	145.24	-1,841.25	2,288.49	2,176.43	112.06	20.421	
12,200.00	12,026.05	15,239.27	10,572.30	42.82	86.77	-89.57	100.99	-1,841.25	2,308.57	2,197.26	111.32	20.739	
12,250.00	12,043.17	15,206.66	10,571.87	42.89	86.29	-89.57	55.05	-1,841.25	2,326.47	2,215.68	110.80	20.998	
12,300.00	12,056.13	15,146.08	10,571.42	42.97	85.38	-89.57	7.79	-1,841.25	2,342.02	2,232.01	110.01	21.289	
12,350.00	12,064.83	15,097.84	10,570.96	43.05	84.66	-89.57	-40.44	-1,841.25	2,355.07	2,245.62	109.46	21.516	
12,400.00	12,069.21	15,049.01	10,570.50	43.13	83.94	-89.57	-89.27	-1,841.25	2,365.52	2,256.55	108.98	21.707	
12,423.64	12,069.77	15,025.82	10,570.28	43.17	83.60	-89.57	-112.46	-1,841.25	2,369.54	2,260.76	108.77	21.784	
12,500.00	12,069.98	14,950.87	10,569.57	43.32	82.49	-89.57	-187.41	-1,841.25	2,381.55	2,273.39	108.16	22.018	
12,600.00	12,070.27	14,852.71	10,568.64	43.58	81.04	-89.58	-285.56	-1,841.25	2,397.32	2,289.91	107.41	22.320	
12,667.68	12,070.46	14,786.28	10,568.01	43.79	80.07	-89.58	-351.99	-1,841.25	2,408.03	2,301.10	106.93	22.521	
12,700.00	12,070.55	14,754.52	10,567.71	43.90	79.60	-89.58	-383.74	-1,841.25	2,413.00	2,306.30	106.70	22.615	
12,800.00	12,070.84	14,655.87	10,566.78	44.29	78.16	-89.58	-482.39	-1,841.25	2,426.63	2,320.63	106.00	22.893	
12,900.00	12,071.12	14,556.70	10,565.84	44.73	76.72	-89.59	-581.55	-1,841.25	2,437.54	2,332.25	105.29	23.150	
13,000.00	12,071.41	14,457.15	10,564.90	45.22	75.29	-89.59	-681.10	-1,841.25	2,445.71	2,341.13	104.59	23.384	
13,100.00	12,071.69	14,357.33	10,563.95	45.76	73.85	-89.59	-780.91	-1,841.25	2,451.12	2,347.24	103.88	23.595	
13,200.00	12,071.98	14,257.37	10,563.01	46.34	72.43	-89.59	-880.87	-1,841.25	2,453.75	2,350.56	103.18	23.781	
13,200.11	12,071.98	14,257.27	10,563.01	46.34	72.43	-89.59	-880.97	-1,841.25	2,453.75	2,350.57	103.18	23.781	
13,300.00	12,072.26	14,157.38	10,562.06	46.97	71.02	-89.59	-980.85	-1,841.25	2,454.98	2,352.47	102.51	23.950	
13,400.00	12,072.55	14,057.39	10,561.12	47.64	69.61	-89.59	-1,080.84	-1,841.25	2,456.21	2,354.33	101.88	24.109	
13,500.00	12,072.83	13,957.40	10,560.17	48.36	68.22	-89.59	-1,180.83	-1,841.25	2,457.44	2,356.14	101.30	24.259	
13,600.00	12,073.12	13,857.41	10,559.22	49.13	66.84	-89.59	-1,280.81	-1,841.25	2,458.67	2,357.90	100.77	24.399	
13,700.00	12,073.40	13,757.42	10,558.28	49.94	65.47	-89.59	-1,380.80	-1,841.25	2,459.91	2,359.62	100.29	24.529	
13,800.00	12,073.68	13,657.43	10,557.33	50.80	64.12	-89.59	-1,480.78	-1,841.25	2,461.14	2,361.29	99.85	24.649	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 294H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 728-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	12,073.97	13,557.44	10,556.38	51.69	62.78	-89.59	-1,580.77	-1,841.25	2,462.37	2,362.92	99.45	24.759	
14,000.00	12,074.25	13,457.45	10,555.44	52.62	61.45	-89.59	-1,680.76	-1,841.25	2,463.61	2,364.50	99.10	24.859	
14,100.00	12,074.54	13,357.46	10,554.49	53.58	60.14	-89.59	-1,780.74	-1,841.25	2,464.84	2,366.05	98.79	24.949	
14,200.00	12,074.82	13,257.47	10,553.54	54.58	58.85	-89.59	-1,880.73	-1,841.25	2,466.07	2,367.54	98.53	25.029	
14,300.00	12,075.11	13,157.48	10,552.60	55.61	57.58	-89.59	-1,980.71	-1,841.25	2,467.31	2,369.00	98.30	25.099	
14,400.00	12,075.39	13,057.49	10,551.65	56.67	56.33	-89.59	-2,080.70	-1,841.25	2,468.54	2,370.42	98.12	25.158	
14,500.00	12,075.68	12,957.50	10,550.70	57.76	55.10	-89.59	-2,180.69	-1,841.25	2,469.77	2,371.79	97.98	25.207	
14,600.00	12,075.96	12,857.51	10,549.76	58.87	53.89	-89.59	-2,280.67	-1,841.25	2,471.01	2,373.13	97.88	25.245	
14,700.00	12,076.24	12,757.52	10,548.81	60.01	52.71	-89.59	-2,380.66	-1,841.25	2,472.24	2,374.42	97.82	25.273	
14,800.00	12,076.53	12,657.53	10,547.87	61.17	51.55	-89.59	-2,480.65	-1,841.25	2,473.48	2,375.67	97.80	25.290	
14,900.00	12,076.81	12,557.53	10,546.92	62.36	50.42	-89.59	-2,580.63	-1,841.25	2,474.71	2,376.88	97.83	25.296	
15,000.00	12,077.10	12,457.54	10,545.97	63.57	49.31	-89.59	-2,680.62	-1,841.25	2,475.94	2,378.05	97.90	25.292	
15,100.00	12,077.38	12,357.55	10,545.03	64.79	48.25	-89.59	-2,780.60	-1,841.25	2,477.18	2,379.17	98.00	25.276	
15,200.00	12,077.67	12,257.56	10,544.08	66.04	47.21	-89.59	-2,880.59	-1,841.25	2,478.41	2,380.26	98.16	25.249	
15,300.00	12,077.95	12,157.57	10,543.13	67.30	46.21	-89.59	-2,980.58	-1,841.25	2,479.65	2,381.29	98.35	25.211	
15,400.00	12,078.23	12,057.58	10,542.19	68.58	45.25	-89.58	-3,080.56	-1,841.25	2,480.88	2,382.29	98.60	25.162	
15,500.00	12,078.52	11,957.59	10,541.24	69.88	44.33	-89.58	-3,180.55	-1,841.25	2,482.12	2,383.23	98.89	25.100	
15,600.00	12,078.80	11,857.60	10,540.29	71.19	43.45	-89.58	-3,280.53	-1,841.25	2,483.35	2,384.13	99.23	25.027	
15,700.00	12,079.09	11,757.61	10,539.35	72.51	42.62	-89.58	-3,380.52	-1,841.25	2,484.59	2,384.98	99.61	24.942	
15,800.00	12,079.37	11,657.62	10,538.40	73.85	41.83	-89.58	-3,480.51	-1,841.25	2,485.83	2,385.77	100.05	24.845	
15,900.00	12,079.66	11,557.63	10,537.46	75.21	41.10	-89.58	-3,580.49	-1,841.25	2,487.06	2,386.52	100.54	24.736	
16,000.00	12,079.94	11,457.64	10,536.51	76.57	40.42	-89.58	-3,680.48	-1,841.25	2,488.30	2,387.21	101.09	24.615	
16,100.00	12,080.22	11,357.65	10,535.56	77.94	39.80	-89.58	-3,780.46	-1,841.25	2,489.53	2,387.84	101.69	24.481	
16,200.00	12,080.51	16,200.00	10,534.44	79.33	68.55	-90.11	-3,898.66	-1,841.12	2,490.74	2,366.14	124.60	19.990	
16,300.00	12,080.79	10,947.58	10,531.68	80.73	37.82	-95.69	-4,189.94	-1,825.00	2,487.99	2,385.93	102.06	24.378	
16,400.00	12,081.08	10,800.00	10,529.99	82.13	37.33	-97.09	-4,336.21	-1,805.58	2,478.49	2,375.98	102.51	24.178	
16,500.00	12,081.36	10,775.00	10,528.23	83.55	37.26	-94.90	-4,360.85	-1,801.80	2,471.07	2,367.44	103.63	23.844	
16,600.00	12,081.65	10,750.00	10,525.16	84.97	37.19	-92.68	-4,385.37	-1,798.04	2,466.75	2,362.03	104.72	23.556	
16,688.24	12,081.90	10,735.76	10,522.83	86.23	37.15	-90.48	-4,399.26	-1,795.91	2,465.50	2,359.80	105.70	23.325	
16,700.00	12,081.93	10,725.00	10,520.79	86.40	37.13	-90.44	-4,409.70	-1,794.30	2,465.58	2,359.81	105.77	23.312	
16,800.00	12,082.22	10,710.50	10,517.67	87.84	37.09	-87.89	-4,423.70	-1,792.16	2,467.47	2,360.63	106.84	23.095	
16,900.00	12,082.50	10,688.41	10,512.10	89.29	37.03	-85.55	-4,444.82	-1,788.92	2,472.60	2,364.79	107.81	22.935	
17,000.00	12,082.78	10,675.00	10,508.24	90.75	37.00	-82.98	-4,457.52	-1,786.97	2,480.97	2,372.19	108.79	22.805	
17,100.00	12,083.07	10,650.00	10,500.08	92.21	36.95	-80.73	-4,480.87	-1,783.39	2,492.44	2,382.81	109.63	22.736	
17,200.00	12,083.35	10,625.00	10,490.69	93.68	36.91	-78.49	-4,503.77	-1,779.87	2,507.11	2,396.71	110.40	22.710	
17,300.00	12,083.64	10,600.00	10,480.11	95.15	36.89	-76.26	-4,526.16	-1,776.44	2,525.00	2,413.89	111.11	22.726	
17,400.00	12,083.92	10,587.65	10,474.44	96.63	36.88	-73.77	-4,537.01	-1,774.77	2,545.95	2,434.10	111.85	22.762	
17,500.00	12,084.21	10,575.00	10,468.35	98.12	36.87	-71.34	-4,547.96	-1,773.09	2,570.07	2,457.54	112.53	22.839	
17,600.00	12,084.49	10,550.00	10,455.46	99.61	36.84	-69.22	-4,569.13	-1,769.85	2,597.18	2,484.14	113.04	22.975	
17,700.00	12,084.77	10,536.00	10,447.76	101.11	36.83	-66.93	-4,580.68	-1,768.07	2,627.31	2,513.73	113.58	23.132	
17,800.00	12,085.06	10,525.00	10,441.46	102.61	36.81	-64.65	-4,589.60	-1,766.71	2,660.39	2,546.31	114.08	23.321	
17,900.00	12,085.34	10,500.00	10,426.40	104.11	36.78	-62.68	-4,609.32	-1,763.68	2,696.30	2,581.89	114.41	23.568	
18,000.00	12,085.63	10,500.00	10,426.40	105.63	36.78	-60.37	-4,609.32	-1,763.68	2,735.03	2,620.17	114.86	23.812	
18,100.00	12,085.91	10,475.00	10,410.32	107.14	36.75	-58.54	-4,628.23	-1,760.78	2,776.31	2,661.24	115.08	24.126	
18,200.00	12,086.20	10,464.43	10,403.22	108.66	36.73	-56.55	-4,635.98	-1,759.59	2,820.26	2,704.92	115.34	24.451	
18,300.00	12,086.48	10,450.00	10,393.25	110.18	36.71	-54.70	-4,646.29	-1,758.01	2,866.71	2,751.18	115.53	24.813	
18,400.00	12,086.76	10,450.00	10,393.25	111.71	36.71	-52.76	-4,646.29	-1,758.01	2,915.65	2,799.88	115.76	25.186	
18,500.00	12,087.05	10,425.00	10,375.26	113.24	36.67	-51.18	-4,663.44	-1,755.38	2,966.72	2,850.92	115.80	25.620	
18,600.00	12,087.33	10,425.00	10,375.26	114.78	36.67	-49.41	-4,663.44	-1,755.38	3,020.09	2,904.15	115.94	26.048	
18,700.00	12,087.62	10,400.00	10,356.38	116.32	36.62	-47.96	-4,679.63	-1,752.89	3,075.58	2,959.67	115.90	26.535	
18,800.00	12,087.90	10,400.00	10,356.38	117.86	36.62	-46.35	-4,679.63	-1,752.89	3,132.97	3,017.00	115.98	27.014	
18,900.00	12,088.19	10,389.58	10,348.26	119.40	36.60	-44.90	-4,686.08	-1,751.90	3,192.35	3,076.39	115.96	27.531	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 294H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 728-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	10,375.00	10,336.66	120.95	36.57	-43.56	-4,694.82	-1,750.56	3,253.59	3,137.70	115.89	28.075	
19,100.00	12,088.76	10,375.00	10,336.66	122.50	36.57	-42.17	-4,694.82	-1,750.56	3,316.49	3,200.62	115.87	28.623	
19,200.00	12,089.04	10,364.51	10,328.16	124.05	36.55	-40.92	-4,700.89	-1,749.63	3,381.06	3,265.29	115.78	29.203	
19,300.00	12,089.32	10,350.00	10,316.18	125.61	36.51	-39.75	-4,708.98	-1,748.39	3,447.26	3,331.61	115.65	29.808	
19,400.00	12,089.61	10,350.00	10,316.18	127.17	36.51	-38.56	-4,708.98	-1,748.39	3,514.84	3,399.27	115.57	30.414	
19,500.00	12,089.89	10,350.00	10,316.18	128.73	36.51	-37.43	-4,708.98	-1,748.39	3,583.93	3,468.46	115.47	31.039	
19,600.00	12,090.18	10,336.06	10,304.43	130.29	36.48	-36.41	-4,716.40	-1,747.25	3,654.24	3,538.94	115.30	31.693	
19,700.00	12,090.46	10,325.00	10,294.96	131.86	36.46	-35.43	-4,722.05	-1,746.39	3,725.89	3,610.76	115.14	32.361	
19,800.00	12,090.75	10,325.00	10,294.96	133.42	36.46	-34.45	-4,722.05	-1,746.39	3,798.70	3,683.70	115.00	33.032	
19,900.00	12,091.03	10,325.00	10,294.96	134.99	36.46	-33.52	-4,722.05	-1,746.39	3,872.73	3,757.87	114.85	33.719	
20,000.00	12,091.31	10,312.23	10,283.87	136.57	36.42	-32.67	-4,728.30	-1,745.43	3,947.72	3,833.05	114.66	34.428	
20,100.00	12,091.60	10,300.00	10,273.09	138.14	36.39	-31.86	-4,734.01	-1,744.55	4,023.83	3,909.36	114.47	35.151	
20,200.00	12,091.88	10,300.00	10,273.09	139.72	36.39	-31.05	-4,734.01	-1,744.55	4,100.82	3,986.51	114.31	35.874	
20,300.00	12,092.17	10,300.00	10,273.09	141.29	36.39	-30.28	-4,734.01	-1,744.55	4,178.78	4,064.63	114.15	36.609	
20,400.00	12,092.45	10,300.00	10,273.09	142.87	36.39	-29.54	-4,734.01	-1,744.55	4,257.66	4,143.68	113.98	37.355	
20,500.00	12,092.74	10,287.50	10,261.92	144.45	36.36	-28.86	-4,739.56	-1,743.70	4,337.24	4,223.46	113.78	38.119	
20,600.00	12,093.02	10,275.00	10,250.61	146.04	36.33	-28.20	-4,744.82	-1,742.89	4,417.75	4,304.16	113.59	38.893	
20,700.00	12,093.31	10,275.00	10,250.61	147.62	36.33	-27.55	-4,744.82	-1,742.89	4,498.87	4,385.45	113.42	39.666	
20,800.00	12,093.59	10,275.00	10,250.61	149.21	36.33	-26.93	-4,744.82	-1,742.89	4,580.74	4,467.49	113.25	40.448	
20,900.00	12,093.87	10,275.00	10,250.61	150.80	36.33	-26.33	-4,744.82	-1,742.89	4,663.31	4,550.23	113.08	41.239	
21,000.00	12,094.16	10,275.00	10,250.61	152.39	36.33	-25.76	-4,744.82	-1,742.89	4,746.56	4,633.64	112.91	42.037	
21,100.00	12,094.44	10,263.49	10,240.08	153.98	36.29	-25.23	-4,749.41	-1,742.19	4,830.29	4,717.56	112.73	42.848	
21,200.00	12,094.73	10,250.00	10,227.59	155.57	36.26	-24.72	-4,754.46	-1,741.41	4,914.78	4,802.23	112.55	43.668	
21,300.00	12,095.01	10,250.00	10,227.59	157.16	36.26	-24.21	-4,754.46	-1,741.41	4,999.65	4,887.26	112.39	44.485	
21,400.00	12,095.30	10,250.00	10,227.59	158.76	36.26	-23.72	-4,754.46	-1,741.41	5,085.07	4,972.83	112.23	45.308	
21,500.00	12,095.58	10,250.00	10,227.59	160.35	36.26	-23.25	-4,754.46	-1,741.41	5,171.01	5,058.93	112.08	46.137	
21,600.00	12,095.86	10,250.00	10,227.59	161.95	36.26	-22.80	-4,754.46	-1,741.41	5,257.45	5,145.52	111.93	46.971	
21,700.00	12,096.15	10,250.00	10,227.59	163.55	36.26	-22.36	-4,754.46	-1,741.41	5,344.36	5,232.58	111.78	47.810	
21,800.00	12,096.43	10,250.00	10,227.59	165.15	36.26	-21.94	-4,754.46	-1,741.41	5,431.72	5,320.08	111.64	48.655	
21,900.00	12,096.72	10,238.45	10,216.79	166.75	36.22	-21.55	-4,758.50	-1,740.79	5,519.36	5,407.87	111.49	49.507	
22,000.00	12,097.00	10,225.00	10,204.10	168.35	36.18	-21.17	-4,762.89	-1,740.12	5,607.61	5,496.27	111.34	50.366	
22,100.00	12,097.29	10,225.00	10,204.10	169.96	36.18	-20.79	-4,762.89	-1,740.12	5,696.06	5,584.85	111.21	51.220	
22,175.33	12,097.50	10,225.00	10,204.10	171.16	36.18	-20.51	-4,762.89	-1,740.12	5,762.93	5,651.82	111.11	51.867	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 143-VESSL_GYRO_DROP, 9907-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-161.87	-4,573.58	-1,497.55	4,812.60				
100.00	100.00	103.54	103.54	0.13	0.08	-161.87	-4,573.33	-1,497.20	4,812.28	4,812.07	0.21	N/A	
200.00	200.00	207.23	207.22	0.49	0.22	-161.88	-4,572.75	-1,496.23	4,811.45	4,810.74	0.71	6,763.439	
300.00	300.00	293.40	293.38	0.85	0.37	-161.89	-4,572.53	-1,495.23	4,810.84	4,809.62	1.22	3,939.410	
400.00	400.00	373.97	373.95	1.21	0.52	-161.90	-4,572.62	-1,494.22	4,810.56	4,808.84	1.72	2,795.725	
411.43	411.43	382.75	382.73	1.25	0.53	-161.91	-4,572.65	-1,494.10	4,810.56	4,808.78	1.78	2,707.123	
500.00	500.00	451.09	451.06	1.57	0.65	-161.92	-4,573.11	-1,493.17	4,810.75	4,808.53	2.21	2,173.233	
600.00	600.00	529.54	529.50	1.93	0.79	-161.93	-4,573.96	-1,492.20	4,811.40	4,808.69	2.71	1,776.225	
700.00	700.00	614.17	614.12	2.29	0.94	-161.95	-4,575.14	-1,491.41	4,812.43	4,809.21	3.21	1,497.207	
800.00	800.00	718.24	718.17	2.64	1.12	-161.96	-4,576.64	-1,490.68	4,813.58	4,809.83	3.75	1,282.297	
900.00	900.00	795.08	795.00	3.00	1.26	-161.97	-4,577.86	-1,490.30	4,814.94	4,810.70	4.25	1,133.861	
1,000.00	1,000.00	887.45	887.36	3.36	1.42	-161.98	-4,579.55	-1,490.15	4,816.63	4,811.86	4.77	1,010.489	
1,100.00	1,100.00	960.18	960.07	3.72	1.55	-161.98	-4,580.99	-1,490.37	4,818.62	4,813.37	5.25	917.396	
1,200.00	1,200.00	1,023.61	1,023.48	4.08	1.66	-161.98	-4,582.54	-1,491.02	4,821.28	4,815.55	5.72	842.594	
1,300.00	1,300.00	1,090.88	1,090.70	4.44	1.78	-161.97	-4,584.64	-1,492.36	4,824.80	4,818.60	6.20	778.443	
1,400.00	1,400.00	1,163.03	1,162.78	4.79	1.91	-161.95	-4,587.14	-1,494.49	4,828.96	4,822.28	6.68	722.567	
1,500.00	1,500.00	1,240.29	1,239.93	5.15	2.04	-161.93	-4,589.84	-1,497.49	4,833.49	4,826.31	7.18	673.413	
1,600.00	1,600.00	1,302.84	1,302.36	5.51	2.16	-161.90	-4,592.16	-1,500.58	4,838.60	4,830.95	7.65	632.860	
1,700.00	1,700.00	1,351.91	1,351.30	5.87	2.25	-161.88	-4,594.34	-1,503.51	4,844.68	4,836.59	8.09	598.953	
1,800.00	1,800.00	1,451.80	1,450.81	6.23	2.43	-161.82	-4,599.16	-1,510.76	4,851.53	4,842.90	8.63	562.342	
1,900.00	1,900.00	1,553.08	1,551.64	6.59	2.62	-161.74	-4,603.31	-1,519.27	4,858.07	4,848.90	9.17	529.740	
2,000.00	2,000.00	1,645.42	1,643.55	6.95	2.79	-161.66	-4,607.06	-1,527.45	4,864.72	4,855.03	9.70	501.670	
2,100.00	2,100.00	1,749.25	1,746.89	7.30	2.99	-161.57	-4,611.39	-1,536.48	4,871.44	4,861.20	10.24	475.514	
2,200.00	2,200.00	1,864.65	1,861.77	7.66	3.20	-161.48	-4,615.98	-1,546.38	4,877.95	4,867.13	10.81	451.100	
2,300.00	2,300.00	1,969.18	1,965.84	8.02	3.39	-161.39	-4,619.94	-1,555.33	4,884.28	4,872.92	11.36	429.910	
2,400.00	2,400.00	2,077.00	2,073.20	8.38	3.58	-161.31	-4,623.83	-1,564.50	4,890.43	4,878.51	11.91	410.449	
2,500.00	2,500.00	2,183.87	2,179.62	8.74	3.78	-161.22	-4,627.55	-1,573.63	4,896.49	4,884.02	12.47	392.784	
2,600.00	2,599.99	2,270.81	2,266.19	9.10	3.93	-161.15	-4,630.49	-1,581.03	4,903.21	4,890.24	12.98	377.765	
2,700.00	2,699.96	2,348.28	2,343.28	9.45	4.07	-161.10	-4,633.38	-1,588.16	4,911.97	4,898.49	13.47	364.529	
2,800.00	2,799.86	2,447.85	2,442.27	9.81	4.26	-161.03	-4,636.91	-1,598.24	4,922.35	4,908.33	14.01	351.265	
2,900.00	2,899.68	2,538.97	2,532.86	10.17	4.42	-160.98	-4,640.21	-1,607.51	4,934.31	4,919.78	14.53	339.481	
3,000.00	2,999.37	2,627.72	2,621.09	10.53	4.58	-160.94	-4,643.62	-1,616.46	4,947.95	4,932.90	15.05	328.743	
3,100.00	3,098.90	2,721.99	2,714.78	10.89	4.76	-160.90	-4,647.38	-1,626.25	4,963.28	4,947.71	15.58	318.610	
3,200.00	3,198.26	2,846.46	2,838.56	11.25	4.98	-160.85	-4,652.08	-1,638.44	4,979.67	4,963.51	16.16	308.083	
3,300.06	3,297.46	2,941.67	2,933.28	11.62	5.15	-160.85	-4,655.67	-1,647.41	4,997.44	4,980.75	16.69	299.395	
3,400.00	3,396.43	3,036.55	3,027.64	11.98	5.32	-160.85	-4,659.26	-1,656.54	5,015.99	4,998.77	17.22	291.299	
3,500.00	3,495.46	3,139.81	3,130.34	12.36	5.51	-160.83	-4,663.11	-1,666.67	5,034.57	5,016.80	17.76	283.404	
3,600.00	3,594.48	3,221.30	3,211.40	12.73	5.65	-160.84	-4,666.19	-1,674.50	5,053.13	5,034.87	18.27	276.618	
3,700.00	3,693.51	3,299.14	3,288.81	13.11	5.79	-160.86	-4,669.61	-1,681.92	5,072.23	5,053.46	18.76	270.324	
3,800.00	3,792.54	3,423.56	3,412.56	13.49	6.02	-160.84	-4,675.08	-1,693.53	5,091.28	5,071.93	19.35	263.060	
3,900.00	3,891.56	3,562.36	3,550.73	13.87	6.26	-160.81	-4,680.41	-1,705.55	5,109.57	5,089.60	19.97	255.814	
4,000.00	3,990.59	3,628.22	3,616.31	14.25	6.38	-160.84	-4,682.97	-1,711.12	5,127.84	5,107.39	20.45	250.777	
4,100.00	4,089.62	3,726.58	3,714.25	14.64	6.55	-160.85	-4,687.32	-1,719.03	5,146.48	5,125.50	20.99	245.217	
4,200.00	4,188.64	3,858.70	3,845.90	15.03	6.79	-160.85	-4,692.97	-1,728.63	5,164.74	5,143.15	21.60	239.154	
4,300.00	4,287.67	3,912.89	3,899.90	15.42	6.88	-160.90	-4,695.51	-1,732.38	5,183.17	5,161.13	22.05	235.100	
4,400.00	4,386.70	3,983.76	3,970.50	15.81	7.01	-160.94	-4,699.21	-1,737.31	5,202.20	5,179.67	22.53	230.891	
4,500.00	4,485.72	4,053.46	4,039.90	16.20	7.13	-160.98	-4,703.05	-1,742.58	5,221.70	5,198.68	23.01	226.904	
4,600.00	4,584.75	4,124.80	4,110.86	16.59	7.26	-161.02	-4,707.34	-1,748.47	5,241.85	5,218.35	23.50	223.077	
4,700.00	4,683.78	4,189.89	4,175.57	16.98	7.37	-161.05	-4,711.52	-1,754.19	5,262.54	5,238.57	23.97	219.552	
4,800.00	4,782.80	4,295.64	4,280.66	17.38	7.56	-161.05	-4,718.41	-1,763.80	5,283.47	5,258.94	24.53	215.391	
4,900.00	4,881.83	4,405.32	4,389.65	17.78	7.76	-161.05	-4,725.07	-1,774.15	5,304.10	5,279.00	25.10	211.322	
5,000.00	4,980.86	4,552.37	4,535.82	18.17	8.02	-161.01	-4,732.64	-1,788.16	5,323.75	5,298.00	25.75	206.733	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

urvey Program: 143-VESSI_GYRO_DROP, 9907-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	4,627.17	4,610.15	18.57	8.16	-161.02	-4,736.39	-1,795.72	5,343.61	5,317.37	26.25	203.590	
5,200.00	5,178.91	4,712.64	4,695.04	18.97	8.31	-161.03	-4,740.99	-1,804.43	5,363.84	5,337.08	26.77	200.400	
5,300.00	5,277.94	4,822.24	4,803.91	19.37	8.50	-161.01	-4,746.68	-1,815.76	5,383.94	5,356.60	27.34	196.937	
5,400.00	5,376.96	4,914.50	4,895.56	19.77	8.67	-161.01	-4,751.59	-1,825.16	5,404.11	5,376.24	27.87	193.885	
5,500.00	5,475.99	5,039.99	5,020.22	20.17	8.89	-160.98	-4,757.95	-1,838.16	5,424.12	5,395.64	28.48	190.442	
5,600.00	5,575.02	5,136.54	5,116.20	20.57	9.07	-160.98	-4,762.67	-1,847.44	5,443.71	5,414.69	29.03	187.546	
5,690.40	5,664.54	5,217.78	5,196.98	20.93	9.21	-160.98	-4,766.92	-1,854.99	5,461.61	5,432.11	29.50	185.111	
5,700.00	5,674.04	5,226.95	5,206.09	20.97	9.23	-160.98	-4,767.41	-1,855.82	5,463.51	5,433.95	29.56	184.849	
5,800.00	5,773.21	5,333.26	5,311.81	21.37	9.42	-160.98	-4,773.04	-1,865.52	5,482.45	5,452.33	30.12	182.013	
5,900.00	5,872.58	5,465.33	5,443.19	21.76	9.65	-160.94	-4,779.59	-1,877.32	5,499.55	5,468.81	30.74	178.900	
6,000.00	5,972.14	5,580.09	5,557.44	22.15	9.85	-160.92	-4,784.95	-1,886.76	5,514.68	5,483.36	31.32	176.081	
6,100.00	6,071.84	5,692.20	5,669.04	22.52	10.05	-160.88	-4,789.90	-1,896.17	5,528.15	5,496.26	31.89	173.359	
6,200.00	6,171.66	5,813.65	5,789.97	22.89	10.27	-160.83	-4,794.85	-1,906.14	5,539.76	5,507.29	32.48	170.583	
6,300.00	6,271.57	5,913.62	5,889.55	23.25	10.44	-160.79	-4,798.80	-1,914.06	5,549.68	5,516.67	33.01	168.112	
6,400.00	6,371.54	6,050.59	6,026.00	23.60	10.68	-160.72	-4,803.90	-1,924.85	5,557.92	5,524.30	33.63	165.287	
6,490.46	6,462.00	6,177.31	6,152.31	23.92	10.90	-160.64	-4,807.61	-1,934.26	5,563.22	5,529.03	34.18	162.748	
6,500.00	6,471.54	6,187.13	6,162.11	23.95	10.92	-160.64	-4,807.91	-1,934.91	5,563.70	5,529.46	34.23	162.520	
6,600.00	6,571.54	6,452.66	6,427.24	24.29	11.38	-160.54	-4,814.55	-1,947.28	5,568.19	5,533.08	35.10	158.620	
6,700.00	6,671.54	6,629.97	6,604.53	24.63	11.69	-160.53	-4,815.99	-1,949.39	5,569.18	5,533.40	35.78	155.647	
6,800.00	6,771.54	6,733.29	6,707.85	24.98	11.87	-160.52	-4,816.44	-1,950.05	5,569.81	5,533.49	36.31	153.386	
6,900.00	6,871.54	6,831.18	6,805.73	25.32	12.04	-160.52	-4,816.88	-1,950.75	5,570.46	5,533.63	36.83	151.234	
7,000.00	6,971.54	6,921.92	6,896.47	25.66	12.20	-160.51	-4,817.34	-1,951.39	5,571.18	5,533.83	37.34	149.197	
7,100.00	7,071.54	7,005.33	6,979.88	26.01	12.34	-160.51	-4,817.98	-1,952.02	5,572.15	5,534.32	37.83	147.275	
7,200.00	7,171.54	7,083.49	7,058.02	26.35	12.48	-160.50	-4,818.80	-1,952.72	5,573.45	5,535.13	38.32	145.449	
7,300.00	7,271.54	7,405.57	7,380.03	26.70	13.03	-160.48	-4,816.17	-1,954.42	5,572.58	5,533.34	39.25	141.980	
7,400.00	7,371.54	7,500.07	7,474.51	27.04	13.18	-160.47	-4,813.82	-1,954.12	5,570.14	5,530.38	39.76	140.105	
7,500.00	7,471.54	7,578.62	7,553.04	27.39	13.31	-160.47	-4,812.00	-1,954.04	5,567.93	5,527.69	40.24	138.375	
7,600.00	7,571.54	7,649.73	7,624.13	27.73	13.43	-160.46	-4,810.66	-1,954.15	5,566.21	5,525.50	40.71	136.742	
7,700.00	7,671.54	7,720.30	7,694.70	28.08	13.55	-160.46	-4,809.72	-1,954.28	5,565.01	5,523.84	41.17	135.161	
7,800.00	7,771.54	7,807.34	7,781.74	28.43	13.69	-160.45	-4,808.91	-1,954.48	5,564.21	5,522.54	41.67	133.530	
7,900.00	7,871.54	7,884.22	7,858.61	28.77	13.82	-160.45	-4,808.35	-1,954.87	5,563.70	5,521.55	42.15	131.998	
7,967.12	7,938.65	7,935.56	7,909.95	29.01	13.91	-160.44	-4,808.13	-1,955.28	5,563.61	5,521.14	42.47	130.996	
8,000.00	7,971.54	7,962.05	7,936.44	29.12	13.96	-160.44	-4,808.07	-1,955.51	5,563.63	5,521.00	42.63	130.502	
8,100.00	8,071.54	8,049.34	8,023.73	29.47	14.11	-160.43	-4,808.08	-1,956.20	5,563.90	5,520.76	43.13	128.991	
8,200.00	8,171.54	8,243.08	8,217.46	29.82	14.44	-160.43	-4,807.29	-1,956.03	5,563.56	5,519.73	43.83	126.928	
8,300.00	8,271.54	8,333.67	8,308.04	30.16	14.59	-160.42	-4,805.94	-1,956.25	5,562.25	5,517.91	44.34	125.454	
8,400.00	8,371.54	8,406.60	8,380.96	30.51	14.72	-160.42	-4,805.04	-1,956.66	5,561.29	5,516.48	44.81	124.107	
8,498.34	8,469.87	8,466.82	8,441.17	30.86	14.82	-160.41	-4,804.63	-1,957.21	5,560.95	5,515.70	45.26	122.879	
8,500.00	8,471.54	8,467.84	8,442.19	30.86	14.83	-160.41	-4,804.62	-1,957.23	5,560.95	5,515.69	45.26	122.859	
8,600.00	8,571.54	8,537.74	8,512.09	31.21	14.95	-160.40	-4,804.50	-1,958.22	5,561.26	5,515.53	45.73	121.606	
8,700.00	8,671.54	8,638.05	8,612.38	31.56	15.13	-160.38	-4,804.57	-1,960.10	5,561.95	5,515.69	46.26	120.232	
8,800.00	8,771.54	8,736.39	8,710.71	31.91	15.30	-160.37	-4,804.53	-1,961.56	5,562.42	5,515.63	46.78	118.894	
8,900.00	8,871.54	8,825.70	8,800.01	32.26	15.46	-160.36	-4,804.93	-1,962.30	5,563.11	5,515.82	47.29	117.632	
9,000.00	8,971.54	8,916.24	8,890.54	32.61	15.62	-160.35	-4,805.27	-1,963.62	5,563.96	5,516.15	47.80	116.394	
9,100.00	9,071.54	9,026.17	9,000.44	32.96	15.81	-160.33	-4,805.43	-1,966.23	5,564.90	5,516.55	48.35	115.095	
9,200.00	9,171.54	9,218.02	9,192.20	33.31	16.15	-160.27	-4,803.27	-1,971.43	5,564.68	5,515.63	49.05	113.446	
9,300.00	9,271.54	9,313.24	9,287.42	33.66	16.31	-160.26	-4,802.28	-1,971.62	5,563.77	5,514.20	49.57	112.248	
9,400.00	9,371.54	9,376.40	9,350.58	34.01	16.42	-160.26	-4,801.98	-1,971.40	5,563.24	5,513.22	50.02	111.213	
9,416.56	9,388.10	9,385.22	9,359.40	34.06	16.43	-160.26	-4,801.96	-1,971.42	5,563.23	5,513.13	50.10	111.052	
9,500.00	9,471.54	9,434.16	9,408.34	34.36	16.52	-160.26	-4,802.02	-1,971.82	5,563.52	5,513.05	50.47	110.236	
9,600.00	9,571.54	9,610.01	9,584.16	34.71	16.83	-160.23	-4,800.51	-1,973.88	5,562.84	5,511.70	51.14	108.779	
9,655.09	9,626.63	9,623.78	9,597.93	34.90	16.85	-160.23	-4,800.35	-1,974.02	5,562.59	5,511.24	51.35	108.324	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 143-VESSI_GYRO_DROP, 9907-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,700.00	9,671.54	9,623.78	9,597.93	35.06	16.85	-160.23	-4,800.35	-1,974.02	5,562.77	5,511.27	51.50	108.010	
9,800.00	9,771.54	9,673.56	9,647.71	35.41	16.94	-160.23	-4,800.57	-1,974.15	5,563.65	5,511.72	51.93	107.133	
9,900.00	9,871.54	9,710.00	9,684.13	35.76	17.00	-160.24	-4,801.71	-1,973.78	5,566.04	5,513.71	52.33	106.359	
10,000.00	9,971.54	9,710.00	9,684.13	36.11	17.00	-160.24	-4,801.71	-1,973.78	5,569.79	5,517.14	52.65	105.780	
10,100.00	10,071.54	9,710.00	9,684.13	36.46	17.00	-160.24	-4,801.71	-1,973.78	5,575.33	5,522.36	52.97	105.256	
10,200.00	10,171.54	9,732.02	9,706.09	36.81	17.04	-160.25	-4,803.21	-1,973.28	5,582.14	5,528.81	53.33	104.680	
10,300.00	10,271.54	9,755.00	9,728.88	37.17	17.08	-160.27	-4,805.97	-1,972.43	5,591.01	5,537.33	53.68	104.154	
10,400.00	10,371.54	9,755.00	9,728.88	37.52	17.08	-160.27	-4,805.97	-1,972.43	5,601.09	5,547.11	53.98	103.771	
10,500.00	10,471.54	9,755.00	9,728.88	37.87	17.08	-160.27	-4,805.97	-1,972.43	5,612.93	5,558.66	54.26	103.438	
10,600.00	10,571.54	9,782.13	9,755.64	38.22	17.12	-160.30	-4,810.22	-1,971.09	5,626.23	5,571.62	54.61	103.020	
10,700.00	10,671.54	9,800.00	9,773.21	38.57	17.15	-160.32	-4,813.33	-1,970.08	5,640.91	5,585.97	54.93	102.686	
10,800.00	10,771.54	9,829.05	9,801.66	38.93	17.20	-160.35	-4,818.89	-1,968.09	5,656.89	5,601.61	55.28	102.333	
10,900.00	10,871.54	9,845.00	9,817.20	39.28	17.23	-160.38	-4,822.22	-1,966.77	5,674.20	5,618.61	55.59	102.079	
11,000.00	10,971.54	9,870.64	9,842.07	39.63	17.37	-160.42	-4,827.99	-1,964.44	5,692.83	5,636.87	55.96	101.724	
11,100.00	11,071.54	9,907.00	9,877.08	39.98	17.71	-160.49	-4,837.12	-1,960.82	5,712.98	5,656.77	56.21	101.639	
11,200.00	11,171.54	9,907.00	9,877.08	40.34	17.71	-160.49	-4,837.12	-1,960.82	5,734.22	5,677.78	56.44	101.597	
11,300.00	11,271.54	9,924.22	9,893.53	40.69	17.72	-160.52	-4,841.84	-1,958.96	5,756.97	5,700.28	56.69	101.550	
11,400.00	11,371.54	9,938.00	9,906.63	41.04	17.72	-160.55	-4,845.84	-1,957.38	5,781.10	5,724.16	56.93	101.543	
11,500.00	11,471.54	9,938.00	9,906.63	41.40	17.72	-160.55	-4,845.84	-1,957.38	5,806.75	5,749.60	57.15	101.605	
11,525.27	11,496.81	9,938.00	9,906.63	41.48	17.72	-160.55	-4,845.84	-1,957.38	5,813.48	5,756.28	57.20	101.627	
11,550.00	11,521.53	9,953.11	9,920.88	41.57	17.72	-160.58	-4,850.51	-1,955.60	5,819.53	5,762.25	57.27	101.607	
11,600.00	11,571.33	9,970.00	9,936.66	41.72	17.73	-160.60	-4,856.17	-1,953.56	5,829.70	5,772.32	57.38	101.593	
11,650.00	11,620.56	9,970.00	9,936.66	41.85	17.73	-160.55	-4,856.17	-1,953.56	5,836.29	5,778.84	57.46	101.576	
11,700.00	11,668.84	9,970.00	9,936.66	41.98	17.73	-160.48	-4,856.17	-1,953.56	5,839.53	5,782.00	57.52	101.515	
11,750.00	11,715.82	9,970.00	9,936.66	42.10	17.73	-160.40	-4,856.17	-1,953.56	5,839.38	5,781.79	57.58	101.411	
11,800.00	11,761.13	9,970.00	9,936.66	42.20	17.73	-160.28	-4,856.17	-1,953.56	5,835.84	5,778.21	57.63	101.267	
11,850.00	11,804.43	9,970.00	9,936.66	42.30	17.73	-160.15	-4,856.17	-1,953.56	5,828.95	5,771.28	57.67	101.082	
11,900.00	11,845.39	9,970.00	9,936.66	42.39	17.73	-160.00	-4,856.17	-1,953.56	5,818.74	5,761.04	57.69	100.858	
11,950.00	11,883.69	9,985.46	9,950.95	42.47	17.73	-159.86	-4,861.80	-1,951.80	5,804.97	5,747.24	57.74	100.541	
12,000.00	11,919.06	10,001.00	9,965.16	42.54	17.74	-159.71	-4,867.91	-1,950.28	5,788.37	5,730.59	57.77	100.190	
12,050.00	11,951.20	10,001.00	9,965.16	42.61	17.74	-159.50	-4,867.91	-1,950.28	5,768.39	5,710.62	57.78	99.842	
12,100.00	11,979.89	10,001.00	9,965.16	42.68	17.74	-159.27	-4,867.91	-1,950.28	5,745.47	5,687.70	57.77	99.455	
12,150.00	12,004.90	10,001.00	9,965.16	42.75	17.74	-159.03	-4,867.91	-1,950.28	5,719.74	5,661.98	57.76	99.029	
12,200.00	12,026.05	10,001.00	9,965.16	42.82	17.74	-158.77	-4,867.91	-1,950.28	5,691.35	5,633.61	57.74	98.565	
12,250.00	12,043.17	10,001.00	9,965.16	42.89	17.74	-158.50	-4,867.91	-1,950.28	5,660.49	5,602.77	57.72	98.062	
12,300.00	12,056.13	10,001.00	9,965.16	42.97	17.74	-158.21	-4,867.91	-1,950.28	5,627.36	5,569.65	57.70	97.520	
12,350.00	12,064.83	10,001.00	9,965.16	43.05	17.74	-157.92	-4,867.91	-1,950.28	5,592.16	5,534.47	57.69	96.942	
12,400.00	12,069.21	10,001.00	9,965.16	43.13	17.74	-157.62	-4,867.91	-1,950.28	5,555.12	5,497.46	57.67	96.328	
12,423.64	12,069.77	10,001.00	9,965.16	43.17	17.74	-157.47	-4,867.91	-1,950.28	5,537.05	5,479.38	57.66	96.024	
12,500.00	12,069.98	10,001.00	9,965.16	43.32	17.74	-157.00	-4,867.91	-1,950.28	5,478.33	5,420.69	57.65	95.033	
12,600.00	12,070.27	10,016.40	9,979.06	43.58	17.74	-156.40	-4,874.41	-1,949.05	5,401.82	5,344.14	57.68	93.653	
12,667.68	12,070.46	10,033.00	9,993.85	43.79	17.75	-156.00	-4,881.89	-1,948.01	5,350.82	5,293.09	57.73	92.686	
12,700.00	12,070.55	10,033.00	9,993.85	43.90	17.75	-155.78	-4,881.89	-1,948.01	5,326.35	5,268.61	57.74	92.243	
12,800.00	12,070.84	10,033.00	9,993.85	44.29	17.75	-155.13	-4,881.89	-1,948.01	5,249.94	5,192.14	57.79	90.840	
12,900.00	12,071.12	10,033.00	9,993.85	44.73	17.75	-154.48	-4,881.89	-1,948.01	5,172.54	5,114.68	57.86	89.398	
13,000.00	12,071.41	10,033.00	9,993.85	45.22	17.75	-153.85	-4,881.89	-1,948.01	5,094.22	5,036.28	57.94	87.924	
13,100.00	12,071.69	10,033.00	9,993.85	45.76	17.75	-153.24	-4,881.89	-1,948.01	5,015.02	4,956.99	58.03	86.422	
13,200.00	12,071.98	10,033.00	9,993.85	46.34	17.75	-152.64	-4,881.89	-1,948.01	4,935.00	4,876.87	58.13	84.900	
13,200.11	12,071.98	10,033.00	9,993.85	46.34	17.75	-152.64	-4,881.89	-1,948.01	4,934.91	4,876.78	58.13	84.898	
13,300.00	12,072.26	10,033.00	9,993.85	46.97	17.75	-152.03	-4,881.89	-1,948.01	4,854.95	4,796.71	58.24	83.361	
13,400.00	12,072.55	10,048.46	10,007.42	47.64	17.76	-151.46	-4,889.26	-1,947.31	4,775.39	4,716.97	58.41	81.750	
13,500.00	12,072.83	10,065.00	10,021.73	48.36	17.76	-150.86	-4,897.54	-1,946.82	4,696.84	4,638.22	58.62	80.124	

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

devon

MS Energy Services
Anticollision Report

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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 143-VESSI_GYRO_DROP, 9907-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	12,073.12	10,065.00	10,021.73	49.13	17.76	-150.18	-4,897.54	-1,946.82	4,618.82	4,560.01	58.82	78.531	
13,700.00	12,073.40	10,065.00	10,021.73	49.94	17.76	-149.47	-4,897.54	-1,946.82	4,541.66	4,482.62	59.04	76.922	
13,800.00	12,073.68	10,065.00	10,021.73	50.80	17.76	-148.74	-4,897.54	-1,946.82	4,465.40	4,406.10	59.30	75.298	
13,900.00	12,073.97	10,065.00	10,021.73	51.69	17.76	-147.97	-4,897.54	-1,946.82	4,390.10	4,330.50	59.60	73.659	
14,000.00	12,074.25	10,065.00	10,021.73	52.62	17.76	-147.16	-4,897.54	-1,946.82	4,315.80	4,255.87	59.94	72.007	
14,100.00	12,074.54	10,096.00	10,047.80	53.58	17.78	-146.47	-4,914.31	-1,946.44	4,242.31	4,181.92	60.39	70.249	
14,200.00	12,074.82	10,096.00	10,047.80	54.58	17.78	-145.59	-4,914.31	-1,946.44	4,169.77	4,108.96	60.81	68.572	
14,300.00	12,075.11	10,096.00	10,047.80	55.61	17.78	-144.68	-4,914.31	-1,946.44	4,098.39	4,037.12	61.27	66.887	
14,400.00	12,075.39	10,096.00	10,047.80	56.67	17.78	-143.72	-4,914.31	-1,946.44	4,028.22	3,966.44	61.79	65.196	
14,500.00	12,075.68	10,096.00	10,047.80	57.76	17.78	-142.72	-4,914.31	-1,946.44	3,959.34	3,896.99	62.35	63.503	
14,600.00	12,075.96	10,113.97	10,062.40	58.87	17.79	-141.79	-4,924.77	-1,946.52	3,891.43	3,828.42	63.01	61.762	
14,700.00	12,076.24	10,128.00	10,073.55	60.01	17.80	-140.79	-4,933.29	-1,946.77	3,825.05	3,761.35	63.71	60.041	
14,800.00	12,076.53	10,128.00	10,073.55	61.17	17.80	-139.64	-4,933.29	-1,946.77	3,759.92	3,695.49	64.43	58.356	
14,900.00	12,076.81	10,128.00	10,073.55	62.36	17.80	-138.45	-4,933.29	-1,946.77	3,696.35	3,631.14	65.21	56.684	
15,000.00	12,077.10	10,142.10	10,084.51	63.57	17.81	-137.30	-4,942.15	-1,947.19	3,634.19	3,568.11	66.08	54.996	
15,100.00	12,077.38	10,154.00	10,093.57	64.79	17.82	-136.09	-4,949.85	-1,947.68	3,573.68	3,506.67	67.00	53.335	
15,200.00	12,077.67	10,154.00	10,093.57	66.04	17.82	-134.72	-4,949.85	-1,947.68	3,514.80	3,446.84	67.96	51.719	
15,300.00	12,077.95	10,154.00	10,093.57	67.30	17.82	-133.28	-4,949.85	-1,947.68	3,457.82	3,388.84	68.97	50.131	
15,400.00	12,078.23	10,185.00	10,116.18	68.58	17.85	-132.08	-4,970.99	-1,949.21	3,402.42	3,332.30	70.12	48.524	
15,500.00	12,078.52	10,185.00	10,116.18	69.88	17.85	-130.51	-4,970.99	-1,949.21	3,348.87	3,277.62	71.25	47.001	
15,600.00	12,078.80	10,185.00	10,116.18	71.19	17.85	-128.87	-4,970.99	-1,949.21	3,297.47	3,225.03	72.44	45.520	
15,700.00	12,079.09	10,200.55	10,126.87	72.51	17.86	-127.34	-4,982.25	-1,950.04	3,248.02	3,174.30	73.72	44.060	
15,800.00	12,079.37	10,217.00	10,137.56	73.85	17.88	-125.77	-4,994.72	-1,950.93	3,200.89	3,125.84	75.05	42.652	
15,900.00	12,079.66	10,217.00	10,137.56	75.21	17.88	-123.90	-4,994.72	-1,950.93	3,155.85	3,079.45	76.39	41.311	
16,000.00	12,079.94	10,217.00	10,137.56	76.57	17.88	-121.96	-4,994.72	-1,950.93	3,113.36	3,035.58	77.78	40.027	
16,100.00	12,080.22	10,248.00	10,155.71	77.94	17.93	-120.42	-5,019.77	-1,952.66	3,073.36	2,994.09	79.27	38.770	
16,200.00	12,080.51	10,248.00	10,155.71	79.33	17.93	-118.33	-5,019.77	-1,952.66	3,035.49	2,954.75	80.74	37.596	
16,300.00	12,080.79	10,248.00	10,155.71	80.73	17.93	-116.16	-5,019.77	-1,952.66	3,000.47	2,918.24	82.23	36.487	
16,400.00	12,081.08	10,248.00	10,155.71	82.13	17.93	-113.90	-5,019.77	-1,952.66	2,968.42	2,884.66	83.75	35.443	
16,500.00	12,081.36	10,280.00	10,171.19	83.55	17.98	-112.20	-5,047.69	-1,954.46	2,938.71	2,853.37	85.35	34.432	
16,600.00	12,081.65	10,280.00	10,171.19	84.97	17.98	-109.80	-5,047.69	-1,954.46	2,911.89	2,825.00	86.89	33.511	
16,700.00	12,081.93	10,280.00	10,171.19	86.40	17.98	-107.34	-5,047.69	-1,954.46	2,888.28	2,799.85	88.43	32.660	
16,800.00	12,082.22	10,312.00	10,183.35	87.84	18.05	-105.54	-5,077.22	-1,956.37	2,867.25	2,777.20	90.04	31.843	
16,900.00	12,082.50	10,312.00	10,183.35	89.29	18.05	-102.97	-5,077.22	-1,956.37	2,849.25	2,757.69	91.57	31.116	
17,000.00	12,082.78	10,344.00	10,192.70	90.75	18.13	-101.14	-5,107.74	-1,958.48	2,834.36	2,741.21	93.15	30.427	
17,100.00	12,083.07	10,344.00	10,192.70	92.21	18.13	-98.48	-5,107.74	-1,958.48	2,822.17	2,727.54	94.63	29.822	
17,200.00	12,083.35	10,362.16	10,196.76	93.68	18.19	-96.27	-5,125.40	-1,959.68	2,813.09	2,716.96	96.13	29.264	
17,300.00	12,083.64	10,375.00	10,198.99	95.15	18.24	-93.90	-5,138.01	-1,960.49	2,807.06	2,709.49	97.56	28.771	
17,400.00	12,083.92	10,405.00	10,202.15	96.63	18.37	-91.99	-5,167.79	-1,962.18	2,804.18	2,705.17	99.01	28.322	
17,454.82	12,084.08	10,405.00	10,202.15	97.45	18.37	-90.50	-5,167.79	-1,962.18	2,803.64	2,703.91	99.73	28.112	
17,500.00	12,084.21	10,416.27	10,202.71	98.12	18.42	-89.57	-5,179.02	-1,962.71	2,803.95	2,703.60	100.35	27.942	
17,600.00	12,084.49	10,563.00	10,204.80	99.61	19.29	-90.84	-5,325.70	-1,963.03	2,803.58	2,701.48	102.10	27.460	
17,657.35	12,084.65	10,607.64	10,203.90	100.47	19.62	-90.49	-5,370.31	-1,961.60	2,803.35	2,700.36	102.99	27.219	
17,700.00	12,084.77	10,634.99	10,202.94	101.11	19.83	-90.08	-5,397.62	-1,960.61	2,803.47	2,699.84	103.63	27.052	
17,800.00	12,085.06	10,747.16	10,197.96	102.61	20.77	-90.40	-5,509.59	-1,956.14	2,804.10	2,698.76	105.33	26.621	
17,900.00	12,085.34	10,818.69	10,195.18	104.11	21.45	-89.62	-5,581.02	-1,953.59	2,804.68	2,697.73	106.95	26.224	
18,000.00	12,085.63	10,885.31	10,192.18	105.63	22.11	-88.71	-5,647.55	-1,951.87	2,806.40	2,697.84	108.56	25.850	
18,100.00	12,085.91	11,011.42	10,185.67	107.14	23.45	-89.42	-5,773.47	-1,949.41	2,809.22	2,698.67	110.55	25.411	
18,200.00	12,086.20	11,187.64	10,183.22	108.66	25.51	-91.50	-5,949.58	-1,944.13	2,808.02	2,695.03	113.00	24.850	
18,300.00	12,086.48	11,267.07	10,182.93	110.18	26.49	-90.94	-6,028.98	-1,942.18	2,807.09	2,692.19	114.90	24.431	
18,400.00	12,086.76	11,385.62	10,182.20	111.71	28.00	-91.45	-6,147.50	-1,939.70	2,806.66	2,689.54	117.12	23.963	
18,500.00	12,087.05	11,481.86	10,182.28	113.24	29.27	-91.34	-6,243.71	-1,937.03	2,805.20	2,685.97	119.23	23.528	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 143-VESSI_GYRO_DROP, 9907-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,595.53	12,087.32	11,546.58	10,182.27	114.71	30.14	-90.50	-6,308.42	-1,935.91	2,804.62	2,683.57	121.05	23.169	
18,600.00	12,087.33	11,549.35	10,182.27	114.78	30.18	-90.45	-6,311.18	-1,935.88	2,804.62	2,683.49	121.13	23.154	
18,700.00	12,087.62	11,616.83	10,182.17	116.32	31.10	-89.56	-6,378.66	-1,935.91	2,805.35	2,682.30	123.05	22.798	
18,800.00	12,087.90	18,800.00	10,180.64	117.86	132.55	-91.01	-6,531.45	-1,933.68	2,805.56	2,604.55	201.01	13.957	
18,900.00	12,088.19	11,896.45	10,179.66	119.40	35.04	-91.75	-6,658.15	-1,929.01	2,803.88	2,675.69	128.19	21.873	
19,000.00	12,088.47	12,023.91	10,177.90	120.95	36.91	-92.50	-6,785.41	-1,922.01	2,801.26	2,670.63	130.62	21.445	
19,100.00	12,088.76	12,097.19	10,176.53	122.50	37.99	-91.77	-6,858.56	-1,918.01	2,799.13	2,666.50	132.63	21.105	
19,200.00	12,089.04	12,173.00	10,174.68	124.05	39.12	-91.10	-6,934.27	-1,914.60	2,798.05	2,663.39	134.66	20.779	
19,300.00	12,089.32	12,328.06	10,173.43	125.61	41.45	-92.62	-7,089.13	-1,906.95	2,795.21	2,657.79	137.42	20.341	
19,400.00	12,089.61	12,402.08	10,173.18	127.17	42.58	-91.90	-7,163.08	-1,903.84	2,792.97	2,653.47	139.50	20.022	
19,500.00	12,089.89	12,479.25	10,172.69	128.73	43.75	-91.27	-7,240.21	-1,901.25	2,791.58	2,649.96	141.61	19.713	
19,600.00	12,090.18	12,651.62	10,171.44	130.29	46.40	-93.29	-7,412.46	-1,895.42	2,790.89	2,646.28	144.61	19.300	
19,700.00	12,090.46	12,744.50	10,171.60	131.86	47.85	-93.09	-7,505.21	-1,890.41	2,787.45	2,640.56	146.88	18.977	
19,800.00	12,090.75	12,834.72	10,171.61	133.42	49.25	-92.82	-7,595.31	-1,885.76	2,784.30	2,635.16	149.14	18.669	
19,900.00	12,091.03	12,903.95	10,171.18	134.99	50.34	-91.96	-7,664.45	-1,882.45	2,781.87	2,630.66	151.20	18.398	
20,000.00	12,091.31	12,976.39	10,169.99	136.57	51.47	-91.18	-7,736.82	-1,879.41	2,780.53	2,627.25	153.28	18.140	
20,100.00	12,091.60	13,114.13	10,167.33	138.14	53.64	-92.25	-7,874.42	-1,873.87	2,779.76	2,623.79	155.96	17.823	
20,200.00	12,091.88	13,182.84	10,166.97	139.72	54.72	-91.36	-7,943.08	-1,871.20	2,777.98	2,619.94	158.04	17.578	
20,300.00	12,092.17	13,254.64	10,166.00	141.29	55.86	-90.57	-8,014.85	-1,869.22	2,777.49	2,617.36	160.13	17.345	
20,315.18	12,092.21	13,267.54	10,165.78	141.53	56.06	-90.50	-8,027.74	-1,868.90	2,777.48	2,617.02	160.47	17.309	
20,400.00	12,092.45	13,366.62	10,164.12	142.87	57.63	-90.91	-8,126.77	-1,866.48	2,777.53	2,614.89	162.64	17.078	
20,500.00	12,092.74	13,468.39	10,164.03	144.45	59.24	-90.96	-8,228.52	-1,864.33	2,776.68	2,611.59	165.09	16.819	
20,598.48	12,093.02	13,550.89	10,163.90	146.01	60.56	-90.50	-8,311.02	-1,863.20	2,776.43	2,609.10	167.33	16.593	
20,600.00	12,093.02	13,552.21	10,163.90	146.04	60.58	-90.50	-8,312.34	-1,863.19	2,776.43	2,609.07	167.36	16.590	
20,700.00	12,093.31	13,651.49	10,163.70	147.62	62.15	-90.48	-8,411.61	-1,862.31	2,776.56	2,606.74	169.82	16.350	
20,800.00	12,093.59	13,825.80	10,163.04	149.21	64.95	-92.58	-8,585.82	-1,856.92	2,775.17	2,602.17	173.00	16.042	
20,900.00	12,093.87	13,913.23	10,162.07	150.80	66.36	-92.23	-8,673.11	-1,852.19	2,772.65	2,597.41	175.24	15.822	
21,000.00	12,094.16	13,986.37	10,160.64	152.39	67.53	-91.46	-8,746.15	-1,848.47	2,770.94	2,593.62	177.33	15.626	
21,100.00	12,094.44	14,058.17	10,158.53	153.98	68.69	-90.66	-8,817.84	-1,845.14	2,770.24	2,590.86	179.38	15.444	
21,200.00	12,094.73	14,191.87	10,155.51	155.57	70.85	-91.62	-8,951.38	-1,839.35	2,769.25	2,587.20	182.05	15.212	
21,300.00	12,095.01	14,262.00	10,154.39	157.16	71.99	-90.77	-9,021.45	-1,836.83	2,768.39	2,584.26	184.12	15.035	
21,400.00	12,095.30	14,417.19	10,154.21	158.76	74.50	-92.35	-9,176.53	-1,831.05	2,766.05	2,578.95	187.11	14.783	
21,500.00	12,095.58	14,498.70	10,153.99	160.35	75.82	-91.82	-9,257.97	-1,827.89	2,764.08	2,574.74	189.34	14.599	
21,600.00	12,095.86	14,612.34	10,152.83	161.95	77.67	-92.21	-9,371.51	-1,823.23	2,762.50	2,570.65	191.85	14.399	
21,700.00	12,096.15	14,699.68	10,152.31	163.55	79.09	-91.85	-9,458.76	-1,819.32	2,760.36	2,566.25	194.11	14.220	
21,800.00	12,096.43	14,776.77	10,150.86	165.15	80.35	-91.19	-9,535.76	-1,815.94	2,759.15	2,562.90	196.24	14.060	
21,900.00	12,096.72	14,857.51	10,148.56	166.75	81.66	-90.63	-9,616.39	-1,812.42	2,758.63	2,560.25	198.37	13.906	
21,918.42	12,096.77	14,871.85	10,148.07	167.05	81.90	-90.51	-9,630.71	-1,811.80	2,758.61	2,559.86	198.76	13.879	CC
22,000.00	12,097.00	14,938.28	10,145.38	168.35	82.98	-90.07	-9,697.02	-1,808.90	2,758.88	2,558.41	200.46	13.762	
22,100.00	12,097.29	15,038.10	10,141.02	169.96	84.61	-90.06	-9,796.65	-1,804.55	2,759.44	2,556.71	202.73	13.612	
22,175.33	12,097.50	15,067.00	10,139.76	171.16	85.08	-88.71	-9,825.50	-1,803.29	2,760.25	2,556.31	203.94	13.534	ES, SF

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Offset Design Cotton Draw Unit - 512H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

urvey Program: 26-MWD, 738-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-162.21	-4,573.40	-1,467.57	4,803.18				
100.00	100.00	77.70	77.70	0.13	0.18	-162.21	-4,573.41	-1,467.43	4,803.07	4,802.75	0.32	N/A	
200.00	200.00	181.53	181.52	0.49	0.55	-162.22	-4,573.46	-1,466.46	4,802.83	4,801.79	1.04	4,601.978	
239.36	239.36	210.77	210.77	0.63	0.65	-162.22	-4,573.49	-1,466.25	4,802.78	4,801.49	1.29	3,727.045	
300.00	300.00	250.34	250.34	0.85	0.79	-162.23	-4,573.67	-1,466.06	4,802.94	4,801.30	1.65	2,919.461	
400.00	400.00	332.27	332.25	1.21	1.08	-162.23	-4,574.37	-1,465.64	4,803.59	4,801.30	2.29	2,095.721	
500.00	500.00	437.80	437.78	1.57	1.46	-162.25	-4,575.47	-1,464.82	4,804.35	4,801.32	3.03	1,587.672	
600.00	600.00	506.21	506.18	1.93	1.70	-162.25	-4,576.29	-1,464.49	4,805.35	4,801.73	3.63	1,324.706	
700.00	700.00	583.85	583.82	2.29	1.98	-162.26	-4,577.46	-1,464.45	4,806.81	4,802.55	4.26	1,128.287	
800.00	800.00	692.97	692.92	2.64	2.37	-162.27	-4,579.49	-1,464.25	4,808.53	4,803.52	5.01	960.499	
900.00	900.00	810.59	810.52	3.00	2.79	-162.28	-4,581.31	-1,464.06	4,809.94	4,804.16	5.78	831.598	
1,000.00	1,000.00	971.47	971.40	3.36	3.34	-162.28	-4,582.24	-1,463.94	4,810.41	4,803.71	6.70	717.772	
1,100.00	1,100.00	1,071.47	1,071.40	3.72	3.68	-162.28	-4,582.24	-1,463.94	4,810.41	4,803.02	7.40	650.326	
1,200.00	1,200.00	1,171.47	1,171.40	4.08	4.02	-162.28	-4,582.24	-1,463.94	4,810.41	4,802.32	8.10	594.197	
1,300.00	1,300.00	1,271.47	1,271.40	4.44	4.36	-162.28	-4,582.24	-1,463.94	4,810.41	4,801.62	8.80	546.804	
1,400.00	1,400.00	1,371.47	1,371.40	4.79	4.71	-162.28	-4,582.24	-1,463.94	4,810.41	4,800.91	9.50	506.291	
1,500.00	1,500.00	1,471.47	1,471.40	5.15	5.06	-162.28	-4,582.24	-1,463.94	4,810.41	4,800.21	10.21	471.283	
1,600.00	1,600.00	1,544.41	1,544.34	5.51	5.31	-162.28	-4,582.33	-1,464.09	4,810.61	4,799.80	10.82	444.654	
1,700.00	1,700.00	1,600.00	1,599.92	5.87	5.50	-162.28	-4,582.66	-1,464.70	4,811.58	4,800.21	11.37	423.204	
1,800.00	1,800.00	1,668.65	1,668.55	6.23	5.74	-162.26	-4,583.44	-1,466.11	4,813.31	4,801.35	11.96	402.302	
1,900.00	1,900.00	1,730.71	1,730.58	6.59	5.95	-162.24	-4,584.48	-1,468.01	4,815.84	4,803.31	12.54	384.157	
2,000.00	2,000.00	1,800.00	1,799.79	6.95	6.20	-162.22	-4,586.03	-1,470.82	4,819.17	4,806.04	13.13	366.943	
2,100.00	2,100.00	1,854.67	1,854.36	7.30	6.39	-162.19	-4,587.53	-1,473.56	4,823.27	4,809.59	13.68	352.612	
2,200.00	2,200.00	1,916.52	1,916.08	7.66	6.61	-162.16	-4,589.54	-1,477.20	4,828.16	4,813.91	14.25	338.846	
2,300.00	2,300.00	1,978.29	1,977.66	8.02	6.82	-162.12	-4,591.86	-1,481.42	4,833.84	4,819.03	14.82	326.201	
2,400.00	2,400.00	2,039.94	2,039.06	8.38	7.04	-162.07	-4,594.49	-1,486.22	4,840.32	4,824.93	15.39	314.556	
2,500.00	2,500.00	2,102.63	2,101.45	8.74	7.27	-162.02	-4,597.50	-1,491.68	4,847.58	4,831.62	15.96	303.728	
2,600.00	2,599.99	2,202.05	2,200.32	9.10	7.63	-161.95	-4,602.50	-1,500.78	4,855.97	4,839.29	16.67	291.273	
2,700.00	2,699.96	2,301.39	2,299.12	9.45	7.99	-161.88	-4,607.50	-1,509.88	4,865.87	4,848.48	17.38	279.898	
2,800.00	2,799.86	2,400.62	2,397.80	9.81	8.36	-161.82	-4,612.50	-1,518.96	4,877.27	4,859.17	18.10	269.488	
2,900.00	2,899.68	2,500.30	2,496.34	10.17	8.73	-161.77	-4,617.48	-1,528.03	4,890.17	4,871.36	18.82	259.907	
3,000.00	2,999.37	2,601.39	2,594.71	10.53	9.11	-161.74	-4,622.46	-1,537.08	4,904.57	4,885.03	19.54	251.025	
3,100.00	3,098.90	2,702.69	2,692.88	10.89	9.49	-161.71	-4,627.43	-1,546.11	4,920.45	4,900.19	20.26	242.828	
3,200.00	3,198.26	2,804.22	2,790.81	11.25	9.87	-161.70	-4,632.39	-1,555.13	4,937.81	4,916.82	20.99	235.243	
3,300.06	3,297.46	2,894.05	2,888.54	11.62	10.21	-161.69	-4,637.33	-1,564.12	4,956.66	4,934.99	21.68	228.670	
3,400.00	3,396.43	3,007.94	2,986.01	11.98	10.65	-161.69	-4,642.27	-1,573.09	4,976.22	4,953.77	22.45	221.649	
3,500.00	3,495.46	3,109.88	3,083.54	12.36	11.03	-161.69	-4,647.20	-1,582.07	4,995.80	4,972.61	23.18	215.487	
3,600.00	3,594.48	3,188.19	3,181.07	12.73	11.33	-161.69	-4,652.14	-1,591.04	5,015.37	4,991.54	23.83	210.453	
3,700.00	3,693.51	3,286.26	3,278.60	13.11	11.71	-161.69	-4,657.07	-1,600.02	5,034.94	5,010.39	24.55	205.061	
3,800.00	3,792.54	3,384.32	3,376.13	13.49	12.09	-161.69	-4,662.01	-1,609.00	5,054.52	5,029.24	25.28	199.963	
3,900.00	3,891.56	3,482.39	3,473.65	13.87	12.46	-161.70	-4,666.94	-1,617.97	5,074.09	5,048.09	26.00	195.138	
4,000.00	3,990.59	3,580.45	3,571.18	14.25	12.84	-161.70	-4,671.88	-1,626.95	5,093.66	5,066.93	26.73	190.565	
4,100.00	4,089.62	3,678.52	3,668.71	14.64	13.22	-161.70	-4,676.82	-1,635.92	5,113.24	5,085.78	27.46	186.225	
4,200.00	4,188.64	3,776.58	3,766.24	15.03	13.60	-161.70	-4,681.75	-1,644.90	5,132.81	5,104.62	28.19	182.102	
4,300.00	4,287.67	3,874.65	3,863.77	15.42	13.98	-161.70	-4,686.69	-1,653.88	5,152.38	5,123.47	28.92	178.180	
4,400.00	4,386.70	3,972.72	3,961.30	15.81	14.36	-161.70	-4,691.62	-1,662.85	5,171.95	5,142.31	29.65	174.445	
4,500.00	4,485.72	4,070.78	4,058.83	16.20	14.74	-161.70	-4,696.56	-1,671.83	5,191.53	5,161.15	30.38	170.884	
4,600.00	4,584.75	4,168.85	4,156.36	16.59	15.12	-161.70	-4,701.49	-1,680.80	5,211.10	5,179.99	31.11	167.486	
4,700.00	4,683.78	4,266.91	4,253.89	16.98	15.50	-161.70	-4,706.43	-1,689.78	5,230.67	5,198.83	31.85	164.241	
4,800.00	4,782.80	4,364.98	4,351.42	17.38	15.89	-161.70	-4,711.37	-1,698.75	5,250.25	5,217.66	32.58	161.138	
4,900.00	4,881.83	4,463.04	4,448.95	17.78	16.27	-161.70	-4,716.30	-1,707.73	5,269.82	5,236.50	33.32	158.168	
5,000.00	4,980.86	4,561.11	4,546.48	18.17	16.65	-161.70	-4,721.24	-1,716.71	5,289.39	5,255.34	34.05	155.323	

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

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Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 512H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 738-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	4,659.18	4,644.01	18.57	17.03	-161.70	-4,726.17	-1,725.68	5,308.97	5,274.17	34.79	152.596	
5,200.00	5,178.91	4,757.24	4,741.54	18.97	17.42	-161.70	-4,731.11	-1,734.66	5,328.54	5,293.01	35.53	149.979	
5,300.00	5,277.94	14,933.27	10,202.71	19.37	86.68	-95.85	145.19	-1,841.24	5,263.75	5,205.16	58.59	89.842	
5,400.00	5,376.96	14,933.27	10,202.71	19.77	86.68	-96.30	145.19	-1,841.24	5,170.18	5,111.10	59.08	87.519	
5,500.00	5,475.99	14,933.27	10,202.71	20.17	86.68	-96.74	145.19	-1,841.24	5,076.84	5,017.26	59.58	85.212	
5,600.00	5,575.02	14,933.27	10,202.71	20.57	86.68	-97.19	145.19	-1,841.24	4,983.77	4,923.67	60.10	82.922	
5,690.40	5,664.54	14,933.27	10,202.71	20.93	86.68	-97.60	145.19	-1,841.24	4,899.87	4,839.27	60.59	80.867	
5,700.00	5,674.04	14,933.27	10,202.71	20.97	86.68	-97.64	145.19	-1,841.24	4,890.97	4,830.32	60.64	80.650	
5,800.00	5,773.21	14,933.27	10,202.71	21.37	86.68	-98.05	145.19	-1,841.24	4,798.35	4,737.14	61.21	78.392	
5,900.00	5,872.58	14,933.27	10,202.71	21.76	86.68	-98.41	145.19	-1,841.24	4,705.89	4,644.09	61.80	76.150	
6,000.00	5,972.14	14,933.27	10,202.71	22.15	86.68	-98.72	145.19	-1,841.24	4,613.61	4,551.20	62.41	73.923	
6,100.00	6,071.84	14,933.27	10,202.71	22.52	86.68	-98.96	145.19	-1,841.24	4,521.56	4,458.51	63.05	71.715	
6,200.00	6,171.66	14,933.27	10,202.71	22.89	86.68	-99.16	145.19	-1,841.24	4,429.78	4,366.07	63.71	69.526	
6,300.00	6,271.57	14,933.27	10,202.71	23.25	86.68	-99.29	145.19	-1,841.24	4,338.32	4,273.91	64.41	67.357	
6,400.00	6,371.54	14,933.27	10,202.71	23.60	86.68	-99.37	145.19	-1,841.24	4,247.22	4,182.09	65.13	65.210	
6,490.46	6,462.00	14,933.27	10,202.71	23.92	86.68	-99.39	145.19	-1,841.24	4,165.18	4,099.36	65.81	63.288	
6,500.00	6,471.54	14,933.27	10,202.71	23.95	86.68	-99.39	145.19	-1,841.24	4,156.54	4,090.66	65.89	63.087	
6,600.00	6,571.54	14,933.27	10,202.71	24.29	86.68	-99.39	145.19	-1,841.24	4,066.31	3,999.64	66.68	60.987	
6,700.00	6,671.54	14,933.27	10,202.71	24.63	86.68	-99.39	145.19	-1,841.24	3,976.55	3,909.05	67.50	58.912	
6,800.00	6,771.54	14,933.27	10,202.71	24.98	86.68	-99.39	145.19	-1,841.24	3,887.29	3,818.93	68.36	56.863	
6,900.00	6,871.54	14,933.27	10,202.71	25.32	86.68	-99.39	145.19	-1,841.24	3,798.56	3,729.30	69.26	54.842	
7,000.00	6,971.54	14,933.27	10,202.71	25.66	86.68	-99.39	145.19	-1,841.24	3,710.40	3,640.20	70.21	52.849	
7,100.00	7,071.54	14,933.27	10,202.71	26.01	86.68	-99.39	145.19	-1,841.24	3,622.86	3,551.67	71.20	50.886	
7,200.00	7,171.54	14,933.27	10,202.71	26.35	86.68	-99.39	145.19	-1,841.24	3,535.98	3,463.75	72.23	48.954	
7,300.00	7,271.54	14,933.27	10,202.71	26.70	86.68	-99.39	145.19	-1,841.24	3,449.82	3,376.50	73.32	47.054	
7,400.00	7,371.54	14,933.27	10,202.71	27.04	86.68	-99.39	145.19	-1,841.24	3,364.41	3,289.96	74.45	45.187	
7,500.00	7,471.54	14,933.27	10,202.71	27.39	86.68	-99.39	145.19	-1,841.24	3,279.84	3,204.19	75.65	43.356	
7,600.00	7,571.54	14,933.27	10,202.71	27.73	86.68	-99.39	145.19	-1,841.24	3,196.15	3,119.25	76.90	41.562	
7,700.00	7,671.54	14,933.27	10,202.71	28.08	86.68	-99.39	145.19	-1,841.24	3,113.42	3,035.21	78.21	39.806	
7,800.00	7,771.54	14,933.27	10,202.71	28.43	86.68	-99.39	145.19	-1,841.24	3,031.74	2,952.15	79.59	38.091	
7,900.00	7,871.54	14,933.27	10,202.71	28.77	86.68	-99.39	145.19	-1,841.24	2,951.19	2,870.15	81.04	36.418	
8,000.00	7,971.54	14,933.27	10,202.71	29.12	86.68	-99.39	145.19	-1,841.24	2,871.85	2,789.30	82.55	34.789	
8,100.00	8,071.54	14,933.27	10,202.71	29.47	86.68	-99.39	145.19	-1,841.24	2,793.85	2,709.71	84.14	33.206	
8,200.00	8,171.54	14,933.27	10,202.71	29.82	86.68	-99.39	145.19	-1,841.24	2,717.29	2,631.49	85.80	31.671	
8,300.00	8,271.54	14,933.27	10,202.71	30.16	86.68	-99.39	145.19	-1,841.24	2,642.29	2,554.76	87.53	30.187	
8,400.00	8,371.54	14,933.27	10,202.71	30.51	86.68	-99.39	145.19	-1,841.24	2,568.99	2,479.65	89.34	28.755	
8,500.00	8,471.54	14,933.27	10,202.71	30.86	86.68	-99.39	145.19	-1,841.24	2,497.55	2,406.33	91.22	27.378	
8,600.00	8,571.54	14,933.27	10,202.71	31.21	86.68	-99.39	145.19	-1,841.24	2,428.13	2,334.95	93.18	26.058	
8,700.00	8,671.54	14,933.27	10,202.71	31.56	86.68	-99.39	145.19	-1,841.24	2,360.90	2,265.70	95.21	24.798	
8,800.00	8,771.54	14,933.27	10,202.71	31.91	86.68	-99.39	145.19	-1,841.24	2,296.07	2,198.77	97.29	23.599	
8,900.00	8,871.54	14,933.27	10,202.71	32.26	86.68	-99.39	145.19	-1,841.24	2,233.82	2,134.38	99.44	22.465	
9,000.00	8,971.54	14,933.27	10,202.71	32.61	86.68	-99.39	145.19	-1,841.24	2,174.40	2,072.77	101.62	21.396	
9,100.00	9,071.54	14,933.27	10,202.71	32.96	86.68	-99.39	145.19	-1,841.24	2,118.03	2,014.19	103.84	20.397	
9,200.00	9,171.54	14,933.27	10,202.71	33.31	86.68	-99.39	145.19	-1,841.24	2,064.97	1,958.90	106.07	19.468	
9,300.00	9,271.54	14,933.27	10,202.71	33.66	86.68	-99.39	145.19	-1,841.24	2,015.48	1,907.19	108.29	18.612	
9,400.00	9,371.54	14,933.27	10,202.71	34.01	86.68	-99.39	145.19	-1,841.24	1,969.82	1,859.35	110.47	17.831	
9,500.00	9,471.54	14,933.27	10,202.71	34.36	86.68	-99.39	145.19	-1,841.24	1,928.27	1,815.68	112.59	17.126	
9,600.00	9,571.54	14,933.27	10,202.71	34.71	86.68	-99.39	145.19	-1,841.24	1,891.11	1,776.48	114.62	16.499	
9,700.00	9,671.54	14,933.27	10,202.71	35.06	86.68	-99.39	145.19	-1,841.24	1,858.58	1,742.06	116.52	15.951	
9,800.00	9,771.54	14,933.27	10,202.71	35.41	86.68	-99.39	145.19	-1,841.24	1,830.95	1,712.70	118.25	15.483	
9,900.00	9,871.54	14,933.27	10,202.71	35.76	86.68	-99.39	145.19	-1,841.24	1,808.43	1,688.64	119.79	15.097	
10,000.00	9,971.54	14,933.27	10,202.71	36.11	86.68	-99.39	145.19	-1,841.24	1,791.22	1,670.12	121.10	14.791	

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

ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 512H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

urvey Program: 26-MWD, 738-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,071.54	14,933.27	10,202.71	36.46	86.68	-99.39	145.19	-1,841.24	1,779.47	1,657.32	122.15	14.568	
10,200.00	10,171.54	14,933.27	10,202.71	36.81	86.68	-99.39	145.19	-1,841.24	1,773.29	1,650.36	122.93	14.425	
10,259.77	10,231.31	14,933.27	10,202.71	37.02	86.68	-99.39	145.19	-1,841.24	1,772.28	1,649.02	123.26	14.378	CC, ES
10,300.00	10,271.54	14,933.27	10,202.71	37.17	86.68	-99.39	145.19	-1,841.24	1,772.74	1,649.31	123.42	14.363	SF
10,400.00	10,371.54	14,933.27	10,202.71	37.52	86.68	-99.39	145.19	-1,841.24	1,777.82	1,654.19	123.63	14.380	
10,500.00	10,471.54	14,933.27	10,202.71	37.87	86.68	-99.39	145.19	-1,841.24	1,788.49	1,664.94	123.55	14.476	
10,600.00	10,571.54	14,933.27	10,202.71	38.22	86.68	-99.39	145.19	-1,841.24	1,804.64	1,681.45	123.19	14.649	
10,700.00	10,671.54	14,933.27	10,202.71	38.57	86.68	-99.39	145.19	-1,841.24	1,826.14	1,703.55	122.59	14.896	
10,800.00	10,771.54	14,933.27	10,202.71	38.93	86.68	-99.39	145.19	-1,841.24	1,852.79	1,731.02	121.77	15.215	
10,900.00	10,871.54	14,933.27	10,202.71	39.28	86.68	-99.39	145.19	-1,841.24	1,884.38	1,763.62	120.76	15.604	
11,000.00	10,971.54	14,933.27	10,202.71	39.63	86.68	-99.39	145.19	-1,841.24	1,920.66	1,801.07	119.59	16.060	
11,100.00	11,071.54	14,933.27	10,202.71	39.98	86.68	-99.39	145.19	-1,841.24	1,961.37	1,843.07	118.30	16.580	
11,200.00	11,171.54	14,933.27	10,202.71	40.34	86.68	-99.39	145.19	-1,841.24	2,006.24	1,889.33	116.91	17.160	
11,300.00	11,271.54	14,933.27	10,202.71	40.69	86.68	-99.39	145.19	-1,841.24	2,055.01	1,939.54	115.47	17.798	
11,400.00	11,371.54	14,933.27	10,202.71	41.04	86.68	-99.39	145.19	-1,841.24	2,107.39	1,993.41	113.98	18.488	
11,500.00	11,471.54	14,933.27	10,202.71	41.40	86.68	-99.39	145.19	-1,841.24	2,163.13	2,050.64	112.49	19.229	
11,525.27	11,496.81	14,933.27	10,202.71	41.48	86.68	-99.39	145.19	-1,841.24	2,177.72	2,065.61	112.12	19.424	
11,550.00	11,521.53	14,933.27	10,202.71	41.57	86.68	-99.38	145.19	-1,841.24	2,192.19	2,080.45	111.75	19.618	
11,600.00	11,571.33	14,933.27	10,202.71	41.72	86.68	-99.24	145.19	-1,841.24	2,221.97	2,110.96	111.00	20.017	
11,650.00	11,620.56	14,933.27	10,202.71	41.85	86.68	-98.96	145.19	-1,841.24	2,252.22	2,141.94	110.28	20.422	
11,700.00	11,668.84	14,933.27	10,202.71	41.98	86.68	-98.54	145.19	-1,841.24	2,282.72	2,173.13	109.59	20.829	
11,750.00	11,715.82	14,933.27	10,202.71	42.10	86.68	-97.99	145.19	-1,841.24	2,313.22	2,204.29	108.93	21.235	
11,800.00	11,761.13	14,933.27	10,202.71	42.20	86.68	-97.31	145.19	-1,841.24	2,343.49	2,235.18	108.31	21.637	
11,850.00	11,804.43	14,933.27	10,202.71	42.30	86.68	-96.51	145.19	-1,841.24	2,373.31	2,265.58	107.73	22.030	
11,900.00	11,845.39	14,933.27	10,202.71	42.39	86.68	-95.59	145.19	-1,841.24	2,402.49	2,295.30	107.20	22.412	
11,950.00	11,883.69	14,933.27	10,202.71	42.47	86.68	-94.56	145.19	-1,841.24	2,430.82	2,324.11	106.71	22.780	
12,000.00	11,919.06	14,933.27	10,202.71	42.54	86.68	-93.43	145.19	-1,841.24	2,458.13	2,351.86	106.27	23.130	
12,050.00	11,951.20	14,933.27	10,202.71	42.61	86.68	-92.22	145.19	-1,841.24	2,484.23	2,378.34	105.89	23.460	
12,100.00	11,979.89	14,933.27	10,202.71	42.68	86.68	-90.93	145.19	-1,841.24	2,508.98	2,403.42	105.56	23.768	
12,150.00	12,004.90	14,928.40	10,202.69	42.75	86.60	-89.73	140.32	-1,841.24	2,532.23	2,426.99	105.24	24.061	
12,200.00	12,026.05	14,884.05	10,202.48	42.82	85.94	-89.73	95.96	-1,841.25	2,553.37	2,448.78	104.59	24.414	
12,250.00	12,043.17	14,838.03	10,202.26	42.89	85.25	-89.73	49.95	-1,841.25	2,571.94	2,467.95	103.99	24.733	
12,300.00	12,056.13	14,809.30	10,202.04	42.97	84.81	-89.73	2.62	-1,841.25	2,587.76	2,484.10	103.66	24.964	
12,350.00	12,064.83	14,742.43	10,201.81	43.05	83.81	-89.73	-45.65	-1,841.25	2,600.72	2,497.76	102.96	25.260	
12,400.00	12,069.21	14,706.43	10,201.58	43.13	83.27	-89.73	-94.51	-1,841.25	2,610.71	2,508.02	102.69	25.423	
12,423.64	12,069.77	14,670.38	10,201.47	43.17	82.74	-89.73	-117.70	-1,841.25	2,614.38	2,512.02	102.36	25.540	
12,500.00	12,069.98	14,604.58	10,201.12	43.32	81.76	-89.73	-192.66	-1,841.25	2,625.15	2,523.21	101.94	25.752	
12,600.00	12,070.27	14,502.74	10,200.66	43.58	80.25	-89.74	-290.82	-1,841.25	2,639.31	2,538.07	101.24	26.069	
12,667.68	12,070.46	14,430.83	10,200.34	43.79	79.18	-89.74	-357.25	-1,841.25	2,648.93	2,548.18	100.76	26.290	
12,700.00	12,070.55	14,400.93	10,200.19	43.90	78.74	-89.74	-389.01	-1,841.25	2,653.41	2,552.83	100.58	26.380	
12,800.00	12,070.84	14,300.41	10,199.73	44.29	77.27	-89.74	-487.67	-1,841.25	2,665.65	2,565.71	99.95	26.671	
12,900.00	12,071.12	14,201.24	10,199.26	44.73	75.82	-89.74	-586.84	-1,841.25	2,675.43	2,576.12	99.32	26.939	
13,000.00	12,071.41	14,101.68	10,198.79	45.22	74.37	-89.74	-686.39	-1,841.25	2,682.72	2,584.05	98.68	27.187	
13,100.00	12,071.69	14,001.86	10,198.32	45.76	72.93	-89.74	-786.21	-1,841.25	2,687.49	2,589.47	98.03	27.416	
13,200.00	12,071.98	13,901.90	10,197.85	46.34	71.49	-89.75	-886.18	-1,841.25	2,689.73	2,592.36	97.37	27.623	
13,200.11	12,071.98	13,901.79	10,197.85	46.34	71.49	-89.75	-886.28	-1,841.25	2,689.73	2,592.36	97.37	27.623	
13,300.00	12,072.26	13,801.90	10,197.38	46.97	70.06	-89.75	-986.17	-1,841.25	2,690.70	2,593.96	96.74	27.814	
13,400.00	12,072.55	13,701.91	10,196.91	47.64	68.65	-89.75	-1,086.16	-1,841.25	2,691.66	2,595.51	96.15	27.995	
13,500.00	12,072.83	13,601.91	10,196.44	48.36	67.24	-89.74	-1,186.16	-1,841.25	2,692.63	2,597.02	95.60	28.164	
13,600.00	12,073.12	13,501.91	10,195.97	49.13	65.85	-89.74	-1,286.15	-1,841.25	2,693.59	2,598.49	95.10	28.323	
13,700.00	12,073.40	13,401.92	10,195.49	49.94	64.47	-89.74	-1,386.15	-1,841.25	2,694.56	2,599.91	94.64	28.470	
13,800.00	12,073.68	13,301.92	10,195.02	50.80	63.10	-89.74	-1,486.14	-1,841.25	2,695.52	2,601.29	94.23	28.606	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 512H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 738-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	12,073.97	13,201.93	10,194.55	51.69	61.75	-89.74	-1,586.14	-1,841.25	2,696.49	2,602.63	93.85	28.731	
14,000.00	12,074.25	13,101.93	10,194.08	52.62	60.41	-89.74	-1,686.13	-1,841.25	2,697.45	2,603.93	93.52	28.844	
14,100.00	12,074.54	13,001.94	10,193.61	53.58	59.09	-89.74	-1,786.12	-1,841.25	2,698.42	2,605.19	93.22	28.945	
14,200.00	12,074.82	12,901.94	10,193.14	54.58	57.78	-89.74	-1,886.12	-1,841.25	2,699.38	2,606.41	92.97	29.035	
14,300.00	12,075.11	12,801.95	10,192.67	55.61	56.49	-89.74	-1,986.11	-1,841.26	2,700.35	2,607.59	92.75	29.113	
14,400.00	12,075.39	12,701.95	10,192.20	56.67	55.23	-89.74	-2,086.11	-1,841.26	2,701.31	2,608.74	92.57	29.180	
14,500.00	12,075.68	12,601.96	10,191.72	57.76	53.98	-89.74	-2,186.10	-1,841.26	2,702.28	2,609.84	92.44	29.234	
14,600.00	12,075.96	12,501.96	10,191.25	58.87	52.76	-89.74	-2,286.09	-1,841.26	2,703.24	2,610.91	92.33	29.277	
14,700.00	12,076.24	12,401.97	10,190.78	60.01	51.56	-89.74	-2,386.09	-1,841.26	2,704.21	2,611.94	92.27	29.307	
14,800.00	12,076.53	12,301.97	10,190.31	61.17	50.38	-89.74	-2,486.08	-1,841.26	2,705.17	2,612.93	92.25	29.325	
14,900.00	12,076.81	12,201.98	10,189.84	62.36	49.23	-89.74	-2,586.08	-1,841.26	2,706.14	2,613.88	92.26	29.331	
15,000.00	12,077.10	12,101.98	10,189.37	63.57	48.12	-89.74	-2,686.07	-1,841.26	2,707.10	2,614.79	92.32	29.324	
15,100.00	12,077.38	12,001.99	10,188.90	64.79	47.03	-89.74	-2,786.07	-1,841.26	2,708.07	2,615.66	92.41	29.305	
15,200.00	12,077.67	11,901.99	10,188.43	66.04	45.98	-89.74	-2,886.06	-1,841.26	2,709.03	2,616.49	92.55	29.272	
15,300.00	12,077.95	11,802.00	10,187.95	67.30	44.96	-89.74	-2,986.05	-1,841.26	2,710.00	2,617.27	92.72	29.227	
15,400.00	12,078.23	11,702.00	10,187.48	68.58	43.98	-89.74	-3,086.05	-1,841.26	2,710.96	2,618.02	92.94	29.168	
15,500.00	12,078.52	11,602.00	10,187.01	69.88	43.05	-89.74	-3,186.04	-1,841.26	2,711.93	2,618.72	93.21	29.095	
15,600.00	12,078.80	11,502.01	10,186.54	71.19	42.15	-89.74	-3,286.04	-1,841.26	2,712.89	2,619.38	93.52	29.009	
15,700.00	12,079.09	11,402.01	10,186.07	72.51	41.31	-89.74	-3,386.03	-1,841.26	2,713.86	2,619.98	93.88	28.909	
15,800.00	12,079.37	11,302.02	10,185.60	73.85	40.51	-89.74	-3,486.02	-1,841.26	2,714.82	2,620.54	94.28	28.795	
15,900.00	12,079.66	11,202.02	10,185.13	75.21	39.77	-89.74	-3,586.02	-1,841.26	2,715.79	2,621.05	94.74	28.667	
16,000.00	12,079.94	11,102.03	10,184.66	76.57	39.08	-89.74	-3,686.01	-1,841.26	2,716.75	2,621.51	95.24	28.524	
16,100.00	12,080.22	11,002.03	10,184.18	77.94	38.44	-89.74	-3,786.01	-1,841.26	2,717.72	2,621.91	95.81	28.367	
16,200.00	12,080.51	10,902.04	10,183.71	79.33	37.87	-89.74	-3,886.00	-1,841.26	2,718.69	2,622.26	96.42	28.196	
16,300.00	12,080.79	10,802.04	10,183.24	80.73	37.36	-89.74	-3,986.00	-1,841.27	2,719.65	2,622.56	97.09	28.010	
16,400.00	12,081.08	10,702.05	10,182.77	82.13	36.91	-89.74	-4,085.99	-1,841.27	2,720.62	2,622.79	97.83	27.811	
16,500.00	12,081.36	10,602.05	10,182.30	83.55	36.53	-89.74	-4,185.98	-1,841.27	2,721.58	2,622.96	98.62	27.598	
16,600.00	12,081.65	10,502.06	10,181.83	84.97	36.22	-89.74	-4,285.98	-1,841.27	2,722.55	2,623.08	99.47	27.371	
16,700.00	12,081.93	10,459.00	10,181.41	86.40	36.10	-88.10	-4,329.03	-1,841.27	2,724.26	2,623.76	100.50	27.108	
16,800.00	12,082.22	10,438.75	10,180.27	87.84	36.05	-85.79	-4,349.25	-1,841.27	2,728.77	2,627.22	101.55	26.870	
16,900.00	12,082.50	10,425.00	10,179.00	89.29	36.01	-83.32	-4,362.94	-1,841.27	2,736.24	2,633.65	102.59	26.671	
17,000.00	12,082.78	10,400.00	10,175.70	90.75	35.95	-81.18	-4,387.72	-1,841.27	2,746.53	2,642.97	103.56	26.521	
17,100.00	12,083.07	10,375.00	10,171.11	92.21	35.90	-79.07	-4,412.29	-1,841.27	2,759.75	2,655.27	104.48	26.413	
17,200.00	12,083.35	10,359.77	10,167.68	93.68	35.88	-76.72	-4,427.12	-1,841.27	2,775.80	2,670.40	105.40	26.337	
17,300.00	12,083.64	10,350.00	10,165.23	95.15	35.87	-74.27	-4,436.58	-1,841.27	2,794.76	2,688.49	106.28	26.297	
17,400.00	12,083.92	10,325.00	10,158.09	96.63	35.86	-72.26	-4,460.54	-1,841.27	2,816.36	2,709.30	107.06	26.307	
17,500.00	12,084.21	10,300.00	10,149.71	98.12	35.86	-70.28	-4,484.09	-1,841.27	2,840.79	2,733.00	107.79	26.354	
17,600.00	12,084.49	10,286.81	10,144.80	99.61	35.85	-68.07	-4,496.33	-1,841.27	2,867.90	2,759.38	108.52	26.429	
17,700.00	12,084.77	10,275.00	10,140.11	101.11	35.85	-65.90	-4,507.17	-1,841.27	2,897.69	2,788.50	109.19	26.537	
17,800.00	12,085.06	10,250.00	10,129.31	102.61	35.84	-64.07	-4,529.71	-1,841.27	2,930.04	2,820.27	109.77	26.691	
17,900.00	12,085.34	10,237.45	10,123.45	104.11	35.83	-62.04	-4,540.81	-1,841.27	2,964.93	2,854.58	110.35	26.868	
18,000.00	12,085.63	10,225.00	10,117.35	105.63	35.82	-60.08	-4,551.66	-1,841.27	3,002.30	2,891.43	110.88	27.078	
18,100.00	12,085.91	10,200.00	10,104.25	107.14	35.80	-58.41	-4,572.96	-1,841.27	3,042.12	2,930.80	111.31	27.329	
18,200.00	12,086.20	10,200.00	10,104.25	108.66	35.80	-56.37	-4,572.96	-1,841.27	3,084.22	2,972.43	111.79	27.591	
18,300.00	12,086.48	10,175.00	10,090.06	110.18	35.78	-54.82	-4,593.53	-1,841.27	3,128.55	3,016.42	112.13	27.900	
18,400.00	12,086.76	10,175.00	10,090.06	111.71	35.78	-52.95	-4,593.53	-1,841.27	3,175.16	3,062.65	112.52	28.220	
18,500.00	12,087.05	10,150.00	10,074.81	113.24	35.75	-51.52	-4,613.34	-1,841.27	3,223.77	3,110.98	112.78	28.583	
18,600.00	12,087.33	10,150.00	10,074.81	114.78	35.75	-49.80	-4,613.34	-1,841.27	3,274.53	3,161.44	113.08	28.957	
18,700.00	12,087.62	10,125.00	10,058.55	116.32	35.72	-48.48	-4,632.32	-1,841.27	3,327.15	3,213.87	113.28	29.371	
18,800.00	12,087.90	10,125.00	10,058.55	117.86	35.72	-46.91	-4,632.32	-1,841.27	3,381.71	3,268.20	113.51	29.793	
18,900.00	12,088.19	10,100.00	10,041.31	119.40	35.69	-45.69	-4,650.43	-1,841.27	3,438.11	3,324.46	113.64	30.254	
19,000.00	12,088.47	10,100.00	10,041.31	120.95	35.69	-44.26	-4,650.43	-1,841.27	3,496.14	3,382.34	113.81	30.720	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 512H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 738-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	12,088.76	10,088.28	10,032.91	122.50	35.67	-43.01	-4,658.60	-1,841.27	3,555.91	3,441.99	113.92	31.215	
19,200.00	12,089.04	10,075.00	10,023.15	124.05	35.65	-41.83	-4,667.61	-1,841.27	3,617.29	3,503.29	114.00	31.731	
19,300.00	12,089.32	10,075.00	10,023.15	125.61	35.65	-40.59	-4,667.61	-1,841.27	3,680.19	3,566.11	114.08	32.259	
19,400.00	12,089.61	10,061.31	10,012.83	127.17	35.63	-39.52	-4,676.61	-1,841.27	3,744.51	3,630.39	114.12	32.812	
19,500.00	12,089.89	10,050.00	10,004.12	128.73	35.61	-38.47	-4,683.81	-1,841.27	3,810.27	3,696.13	114.14	33.382	
19,600.00	12,090.18	10,050.00	10,004.12	130.29	35.61	-37.40	-4,683.81	-1,841.27	3,877.36	3,763.20	114.16	33.963	
19,700.00	12,090.46	10,037.52	9,994.31	131.86	35.58	-36.45	-4,691.52	-1,841.27	3,945.69	3,831.54	114.15	34.565	
19,800.00	12,090.75	10,025.00	9,984.26	133.42	35.56	-35.54	-4,699.00	-1,841.27	4,015.28	3,901.16	114.13	35.182	
19,900.00	12,091.03	10,025.00	9,984.26	134.99	35.56	-34.60	-4,699.00	-1,841.27	4,085.98	3,971.88	114.11	35.809	
20,000.00	12,091.31	10,025.00	9,984.26	136.57	35.56	-33.71	-4,699.00	-1,841.27	4,157.89	4,043.82	114.07	36.450	
20,100.00	12,091.60	10,000.00	9,963.64	138.14	35.51	-32.97	-4,713.12	-1,841.27	4,230.81	4,116.81	114.00	37.112	
20,200.00	12,091.88	10,000.00	9,963.64	139.72	35.51	-32.15	-4,713.12	-1,841.27	4,304.61	4,190.66	113.95	37.777	
20,300.00	12,092.17	10,000.00	9,963.64	141.29	35.51	-31.36	-4,713.12	-1,841.27	4,379.45	4,265.57	113.88	38.455	
20,400.00	12,092.45	10,000.00	9,963.64	142.87	35.51	-30.61	-4,713.12	-1,841.27	4,455.29	4,341.47	113.81	39.146	
20,500.00	12,092.74	9,986.54	9,952.24	144.45	35.48	-29.94	-4,720.27	-1,841.27	4,531.87	4,418.14	113.73	39.848	
20,600.00	12,093.02	9,975.00	9,942.30	146.04	35.45	-29.29	-4,726.15	-1,841.27	4,609.39	4,495.75	113.64	40.561	
20,700.00	12,093.31	9,975.00	9,942.30	147.62	35.45	-28.63	-4,726.15	-1,841.27	4,687.62	4,574.07	113.55	41.281	
20,800.00	12,093.59	9,975.00	9,942.30	149.21	35.45	-27.99	-4,726.15	-1,841.27	4,766.67	4,653.21	113.46	42.011	
20,900.00	12,093.87	9,975.00	9,942.30	150.80	35.45	-27.38	-4,726.15	-1,841.27	4,846.49	4,733.13	113.37	42.750	
21,000.00	12,094.16	9,961.74	9,930.72	152.39	35.42	-26.84	-4,732.60	-1,841.27	4,926.87	4,813.60	113.27	43.497	
21,100.00	12,094.44	9,950.00	9,920.32	153.98	35.39	-26.30	-4,738.04	-1,841.27	5,008.04	4,894.87	113.17	44.253	
21,200.00	12,094.73	9,950.00	9,920.32	155.57	35.39	-25.76	-4,738.04	-1,841.27	5,089.74	4,976.67	113.07	45.014	
21,300.00	12,095.01	9,950.00	9,920.32	157.16	35.39	-25.24	-4,738.04	-1,841.27	5,172.08	5,059.11	112.97	45.782	
21,400.00	12,095.30	9,950.00	9,920.32	158.76	35.39	-24.73	-4,738.04	-1,841.27	5,255.04	5,142.17	112.87	46.558	
21,500.00	12,095.58	9,950.00	9,920.32	160.35	35.39	-24.25	-4,738.04	-1,841.27	5,338.58	5,225.81	112.77	47.341	
21,600.00	12,095.86	9,937.21	9,908.84	161.95	35.36	-23.81	-4,743.67	-1,841.27	5,422.50	5,309.84	112.67	48.128	
21,700.00	12,096.15	9,925.00	9,897.74	163.55	35.33	-23.38	-4,748.77	-1,841.27	5,507.10	5,394.53	112.57	48.921	
21,800.00	12,096.43	9,925.00	9,897.74	165.15	35.33	-22.95	-4,748.77	-1,841.27	5,592.05	5,479.58	112.47	49.720	
21,900.00	12,096.72	9,925.00	9,897.74	166.75	35.33	-22.53	-4,748.77	-1,841.27	5,677.49	5,565.11	112.37	50.523	
22,000.00	12,097.00	9,925.00	9,897.74	168.35	35.33	-22.12	-4,748.77	-1,841.27	5,763.40	5,651.12	112.28	51.332	
22,100.00	12,097.29	9,925.00	9,897.74	169.96	35.33	-21.73	-4,748.77	-1,841.27	5,849.75	5,737.57	112.18	52.146	
22,175.33	12,097.50	9,925.00	9,897.74	171.16	35.33	-21.45	-4,748.77	-1,841.27	5,915.09	5,802.98	112.11	52.762	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 513H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-163.58	-4,572.68	-1,347.60	4,767.19				
100.00	100.00	87.29	87.29	0.13	0.22	-163.58	-4,572.60	-1,347.56	4,767.05	4,766.69	0.35	N/A	
200.00	200.00	175.24	175.24	0.49	0.53	-163.58	-4,572.30	-1,347.47	4,766.72	4,765.70	1.02	4,661.135	
205.09	205.09	178.49	178.49	0.51	0.54	-163.58	-4,572.30	-1,347.48	4,766.72	4,765.67	1.05	4,530.580	
300.00	300.00	243.56	243.56	0.85	0.77	-163.58	-4,572.45	-1,347.84	4,767.06	4,765.44	1.62	2,946.997	
400.00	400.00	336.32	336.31	1.21	1.09	-163.57	-4,572.98	-1,348.23	4,767.73	4,765.44	2.30	2,077.039	
500.00	500.00	417.00	416.99	1.57	1.37	-163.57	-4,573.69	-1,348.73	4,768.74	4,765.81	2.94	1,624.227	
600.00	600.00	526.44	526.42	1.93	1.75	-163.57	-4,574.83	-1,349.21	4,769.87	4,766.19	3.68	1,296.160	
700.00	700.00	632.96	632.94	2.29	2.13	-163.57	-4,575.83	-1,349.28	4,770.79	4,766.37	4.42	1,080.564	
800.00	800.00	723.60	723.57	2.64	2.45	-163.57	-4,576.63	-1,349.36	4,771.67	4,766.57	5.10	936.500	
900.00	900.00	873.43	873.40	3.00	2.98	-163.57	-4,577.67	-1,349.76	4,772.52	4,766.54	5.98	798.132	
1,000.00	1,000.00	973.43	973.40	3.36	3.32	-163.57	-4,577.67	-1,349.76	4,772.52	4,765.84	6.68	714.551	
1,100.00	1,100.00	1,080.76	1,080.73	3.72	3.69	-163.58	-4,577.78	-1,349.20	4,772.46	4,765.06	7.41	644.321	
1,200.00	1,200.00	1,190.69	1,190.63	4.08	4.07	-163.61	-4,578.23	-1,346.63	4,772.21	4,764.06	8.15	585.754	
1,300.00	1,300.00	1,300.48	1,300.31	4.44	4.46	-163.67	-4,579.07	-1,342.00	4,771.74	4,762.85	8.89	536.768	
1,400.00	1,400.00	1,410.05	1,409.67	4.79	4.84	-163.75	-4,580.26	-1,335.32	4,771.08	4,761.44	9.64	495.152	
1,500.00	1,500.00	1,519.32	1,518.58	5.15	5.23	-163.85	-4,581.83	-1,326.61	4,770.23	4,759.84	10.39	459.330	
1,600.00	1,600.00	1,628.21	1,626.92	5.51	5.63	-163.98	-4,583.75	-1,315.89	4,769.19	4,758.05	11.14	428.132	
1,700.00	1,700.00	1,736.65	1,734.59	5.87	6.03	-164.14	-4,586.02	-1,303.21	4,767.99	4,756.09	11.90	400.675	
1,800.00	1,800.00	1,844.56	1,841.47	6.23	6.44	-164.31	-4,588.64	-1,288.60	4,766.63	4,753.96	12.67	376.289	
1,900.00	1,900.00	1,951.87	1,947.46	6.59	6.86	-164.51	-4,591.60	-1,272.11	4,765.14	4,751.69	13.44	354.478	
2,000.00	2,000.00	2,052.02	2,046.18	6.95	7.26	-164.72	-4,594.58	-1,255.50	4,763.58	4,749.38	14.20	335.453	
2,100.00	2,100.00	2,150.58	2,143.33	7.30	7.66	-164.92	-4,597.51	-1,239.12	4,762.08	4,747.13	14.96	318.372	
2,200.00	2,200.00	2,249.14	2,240.48	7.66	8.06	-165.12	-4,600.45	-1,222.73	4,760.64	4,744.93	15.72	302.849	
2,300.00	2,300.00	2,347.71	2,337.63	8.02	8.47	-165.32	-4,603.39	-1,206.35	4,759.27	4,742.78	16.49	288.694	
2,400.00	2,400.00	2,446.27	2,434.78	8.38	8.88	-165.52	-4,606.33	-1,189.97	4,757.95	4,740.69	17.26	275.743	
2,500.00	2,500.00	2,544.84	2,531.92	8.74	9.29	-165.72	-4,609.26	-1,173.59	4,756.69	4,738.66	18.03	263.856	
2,575.62	2,575.62	2,619.34	2,605.36	9.01	9.61	-165.87	-4,611.49	-1,161.21	4,756.22	4,737.61	18.61	255.530	
2,600.00	2,599.99	2,643.34	2,629.01	9.10	9.71	-165.92	-4,612.20	-1,157.22	4,756.27	4,737.47	18.80	252.962	
2,700.00	2,699.96	2,741.70	2,725.96	9.45	10.13	-166.13	-4,615.13	-1,140.87	4,757.48	4,737.91	19.58	242.994	
2,800.00	2,799.86	2,839.89	2,822.74	9.81	10.54	-166.36	-4,618.06	-1,124.55	4,760.34	4,739.98	20.36	233.851	
2,900.00	2,899.68	2,937.88	2,919.33	10.17	10.97	-166.59	-4,620.98	-1,108.26	4,764.84	4,743.71	21.13	225.449	
3,000.00	2,999.37	3,035.64	3,015.68	10.53	11.39	-166.82	-4,623.89	-1,092.01	4,771.00	4,749.09	21.91	217.713	
3,100.00	3,098.90	3,133.14	3,111.78	10.89	11.81	-167.07	-4,626.80	-1,075.81	4,778.82	4,756.13	22.69	210.579	
3,200.00	3,198.26	3,230.34	3,207.59	11.25	12.23	-167.32	-4,629.70	-1,059.65	4,788.31	4,764.84	23.47	203.987	
3,300.06	3,297.46	3,327.29	3,303.14	11.62	12.65	-167.58	-4,632.58	-1,043.54	4,799.48	4,775.23	24.25	197.885	
3,400.00	3,396.43	3,423.95	3,398.41	11.98	13.07	-167.85	-4,635.47	-1,027.48	4,811.53	4,786.49	25.03	192.201	
3,500.00	3,495.46	3,520.66	3,493.74	12.36	13.49	-168.11	-4,638.35	-1,011.40	4,823.68	4,797.87	25.82	186.852	
3,600.00	3,594.48	3,617.38	3,589.06	12.73	13.92	-168.37	-4,641.23	-995.33	4,835.95	4,809.35	26.60	181.809	
3,700.00	3,693.51	3,714.09	3,684.39	13.11	14.34	-168.63	-4,644.11	-979.25	4,848.31	4,820.93	27.38	177.049	
3,800.00	3,792.54	3,810.81	3,779.72	13.49	14.76	-168.89	-4,647.00	-963.18	4,860.77	4,832.60	28.17	172.551	
3,900.00	3,891.56	3,907.53	3,875.05	13.87	15.19	-169.14	-4,649.88	-947.10	4,873.34	4,844.38	28.96	168.293	
4,000.00	3,990.59	4,004.24	3,970.37	14.25	15.61	-169.40	-4,652.76	-931.03	4,886.01	4,856.26	29.75	164.258	
4,100.00	4,089.62	4,100.96	4,065.70	14.64	16.04	-169.65	-4,655.64	-914.95	4,898.77	4,868.24	30.54	160.431	
4,200.00	4,188.64	4,202.33	4,161.03	15.03	16.49	-169.90	-4,658.53	-898.88	4,911.63	4,880.29	31.35	156.692	
4,300.00	4,287.67	4,305.61	4,256.36	15.42	16.94	-170.15	-4,661.41	-882.80	4,924.60	4,892.43	32.17	153.102	
4,400.00	4,386.70	4,408.89	4,351.68	15.81	17.40	-170.40	-4,664.29	-866.73	4,937.65	4,904.67	32.99	149.689	
4,500.00	4,485.72	4,487.82	4,447.01	16.20	17.75	-170.65	-4,667.17	-850.65	4,950.81	4,917.11	33.70	146.911	
4,600.00	4,584.75	4,584.54	4,542.34	16.59	18.18	-170.90	-4,670.06	-834.58	4,964.06	4,929.56	34.49	143.920	
4,700.00	4,683.78	4,681.26	4,637.67	16.98	18.61	-171.14	-4,672.94	-818.50	4,977.40	4,942.11	35.28	141.065	
4,800.00	4,782.80	4,777.97	4,732.99	17.38	19.04	-171.39	-4,675.82	-802.43	4,990.84	4,954.76	36.08	138.336	
4,900.00	4,881.83	4,874.69	4,828.32	17.78	19.47	-171.63	-4,678.70	-786.35	5,004.37	4,967.49	36.87	135.726	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 513H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,980.86	4,971.40	4,923.65	18.17	19.90	-171.87	-4,681.59	-770.28	5,017.99	4,980.32	37.66	133.228	
5,100.00	5,079.88	5,068.12	5,018.98	18.57	20.33	-172.11	-4,684.47	-754.20	5,031.70	4,993.24	38.46	130.834	
5,200.00	5,178.91	5,164.84	5,114.30	18.97	20.76	-172.35	-4,687.35	-738.13	5,045.51	5,006.25	39.25	128.539	
5,300.00	5,277.94	15,046.81	10,232.83	19.37	88.25	-138.81	153.76	-221.13	4,986.80	4,934.63	52.17	95.594	
5,400.00	5,376.96	15,046.81	10,232.83	19.77	88.25	-141.49	153.76	-221.13	4,888.29	4,835.94	52.35	93.379	
5,500.00	5,475.99	15,046.81	10,232.83	20.17	88.25	-143.98	153.76	-221.13	4,789.84	4,737.31	52.53	91.175	
5,600.00	5,575.02	15,046.81	10,232.83	20.57	88.25	-146.29	153.76	-221.13	4,691.46	4,638.74	52.72	88.981	
5,690.40	5,664.54	15,046.81	10,232.83	20.93	88.25	-148.23	153.76	-221.13	4,602.59	4,549.69	52.90	87.008	
5,700.00	5,674.04	15,046.81	10,232.83	20.97	88.25	-148.43	153.76	-221.13	4,593.15	4,540.23	52.92	86.798	
5,800.00	5,773.21	15,046.81	10,232.83	21.37	88.25	-150.27	153.76	-221.13	4,494.73	4,441.61	53.12	84.622	
5,900.00	5,872.58	15,046.81	10,232.83	21.76	88.25	-151.77	153.76	-221.13	4,396.08	4,342.77	53.32	82.450	
6,000.00	5,972.14	15,046.81	10,232.83	22.15	88.25	-152.96	153.76	-221.13	4,297.23	4,243.71	53.52	80.287	
6,100.00	6,071.84	15,046.81	10,232.83	22.52	88.25	-153.89	153.76	-221.13	4,198.19	4,144.45	53.73	78.132	
6,200.00	6,171.66	15,046.81	10,232.83	22.89	88.25	-154.59	153.76	-221.13	4,098.97	4,045.02	53.94	75.987	
6,300.00	6,271.57	15,046.81	10,232.83	23.25	88.25	-155.06	153.76	-221.13	3,999.59	3,945.43	54.16	73.852	
6,400.00	6,371.54	15,046.81	10,232.83	23.60	88.25	-155.34	153.76	-221.13	3,900.08	3,845.70	54.37	71.728	
6,490.46	6,462.00	15,046.81	10,232.83	23.92	88.25	-155.42	153.76	-221.13	3,809.95	3,755.38	54.57	69.816	
6,500.00	6,471.54	15,046.81	10,232.83	23.95	88.25	-155.42	153.76	-221.13	3,800.45	3,745.85	54.59	69.615	
6,600.00	6,571.54	15,046.81	10,232.83	24.29	88.25	-155.42	153.76	-221.13	3,700.79	3,645.97	54.81	67.515	
6,700.00	6,671.54	15,046.81	10,232.83	24.63	88.25	-155.42	153.76	-221.13	3,601.14	3,546.10	55.04	65.428	
6,800.00	6,771.54	15,046.81	10,232.83	24.98	88.25	-155.42	153.76	-221.13	3,501.52	3,446.25	55.27	63.353	
6,900.00	6,871.54	15,046.81	10,232.83	25.32	88.25	-155.42	153.76	-221.13	3,401.92	3,346.42	55.50	61.292	
7,000.00	6,971.54	15,046.81	10,232.83	25.66	88.25	-155.42	153.76	-221.13	3,302.35	3,246.61	55.74	59.244	
7,100.00	7,071.54	15,046.81	10,232.83	26.01	88.25	-155.42	153.76	-221.13	3,202.80	3,146.81	55.98	57.209	
7,200.00	7,171.54	15,046.81	10,232.83	26.35	88.25	-155.42	153.76	-221.13	3,103.28	3,047.05	56.23	55.188	
7,300.00	7,271.54	15,046.81	10,232.83	26.70	88.25	-155.42	153.76	-221.13	3,003.79	2,947.31	56.48	53.181	
7,400.00	7,371.54	15,046.81	10,232.83	27.04	88.25	-155.42	153.76	-221.13	2,904.34	2,847.60	56.74	51.187	
7,500.00	7,471.54	15,046.81	10,232.83	27.39	88.25	-155.42	153.76	-221.13	2,804.93	2,747.92	57.00	49.208	
7,600.00	7,571.54	15,046.81	10,232.83	27.73	88.25	-155.42	153.76	-221.13	2,705.56	2,648.29	57.27	47.242	
7,700.00	7,671.54	15,046.81	10,232.83	28.08	88.25	-155.42	153.76	-221.13	2,606.23	2,548.69	57.54	45.291	
7,800.00	7,771.54	15,046.81	10,232.83	28.43	88.25	-155.42	153.76	-221.13	2,506.96	2,449.14	57.82	43.355	
7,900.00	7,871.54	15,046.81	10,232.83	28.77	88.25	-155.42	153.76	-221.13	2,407.76	2,349.65	58.11	41.433	
8,000.00	7,971.54	15,046.81	10,232.83	29.12	88.25	-155.42	153.76	-221.13	2,308.62	2,250.21	58.41	39.527	
8,100.00	8,071.54	15,046.81	10,232.83	29.47	88.25	-155.42	153.76	-221.13	2,209.56	2,150.85	58.71	37.635	
8,200.00	8,171.54	15,046.81	10,232.83	29.82	88.25	-155.42	153.76	-221.13	2,110.58	2,051.56	59.02	35.758	
8,300.00	8,271.54	15,046.81	10,232.83	30.16	88.25	-155.42	153.76	-221.13	2,011.71	1,952.36	59.35	33.897	
8,400.00	8,371.54	15,046.81	10,232.83	30.51	88.25	-155.42	153.76	-221.13	1,912.96	1,853.27	59.68	32.051	
8,500.00	8,471.54	15,046.81	10,232.83	30.86	88.25	-155.42	153.76	-221.13	1,814.34	1,754.30	60.03	30.221	
8,600.00	8,571.54	15,046.81	10,232.83	31.21	88.25	-155.42	153.76	-221.13	1,715.88	1,655.48	60.40	28.408	
8,700.00	8,671.54	15,046.81	10,232.83	31.56	88.25	-155.42	153.76	-221.13	1,617.61	1,556.82	60.79	26.611	
8,800.00	8,771.54	15,046.81	10,232.83	31.91	88.25	-155.42	153.76	-221.13	1,519.57	1,458.37	61.20	24.831	
8,900.00	8,871.54	15,046.81	10,232.83	32.26	88.25	-155.42	153.76	-221.13	1,421.80	1,360.16	61.64	23.068	
9,000.00	8,971.54	15,046.81	10,232.83	32.61	88.25	-155.42	153.76	-221.13	1,324.36	1,262.25	62.11	21.323	
9,100.00	9,071.54	15,046.81	10,232.83	32.96	88.25	-155.42	153.76	-221.13	1,227.34	1,164.71	62.63	19.598	
9,200.00	9,171.54	15,046.81	10,232.83	33.31	88.25	-155.42	153.76	-221.13	1,130.83	1,067.63	63.20	17.893	
9,300.00	9,271.54	15,046.81	10,232.83	33.66	88.25	-155.42	153.76	-221.13	1,034.99	971.14	63.85	16.211	
9,400.00	9,371.54	15,046.81	10,232.83	34.01	88.25	-155.42	153.76	-221.13	940.01	875.42	64.59	14.554	
9,500.00	9,471.54	15,046.81	10,232.83	34.36	88.25	-155.42	153.76	-221.13	846.19	780.73	65.47	12.926	
9,600.00	9,571.54	15,046.81	10,232.83	34.71	88.25	-155.42	153.76	-221.13	753.97	687.44	66.52	11.334	
9,700.00	9,671.54	15,046.81	10,232.83	35.06	88.25	-155.42	153.76	-221.13	663.99	596.16	67.83	9.788	
9,800.00	9,771.54	15,046.81	10,232.83	35.41	88.25	-155.42	153.76	-221.13	577.33	507.83	69.50	8.307	
9,900.00	9,871.54	15,046.81	10,232.83	35.76	88.25	-155.42	153.76	-221.13	495.71	424.09	71.62	6.921	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 513H - Wellbore #1 - Design #2 — Offset Site Error: 0.00 usft

Survey Program: 26-MWD, 700-MWD — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,971.54	15,046.81	10,232.83	36.11	88.25	-155.42	153.76	-221.13	422.08	347.78	74.30	5.681	
10,100.00	10,071.54	15,046.81	10,232.83	36.46	88.25	-155.42	153.76	-221.13	361.35	283.99	77.36	4.671	
10,200.00	10,171.54	15,046.81	10,232.83	36.81	88.25	-155.42	153.76	-221.13	320.93	240.94	79.99	4.012	
10,287.89	10,259.43	15,046.81	10,232.83	37.12	88.25	-155.42	153.76	-221.13	308.66	227.88	80.78	3.821	CC, ES, SF
10,300.00	10,271.54	15,046.81	10,232.83	37.17	88.25	-155.42	153.76	-221.13	308.90	228.17	80.73	3.826	
10,400.00	10,371.54	15,046.81	10,232.83	37.52	88.25	-155.42	153.76	-221.13	328.39	249.37	79.02	4.156	
10,500.00	10,471.54	15,046.81	10,232.83	37.87	88.25	-155.42	153.76	-221.13	374.51	298.35	76.17	4.917	
10,600.00	10,571.54	15,046.81	10,232.83	38.22	88.25	-155.42	153.76	-221.13	438.96	365.43	73.53	5.970	
10,700.00	10,671.54	15,046.81	10,232.83	38.57	88.25	-155.42	153.76	-221.13	514.88	443.30	71.58	7.193	
10,800.00	10,771.54	15,046.81	10,232.83	38.93	88.25	-155.42	153.76	-221.13	597.93	527.66	70.28	8.508	
10,900.00	10,871.54	15,046.81	10,232.83	39.28	88.25	-155.42	153.76	-221.13	685.53	616.07	69.45	9.870	
11,000.00	10,971.54	15,046.81	10,232.83	39.63	88.25	-155.42	153.76	-221.13	776.12	707.16	68.97	11.253	
11,100.00	11,071.54	15,046.81	10,232.83	39.98	88.25	-155.42	153.76	-221.13	868.79	800.07	68.71	12.643	
11,200.00	11,171.54	15,046.81	10,232.83	40.34	88.25	-155.42	153.76	-221.13	962.92	894.30	68.62	14.032	
11,300.00	11,271.54	15,046.81	10,232.83	40.69	88.25	-155.42	153.76	-221.13	1,058.13	989.49	68.64	15.415	
11,400.00	11,371.54	15,046.81	10,232.83	41.04	88.25	-155.42	153.76	-221.13	1,154.15	1,085.41	68.74	16.789	
11,500.00	11,471.54	15,046.81	10,232.83	41.40	88.25	-155.42	153.76	-221.13	1,250.79	1,181.89	68.90	18.153	
11,525.27	11,496.81	15,046.81	10,232.83	41.48	88.25	-155.42	153.76	-221.13	1,275.30	1,206.35	68.95	18.496	
11,550.00	11,521.53	15,046.81	10,232.83	41.57	88.25	-155.36	153.76	-221.13	1,299.19	1,230.20	69.00	18.830	
11,600.00	11,571.33	15,046.81	10,232.83	41.72	88.25	-154.89	153.76	-221.13	1,346.82	1,277.74	69.08	19.497	
11,650.00	11,620.56	15,046.81	10,232.83	41.85	88.25	-153.90	153.76	-221.13	1,393.32	1,324.17	69.14	20.151	
11,700.00	11,668.84	15,046.81	10,232.83	41.98	88.25	-152.35	153.76	-221.13	1,438.45	1,369.25	69.20	20.786	
11,750.00	11,715.82	15,046.81	10,232.83	42.10	88.25	-150.12	153.76	-221.13	1,482.02	1,412.77	69.25	21.400	
11,800.00	11,761.13	15,046.81	10,232.83	42.20	88.25	-147.07	153.76	-221.13	1,523.85	1,454.55	69.30	21.989	
11,850.00	11,804.43	15,046.81	10,232.83	42.30	88.25	-142.95	153.76	-221.13	1,563.76	1,494.41	69.35	22.550	
11,900.00	11,845.39	15,046.81	10,232.83	42.39	88.25	-137.48	153.76	-221.13	1,601.61	1,532.21	69.40	23.079	
11,950.00	11,883.69	15,046.81	10,232.83	42.47	88.25	-130.27	153.76	-221.13	1,637.26	1,567.81	69.46	23.573	
12,000.00	11,919.06	15,046.81	10,232.83	42.54	88.25	-121.00	153.76	-221.13	1,670.59	1,601.07	69.52	24.029	
12,050.00	11,951.20	15,046.81	10,232.83	42.61	88.25	-109.57	153.76	-221.13	1,701.49	1,631.89	69.61	24.444	
12,100.00	11,979.89	15,046.81	10,232.83	42.68	88.25	-96.59	153.76	-221.13	1,729.87	1,660.16	69.71	24.815	
12,150.00	12,004.90	15,028.05	10,232.80	42.75	87.97	-89.07	135.00	-221.13	1,755.52	1,685.83	69.69	25.190	
12,200.00	12,026.05	14,983.63	10,232.72	42.82	87.31	-89.10	90.58	-221.13	1,777.55	1,708.07	69.48	25.582	
12,250.00	12,043.17	14,937.56	10,232.64	42.89	86.63	-89.13	44.51	-221.13	1,795.65	1,726.38	69.27	25.924	
12,300.00	12,056.13	14,909.81	10,232.56	42.97	86.22	-89.16	-2.85	-221.13	1,809.67	1,740.49	69.18	26.160	
12,350.00	12,064.83	14,841.89	10,232.47	43.05	85.22	-89.19	-51.16	-221.13	1,819.53	1,750.72	68.81	26.443	
12,400.00	12,069.21	14,806.98	10,232.39	43.13	84.71	-89.22	-100.03	-221.13	1,825.15	1,756.47	68.68	26.576	
12,423.64	12,069.77	14,769.83	10,232.35	43.17	84.17	-89.24	-123.22	-221.13	1,826.32	1,757.85	68.47	26.673	
12,500.00	12,069.98	14,705.13	10,232.22	43.32	83.22	-89.28	-198.18	-221.13	1,828.61	1,760.40	68.21	26.808	
12,600.00	12,070.27	14,603.29	10,232.04	43.58	81.74	-89.33	-296.34	-221.13	1,831.79	1,764.01	67.78	27.024	
12,667.68	12,070.46	14,530.27	10,231.93	43.79	80.68	-89.36	-362.78	-221.13	1,834.05	1,766.57	67.49	27.177	
12,700.00	12,070.55	14,501.49	10,231.87	43.90	80.27	-89.38	-394.54	-221.13	1,835.14	1,767.74	67.39	27.231	
12,800.00	12,070.84	14,400.15	10,231.70	44.29	78.81	-89.41	-493.20	-221.13	1,838.22	1,771.21	67.02	27.429	
12,900.00	12,071.12	14,300.68	10,231.53	44.73	77.38	-89.43	-592.37	-221.13	1,840.85	1,774.20	66.65	27.618	
13,000.00	12,071.41	14,201.12	10,231.35	45.22	75.97	-89.45	-691.93	-221.13	1,842.94	1,776.66	66.29	27.803	
13,100.00	12,071.69	14,101.30	10,231.18	45.76	74.56	-89.46	-791.75	-221.13	1,844.45	1,778.54	65.91	27.986	
13,200.00	12,071.98	14,001.33	10,231.01	46.34	73.16	-89.46	-891.72	-221.13	1,845.33	1,779.81	65.52	28.165	
13,200.11	12,071.98	14,001.23	10,231.01	46.34	73.16	-89.46	-891.82	-221.13	1,845.33	1,779.81	65.52	28.165	
13,300.00	12,072.26	13,901.33	10,230.83	46.97	71.77	-89.46	-991.71	-221.13	1,845.89	1,780.75	65.14	28.338	
13,400.00	12,072.55	13,801.34	10,230.66	47.64	70.39	-89.46	-1,091.71	-221.13	1,846.45	1,781.67	64.78	28.502	
13,500.00	12,072.83	13,701.34	10,230.48	48.36	69.02	-89.46	-1,191.71	-221.13	1,847.02	1,782.56	64.45	28.657	
13,600.00	12,073.12	13,601.34	10,230.31	49.13	67.66	-89.46	-1,291.70	-221.13	1,847.58	1,783.43	64.15	28.802	
13,700.00	12,073.40	13,501.35	10,230.13	49.94	66.32	-89.47	-1,391.70	-221.13	1,848.14	1,784.28	63.87	28.937	

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

ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 513H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

urvey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
easured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	12,073.68	13,401.35	10,229.96	50.80	64.99	-89.47	-1,491.70	-221.13	1,848.71	1,785.10	63.61	29.062	
13,900.00	12,073.97	13,301.35	10,229.78	51.69	63.68	-89.47	-1,591.69	-221.13	1,849.27	1,785.89	63.38	29.177	
14,000.00	12,074.25	13,201.35	10,229.61	52.62	62.39	-89.47	-1,691.69	-221.13	1,849.84	1,786.66	63.17	29.282	
14,100.00	12,074.54	13,101.36	10,229.43	53.58	61.11	-89.47	-1,791.69	-221.13	1,850.40	1,787.41	62.99	29.376	
14,200.00	12,074.82	13,001.36	10,229.26	54.58	59.85	-89.47	-1,891.69	-221.13	1,850.97	1,788.13	62.83	29.459	
14,300.00	12,075.11	12,901.36	10,229.09	55.61	58.61	-89.47	-1,991.68	-221.13	1,851.53	1,788.83	62.70	29.532	
14,400.00	12,075.39	12,801.37	10,228.91	56.67	57.39	-89.47	-2,091.68	-221.13	1,852.09	1,789.51	62.59	29.593	
14,500.00	12,075.68	12,701.37	10,228.74	57.76	56.20	-89.47	-2,191.68	-221.13	1,852.66	1,790.16	62.50	29.644	
14,600.00	12,075.96	12,601.37	10,228.56	58.87	55.02	-89.47	-2,291.67	-221.13	1,853.22	1,790.79	62.43	29.683	
14,700.00	12,076.24	12,501.37	10,228.39	60.01	53.88	-89.47	-2,391.67	-221.13	1,853.79	1,791.39	62.40	29.710	
14,800.00	12,076.53	12,401.38	10,228.21	61.17	52.76	-89.47	-2,491.67	-221.13	1,854.35	1,791.97	62.38	29.726	
14,900.00	12,076.81	12,301.38	10,228.04	62.36	51.67	-89.47	-2,591.66	-221.13	1,854.92	1,792.53	62.39	29.730	
15,000.00	12,077.10	12,201.38	10,227.86	63.57	50.61	-89.48	-2,691.66	-221.13	1,855.49	1,793.06	62.43	29.722	
15,100.00	12,077.38	12,101.39	10,227.69	64.79	49.58	-89.48	-2,791.66	-221.13	1,856.05	1,793.56	62.49	29.701	
15,200.00	12,077.67	12,001.39	10,227.51	66.04	48.59	-89.48	-2,891.65	-221.13	1,856.62	1,794.04	62.58	29.668	
15,300.00	12,077.95	11,901.39	10,227.34	67.30	47.64	-89.48	-2,991.65	-221.13	1,857.18	1,794.49	62.70	29.622	
15,400.00	12,078.23	11,801.40	10,227.17	68.58	46.72	-89.48	-3,091.65	-221.13	1,857.75	1,794.91	62.84	29.563	
15,500.00	12,078.52	11,701.40	10,226.99	69.88	45.86	-89.48	-3,191.65	-221.13	1,858.32	1,795.30	63.01	29.491	
15,600.00	12,078.80	11,601.40	10,226.82	71.19	45.04	-89.48	-3,291.64	-221.13	1,858.88	1,795.67	63.22	29.405	
15,700.00	12,079.09	11,501.40	10,226.64	72.51	44.27	-89.48	-3,391.64	-221.13	1,859.45	1,796.00	63.45	29.306	
15,800.00	12,079.37	11,401.41	10,226.47	73.85	43.55	-89.48	-3,491.64	-221.13	1,860.02	1,796.30	63.72	29.193	
15,900.00	12,079.66	11,301.41	10,226.29	75.21	42.90	-89.48	-3,591.63	-221.13	1,860.58	1,796.57	64.01	29.066	
16,000.00	12,079.94	11,201.41	10,226.12	76.57	42.32	-89.48	-3,691.63	-221.13	1,861.15	1,796.81	64.34	28.925	
16,100.00	12,080.22	11,101.42	10,225.94	77.94	41.80	-89.48	-3,791.63	-221.13	1,861.72	1,797.01	64.71	28.771	
16,200.00	12,080.51	11,001.42	10,225.77	79.33	41.37	-89.48	-3,891.62	-221.13	1,862.28	1,797.17	65.11	28.602	
16,300.00	12,080.79	10,901.42	10,225.60	80.73	41.01	-89.49	-3,991.62	-221.13	1,862.85	1,797.30	65.55	28.420	
16,400.00	12,081.08	10,801.42	10,225.42	82.13	40.74	-89.49	-4,091.62	-221.13	1,863.42	1,797.40	66.02	28.224	
16,500.00	12,081.36	10,701.43	10,225.25	83.55	40.55	-89.49	-4,191.61	-221.13	1,863.99	1,797.45	66.53	28.016	
16,600.00	12,081.65	10,601.43	10,225.07	84.97	40.43	-89.49	-4,291.61	-221.13	1,864.56	1,797.47	67.08	27.794	
16,700.00	12,081.93	10,575.00	10,224.80	86.40	40.40	-77.90	-4,318.04	-221.13	1,866.79	1,798.78	68.02	27.446	
16,800.00	12,082.22	10,550.00	10,223.34	87.84	40.39	-67.06	-4,342.99	-221.13	1,873.21	1,804.17	69.03	27.135	
16,900.00	12,082.50	10,525.00	10,220.57	89.29	40.37	-57.72	-4,367.84	-221.13	1,883.88	1,813.76	70.12	26.868	
17,000.00	12,082.78	10,510.10	10,218.31	90.75	40.37	-49.05	-4,382.56	-221.13	1,898.63	1,827.29	71.34	26.614	
17,100.00	12,083.07	10,490.16	10,214.56	92.21	40.36	-42.55	-4,402.14	-221.13	1,917.49	1,844.92	72.56	26.425	
17,200.00	12,083.35	10,475.00	10,211.16	93.68	40.35	-37.08	-4,416.92	-221.13	1,940.35	1,866.49	73.86	26.271	
17,300.00	12,083.64	10,450.00	10,204.54	95.15	40.34	-33.15	-4,441.02	-221.13	1,967.03	1,891.97	75.06	26.206	
17,400.00	12,083.92	10,425.00	10,196.67	96.63	40.33	-29.90	-4,464.75	-221.13	1,997.56	1,921.31	76.25	26.198	
17,500.00	12,084.21	10,414.47	10,192.99	98.12	40.33	-26.75	-4,474.62	-221.13	2,031.54	1,953.98	77.56	26.192	
17,600.00	12,084.49	10,400.00	10,187.57	99.61	40.32	-24.26	-4,488.03	-221.13	2,069.09	1,990.29	78.80	26.258	
17,700.00	12,084.77	10,375.00	10,177.26	101.11	40.31	-22.39	-4,510.80	-221.13	2,109.94	2,030.06	79.88	26.413	
17,800.00	12,085.06	10,363.04	10,171.91	102.61	40.31	-20.55	-4,521.50	-221.13	2,153.92	2,072.88	81.05	26.577	
17,900.00	12,085.34	10,350.00	10,165.78	104.11	40.30	-18.99	-4,533.01	-221.13	2,200.95	2,118.81	82.14	26.796	
18,000.00	12,085.63	10,325.00	10,153.14	105.63	40.29	-17.80	-4,554.58	-221.13	2,250.87	2,167.81	83.06	27.099	
18,100.00	12,085.91	10,325.00	10,153.14	107.14	40.29	-16.47	-4,554.58	-221.13	2,303.47	2,219.33	84.14	27.376	
18,200.00	12,086.20	10,300.00	10,139.40	108.66	40.27	-15.55	-4,575.46	-221.13	2,358.52	2,273.57	84.95	27.764	
18,300.00	12,086.48	10,288.80	10,132.90	110.18	40.26	-14.62	-4,584.57	-221.13	2,416.04	2,330.23	85.81	28.157	
18,400.00	12,086.76	10,275.00	10,124.58	111.71	40.25	-13.81	-4,595.59	-221.13	2,475.84	2,389.25	86.58	28.594	
18,500.00	12,087.05	10,263.06	10,117.14	113.24	40.24	-13.07	-4,604.93	-221.13	2,537.77	2,450.45	87.32	29.063	
18,600.00	12,087.33	10,250.00	10,108.73	114.78	40.22	-12.41	-4,614.92	-221.13	2,601.70	2,513.71	87.99	29.567	
18,700.00	12,087.62	10,239.41	10,101.72	116.32	40.21	-11.80	-4,622.85	-221.13	2,667.51	2,578.89	88.63	30.098	
18,800.00	12,087.90	10,225.00	10,091.89	117.86	40.20	-11.27	-4,633.39	-221.13	2,735.11	2,645.91	89.20	30.664	
18,900.00	12,088.19	10,225.00	10,091.89	119.40	40.20	-10.73	-4,633.39	-221.13	2,804.40	2,714.62	89.79	31.234	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
WWW.MSENERGYSERVICES.COM

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 513H - Wellbore #1 - Design #2 — **Offset Site Error:** 0.00 usft

Survey Program: 26-MWD, 700-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	10,200.00	10,074.11	120.95	40.17	-10.32	-4,650.96	-221.13	2,875.20	2,784.97	90.23	31.866	
19,100.00	12,088.76	10,200.00	10,074.11	122.50	40.17	-9.86	-4,650.96	-221.13	2,947.39	2,856.66	90.73	32.485	
19,200.00	12,089.04	10,188.49	10,065.62	124.05	40.15	-9.48	-4,658.72	-221.13	3,021.01	2,929.86	91.15	33.142	
19,300.00	12,089.32	10,175.00	10,055.43	125.61	40.13	-9.13	-4,667.57	-221.13	3,095.94	3,004.40	91.54	33.820	
19,400.00	12,089.61	10,175.00	10,055.43	127.17	40.13	-8.77	-4,667.57	-221.13	3,172.04	3,080.11	91.93	34.504	
19,500.00	12,089.89	10,162.81	10,046.01	128.73	40.11	-8.47	-4,675.31	-221.13	3,249.27	3,157.00	92.27	35.216	
19,600.00	12,090.18	10,150.00	10,035.90	130.29	40.09	-8.19	-4,683.18	-221.13	3,327.60	3,235.02	92.58	35.944	
19,700.00	12,090.46	10,150.00	10,035.90	131.86	40.09	-7.90	-4,683.18	-221.13	3,406.88	3,314.00	92.89	36.678	
19,800.00	12,090.75	10,150.00	10,035.90	133.42	40.09	-7.64	-4,683.18	-221.13	3,487.23	3,394.06	93.17	37.429	
19,900.00	12,091.03	10,125.00	10,015.59	134.99	40.05	-7.43	-4,697.75	-221.13	3,568.32	3,474.91	93.41	38.202	
20,000.00	12,091.31	10,125.00	10,015.59	136.57	40.05	-7.19	-4,697.75	-221.13	3,650.19	3,556.54	93.65	38.976	
20,100.00	12,091.60	10,125.00	10,015.59	138.14	40.05	-6.97	-4,697.75	-221.13	3,732.95	3,639.07	93.88	39.763	
20,200.00	12,091.88	10,114.04	10,006.45	139.72	40.03	-6.78	-4,703.80	-221.13	3,816.39	3,722.30	94.09	40.563	
20,300.00	12,092.17	10,100.00	9,994.54	141.29	40.01	-6.60	-4,711.23	-221.13	3,900.63	3,806.35	94.28	41.372	
20,400.00	12,092.45	10,100.00	9,994.54	142.87	40.01	-6.42	-4,711.23	-221.13	3,985.38	3,890.91	94.47	42.188	
20,500.00	12,092.74	10,100.00	9,994.54	144.45	40.01	-6.25	-4,711.23	-221.13	4,070.82	3,976.18	94.64	43.014	
20,600.00	12,093.02	10,100.00	9,994.54	146.04	40.01	-6.08	-4,711.23	-221.13	4,156.91	4,062.11	94.80	43.849	
20,700.00	12,093.31	10,086.63	9,983.00	147.62	39.98	-5.94	-4,717.99	-221.13	4,243.40	4,148.44	94.96	44.687	
20,800.00	12,093.59	10,075.00	9,972.82	149.21	39.96	-5.80	-4,723.60	-221.13	4,330.55	4,235.44	95.11	45.532	
20,900.00	12,093.87	10,075.00	9,972.82	150.80	39.96	-5.66	-4,723.60	-221.13	4,418.09	4,322.85	95.25	46.386	
21,000.00	12,094.16	10,075.00	9,972.82	152.39	39.96	-5.53	-4,723.60	-221.13	4,506.15	4,410.78	95.38	47.246	
21,100.00	12,094.44	10,075.00	9,972.82	153.98	39.96	-5.40	-4,723.60	-221.13	4,594.70	4,499.20	95.50	48.113	
21,200.00	12,094.73	10,063.86	9,962.93	155.57	39.93	-5.29	-4,728.74	-221.13	4,683.57	4,587.94	95.63	48.978	
21,300.00	12,095.01	10,050.00	9,950.48	157.16	39.91	-5.18	-4,734.81	-221.13	4,773.00	4,677.24	95.75	49.847	
21,400.00	12,095.30	10,050.00	9,950.48	158.76	39.91	-5.07	-4,734.81	-221.13	4,862.63	4,766.77	95.86	50.726	
21,500.00	12,095.58	10,050.00	9,950.48	160.35	39.91	-4.97	-4,734.81	-221.13	4,952.65	4,856.69	95.96	51.609	
21,600.00	12,095.86	10,050.00	9,950.48	161.95	39.91	-4.86	-4,734.81	-221.13	5,043.06	4,946.99	96.06	52.497	
21,700.00	12,096.15	10,050.00	9,950.48	163.55	39.91	-4.77	-4,734.81	-221.13	5,133.81	5,037.65	96.16	53.388	
21,800.00	12,096.43	10,050.00	9,950.48	165.15	39.91	-4.68	-4,734.81	-221.13	5,224.91	5,128.66	96.25	54.283	
21,900.00	12,096.72	10,037.91	9,939.47	166.75	39.88	-4.59	-4,739.81	-221.13	5,316.16	5,219.80	96.36	55.169	
22,000.00	12,097.00	10,025.00	9,927.58	168.35	39.85	-4.51	-4,744.83	-221.13	5,407.89	5,311.41	96.47	56.058	
22,100.00	12,097.29	10,025.00	9,927.58	169.96	39.85	-4.43	-4,744.83	-221.13	5,499.72	5,403.16	96.56	56.958	
22,175.33	12,097.50	10,025.00	9,927.58	171.16	39.85	-4.37	-4,744.83	-221.13	5,569.08	5,472.45	96.62	57.638	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
te Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

ffset Design Cotton Draw Unit - 514H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

urvey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
easured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.60	-0.60	0.00	0.00	89.70	0.31	59.98	59.98				
100.00	100.00	100.60	99.40	0.13	0.14	89.70	0.31	59.98	59.98	59.71	0.27	221.332	
200.00	200.00	200.60	199.40	0.49	0.50	89.70	0.31	59.98	59.98	58.99	0.99	60.714	
300.00	300.00	300.60	299.40	0.85	0.85	89.70	0.31	59.98	59.98	58.28	1.70	35.182	
400.00	400.00	400.60	399.40	1.21	1.21	89.70	0.31	59.98	59.98	57.56	2.42	24.767	
500.00	500.00	500.60	499.40	1.57	1.57	89.70	0.31	59.98	59.98	56.84	3.14	19.110	
600.00	600.00	600.60	599.40	1.93	1.93	89.70	0.31	59.98	59.98	56.13	3.86	15.557	
700.00	700.00	700.60	699.40	2.29	2.29	89.70	0.31	59.98	59.98	55.41	4.57	13.118	
800.00	800.00	800.60	799.40	2.64	2.65	89.70	0.31	59.98	59.98	54.69	5.29	11.340	
900.00	900.00	900.60	899.40	3.00	3.00	89.70	0.31	59.98	59.98	53.98	6.01	9.986	
1,000.00	1,000.00	1,000.60	999.40	3.36	3.36	89.70	0.31	59.98	59.98	53.26	6.72	8.921	
1,100.00	1,100.00	1,100.60	1,099.40	3.72	3.72	89.70	0.31	59.98	59.98	52.54	7.44	8.062	
1,200.00	1,200.00	1,200.60	1,199.40	4.08	4.08	89.70	0.31	59.98	59.98	51.82	8.16	7.353	
1,300.00	1,300.00	1,300.60	1,299.40	4.44	4.44	89.70	0.31	59.98	59.98	51.11	8.87	6.759	
1,400.00	1,400.00	1,400.60	1,399.40	4.79	4.80	89.70	0.31	59.98	59.98	50.39	9.59	6.254	
1,500.00	1,500.00	1,500.60	1,499.40	5.15	5.16	89.70	0.31	59.98	59.98	49.67	10.31	5.819	
1,600.00	1,600.00	1,600.60	1,599.40	5.51	5.51	89.70	0.31	59.98	59.98	48.96	11.03	5.440	
1,700.00	1,700.00	1,700.60	1,699.40	5.87	5.87	89.70	0.31	59.98	59.98	48.24	11.74	5.108	
1,800.00	1,800.00	1,800.60	1,799.40	6.23	6.23	89.70	0.31	59.98	59.98	47.52	12.46	4.814	
1,900.00	1,900.00	1,900.60	1,899.40	6.59	6.59	89.70	0.31	59.98	59.98	46.81	13.18	4.552	
2,000.00	2,000.00	2,000.60	1,999.40	6.95	6.95	89.70	0.31	59.98	59.98	46.09	13.89	4.317	
2,100.00	2,100.00	2,100.60	2,099.40	7.30	7.31	89.70	0.31	59.98	59.98	45.37	14.61	4.106	
2,200.00	2,200.00	2,200.60	2,199.40	7.66	7.66	89.70	0.31	59.98	59.98	44.66	15.33	3.914	
2,300.00	2,300.00	2,300.60	2,299.40	8.02	8.02	89.70	0.31	59.98	59.98	43.94	16.04	3.739	
2,400.00	2,400.00	2,400.60	2,399.40	8.38	8.38	89.70	0.31	59.98	59.98	43.22	16.76	3.579	
2,500.00	2,500.00	2,499.40	2,499.40	8.74	8.74	89.70	0.31	59.98	59.98	42.51	17.47	3.433	CC
2,600.00	2,599.99	2,599.28	2,599.28	9.10	9.09	89.70	1.17	60.07	60.26	42.07	18.19	3.313	ES
2,700.00	2,699.96	2,699.16	2,699.12	9.45	9.45	89.68	3.75	60.36	61.09	42.18	18.90	3.231	
2,800.00	2,799.86	2,799.03	2,798.89	9.81	9.81	89.64	8.07	60.82	62.47	42.85	19.62	3.184	
2,900.00	2,899.68	2,898.88	2,898.56	10.17	10.17	89.59	14.11	61.48	64.40	44.07	20.33	3.167	SF
3,000.00	2,999.37	2,998.72	2,998.09	10.53	10.52	89.52	21.88	62.32	66.88	45.83	21.05	3.178	
3,100.00	3,098.90	3,098.53	3,097.44	10.89	10.88	89.45	31.36	63.36	69.92	48.15	21.76	3.212	
3,200.00	3,198.26	3,198.32	3,196.59	11.25	11.24	89.38	42.57	64.57	73.50	51.01	22.49	3.269	
3,300.06	3,297.46	3,301.93	3,295.55	11.62	11.62	89.30	55.49	65.98	77.63	54.41	23.23	3.342	
3,400.00	3,396.43	3,402.03	3,394.42	11.98	11.99	89.19	69.30	67.48	82.04	58.08	23.97	3.423	
3,500.00	3,495.46	3,502.12	3,493.35	12.36	12.36	89.09	83.13	68.98	86.45	61.74	24.71	3.499	
3,600.00	3,594.48	3,602.22	3,592.28	12.73	12.74	89.00	96.95	70.48	90.86	65.41	25.46	3.569	
3,700.00	3,693.51	3,702.32	3,691.21	13.11	13.11	88.92	110.77	71.98	95.28	69.07	26.21	3.635	
3,800.00	3,792.54	3,802.42	3,790.14	13.49	13.49	88.85	124.59	73.49	99.69	72.72	26.97	3.696	
3,900.00	3,891.56	3,902.51	3,889.07	13.87	13.88	88.78	138.42	74.99	104.10	76.37	27.73	3.754	
4,000.00	3,990.59	4,002.61	3,988.00	14.25	14.26	88.72	152.24	76.49	108.51	80.01	28.50	3.808	
4,100.00	4,089.62	4,102.71	4,086.93	14.64	14.65	88.66	166.06	77.99	112.92	83.66	29.27	3.859	
4,200.00	4,188.64	4,202.81	4,185.86	15.03	15.03	88.61	179.89	79.49	117.34	87.30	30.04	3.906	
4,300.00	4,287.67	4,302.90	4,284.79	15.42	15.42	88.56	193.71	81.00	121.75	90.93	30.81	3.951	
4,400.00	4,386.70	4,403.00	4,383.73	15.81	15.81	88.51	207.53	82.50	126.16	94.57	31.59	3.993	
4,500.00	4,485.72	4,503.10	4,482.66	16.20	16.20	88.47	221.35	84.00	130.57	98.20	32.37	4.033	
4,600.00	4,584.75	4,603.20	4,581.59	16.59	16.60	88.43	235.18	85.50	134.98	101.83	33.16	4.071	
4,700.00	4,683.78	4,703.29	4,680.52	16.98	16.99	88.39	249.00	87.00	139.40	105.45	33.94	4.107	
4,800.00	4,782.80	4,803.39	4,779.45	17.38	17.38	88.36	262.82	88.51	143.81	109.08	34.73	4.141	
4,900.00	4,881.83	4,903.49	4,878.38	17.78	17.78	88.33	276.65	90.01	148.22	112.70	35.52	4.173	
5,000.00	4,980.86	5,003.59	4,977.31	18.17	18.18	88.30	290.47	91.51	152.63	116.32	36.31	4.203	
5,100.00	5,079.88	5,103.68	5,076.24	18.57	18.58	88.27	304.29	93.01	157.05	119.94	37.11	4.232	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 514H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	5,203.78	5,175.17	18.97	18.97	88.24	318.12	94.51	161.46	123.56	37.90	4.260	
5,300.00	5,277.94	5,303.88	5,274.10	19.37	19.37	88.21	331.94	96.02	165.87	127.17	38.70	4.286	
5,400.00	5,376.96	5,403.98	5,373.03	19.77	19.77	88.19	345.76	97.52	170.29	130.79	39.50	4.311	
5,500.00	5,475.99	5,504.07	5,471.96	20.17	20.17	88.16	359.58	99.02	174.70	134.40	40.30	4.335	
5,600.00	5,575.02	5,604.17	5,570.89	20.57	20.58	88.14	373.41	100.52	179.11	138.01	41.10	4.358	
5,690.40	5,664.54	5,686.33	5,660.53	20.93	20.91	88.16	385.77	101.87	183.08	141.29	41.79	4.381	
5,700.00	5,674.04	5,695.97	5,670.08	20.97	20.94	88.18	387.03	102.00	183.49	141.62	41.86	4.383	
5,800.00	5,773.21	5,796.34	5,769.71	21.37	21.34	88.37	399.15	103.32	187.47	144.81	42.66	4.395	
5,900.00	5,872.58	5,896.72	5,869.55	21.76	21.73	88.55	409.54	104.45	190.91	147.47	43.44	4.395	
6,000.00	5,972.14	5,997.13	5,969.57	22.15	22.11	88.74	418.19	105.39	193.79	149.59	44.20	4.384	
6,100.00	6,071.84	6,097.53	6,069.74	22.52	22.48	88.93	425.10	106.14	196.13	151.18	44.95	4.363	
6,200.00	6,171.66	6,197.95	6,170.02	22.89	22.85	89.13	430.25	106.70	197.92	152.23	45.69	4.332	
6,300.00	6,271.57	6,298.36	6,270.37	23.25	23.21	89.33	433.67	107.07	199.15	152.75	46.40	4.292	
6,400.00	6,371.54	6,398.77	6,370.76	23.60	23.56	89.55	435.33	107.25	199.84	152.73	47.11	4.242	
6,490.46	6,462.00	6,489.41	6,461.40	23.92	23.87	89.70	435.51	107.27	200.00	152.27	47.73	4.190	
6,500.00	6,471.54	6,501.05	6,470.94	23.95	23.91	89.70	435.51	107.27	200.00	152.20	47.80	4.184	
6,600.00	6,571.54	6,601.05	6,570.94	24.29	24.25	89.70	435.51	107.27	200.00	151.51	48.49	4.125	
6,700.00	6,671.54	6,701.05	6,670.94	24.63	24.60	89.70	435.51	107.27	200.00	150.82	49.18	4.067	
6,800.00	6,771.54	6,801.05	6,770.94	24.98	24.94	89.70	435.51	107.27	200.00	150.14	49.86	4.011	
6,900.00	6,871.54	6,901.05	6,870.94	25.32	25.28	89.70	435.51	107.27	200.00	149.45	50.55	3.956	
7,000.00	6,971.54	7,001.05	6,970.94	25.66	25.63	89.70	435.51	107.27	200.00	148.76	51.24	3.903	
7,100.00	7,071.54	7,101.05	7,070.94	26.01	25.97	89.70	435.51	107.27	200.00	148.07	51.93	3.851	
7,200.00	7,171.54	7,201.05	7,170.94	26.35	26.32	89.70	435.51	107.27	200.00	147.38	52.62	3.801	
7,300.00	7,271.54	7,301.05	7,270.94	26.70	26.66	89.70	435.51	107.27	200.00	146.69	53.31	3.752	
7,400.00	7,371.54	7,401.05	7,370.94	27.04	27.01	89.70	435.51	107.27	200.00	146.00	54.00	3.704	
7,500.00	7,471.54	7,501.05	7,470.94	27.39	27.35	89.70	435.51	107.27	200.00	145.31	54.69	3.657	
7,600.00	7,571.54	7,601.05	7,570.94	27.73	27.70	89.70	435.51	107.27	200.00	144.61	55.39	3.611	
7,700.00	7,671.54	7,701.05	7,670.94	28.08	28.05	89.70	435.51	107.27	200.00	143.92	56.08	3.566	
7,800.00	7,771.54	7,801.05	7,770.94	28.43	28.39	89.70	435.51	107.27	200.00	143.23	56.77	3.523	
7,900.00	7,871.54	7,901.05	7,870.94	28.77	28.74	89.70	435.51	107.27	200.00	142.53	57.47	3.480	
8,000.00	7,971.54	8,001.05	7,970.94	29.12	29.09	89.70	435.51	107.27	200.00	141.84	58.16	3.439	
8,100.00	8,071.54	8,101.05	8,070.94	29.47	29.44	89.70	435.51	107.27	200.00	141.14	58.86	3.398	
8,200.00	8,171.54	8,201.05	8,170.94	29.82	29.79	89.70	435.51	107.27	200.00	140.45	59.55	3.358	
8,300.00	8,271.54	8,301.05	8,270.94	30.16	30.13	89.70	435.51	107.27	200.00	139.75	60.25	3.319	
8,400.00	8,371.54	8,401.05	8,370.94	30.51	30.48	89.70	435.51	107.27	200.00	139.05	60.95	3.281	
8,500.00	8,471.54	8,498.95	8,470.94	30.86	30.82	89.70	435.51	107.27	200.00	138.36	61.64	3.245	
8,503.66	8,475.20	8,502.60	8,474.60	30.87	30.84	89.70	435.51	107.27	200.00	138.34	61.66	3.243	
8,600.00	8,571.54	8,598.01	8,569.56	31.21	31.12	91.99	427.50	107.32	200.17	137.90	62.27	3.214	
8,700.00	8,671.54	8,691.66	8,660.21	31.56	31.34	98.52	404.45	107.46	202.71	139.99	62.71	3.232	
8,800.00	8,771.54	8,775.92	8,737.61	31.91	31.51	107.48	371.33	107.66	212.72	150.22	62.51	3.403	
8,900.00	8,871.54	8,849.11	8,800.28	32.26	31.63	116.68	333.62	107.89	235.39	174.36	61.03	3.857	
9,000.00	8,971.54	8,911.34	8,849.42	32.61	31.71	124.68	295.49	108.13	272.80	214.48	58.32	4.677	
9,100.00	9,071.54	8,963.73	8,887.39	32.96	31.78	131.04	259.41	108.35	323.67	268.57	55.10	5.874	
9,200.00	9,171.54	9,007.76	8,916.63	33.31	31.83	135.93	226.51	108.55	385.26	333.26	51.99	7.409	
9,300.00	9,271.54	9,050.00	8,942.24	33.66	31.88	140.16	192.93	108.76	454.94	405.33	49.61	9.170	
9,400.00	9,371.54	9,076.32	8,956.91	34.01	31.91	142.56	171.09	108.89	530.49	483.39	47.10	11.263	
9,500.00	9,471.54	9,100.00	8,969.25	34.36	31.94	144.57	150.88	109.02	610.58	565.39	45.19	13.511	
9,600.00	9,571.54	9,126.24	8,981.93	34.71	31.98	146.63	127.90	109.16	694.01	650.08	43.93	15.797	
9,700.00	9,671.54	9,150.00	8,992.50	35.06	32.01	148.36	106.63	109.29	780.10	737.14	42.97	18.156	
9,800.00	9,771.54	9,163.70	8,998.18	35.41	32.02	149.29	94.16	109.36	868.21	826.23	41.98	20.680	
9,900.00	9,871.54	9,179.04	9,004.20	35.76	32.05	150.30	80.05	109.45	957.97	916.65	41.33	23.180	
10,000.00	9,971.54	9,200.00	9,011.80	36.11	32.07	151.59	60.52	109.57	1,049.14	1,008.13	41.01	25.582	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
te Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

ffset Design Cotton Draw Unit - 514H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

urvey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
easured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0,100.00	10,071.54	9,200.00	9,011.80	36.46	32.07	151.59	60.52	109.57	1,141.28	1,100.92	40.37	28.272	
0,200.00	10,171.54	9,215.50	9,016.95	36.81	32.10	152.49	45.91	109.66	1,234.34	1,194.14	40.21	30.698	
0,300.00	10,271.54	9,225.22	9,019.99	37.17	32.11	153.03	36.67	109.72	1,328.19	1,288.15	40.04	33.173	
0,400.00	10,371.54	9,250.00	9,027.00	37.52	32.15	154.33	12.91	109.86	1,422.99	1,382.80	40.19	35.403	
0,500.00	10,471.54	9,250.00	9,027.00	37.87	32.15	154.33	12.91	109.86	1,517.79	1,477.77	40.02	37.927	
0,600.00	10,571.54	9,250.00	9,027.00	38.22	32.15	154.33	12.91	109.86	1,613.22	1,573.29	39.93	40.403	
0,700.00	10,671.54	9,250.00	9,027.00	38.57	32.15	154.33	12.91	109.86	1,709.17	1,669.26	39.91	42.828	
0,800.00	10,771.54	9,250.00	9,027.00	38.93	32.15	154.33	12.91	109.86	1,805.56	1,765.62	39.94	45.204	
0,900.00	10,871.54	9,250.00	9,027.00	39.28	32.15	154.33	12.91	109.86	1,902.32	1,862.30	40.02	47.529	
1,000.00	10,971.54	9,272.85	9,032.56	39.63	32.19	155.44	-9.26	110.00	1,998.82	1,958.47	40.35	49.533	
1,100.00	11,071.54	9,277.67	9,033.62	39.98	32.20	155.67	-13.96	110.03	2,095.91	2,055.38	40.53	51.710	
1,200.00	11,171.54	9,300.00	9,038.00	40.34	32.23	156.66	-35.85	110.16	2,193.57	2,152.69	40.88	53.661	
1,300.00	11,271.54	9,300.00	9,038.00	40.69	32.23	156.66	-35.85	110.16	2,290.93	2,249.87	41.06	55.801	
1,400.00	11,371.54	9,300.00	9,038.00	41.04	32.23	156.66	-35.85	110.16	2,388.50	2,347.24	41.26	57.895	
1,500.00	11,471.54	9,300.00	9,038.00	41.40	32.23	156.66	-35.85	110.16	2,486.27	2,444.79	41.48	59.943	
1,525.27	11,496.81	9,300.00	9,038.00	41.48	32.23	156.66	-35.85	110.16	2,511.00	2,469.46	41.54	60.453	
1,550.00	11,521.53	9,300.00	9,038.00	41.57	32.23	156.65	-35.85	110.16	2,535.10	2,493.51	41.59	60.953	
1,600.00	11,571.33	9,300.00	9,038.00	41.72	32.23	156.55	-35.85	110.16	2,583.06	2,541.37	41.69	61.964	
1,650.00	11,620.56	9,300.00	9,038.00	41.85	32.23	156.33	-35.85	110.16	2,629.73	2,587.97	41.76	62.968	
1,700.00	11,668.84	9,300.00	9,038.00	41.98	32.23	156.00	-35.85	110.16	2,674.84	2,633.01	41.82	63.955	
1,750.00	11,715.82	9,300.00	9,038.00	42.10	32.23	155.53	-35.85	110.16	2,718.12	2,676.25	41.87	64.916	
1,800.00	11,761.13	9,300.00	9,038.00	42.20	32.23	154.90	-35.85	110.16	2,759.35	2,717.44	41.91	65.844	
1,850.00	11,804.43	9,300.00	9,038.00	42.30	32.23	154.08	-35.85	110.16	2,798.31	2,756.37	41.93	66.731	
1,900.00	11,845.39	9,324.93	9,041.89	42.39	32.28	154.53	-60.48	110.31	2,834.14	2,792.08	42.06	67.376	
1,950.00	11,883.69	9,350.00	9,044.71	42.47	32.32	154.88	-85.38	110.46	2,868.00	2,825.82	42.18	67.997	
2,000.00	11,919.06	9,350.00	9,044.71	42.54	32.32	153.57	-85.38	110.46	2,898.36	2,856.18	42.18	68.720	
2,050.00	11,951.20	9,350.00	9,044.71	42.61	32.32	151.86	-85.38	110.46	2,925.74	2,883.56	42.18	69.367	
2,100.00	11,979.89	9,350.00	9,044.71	42.68	32.32	149.56	-85.38	110.46	2,950.01	2,907.83	42.18	69.930	
2,150.00	12,004.90	9,350.00	9,044.71	42.75	32.32	146.40	-85.38	110.46	2,971.07	2,928.87	42.20	70.401	
2,200.00	12,026.05	9,350.00	9,044.71	42.82	32.32	141.86	-85.38	110.46	2,988.83	2,946.60	42.23	70.770	
2,250.00	12,043.17	9,373.32	9,046.36	42.89	32.37	139.77	-108.64	110.61	3,002.65	2,960.32	42.32	70.945	
2,300.00	12,056.13	9,401.14	9,047.08	42.97	32.42	137.90	-136.45	110.78	3,013.58	2,971.16	42.43	71.033	
2,350.00	12,064.83	9,401.14	9,047.08	43.05	32.42	127.13	-136.45	110.78	3,020.22	2,977.73	42.49	71.082	
2,400.00	12,069.21	9,401.14	9,047.08	43.13	32.42	108.57	-136.45	110.78	3,023.33	2,980.76	42.58	71.009	
2,423.64	12,069.77	9,406.57	9,047.07	43.17	32.44	92.81	-131.03	110.74	3,023.57	2,980.93	42.64	70.901	
2,500.00	12,069.98	9,470.76	9,047.20	43.32	32.59	93.37	-206.07	111.20	3,023.25	2,980.39	42.86	70.535	
2,600.00	12,070.27	9,569.04	9,047.37	43.58	32.89	94.48	-304.34	111.81	3,022.93	2,979.71	43.22	69.939	
2,667.68	12,070.46	9,635.56	9,047.49	43.79	33.14	95.69	-370.86	112.22	3,022.78	2,979.28	43.50	69.490	
2,700.00	12,070.55	9,667.35	9,047.54	43.90	33.27	96.49	-402.65	112.41	3,022.73	2,979.09	43.64	69.264	
2,800.00	12,070.84	9,766.11	9,047.71	44.29	33.72	100.25	-501.41	113.02	3,022.66	2,978.54	44.12	68.514	
2,815.44	12,070.88	9,781.41	9,047.74	44.36	33.79	101.10	-516.71	113.11	3,022.66	2,978.46	44.20	68.392	
2,900.00	12,071.12	9,865.36	9,047.88	44.73	34.24	108.04	-600.66	113.63	3,022.68	2,978.04	44.65	67.698	
3,000.00	12,071.41	9,964.98	9,048.06	45.22	34.84	126.43	-700.27	114.24	3,022.77	2,977.53	45.23	66.826	
3,100.00	12,071.69	10,064.83	9,048.23	45.76	35.51	161.14	-800.13	114.85	3,022.87	2,977.00	45.87	65.907	
3,200.00	12,071.98	10,164.81	9,048.40	46.34	36.24	179.65	-900.11	115.46	3,022.98	2,976.44	46.54	64.950	
3,200.11	12,071.98	10,164.92	9,048.40	46.34	36.24	179.65	-900.21	115.46	3,022.98	2,976.44	46.54	64.949	
3,300.00	12,072.26	10,264.81	9,048.57	46.97	37.03	179.65	-1,000.10	116.08	3,023.09	2,975.83	47.26	63.961	
3,400.00	12,072.55	10,364.81	9,048.75	47.64	37.88	179.65	-1,100.10	116.69	3,023.21	2,975.18	48.03	62.950	
3,500.00	12,072.83	10,464.81	9,048.92	48.36	38.78	179.65	-1,200.10	117.30	3,023.32	2,974.49	48.83	61.920	
3,600.00	12,073.12	10,564.81	9,049.09	49.13	39.72	179.65	-1,300.10	117.92	3,023.43	2,973.77	49.66	60.879	
3,700.00	12,073.40	10,664.81	9,049.26	49.94	40.72	179.66	-1,400.10	118.53	3,023.54	2,973.01	50.53	59.831	
3,800.00	12,073.68	10,764.81	9,049.44	50.80	41.75	179.66	-1,500.09	119.14	3,023.65	2,972.21	51.44	58.782	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 514H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,900.00	12,073.97	10,864.81	9,049.61	51.69	42.83	179.66	-1,600.09	119.76	3,023.76	2,971.39	52.37	57.734	
14,000.00	12,074.25	10,964.81	9,049.78	52.62	43.94	179.66	-1,700.09	120.37	3,023.87	2,970.54	53.34	56.692	
14,100.00	12,074.54	11,064.81	9,049.96	53.58	45.08	179.66	-1,800.09	120.98	3,023.99	2,969.65	54.33	55.658	
14,200.00	12,074.82	11,164.81	9,050.13	54.58	46.26	179.66	-1,900.09	121.60	3,024.10	2,968.75	55.35	54.636	
14,300.00	12,075.11	11,264.81	9,050.30	55.61	47.47	179.66	-2,000.08	122.21	3,024.21	2,967.82	56.39	53.627	
14,400.00	12,075.39	11,364.81	9,050.47	56.67	48.70	179.66	-2,100.08	122.82	3,024.32	2,966.86	57.46	52.634	
14,500.00	12,075.68	11,464.81	9,050.65	57.76	49.95	179.66	-2,200.08	123.44	3,024.43	2,965.88	58.55	51.657	
14,600.00	12,075.96	11,564.81	9,050.82	58.87	51.23	179.66	-2,300.08	124.05	3,024.54	2,964.89	59.66	50.698	
14,700.00	12,076.24	11,664.81	9,050.99	60.01	52.53	179.66	-2,400.07	124.66	3,024.66	2,963.87	60.79	49.758	
14,800.00	12,076.53	11,764.81	9,051.17	61.17	53.85	179.66	-2,500.07	125.28	3,024.77	2,962.83	61.94	48.837	
14,900.00	12,076.81	11,864.81	9,051.34	62.36	55.19	179.66	-2,600.07	125.89	3,024.88	2,961.78	63.10	47.937	
15,000.00	12,077.10	11,964.81	9,051.51	63.57	56.54	179.66	-2,700.07	126.50	3,024.99	2,960.71	64.28	47.057	
15,100.00	12,077.38	12,064.81	9,051.68	64.79	57.92	179.66	-2,800.07	127.12	3,025.10	2,959.62	65.48	46.198	
15,200.00	12,077.67	12,164.81	9,051.86	66.04	59.30	179.66	-2,900.06	127.73	3,025.21	2,958.52	66.69	45.359	
15,300.00	12,077.95	12,264.81	9,052.03	67.30	60.70	179.66	-3,000.06	128.34	3,025.32	2,957.40	67.92	44.541	
15,400.00	12,078.23	12,364.81	9,052.20	68.58	62.11	179.66	-3,100.06	128.96	3,025.44	2,956.27	69.16	43.744	
15,500.00	12,078.52	12,464.81	9,052.38	69.88	63.54	179.66	-3,200.06	129.57	3,025.55	2,955.13	70.42	42.967	
15,600.00	12,078.80	12,564.81	9,052.55	71.19	64.97	179.66	-3,300.06	130.18	3,025.66	2,953.98	71.68	42.210	
15,700.00	12,079.09	12,664.81	9,052.72	72.51	66.42	179.66	-3,400.05	130.80	3,025.77	2,952.81	72.96	41.473	
15,800.00	12,079.37	12,764.81	9,052.89	73.85	67.87	179.66	-3,500.05	131.41	3,025.88	2,951.64	74.25	40.755	
15,900.00	12,079.66	12,864.81	9,053.07	75.21	69.33	179.66	-3,600.05	132.02	3,025.99	2,950.45	75.54	40.056	
16,000.00	12,079.94	12,964.81	9,053.24	76.57	70.81	179.66	-3,700.05	132.64	3,026.11	2,949.25	76.85	39.376	
16,100.00	12,080.22	13,064.81	9,053.41	77.94	72.29	179.66	-3,800.05	133.25	3,026.22	2,948.05	78.17	38.713	
16,200.00	12,080.51	13,164.81	9,053.58	79.33	73.78	179.66	-3,900.04	133.87	3,026.33	2,946.83	79.50	38.069	
16,300.00	12,080.79	13,264.81	9,053.76	80.73	75.27	179.66	-4,000.04	134.48	3,026.44	2,945.61	80.83	37.442	
16,400.00	12,081.08	13,364.81	9,053.93	82.13	76.77	179.67	-4,100.04	135.09	3,026.55	2,944.38	82.17	36.831	
16,500.00	12,081.36	13,464.81	9,054.10	83.55	78.28	179.67	-4,200.04	135.71	3,026.66	2,943.14	83.52	36.237	
16,600.00	12,081.65	13,564.81	9,054.28	84.97	79.80	179.67	-4,300.04	136.32	3,026.78	2,941.89	84.88	35.659	
16,700.00	12,081.93	13,664.81	9,054.45	86.40	81.32	179.67	-4,400.03	136.93	3,026.89	2,940.64	86.25	35.096	
16,800.00	12,082.22	13,764.81	9,054.62	87.84	82.84	179.67	-4,500.03	137.55	3,027.00	2,939.38	87.62	34.548	
16,900.00	12,082.50	13,864.81	9,054.79	89.29	84.37	179.67	-4,600.03	138.16	3,027.11	2,938.11	89.00	34.014	
17,000.00	12,082.78	13,964.81	9,054.97	90.75	85.91	179.67	-4,700.03	138.77	3,027.22	2,936.84	90.38	33.494	
17,100.00	12,083.07	14,064.81	9,055.14	92.21	87.45	179.67	-4,800.02	139.39	3,027.33	2,935.56	91.77	32.988	
17,200.00	12,083.35	14,164.81	9,055.31	93.68	88.99	179.67	-4,900.02	140.00	3,027.44	2,934.28	93.17	32.495	
17,300.00	12,083.64	14,264.81	9,055.49	95.15	90.54	179.67	-5,000.02	140.61	3,027.56	2,932.99	94.57	32.015	
17,400.00	12,083.92	14,364.81	9,055.66	96.63	92.09	179.67	-5,100.02	141.23	3,027.67	2,931.70	95.97	31.547	
17,500.00	12,084.21	14,464.81	9,055.83	98.12	93.64	179.67	-5,200.02	141.84	3,027.78	2,930.40	97.38	31.092	
17,600.00	12,084.49	14,564.81	9,056.00	99.61	95.20	179.67	-5,300.01	142.45	3,027.89	2,929.09	98.80	30.647	
17,700.00	12,084.77	14,664.81	9,056.18	101.11	96.76	179.67	-5,400.01	143.07	3,028.00	2,927.78	100.22	30.214	
17,800.00	12,085.06	14,764.81	9,056.35	102.61	98.33	179.67	-5,500.01	143.68	3,028.11	2,926.47	101.64	29.792	
17,900.00	12,085.34	14,864.81	9,056.52	104.11	99.90	179.67	-5,600.01	144.29	3,028.23	2,925.16	103.07	29.380	
18,000.00	12,085.63	14,964.81	9,056.69	105.63	101.47	179.67	-5,700.01	144.91	3,028.34	2,923.83	104.50	28.978	
18,100.00	12,085.91	15,064.81	9,056.87	107.14	103.04	179.67	-5,800.00	145.52	3,028.45	2,922.51	105.94	28.587	
18,200.00	12,086.20	15,164.81	9,057.04	108.66	104.62	179.67	-5,900.00	146.13	3,028.56	2,921.18	107.38	28.204	
18,300.00	12,086.48	15,264.81	9,057.21	110.18	106.20	179.67	-6,000.00	146.75	3,028.67	2,919.85	108.82	27.831	
18,400.00	12,086.76	15,364.81	9,057.39	111.71	107.78	179.67	-6,100.00	147.36	3,028.78	2,918.51	110.27	27.467	
18,500.00	12,087.05	15,464.81	9,057.56	113.24	109.36	179.67	-6,200.00	147.97	3,028.90	2,917.18	111.72	27.112	
18,600.00	12,087.33	15,564.81	9,057.73	114.78	110.95	179.67	-6,299.99	148.59	3,029.01	2,915.83	113.17	26.765	
18,700.00	12,087.62	15,664.81	9,057.90	116.32	112.54	179.67	-6,399.99	149.20	3,029.12	2,914.49	114.63	26.426	
18,800.00	12,087.90	15,764.81	9,058.08	117.86	114.12	179.67	-6,499.99	149.81	3,029.23	2,913.14	116.09	26.094	
18,900.00	12,088.19	15,864.81	9,058.25	119.40	115.72	179.67	-6,599.99	150.43	3,029.34	2,911.79	117.55	25.771	
19,000.00	12,088.47	15,964.81	9,058.42	120.95	117.31	179.67	-6,699.99	151.04	3,029.45	2,910.44	119.01	25.455	

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MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 514H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,100.00	12,088.76	16,064.81	9,058.60	122.50	118.91	179.68	-6,799.98	151.65	3,029.56	2,909.08	120.48	25.146	
19,200.00	12,089.04	16,164.81	9,058.77	124.05	120.50	179.68	-6,899.98	152.27	3,029.68	2,907.73	121.95	24.844	
19,300.00	12,089.32	16,264.81	9,058.94	125.61	122.10	179.68	-6,999.98	152.88	3,029.79	2,906.37	123.42	24.548	
19,400.00	12,089.61	16,364.81	9,059.11	127.17	123.70	179.68	-7,099.98	153.49	3,029.90	2,905.00	124.90	24.259	
19,500.00	12,089.89	16,464.81	9,059.29	128.73	125.30	179.68	-7,199.97	154.11	3,030.01	2,903.64	126.37	23.977	
19,600.00	12,090.18	16,564.81	9,059.46	130.29	126.91	179.68	-7,299.97	154.72	3,030.12	2,902.27	127.85	23.700	
19,700.00	12,090.46	16,664.81	9,059.63	131.86	128.51	179.68	-7,399.97	155.34	3,030.23	2,900.90	129.33	23.430	
19,800.00	12,090.75	16,764.81	9,059.80	133.42	130.12	179.68	-7,499.97	155.95	3,030.35	2,899.53	130.82	23.165	
19,900.00	12,091.03	16,864.81	9,059.98	134.99	131.72	179.68	-7,599.97	156.56	3,030.46	2,898.16	132.30	22.906	
20,000.00	12,091.31	16,964.81	9,060.15	136.57	133.33	179.68	-7,699.96	157.18	3,030.57	2,896.78	133.79	22.652	
20,100.00	12,091.60	17,064.81	9,060.32	138.14	134.94	179.68	-7,799.96	157.79	3,030.68	2,895.40	135.28	22.404	
20,200.00	12,091.88	17,164.81	9,060.50	139.72	136.55	179.68	-7,899.96	158.40	3,030.79	2,894.03	136.77	22.160	
20,300.00	12,092.17	17,264.81	9,060.67	141.29	138.16	179.68	-7,999.96	159.02	3,030.90	2,892.64	138.26	21.922	
20,400.00	12,092.45	17,364.81	9,060.84	142.87	139.78	179.68	-8,099.96	159.63	3,031.01	2,891.26	139.75	21.688	
20,500.00	12,092.74	17,464.81	9,061.01	144.45	141.39	179.68	-8,199.95	160.24	3,031.13	2,889.88	141.25	21.460	
20,600.00	12,093.02	17,564.81	9,061.19	146.04	143.00	179.68	-8,299.95	160.86	3,031.24	2,888.49	142.75	21.235	
20,700.00	12,093.31	17,664.81	9,061.36	147.62	144.62	179.68	-8,399.95	161.47	3,031.35	2,887.11	144.24	21.015	
20,800.00	12,093.59	17,764.81	9,061.53	149.21	146.24	179.68	-8,499.95	162.08	3,031.46	2,885.72	145.74	20.800	
20,900.00	12,093.87	17,864.81	9,061.71	150.80	147.86	179.68	-8,599.95	162.70	3,031.57	2,884.33	147.25	20.589	
21,000.00	12,094.16	17,964.81	9,061.88	152.39	149.47	179.68	-8,699.94	163.31	3,031.68	2,882.94	148.75	20.381	
21,100.00	12,094.44	18,064.81	9,062.05	153.98	151.09	179.68	-8,799.94	163.92	3,031.80	2,881.54	150.25	20.178	
21,200.00	12,094.73	18,164.81	9,062.22	155.57	152.71	179.68	-8,899.94	164.54	3,031.91	2,880.15	151.76	19.979	
21,300.00	12,095.01	18,264.81	9,062.40	157.16	154.33	179.68	-8,999.94	165.15	3,032.02	2,878.75	153.26	19.783	
21,400.00	12,095.30	18,364.81	9,062.57	158.76	155.96	179.68	-9,099.93	165.76	3,032.13	2,877.36	154.77	19.591	
21,500.00	12,095.58	18,464.81	9,062.74	160.35	157.58	179.68	-9,199.93	166.38	3,032.24	2,875.96	156.28	19.402	
21,600.00	12,095.86	18,564.81	9,062.92	161.95	159.20	179.68	-9,299.93	166.99	3,032.35	2,874.56	157.79	19.217	
21,700.00	12,096.15	18,664.81	9,063.09	163.55	160.83	179.68	-9,399.93	167.60	3,032.47	2,873.16	159.30	19.036	
21,800.00	12,096.43	18,764.81	9,063.26	165.15	162.45	179.69	-9,499.93	168.22	3,032.58	2,871.76	160.82	18.857	
21,900.00	12,096.72	18,864.81	9,063.43	166.75	164.08	179.69	-9,599.92	168.83	3,032.69	2,870.36	162.33	18.682	
22,000.00	12,097.00	18,964.81	9,063.61	168.35	165.70	179.69	-9,699.92	169.44	3,032.80	2,868.95	163.85	18.510	
22,100.00	12,097.29	19,064.81	9,063.78	169.96	167.33	179.69	-9,799.92	170.06	3,032.91	2,867.55	165.36	18.341	
22,175.33	12,097.50	19,134.90	9,063.90	171.16	168.47	-90.00	-9,870.01	170.49	3,033.00	2,866.52	166.49	18.218	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	***Offset TVD Reference:***	Offset Datum

Offset Design Cotton Draw Unit - 515H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.40	-0.40	0.00	0.00	89.65	0.18	29.98	29.98				
100.00	100.00	100.40	99.60	0.13	0.14	89.65	0.18	29.98	29.98	29.71	0.27	110.903	
200.00	200.00	200.40	199.60	0.49	0.49	89.65	0.18	29.98	29.98	28.99	0.99	30.363	
300.00	300.00	300.40	299.60	0.85	0.85	89.65	0.18	29.98	29.98	28.27	1.70	17.590	
400.00	400.00	400.40	399.60	1.21	1.21	89.65	0.18	29.98	29.98	27.55	2.42	12.381	
500.00	500.00	500.40	499.60	1.57	1.57	89.65	0.18	29.98	29.98	26.84	3.14	9.552	
600.00	600.00	600.40	599.60	1.93	1.93	89.65	0.18	29.98	29.98	26.12	3.86	7.776	
700.00	700.00	700.40	699.60	2.29	2.29	89.65	0.18	29.98	29.98	25.40	4.57	6.556	
800.00	800.00	800.40	799.60	2.64	2.65	89.65	0.18	29.98	29.98	24.69	5.29	5.668	
900.00	900.00	900.40	899.60	3.00	3.00	89.65	0.18	29.98	29.98	23.97	6.01	4.991	
1,000.00	1,000.00	1,000.40	999.60	3.36	3.36	89.65	0.18	29.98	29.98	23.25	6.72	4.459	
1,100.00	1,100.00	1,100.40	1,099.60	3.72	3.72	89.65	0.18	29.98	29.98	22.54	7.44	4.029	
1,200.00	1,200.00	1,200.40	1,199.60	4.08	4.08	89.65	0.18	29.98	29.98	21.82	8.16	3.675	
1,300.00	1,300.00	1,300.40	1,299.60	4.44	4.44	89.65	0.18	29.98	29.98	21.10	8.87	3.378	
1,400.00	1,400.00	1,400.40	1,399.60	4.79	4.80	89.65	0.18	29.98	29.98	20.39	9.59	3.126	
1,500.00	1,500.00	1,500.40	1,499.60	5.15	5.15	89.65	0.18	29.98	29.98	19.67	10.31	2.908	
1,600.00	1,600.00	1,600.40	1,599.60	5.51	5.51	89.65	0.18	29.98	29.98	18.95	11.02	2.719	
1,700.00	1,700.00	1,700.40	1,699.60	5.87	5.87	89.65	0.18	29.98	29.98	18.23	11.74	2.553	
1,800.00	1,800.00	1,800.40	1,799.60	6.23	6.23	89.65	0.18	29.98	29.98	17.52	12.46	2.406	
1,900.00	1,900.00	1,900.40	1,899.60	6.59	6.59	89.65	0.18	29.98	29.98	16.80	13.18	2.275	
2,000.00	2,000.00	2,000.40	1,999.60	6.95	6.95	89.65	0.18	29.98	29.98	16.08	13.89	2.158	
2,100.00	2,100.00	2,100.40	2,099.60	7.30	7.31	89.65	0.18	29.98	29.98	15.37	14.61	2.052	
2,200.00	2,200.00	2,200.40	2,199.60	7.66	7.66	89.65	0.18	29.98	29.98	14.65	15.33	1.956	
2,300.00	2,300.00	2,300.40	2,299.60	8.02	8.02	89.65	0.18	29.98	29.98	13.93	16.04	1.868	
2,400.00	2,400.00	2,400.40	2,399.60	8.38	8.38	89.65	0.18	29.98	29.98	13.22	16.76	1.789	
2,500.00	2,500.00	2,499.60	2,499.60	8.74	8.74	89.65	0.18	29.98	29.98	12.50	17.47	1.715	CC
2,600.00	2,599.99	2,599.62	2,599.62	9.10	9.09	89.63	1.05	29.93	30.11	11.92	18.19	1.655	
2,700.00	2,699.96	2,699.65	2,699.61	9.45	9.45	89.54	3.66	29.79	30.52	11.62	18.91	1.615	
2,800.00	2,799.86	2,799.67	2,799.53	9.81	9.81	89.40	8.01	29.57	31.21	11.59	19.62	1.591	ES
2,900.00	2,899.68	2,899.69	2,899.36	10.17	10.17	89.20	14.10	29.25	32.16	11.83	20.33	1.582	
3,000.00	2,999.37	2,999.70	2,999.06	10.53	10.53	88.96	21.93	28.84	33.40	12.34	21.05	1.586	
3,100.00	3,098.90	3,099.71	3,098.61	10.89	10.89	88.68	31.50	28.34	34.90	13.13	21.77	1.603	
3,200.00	3,198.26	3,199.71	3,197.97	11.25	11.25	88.39	42.80	27.75	36.68	14.18	22.49	1.631	
3,300.06	3,297.46	3,299.76	3,297.17	11.62	11.61	88.09	55.83	27.07	38.73	15.51	23.23	1.668	
3,400.00	3,396.43	3,400.33	3,396.11	11.98	11.98	87.80	69.72	26.34	40.92	16.95	23.96	1.707	
3,500.00	3,495.46	3,500.35	3,495.11	12.36	12.36	87.54	83.61	25.62	43.11	18.40	24.71	1.745	
3,600.00	3,594.48	3,600.37	3,594.12	12.73	12.73	87.31	97.50	24.89	45.30	19.84	25.46	1.779	
3,700.00	3,693.51	3,700.40	3,693.12	13.11	13.11	87.09	111.39	24.17	47.49	21.28	26.21	1.812	
3,800.00	3,792.54	3,800.42	3,792.12	13.49	13.49	86.90	125.28	23.44	49.68	22.71	26.97	1.842	
3,900.00	3,891.56	3,900.45	3,891.13	13.87	13.87	86.72	139.17	22.72	51.87	24.14	27.73	1.870	
4,000.00	3,990.59	4,000.47	3,990.13	14.25	14.25	86.56	153.06	21.99	54.07	25.57	28.50	1.897	
4,100.00	4,089.62	4,100.49	4,089.13	14.64	14.64	86.41	166.95	21.27	56.26	26.99	29.27	1.922	
4,200.00	4,188.64	4,200.52	4,188.14	15.03	15.03	86.27	180.84	20.54	58.45	28.41	30.04	1.946	
4,300.00	4,287.67	4,300.54	4,287.14	15.42	15.41	86.14	194.73	19.82	60.65	29.82	30.82	1.968	
4,400.00	4,386.70	4,400.57	4,386.14	15.81	15.80	86.02	208.62	19.09	62.84	31.24	31.60	1.989	
4,500.00	4,485.72	4,500.59	4,485.15	16.20	16.20	85.91	222.51	18.37	65.03	32.65	32.38	2.008	
4,600.00	4,584.75	4,600.61	4,584.15	16.59	16.59	85.81	236.40	17.64	67.23	34.06	33.17	2.027	
4,700.00	4,683.78	4,700.64	4,683.15	16.98	16.98	85.71	250.29	16.91	69.42	35.47	33.95	2.045	
4,800.00	4,782.80	4,800.66	4,782.16	17.38	17.38	85.62	264.18	16.19	71.62	36.87	34.74	2.061	
4,900.00	4,881.83	4,900.69	4,881.16	17.78	17.77	85.53	278.07	15.46	73.81	38.28	35.54	2.077	
5,000.00	4,980.86	5,000.71	4,980.17	18.17	18.17	85.45	291.96	14.74	76.01	39.68	36.33	2.092	
5,100.00	5,079.88	5,100.74	5,079.17	18.57	18.57	85.37	305.85	14.01	78.20	41.08	37.12	2.107	

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MS Energy Services
Anticollision Report

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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 515H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	5,200.76	5,178.17	18.97	18.97	85.30	319.74	13.29	80.40	42.48	37.92	2.120	
5,300.00	5,277.94	5,300.78	5,277.18	19.37	19.37	85.23	333.64	12.56	82.59	43.88	38.72	2.133	
5,400.00	5,376.96	5,400.81	5,376.18	19.77	19.77	85.16	347.53	11.84	84.79	45.27	39.52	2.146	
5,500.00	5,475.99	5,500.83	5,475.18	20.17	20.17	85.10	361.42	11.11	86.99	46.67	40.32	2.158	
5,600.00	5,575.02	5,600.86	5,574.19	20.57	20.57	85.04	375.31	10.39	89.18	48.06	41.12	2.169	
5,690.40	5,664.54	5,689.55	5,663.76	20.93	20.92	85.20	387.54	9.75	91.16	49.32	41.84	2.179	
5,700.00	5,674.04	5,699.16	5,673.29	20.97	20.96	85.25	388.77	9.68	91.36	49.45	41.91	2.180	
5,800.00	5,773.21	5,799.17	5,772.60	21.37	21.35	85.85	400.57	9.07	93.37	50.66	42.70	2.186	
5,900.00	5,872.58	5,899.18	5,872.09	21.76	21.74	86.43	410.64	8.54	95.11	51.63	43.48	2.188	
6,000.00	5,972.14	5,999.17	5,971.74	22.15	22.12	87.01	418.97	8.11	96.59	52.35	44.24	2.183	
6,100.00	6,071.84	6,099.15	6,071.50	22.52	22.49	87.58	425.56	7.76	97.80	52.82	44.98	2.174	
6,200.00	6,171.66	6,199.12	6,171.34	22.89	22.85	88.16	430.42	7.51	98.75	53.04	45.71	2.161	
6,300.00	6,271.57	6,299.06	6,271.24	23.25	23.21	88.74	433.53	7.35	99.44	53.02	46.42	2.142	
6,400.00	6,371.54	6,399.00	6,371.16	23.60	23.56	89.34	434.90	7.27	99.86	52.75	47.11	2.120	
6,490.46	6,462.00	6,489.43	6,461.60	23.92	23.87	89.70	434.98	7.27	100.00	52.27	47.73	2.095	
6,500.00	6,471.54	6,501.03	6,471.14	23.95	23.91	89.70	434.98	7.27	100.00	52.19	47.81	2.092	
6,600.00	6,571.54	6,601.03	6,571.14	24.29	24.25	89.70	434.98	7.27	100.00	51.51	48.49	2.062	
6,700.00	6,671.54	6,701.03	6,671.14	24.63	24.59	89.70	434.98	7.27	100.00	50.82	49.18	2.033	
6,800.00	6,771.54	6,801.03	6,771.14	24.98	24.94	89.70	434.98	7.27	100.00	50.14	49.86	2.005	
6,900.00	6,871.54	6,901.03	6,871.14	25.32	25.28	89.70	434.98	7.27	100.00	49.45	50.55	1.978	
7,000.00	6,971.54	7,001.03	6,971.14	25.66	25.62	89.70	434.98	7.27	100.00	48.76	51.24	1.952	
7,100.00	7,071.54	7,101.03	7,071.14	26.01	25.97	89.70	434.98	7.27	100.00	48.07	51.93	1.926	
7,200.00	7,171.54	7,201.03	7,171.14	26.35	26.31	89.70	434.98	7.27	100.00	47.38	52.62	1.900	
7,300.00	7,271.54	7,301.03	7,271.14	26.70	26.66	89.70	434.98	7.27	100.00	46.69	53.31	1.876	
7,400.00	7,371.54	7,401.03	7,371.14	27.04	27.01	89.70	434.98	7.27	100.00	46.00	54.00	1.852	
7,500.00	7,471.54	7,501.03	7,471.14	27.39	27.35	89.70	434.98	7.27	100.00	45.30	54.70	1.828	
7,600.00	7,571.54	7,601.03	7,571.14	27.73	27.70	89.70	434.98	7.27	100.00	44.61	55.39	1.805	
7,700.00	7,671.54	7,701.03	7,671.14	28.08	28.05	89.70	434.98	7.27	100.00	43.92	56.08	1.783	
7,800.00	7,771.54	7,801.03	7,771.14	28.43	28.39	89.70	434.98	7.27	100.00	43.22	56.78	1.761	
7,900.00	7,871.54	7,901.03	7,871.14	28.77	28.74	89.70	434.98	7.27	100.00	42.53	57.47	1.740	
8,000.00	7,971.54	8,001.03	7,971.14	29.12	29.09	89.70	434.98	7.27	100.00	41.83	58.17	1.719	
8,100.00	8,071.54	8,101.03	8,071.14	29.47	29.44	89.70	434.98	7.27	100.00	41.14	58.86	1.699	
8,200.00	8,171.54	8,201.03	8,171.14	29.82	29.78	89.70	434.98	7.27	100.00	40.44	59.56	1.679	
8,300.00	8,271.54	8,301.03	8,271.14	30.16	30.13	89.70	434.98	7.27	100.00	39.75	60.25	1.660	
8,400.00	8,371.54	8,401.03	8,371.14	30.51	30.48	89.70	434.98	7.27	100.00	39.05	60.95	1.641	
8,500.00	8,471.54	8,501.03	8,471.14	30.86	30.83	89.70	434.98	7.27	100.00	38.35	61.65	1.622	
8,600.00	8,571.54	8,601.03	8,571.14	31.21	31.18	89.70	434.98	7.27	100.00	37.65	62.35	1.604	
8,700.00	8,671.54	8,701.03	8,671.14	31.56	31.53	89.70	434.98	7.27	100.00	36.95	63.05	1.586	
8,709.91	8,681.45	8,708.88	8,681.05	31.59	31.56	89.70	434.98	7.27	100.00	36.89	63.11	1.585	
8,800.00	8,771.54	8,797.80	8,769.92	31.91	31.85	90.75	433.13	7.53	100.27	36.57	63.70	1.574 SF	
8,900.00	8,871.54	8,892.72	8,863.46	32.26	32.11	99.21	417.85	9.65	104.00	39.95	64.05	1.624	
9,000.00	8,971.54	8,980.39	8,946.52	32.61	32.30	112.56	390.32	13.48	117.61	54.34	63.27	1.859	
9,100.00	9,071.54	9,058.10	9,015.85	32.96	32.44	125.35	355.69	18.29	146.92	86.16	60.75	2.418	
9,200.00	9,171.54	9,125.09	9,071.36	33.31	32.55	134.92	318.60	23.45	192.02	134.67	57.35	3.348	
9,300.00	9,271.54	9,181.97	9,114.79	33.66	32.62	141.46	282.26	28.50	249.60	195.56	54.05	4.618	
9,400.00	9,371.54	9,229.98	9,148.47	34.01	32.69	145.91	248.39	33.21	316.32	265.12	51.20	6.178	
9,500.00	9,471.54	9,270.50	9,174.58	34.36	32.74	149.01	217.71	37.47	389.71	340.85	48.86	7.976	
9,600.00	9,571.54	9,300.00	9,192.18	34.71	32.78	150.94	194.26	40.73	468.09	421.44	46.65	10.034	
9,700.00	9,671.54	9,334.11	9,210.98	35.06	32.83	152.89	166.08	44.64	550.13	504.66	45.47	12.100	
9,800.00	9,771.54	9,350.00	9,219.15	35.41	32.85	153.71	152.58	46.52	635.24	591.40	43.84	14.491	
9,900.00	9,871.54	9,380.96	9,233.98	35.76	32.89	155.15	125.67	50.26	722.34	678.99	43.35	16.664	
10,000.00	9,971.54	9,400.00	9,242.36	36.11	32.92	155.95	108.73	52.62	811.38	768.75	42.63	19.033	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 515H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	10,071.54	9,416.46	9,249.14	36.46	32.94	156.60	93.88	54.68	901.89	859.81	42.08	21.434	
10,200.00	10,171.54	9,431.10	9,254.81	36.81	32.96	157.13	80.51	56.54	993.59	951.92	41.67	23.846	
10,300.00	10,271.54	9,450.00	9,261.61	37.17	32.99	157.78	63.04	58.97	1,086.32	1,044.81	41.51	26.167	
10,400.00	10,371.54	9,450.00	9,261.61	37.52	32.99	157.78	63.04	58.97	1,179.83	1,138.78	41.05	28.741	
10,500.00	10,471.54	9,466.13	9,266.96	37.87	33.02	158.30	47.97	61.06	1,274.00	1,232.95	41.05	31.036	
10,600.00	10,571.54	9,475.53	9,269.87	38.22	33.04	158.59	39.12	62.29	1,368.80	1,327.81	40.99	33.391	
10,700.00	10,671.54	9,500.00	9,276.77	38.57	33.08	159.29	15.87	65.52	1,464.41	1,423.17	41.24	35.507	
10,800.00	10,771.54	9,500.00	9,276.77	38.93	33.08	159.29	15.87	65.52	1,559.93	1,518.78	41.15	37.904	
10,900.00	10,871.54	9,500.00	9,276.77	39.28	33.08	159.29	15.87	65.52	1,655.98	1,614.84	41.14	40.254	
11,000.00	10,971.54	9,500.00	9,276.77	39.63	33.08	159.29	15.87	65.52	1,752.46	1,711.28	41.18	42.555	
11,100.00	11,071.54	9,500.00	9,276.77	39.98	33.08	159.29	15.87	65.52	1,849.32	1,808.05	41.27	44.808	
11,200.00	11,171.54	9,500.00	9,276.77	40.34	33.08	159.29	15.87	65.52	1,946.50	1,905.10	41.40	47.014	
11,300.00	11,271.54	9,521.99	9,282.11	40.69	33.12	159.87	-5.26	68.46	2,043.41	2,001.65	41.77	48.926	
11,400.00	11,371.54	9,526.73	9,283.16	41.04	33.12	159.99	-9.84	69.10	2,140.85	2,098.87	41.98	50.995	
11,500.00	11,471.54	9,550.00	9,287.73	41.40	33.17	160.54	-32.44	72.24	2,238.86	2,196.49	42.37	52.842	
11,525.27	11,496.81	9,550.00	9,287.73	41.48	33.17	160.54	-32.44	72.24	2,263.51	2,221.09	42.42	53.360	
11,550.00	11,521.53	9,550.00	9,287.73	41.57	33.17	160.53	-32.44	72.24	2,287.52	2,245.06	42.47	53.867	
11,600.00	11,571.33	9,550.00	9,287.73	41.72	33.17	160.46	-32.44	72.24	2,335.26	2,292.72	42.54	54.894	
11,650.00	11,620.56	9,550.00	9,287.73	41.85	33.17	160.30	-32.44	72.24	2,381.67	2,339.07	42.60	55.912	
11,700.00	11,668.84	9,550.00	9,287.73	41.98	33.17	160.06	-32.44	72.24	2,426.48	2,383.85	42.63	56.913	
11,750.00	11,715.82	9,550.00	9,287.73	42.10	33.17	159.73	-32.44	72.24	2,469.45	2,426.79	42.66	57.888	
11,800.00	11,761.13	9,550.00	9,287.73	42.20	33.17	159.28	-32.44	72.24	2,510.35	2,467.67	42.67	58.830	
11,850.00	11,804.43	9,550.00	9,287.73	42.30	33.17	158.68	-32.44	72.24	2,548.97	2,506.30	42.68	59.729	
11,900.00	11,845.39	9,550.00	9,287.73	42.39	33.17	157.91	-32.44	72.24	2,585.14	2,542.46	42.68	60.576	
11,950.00	11,883.69	9,573.00	9,291.33	42.47	33.21	157.81	-54.94	75.36	2,618.12	2,575.34	42.78	61.198	
12,000.00	11,919.06	9,580.08	9,292.25	42.54	33.23	156.95	-61.89	76.33	2,648.49	2,605.69	42.80	61.878	
12,050.00	11,951.20	9,600.00	9,294.39	42.61	33.27	156.45	-81.50	79.06	2,675.98	2,633.11	42.87	62.416	
12,100.00	11,979.89	9,600.00	9,294.39	42.68	33.27	154.65	-81.50	79.06	2,700.00	2,657.13	42.87	62.988	
12,150.00	12,004.90	9,600.00	9,294.39	42.75	33.27	152.11	-81.50	79.06	2,720.86	2,677.99	42.87	63.466	
12,200.00	12,026.05	9,600.00	9,294.39	42.82	33.27	148.31	-81.50	79.06	2,738.47	2,695.58	42.89	63.842	
12,250.00	12,043.17	9,600.00	9,294.39	42.89	33.27	142.18	-81.50	79.06	2,752.78	2,709.84	42.94	64.110	
12,300.00	12,056.13	9,627.84	9,296.22	42.97	33.33	138.86	-109.01	82.88	2,762.90	2,719.85	43.05	64.183	
12,350.00	12,064.83	9,649.26	9,296.70	43.05	33.37	132.26	-130.23	85.83	2,770.03	2,726.88	43.15	64.194	
12,400.00	12,069.21	9,649.26	9,296.70	43.13	33.37	110.06	-130.23	85.83	2,773.23	2,729.98	43.25	64.128	
12,423.64	12,069.77	9,649.26	9,296.70	43.17	33.37	93.16	-130.23	85.83	2,773.54	2,730.24	43.30	64.054	
12,500.00	12,069.98	9,725.06	9,297.01	43.32	33.57	93.63	-205.43	95.27	2,773.32	2,729.78	43.54	63.691	
12,600.00	12,070.27	9,826.67	9,297.42	43.58	33.90	97.36	-306.59	104.80	2,773.00	2,729.09	43.91	63.157	
12,667.68	12,070.46	9,894.99	9,297.70	43.79	34.15	100.79	-374.77	109.18	2,772.76	2,728.58	44.18	62.759	
12,700.00	12,070.55	9,927.49	9,297.83	43.90	34.29	102.82	-407.22	110.70	2,772.65	2,728.33	44.32	62.554	
12,800.00	12,070.84	10,027.70	9,298.24	44.29	34.75	111.55	-507.41	113.05	2,772.36	2,727.57	44.79	61.893	
12,900.00	12,071.12	10,126.95	9,298.64	44.73	35.28	125.17	-606.65	113.66	2,772.15	2,726.83	45.32	61.168	
13,000.00	12,071.41	10,226.56	9,299.04	45.22	35.88	147.72	-706.26	114.27	2,772.00	2,726.10	45.90	60.398	
13,100.00	12,071.69	10,326.42	9,299.44	45.76	36.54	170.78	-806.11	114.89	2,771.87	2,725.35	46.52	59.586	
13,200.00	12,071.98	10,426.40	9,299.85	46.34	37.26	179.65	-906.09	115.50	2,771.75	2,724.57	47.19	58.741	
13,200.11	12,071.98	10,426.50	9,299.85	46.34	37.26	179.65	-906.20	115.50	2,771.75	2,724.56	47.19	58.740	
13,300.00	12,072.26	10,526.40	9,300.25	46.97	38.04	179.65	-1,006.09	116.11	2,771.63	2,723.74	47.90	57.867	
13,400.00	12,072.55	10,626.40	9,300.66	47.64	38.88	179.65	-1,106.09	116.73	2,771.51	2,722.86	48.65	56.972	
13,500.00	12,072.83	10,726.40	9,301.06	48.36	39.77	179.65	-1,206.08	117.34	2,771.39	2,721.96	49.44	56.060	
13,600.00	12,073.12	10,826.40	9,301.47	49.13	40.71	179.65	-1,306.08	117.95	2,771.27	2,721.01	50.26	55.137	
13,700.00	12,073.40	10,926.40	9,301.87	49.94	41.69	179.65	-1,406.08	118.57	2,771.15	2,720.03	51.12	54.207	
13,800.00	12,073.68	11,026.40	9,302.28	50.80	42.72	179.65	-1,506.08	119.18	2,771.03	2,719.02	52.01	53.274	
13,900.00	12,073.97	11,126.40	9,302.68	51.69	43.78	179.65	-1,606.07	119.79	2,770.91	2,717.97	52.94	52.342	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 515H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

urvey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	12,074.25	11,226.40	9,303.08	52.62	44.88	179.65	-1,706.07	120.41	2,770.79	2,716.90	53.89	51.413	
14,100.00	12,074.54	11,326.40	9,303.49	53.58	46.01	179.65	-1,806.07	121.02	2,770.67	2,715.80	54.87	50.491	
14,200.00	12,074.82	11,426.40	9,303.89	54.58	47.18	179.65	-1,906.06	121.63	2,770.55	2,714.67	55.88	49.578	
14,300.00	12,075.11	11,526.40	9,304.30	55.61	48.37	179.65	-2,006.06	122.25	2,770.43	2,713.52	56.92	48.676	
14,400.00	12,075.39	11,626.40	9,304.70	56.67	49.59	179.65	-2,106.06	122.86	2,770.31	2,712.34	57.97	47.787	
14,500.00	12,075.68	11,726.40	9,305.11	57.76	50.83	179.65	-2,206.06	123.47	2,770.19	2,711.14	59.05	46.912	
14,600.00	12,075.96	11,826.40	9,305.51	58.87	52.10	179.65	-2,306.05	124.09	2,770.07	2,709.92	60.15	46.052	
14,700.00	12,076.24	11,926.40	9,305.92	60.01	53.39	179.65	-2,406.05	124.70	2,769.95	2,708.68	61.27	45.208	
14,800.00	12,076.53	12,026.40	9,306.32	61.17	54.70	179.65	-2,506.05	125.31	2,769.83	2,707.42	62.41	44.381	
14,900.00	12,076.81	12,126.40	9,306.72	62.36	56.03	179.65	-2,606.04	125.93	2,769.71	2,706.14	63.57	43.571	
15,000.00	12,077.10	12,226.40	9,307.13	63.57	57.37	179.65	-2,706.04	126.54	2,769.59	2,704.85	64.74	42.780	
15,100.00	12,077.38	12,326.40	9,307.53	64.79	58.73	179.65	-2,806.04	127.16	2,769.47	2,703.54	65.93	42.006	
15,200.00	12,077.67	12,426.40	9,307.94	66.04	60.11	179.65	-2,906.04	127.77	2,769.35	2,702.21	67.14	41.250	
15,300.00	12,077.95	12,526.40	9,308.34	67.30	61.50	179.65	-3,006.03	128.38	2,769.23	2,700.88	68.36	40.512	
15,400.00	12,078.23	12,626.40	9,308.75	68.58	62.90	179.65	-3,106.03	129.00	2,769.11	2,699.52	69.59	39.792	
15,500.00	12,078.52	12,726.40	9,309.15	69.88	64.31	179.65	-3,206.03	129.61	2,768.99	2,698.16	70.83	39.091	
15,600.00	12,078.80	12,826.40	9,309.55	71.19	65.74	179.65	-3,306.03	130.22	2,768.87	2,696.78	72.09	38.407	
15,700.00	12,079.09	12,926.40	9,309.96	72.51	67.18	179.65	-3,406.02	130.84	2,768.75	2,695.39	73.36	37.740	
15,800.00	12,079.37	13,026.40	9,310.36	73.85	68.62	179.65	-3,506.02	131.45	2,768.63	2,693.99	74.65	37.091	
15,900.00	12,079.66	13,126.40	9,310.77	75.21	70.08	179.65	-3,606.02	132.06	2,768.51	2,692.57	75.94	36.458	
16,000.00	12,079.94	13,226.40	9,311.17	76.57	71.54	179.65	-3,706.01	132.68	2,768.39	2,691.15	77.24	35.842	
16,100.00	12,080.22	13,326.40	9,311.58	77.94	73.02	179.65	-3,806.01	133.29	2,768.27	2,689.72	78.55	35.242	
16,200.00	12,080.51	13,426.40	9,311.98	79.33	74.50	179.65	-3,906.01	133.90	2,768.15	2,688.28	79.87	34.658	
16,300.00	12,080.79	13,526.40	9,312.39	80.73	75.99	179.65	-4,006.01	134.52	2,768.03	2,686.83	81.20	34.089	
16,400.00	12,081.08	13,626.40	9,312.79	82.13	77.48	179.65	-4,106.00	135.13	2,767.91	2,685.37	82.54	33.535	
16,500.00	12,081.36	13,726.40	9,313.19	83.55	78.98	179.65	-4,206.00	135.74	2,767.79	2,683.91	83.88	32.996	
16,600.00	12,081.65	13,826.40	9,313.60	84.97	80.49	179.65	-4,306.00	136.36	2,767.67	2,682.43	85.24	32.471	
16,700.00	12,081.93	13,926.40	9,314.00	86.40	82.00	179.65	-4,405.99	136.97	2,767.55	2,680.95	86.60	31.959	
16,800.00	12,082.22	14,026.40	9,314.41	87.84	83.52	179.65	-4,505.99	137.58	2,767.43	2,679.47	87.96	31.462	
16,900.00	12,082.50	14,126.40	9,314.81	89.29	85.05	179.65	-4,605.99	138.20	2,767.31	2,677.97	89.34	30.977	
17,000.00	12,082.78	14,226.40	9,315.22	90.75	86.58	179.65	-4,705.99	138.81	2,767.19	2,676.47	90.72	30.504	
17,100.00	12,083.07	14,326.40	9,315.62	92.21	88.11	179.65	-4,805.98	139.42	2,767.07	2,674.97	92.10	30.044	
17,200.00	12,083.35	14,426.40	9,316.03	93.68	89.65	179.65	-4,905.98	140.04	2,766.95	2,673.46	93.49	29.596	
17,300.00	12,083.64	14,526.40	9,316.43	95.15	91.19	179.65	-5,005.98	140.65	2,766.83	2,671.94	94.89	29.159	
17,400.00	12,083.92	14,626.40	9,316.83	96.63	92.74	179.65	-5,105.98	141.26	2,766.71	2,670.42	96.29	28.733	
17,500.00	12,084.21	14,726.40	9,317.24	98.12	94.29	179.65	-5,205.97	141.88	2,766.59	2,668.89	97.70	28.318	
17,600.00	12,084.49	14,826.39	9,317.64	99.61	95.84	179.65	-5,305.97	142.49	2,766.47	2,667.36	99.11	27.913	
17,700.00	12,084.77	14,926.39	9,318.05	101.11	97.40	179.65	-5,405.97	143.11	2,766.35	2,665.82	100.53	27.519	
17,800.00	12,085.06	15,026.39	9,318.45	102.61	98.96	179.65	-5,505.96	143.72	2,766.23	2,664.28	101.95	27.134	
17,900.00	12,085.34	15,126.39	9,318.86	104.11	100.52	179.65	-5,605.96	144.33	2,766.11	2,662.74	103.37	26.759	
18,000.00	12,085.63	15,226.39	9,319.26	105.63	102.09	179.65	-5,705.96	144.95	2,765.99	2,661.19	104.80	26.393	
18,100.00	12,085.91	15,326.39	9,319.66	107.14	103.66	179.65	-5,805.96	145.56	2,765.87	2,659.64	106.23	26.036	
18,200.00	12,086.20	15,426.39	9,320.07	108.66	105.23	179.65	-5,905.95	146.17	2,765.75	2,658.08	107.67	25.687	
18,300.00	12,086.48	15,526.39	9,320.47	110.18	106.81	179.65	-6,005.95	146.79	2,765.63	2,656.52	109.11	25.347	
18,400.00	12,086.76	15,626.39	9,320.88	111.71	108.38	179.65	-6,105.95	147.40	2,765.51	2,654.96	110.55	25.015	
18,500.00	12,087.05	15,726.39	9,321.28	113.24	109.96	179.65	-6,205.94	148.01	2,765.39	2,653.39	112.00	24.691	
18,600.00	12,087.33	15,826.39	9,321.69	114.78	111.55	179.65	-6,305.94	148.63	2,765.27	2,651.82	113.45	24.374	
18,700.00	12,087.62	15,926.39	9,322.09	116.32	113.13	179.65	-6,405.94	149.24	2,765.15	2,650.25	114.90	24.065	
18,800.00	12,087.90	16,026.39	9,322.50	117.86	114.72	179.65	-6,505.94	149.85	2,765.03	2,648.67	116.36	23.763	
18,900.00	12,088.19	16,126.39	9,322.90	119.40	116.30	179.65	-6,605.93	150.47	2,764.91	2,647.09	117.82	23.467	
19,000.00	12,088.47	16,226.39	9,323.30	120.95	117.89	179.65	-6,705.93	151.08	2,764.79	2,645.51	119.28	23.179	
19,100.00	12,088.76	16,326.39	9,323.71	122.50	119.49	179.65	-6,805.93	151.69	2,764.67	2,643.92	120.75	22.897	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 515H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,200.00	12,089.04	16,426.39	9,324.11	124.05	121.08	179.65	-6,905.93	152.31	2,764.55	2,642.34	122.21	22.621	
19,300.00	12,089.32	16,526.39	9,324.52	125.61	122.68	179.65	-7,005.92	152.92	2,764.43	2,640.75	123.68	22.351	
19,400.00	12,089.61	16,626.39	9,324.92	127.17	124.27	179.65	-7,105.92	153.53	2,764.31	2,639.15	125.15	22.087	
19,500.00	12,089.89	16,726.39	9,325.33	128.73	125.87	179.65	-7,205.92	154.15	2,764.19	2,637.56	126.63	21.829	
19,600.00	12,090.18	16,826.39	9,325.73	130.29	127.47	179.65	-7,305.91	154.76	2,764.07	2,635.96	128.11	21.576	
19,700.00	12,090.46	16,926.39	9,326.14	131.86	129.07	179.65	-7,405.91	155.37	2,763.95	2,634.36	129.58	21.329	
19,800.00	12,090.75	17,026.39	9,326.54	133.42	130.68	179.65	-7,505.91	155.99	2,763.83	2,632.76	131.07	21.087	
19,900.00	12,091.03	17,126.39	9,326.94	134.99	132.28	179.65	-7,605.91	156.60	2,763.71	2,631.16	132.55	20.851	
20,000.00	12,091.31	17,226.39	9,327.35	136.57	133.89	179.65	-7,705.90	157.21	2,763.59	2,629.56	134.03	20.619	
20,100.00	12,091.60	17,326.39	9,327.75	138.14	135.49	179.65	-7,805.90	157.83	2,763.47	2,627.95	135.52	20.392	
20,200.00	12,091.88	17,426.39	9,328.16	139.72	137.10	179.65	-7,905.90	158.44	2,763.35	2,626.34	137.01	20.169	
20,300.00	12,092.17	17,526.39	9,328.56	141.29	138.71	179.65	-8,005.90	159.05	2,763.23	2,624.73	138.50	19.951	
20,400.00	12,092.45	17,626.39	9,328.97	142.87	140.32	179.65	-8,105.89	159.67	2,763.11	2,623.12	139.99	19.738	
20,500.00	12,092.74	17,726.39	9,329.37	144.45	141.93	179.65	-8,205.89	160.28	2,762.99	2,621.50	141.48	19.529	
20,600.00	12,093.02	17,826.39	9,329.77	146.04	143.55	179.65	-8,305.89	160.90	2,762.87	2,619.89	142.98	19.324	
20,700.00	12,093.31	17,926.39	9,330.18	147.62	145.16	179.65	-8,405.88	161.51	2,762.75	2,618.27	144.48	19.123	
20,800.00	12,093.59	18,026.39	9,330.58	149.21	146.77	179.65	-8,505.88	162.12	2,762.63	2,616.65	145.97	18.925	
20,900.00	12,093.87	18,126.39	9,330.99	150.80	148.39	179.65	-8,605.88	162.74	2,762.51	2,615.03	147.47	18.732	
21,000.00	12,094.16	18,226.39	9,331.39	152.39	150.01	179.65	-8,705.88	163.35	2,762.39	2,613.41	148.98	18.543	
21,100.00	12,094.44	18,326.39	9,331.80	153.98	151.62	179.65	-8,805.87	163.96	2,762.27	2,611.79	150.48	18.357	
21,200.00	12,094.73	18,426.39	9,332.20	155.57	153.24	179.65	-8,905.87	164.58	2,762.15	2,610.17	151.98	18.174	
21,300.00	12,095.01	18,526.39	9,332.61	157.16	154.86	179.65	-9,005.87	165.19	2,762.03	2,608.54	153.49	17.995	
21,400.00	12,095.30	18,626.39	9,333.01	158.76	156.48	179.65	-9,105.86	165.80	2,761.91	2,606.91	154.99	17.819	
21,500.00	12,095.58	18,726.39	9,333.41	160.35	158.10	179.65	-9,205.86	166.42	2,761.79	2,605.29	156.50	17.647	
21,600.00	12,095.86	18,826.39	9,333.82	161.95	159.72	179.65	-9,305.86	167.03	2,761.67	2,603.66	158.01	17.478	
21,700.00	12,096.15	18,926.39	9,334.22	163.55	161.35	179.65	-9,405.86	167.64	2,761.55	2,602.03	159.52	17.312	
21,800.00	12,096.43	19,026.39	9,334.63	165.15	162.97	179.65	-9,505.85	168.26	2,761.43	2,600.40	161.03	17.148	
21,900.00	12,096.72	19,126.39	9,335.03	166.75	164.59	179.65	-9,605.85	168.87	2,761.31	2,598.76	162.54	16.988	
22,000.00	12,097.00	19,226.39	9,335.44	168.35	166.22	179.65	-9,705.85	169.48	2,761.19	2,597.13	164.06	16.831	
22,100.00	12,097.29	19,326.39	9,335.84	169.96	167.84	179.65	-9,805.85	170.10	2,761.07	2,595.50	165.57	16.676	
22,172.71	12,097.49	19,399.10	9,336.13	171.12	169.02	179.65	-9,878.56	170.54	2,760.98	2,594.31	166.67	16.565	
22,175.33	12,097.50	19,390.56	9,336.10	171.16	168.88	0.00	-9,870.01	170.49	2,761.00	2,594.32	166.68	16.565	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 517H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.10	-0.10	0.00	0.00	-90.30	-0.16	-29.99	29.99				
100.00	100.00	100.10	99.90	0.13	0.13	-90.30	-0.16	-29.99	29.99	29.72	0.27	111.398	
200.00	200.00	200.10	199.90	0.49	0.49	-90.30	-0.16	-29.99	29.99	29.00	0.99	30.411	
300.00	300.00	300.10	299.90	0.85	0.85	-90.30	-0.16	-29.99	29.99	28.29	1.70	17.609	
400.00	400.00	400.10	399.90	1.21	1.21	-90.30	-0.16	-29.99	29.99	27.57	2.42	12.392	
500.00	500.00	500.10	499.90	1.57	1.57	-90.30	-0.16	-29.99	29.99	26.85	3.14	9.560	
600.00	600.00	600.10	599.90	1.93	1.93	-90.30	-0.16	-29.99	29.99	26.14	3.85	7.782	
700.00	700.00	700.10	699.90	2.29	2.29	-90.30	-0.16	-29.99	29.99	25.42	4.57	6.561	
800.00	800.00	800.10	799.90	2.64	2.64	-90.30	-0.16	-29.99	29.99	24.70	5.29	5.671	
900.00	900.00	900.10	899.90	3.00	3.00	-90.30	-0.16	-29.99	29.99	23.98	6.00	4.994	
1,000.00	1,000.00	1,000.10	999.90	3.36	3.36	-90.30	-0.16	-29.99	29.99	23.27	6.72	4.462	
1,100.00	1,100.00	1,100.10	1,099.90	3.72	3.72	-90.30	-0.16	-29.99	29.99	22.55	7.44	4.032	
1,200.00	1,200.00	1,200.10	1,199.90	4.08	4.08	-90.30	-0.16	-29.99	29.99	21.83	8.16	3.677	
1,300.00	1,300.00	1,300.10	1,299.90	4.44	4.44	-90.30	-0.16	-29.99	29.99	21.12	8.87	3.380	
1,400.00	1,400.00	1,400.10	1,399.90	4.79	4.79	-90.30	-0.16	-29.99	29.99	20.40	9.59	3.127	
1,500.00	1,500.00	1,500.10	1,499.90	5.15	5.15	-90.30	-0.16	-29.99	29.99	19.68	10.31	2.910	
1,600.00	1,600.00	1,600.10	1,599.90	5.51	5.51	-90.30	-0.16	-29.99	29.99	18.97	11.02	2.721	
1,700.00	1,700.00	1,700.10	1,699.90	5.87	5.87	-90.30	-0.16	-29.99	29.99	18.25	11.74	2.554	
1,800.00	1,800.00	1,800.10	1,799.90	6.23	6.23	-90.30	-0.16	-29.99	29.99	17.53	12.46	2.407	
1,900.00	1,900.00	1,900.10	1,899.90	6.59	6.59	-90.30	-0.16	-29.99	29.99	16.82	13.17	2.276	
2,000.00	2,000.00	2,000.10	1,999.90	6.95	6.95	-90.30	-0.16	-29.99	29.99	16.10	13.89	2.159	
2,100.00	2,100.00	2,100.10	2,099.90	7.30	7.30	-90.30	-0.16	-29.99	29.99	15.38	14.61	2.053	
2,200.00	2,200.00	2,200.10	2,199.90	7.66	7.66	-90.30	-0.16	-29.99	29.99	14.66	15.33	1.957	
2,300.00	2,300.00	2,300.10	2,299.90	8.02	8.02	-90.30	-0.16	-29.99	29.99	13.95	16.04	1.869	
2,400.00	2,400.00	2,400.10	2,399.90	8.38	8.38	-90.30	-0.16	-29.99	29.99	13.23	16.76	1.789	
2,500.00	2,500.00	2,499.90	2,499.90	8.74	8.74	-90.30	-0.16	-29.99	29.99	12.51	17.48	1.716 CC	
2,600.00	2,599.99	2,599.69	2,599.69	9.10	9.09	-90.41	0.64	-30.34	30.15	11.96	18.19	1.658	
2,700.00	2,699.96	2,699.49	2,699.45	9.45	9.45	-90.72	3.03	-31.37	30.65	11.75	18.90	1.622 ES	
2,800.00	2,799.86	2,799.28	2,799.14	9.81	9.81	-91.22	7.01	-33.11	31.48	11.87	19.61	1.605	
2,900.00	2,899.68	2,899.06	2,898.74	10.17	10.16	-91.88	12.58	-35.53	32.64	12.32	20.32	1.606	
3,000.00	2,999.37	2,998.84	2,998.21	10.53	10.52	-92.65	19.74	-38.64	34.15	13.11	21.04	1.623	
3,100.00	3,098.90	3,098.60	3,097.51	10.89	10.88	-93.51	28.49	-42.45	35.99	14.24	21.75	1.655	
3,200.00	3,198.26	3,198.36	3,196.63	11.25	11.24	-94.43	38.82	-46.94	38.17	15.70	22.47	1.699	
3,300.06	3,297.46	3,302.04	3,295.58	11.62	11.62	-95.36	50.74	-52.13	40.70	17.49	23.21	1.754	
3,400.00	3,396.43	3,401.94	3,394.51	11.98	11.99	-96.15	63.49	-57.67	43.42	19.47	23.95	1.813	
3,500.00	3,495.46	3,501.98	3,493.50	12.36	12.36	-96.86	76.25	-63.22	46.14	21.45	24.69	1.869	
3,600.00	3,594.48	3,602.01	3,592.49	12.73	12.74	-97.48	89.01	-68.77	48.87	23.43	25.44	1.921	
3,700.00	3,693.51	3,702.05	3,691.48	13.11	13.12	-98.04	101.77	-74.32	51.60	25.41	26.20	1.970	
3,800.00	3,792.54	3,802.09	3,790.46	13.49	13.50	-98.54	114.53	-79.87	54.34	27.39	26.95	2.016	
3,900.00	3,891.56	3,902.13	3,889.45	13.87	13.88	-98.99	127.29	-85.42	57.09	29.37	27.72	2.060	
4,000.00	3,990.59	4,002.17	3,988.44	14.25	14.26	-99.40	140.05	-90.97	59.83	31.35	28.49	2.100	
4,100.00	4,089.62	4,097.79	4,087.43	14.64	14.63	-99.78	152.81	-96.52	62.58	33.34	29.24	2.140	
4,200.00	4,188.64	4,202.25	4,186.42	15.03	15.04	-100.12	165.57	-102.07	65.33	35.30	30.03	2.175	
4,300.00	4,287.67	4,302.28	4,285.41	15.42	15.43	-100.43	178.32	-107.62	68.09	37.28	30.81	2.210	
4,400.00	4,386.70	4,402.32	4,384.39	15.81	15.82	-100.73	191.08	-113.17	70.84	39.25	31.59	2.243	
4,500.00	4,485.72	4,502.36	4,483.38	16.20	16.21	-100.99	203.84	-118.72	73.60	41.23	32.37	2.274	
4,600.00	4,584.75	4,602.40	4,582.37	16.59	16.60	-101.24	216.60	-124.27	76.36	43.20	33.16	2.303	
4,700.00	4,683.78	4,702.44	4,681.36	16.98	17.00	-101.48	229.36	-129.82	79.12	45.17	33.95	2.331	
4,800.00	4,782.80	4,802.48	4,780.35	17.38	17.39	-101.69	242.12	-135.37	81.88	47.14	34.74	2.357	
4,900.00	4,881.83	4,902.52	4,879.34	17.78	17.79	-101.90	254.88	-140.91	84.64	49.11	35.53	2.382	
5,000.00	4,980.86	5,002.55	4,978.32	18.17	18.19	-102.09	267.64	-146.46	87.41	51.08	36.32	2.406	
5,100.00	5,079.88	5,102.59	5,077.31	18.57	18.59	-102.26	280.40	-152.01	90.17	53.05	37.12	2.429	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 517H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.00	5,178.91	5,197.37	5,176.30	18.97	18.97	-102.43	293.16	-157.56	92.94	55.04	37.89	2.453	
5,300.00	5,277.94	5,302.67	5,275.29	19.37	19.39	-102.59	305.92	-163.11	95.70	56.99	38.71	2.472	
5,400.00	5,376.96	5,402.71	5,374.28	19.77	19.79	-102.74	318.67	-168.66	98.47	58.96	39.51	2.492	
5,500.00	5,475.99	5,502.75	5,473.27	20.17	20.19	-102.88	331.43	-174.21	101.24	60.92	40.31	2.511	
5,600.00	5,575.02	5,602.79	5,572.25	20.57	20.59	-103.01	344.19	-179.76	104.00	62.89	41.12	2.529	
5,690.40	5,664.54	5,687.58	5,661.74	20.93	20.93	-103.13	355.73	-184.78	106.51	64.69	41.82	2.547	
5,700.00	5,674.04	5,702.83	5,671.24	20.97	21.00	-103.13	356.95	-185.31	106.77	64.85	41.92	2.547	
5,800.00	5,773.21	5,802.87	5,770.23	21.37	21.40	-102.72	369.71	-190.86	109.53	66.81	42.72	2.564	
5,900.00	5,872.58	5,897.06	5,869.18	21.76	21.78	-101.43	382.47	-196.41	112.30	68.82	43.48	2.583	
6,000.00	5,972.14	5,997.41	5,968.67	22.15	22.18	-99.73	394.50	-201.64	115.00	70.75	44.25	2.599	
6,100.00	6,071.84	6,097.84	6,068.46	22.52	22.58	-98.08	404.94	-206.18	117.44	72.44	45.00	2.610	
6,200.00	6,171.66	6,198.35	6,168.50	22.89	22.96	-96.47	413.78	-210.03	119.63	73.90	45.73	2.616	
6,300.00	6,271.57	6,298.93	6,268.76	23.25	23.34	-94.88	421.01	-213.17	121.58	75.12	46.45	2.617	
6,400.00	6,371.54	6,399.57	6,369.22	23.60	23.71	-93.31	426.63	-215.62	123.26	76.11	47.15	2.614	
6,490.46	6,462.00	6,490.68	6,460.24	23.92	24.04	-91.90	430.32	-217.22	124.57	76.81	47.77	2.608	
6,500.00	6,471.54	6,500.29	6,469.84	23.95	24.08	-91.75	430.64	-217.36	124.70	76.87	47.83	2.607	
6,600.00	6,571.54	6,601.09	6,570.61	24.29	24.43	-90.65	433.02	-218.40	125.68	77.17	48.51	2.591	
6,700.00	6,671.54	6,701.93	6,671.44	24.63	24.78	-90.30	433.78	-218.73	126.00	76.81	49.19	2.561	
6,800.00	6,771.54	6,801.93	6,771.44	24.98	25.12	-90.30	433.78	-218.73	126.00	76.12	49.88	2.526	
6,900.00	6,871.54	6,901.93	6,871.44	25.32	25.46	-90.30	433.78	-218.73	126.00	75.44	50.56	2.492	
7,000.00	6,971.54	7,001.93	6,971.44	25.66	25.80	-90.30	433.78	-218.73	126.00	74.75	51.25	2.458	
7,100.00	7,071.54	7,101.93	7,071.44	26.01	26.14	-90.30	433.78	-218.73	126.00	74.06	51.94	2.426	
7,200.00	7,171.54	7,201.93	7,171.44	26.35	26.49	-90.30	433.78	-218.73	126.00	73.37	52.63	2.394	
7,300.00	7,271.54	7,301.93	7,271.44	26.70	26.83	-90.30	433.78	-218.73	126.00	72.68	53.32	2.363	
7,400.00	7,371.54	7,401.93	7,371.44	27.04	27.17	-90.30	433.78	-218.73	126.00	71.99	54.01	2.333	
7,500.00	7,471.54	7,501.93	7,471.44	27.39	27.52	-90.30	433.78	-218.73	126.00	71.30	54.70	2.303	
7,600.00	7,571.54	7,601.93	7,571.44	27.73	27.86	-90.30	433.78	-218.73	126.00	70.61	55.39	2.275	
7,700.00	7,671.54	7,701.93	7,671.44	28.08	28.21	-90.30	433.78	-218.73	126.00	69.91	56.09	2.247	
7,800.00	7,771.54	7,801.93	7,771.44	28.43	28.55	-90.30	433.78	-218.73	126.00	69.22	56.78	2.219	
7,900.00	7,871.54	7,901.93	7,871.44	28.77	28.90	-90.30	433.78	-218.73	126.00	68.53	57.47	2.192	
8,000.00	7,971.54	8,001.93	7,971.44	29.12	29.24	-90.30	433.78	-218.73	126.00	67.83	58.17	2.166	
8,100.00	8,071.54	8,101.93	8,071.44	29.47	29.59	-90.30	433.78	-218.73	126.00	67.14	58.86	2.141	
8,200.00	8,171.54	8,201.93	8,171.44	29.82	29.93	-90.30	433.78	-218.73	126.00	66.44	59.56	2.116	
8,300.00	8,271.54	8,301.93	8,271.44	30.16	30.28	-90.30	433.78	-218.73	126.00	65.75	60.25	2.091	
8,400.00	8,371.54	8,401.93	8,371.44	30.51	30.63	-90.30	433.78	-218.73	126.00	65.05	60.95	2.067	
8,500.00	8,471.54	8,501.93	8,471.44	30.86	30.97	-90.30	433.78	-218.73	126.00	64.35	61.65	2.044	
8,600.00	8,571.54	8,601.93	8,571.44	31.21	31.32	-90.30	433.78	-218.73	126.00	63.66	62.34	2.021	
8,700.00	8,671.54	8,701.93	8,671.44	31.56	31.67	-90.30	433.78	-218.73	126.00	62.96	63.04	1.999	
8,800.00	8,771.54	8,801.93	8,771.44	31.91	32.02	-90.30	433.78	-218.73	126.00	62.26	63.74	1.977	
8,900.00	8,871.54	8,901.93	8,871.44	32.26	32.37	-90.30	433.78	-218.73	126.00	61.56	64.44	1.955	
9,000.00	8,971.54	9,001.93	8,971.44	32.61	32.71	-90.30	433.78	-218.73	126.00	60.86	65.14	1.934	
9,100.00	9,071.54	9,101.93	9,071.44	32.96	33.06	-90.30	433.78	-218.73	126.00	60.16	65.84	1.914	
9,200.00	9,171.54	9,201.93	9,171.44	33.31	33.41	-90.30	433.78	-218.73	126.00	59.46	66.54	1.894	
9,300.00	9,271.54	9,301.93	9,271.44	33.66	33.76	-90.30	433.78	-218.73	126.00	58.76	67.24	1.874	
9,400.00	9,371.54	9,401.93	9,371.44	34.01	34.11	-90.30	433.78	-218.73	126.00	58.06	67.94	1.855	
9,500.00	9,471.54	9,501.93	9,471.44	34.36	34.46	-90.30	433.78	-218.73	126.00	57.36	68.64	1.836	
9,600.00	9,571.54	9,601.93	9,571.44	34.71	34.81	-90.30	433.78	-218.73	126.00	56.66	69.34	1.817	
9,700.00	9,671.54	9,701.93	9,671.44	35.06	35.16	-90.30	433.78	-218.73	126.00	55.96	70.04	1.799	
9,800.00	9,771.54	9,801.93	9,771.44	35.41	35.51	-90.30	433.78	-218.73	126.00	55.26	70.74	1.781	
9,900.00	9,871.54	9,901.93	9,871.44	35.76	35.86	-90.30	433.78	-218.73	126.00	54.56	71.44	1.764	
10,000.00	9,971.54	10,001.93	9,971.44	36.11	36.21	-90.30	433.78	-218.73	126.00	53.85	72.15	1.746	
10,100.00	10,071.54	10,101.93	10,071.44	36.46	36.56	-90.30	433.78	-218.73	126.00	53.15	72.85	1.730	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 517H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.00	10,171.54	10,201.93	10,171.44	36.81	36.91	-90.30	433.78	-218.73	126.00	52.45	73.55	1.713	
10,300.00	10,271.54	10,301.93	10,271.44	37.17	37.26	-90.30	433.78	-218.73	126.00	51.75	74.25	1.697	
10,400.00	10,371.54	10,401.93	10,371.44	37.52	37.61	-90.30	433.78	-218.73	126.00	51.04	74.96	1.681	
10,500.00	10,471.54	10,501.93	10,471.44	37.87	37.96	-90.30	433.78	-218.73	126.00	50.34	75.66	1.665	
10,600.00	10,571.54	10,601.93	10,571.44	38.22	38.31	-90.30	433.78	-218.73	126.00	49.63	76.37	1.650	
10,700.00	10,671.54	10,701.93	10,671.44	38.57	38.66	-90.30	433.78	-218.73	126.00	48.93	77.07	1.635	
10,800.00	10,771.54	10,801.93	10,771.44	38.93	39.01	-90.30	433.78	-218.73	126.00	48.23	77.77	1.620	
10,900.00	10,871.54	10,901.93	10,871.44	39.28	39.37	-90.30	433.78	-218.73	126.00	47.52	78.48	1.606	
11,000.00	10,971.54	11,001.93	10,971.44	39.63	39.72	-90.30	433.78	-218.73	126.00	46.82	79.18	1.591	
11,100.00	11,071.54	11,101.93	11,071.44	39.98	40.07	-90.30	433.78	-218.73	126.00	46.11	79.89	1.577	
11,200.00	11,171.54	11,201.93	11,171.44	40.34	40.42	-90.30	433.78	-218.73	126.00	45.41	80.59	1.563	
11,300.00	11,271.54	11,301.93	11,271.44	40.69	40.77	-90.30	433.78	-218.73	126.00	44.70	81.30	1.550	
11,400.00	11,371.54	11,401.93	11,371.44	41.04	41.13	-90.30	433.78	-218.73	126.00	43.99	82.01	1.536	
11,500.00	11,471.54	11,501.93	11,471.44	41.40	41.48	-90.30	433.78	-218.73	126.00	43.29	82.71	1.523	
11,525.27	11,496.81	11,527.20	11,496.71	41.48	41.57	-90.30	433.78	-218.73	126.00	43.11	82.89	1.520	
11,550.00	11,521.53	11,551.92	11,521.43	41.57	41.65	-90.07	433.78	-218.73	126.10	43.04	83.06	1.518 SF	
11,600.00	11,571.33	11,601.72	11,571.23	41.72	41.83	-88.15	433.78	-218.73	126.99	43.64	83.36	1.523	
11,650.00	11,620.56	11,650.94	11,620.46	41.85	42.00	-84.40	433.78	-218.73	129.20	45.58	83.62	1.545	
11,700.00	11,668.84	11,700.77	11,668.74	41.98	42.18	-79.08	433.78	-218.73	133.46	49.62	83.84	1.592	
11,750.00	11,715.82	11,746.21	11,715.72	42.10	42.34	-72.62	433.78	-218.73	140.73	56.71	84.02	1.675	
11,800.00	11,761.13	11,808.48	11,761.03	42.20	42.56	-65.60	433.78	-218.73	151.90	67.66	84.24	1.803	
11,850.00	11,804.43	11,834.82	11,804.33	42.30	42.65	-58.62	433.78	-218.73	167.61	83.27	84.33	1.987	
11,900.00	11,845.39	11,875.78	11,845.29	42.39	42.80	-52.16	433.78	-218.73	188.11	103.63	84.48	2.227	
11,950.00	11,883.69	11,918.93	11,888.44	42.47	42.94	-46.51	433.56	-218.68	213.21	128.62	84.59	2.520	
12,000.00	11,919.06	11,975.77	11,945.09	42.54	43.12	-42.20	429.24	-217.84	240.43	156.11	84.32	2.851	
12,050.00	11,951.20	12,038.74	12,006.98	42.61	43.29	-39.16	418.05	-215.67	268.25	184.78	83.47	3.214	
12,100.00	11,979.89	12,109.53	12,074.60	42.68	43.47	-37.22	397.61	-211.70	295.85	214.01	81.84	3.615	
12,150.00	12,004.90	12,190.28	12,147.90	42.75	43.64	-36.38	364.52	-205.26	322.36	243.19	79.17	4.072	
12,200.00	12,026.05	12,283.44	12,225.59	42.82	43.80	-36.89	314.24	-195.49	346.76	271.52	75.23	4.609	
12,250.00	12,043.17	12,391.33	12,303.81	42.89	43.96	-39.51	241.52	-181.35	367.79	297.80	69.99	5.255	
12,300.00	12,056.13	12,300.00	12,361.55	42.97	43.86	-43.17	163.61	-166.21	383.95	318.37	65.58	5.855	
12,350.00	12,064.83	12,652.53	12,425.77	43.05	44.29	-62.92	17.30	-137.77	393.82	334.76	59.06	6.668	
12,400.00	12,069.21	12,797.46	12,445.37	43.13	44.49	-99.34	-123.29	-110.44	396.12	338.44	57.69	6.867	
12,423.64	12,069.77	12,827.92	12,445.20	43.17	44.54	-102.50	-153.18	-104.63	395.43	337.60	57.84	6.837	
12,500.00	12,069.98	12,904.27	12,444.55	43.32	44.69	-102.49	-228.13	-90.06	394.60	336.55	58.06	6.797	
12,600.00	12,070.27	13,004.26	12,443.69	43.58	44.96	-102.49	-326.28	-70.99	393.52	335.11	58.40	6.738	
12,667.68	12,070.46	13,071.94	12,443.10	43.79	45.18	-102.48	-392.71	-58.07	392.78	334.11	58.67	6.695	
12,700.00	12,070.55	13,104.26	12,442.83	43.90	45.28	-102.48	-424.43	-51.91	392.37	333.58	58.79	6.674	
12,800.00	12,070.84	13,204.20	12,441.97	44.29	45.68	-102.52	-522.54	-32.84	390.39	331.31	59.07	6.608	
12,900.00	12,071.12	13,303.99	12,441.11	44.73	46.13	-102.59	-620.49	-13.80	387.38	328.18	59.20	6.544	
13,000.00	12,071.41	13,403.49	12,440.25	45.22	46.65	-102.74	-718.16	5.19	383.49	324.32	59.16	6.482	
13,100.00	12,071.69	13,502.59	12,439.40	45.76	47.22	-102.99	-815.43	24.10	378.97	319.98	58.99	6.424	
13,200.00	12,071.98	13,601.17	12,438.55	46.34	47.84	-103.43	-912.19	42.90	374.18	315.44	58.74	6.370	
13,200.11	12,071.98	13,601.27	12,438.55	46.34	47.84	-103.43	-912.30	42.92	374.17	315.43	58.74	6.370	
13,300.00	12,072.26	13,699.44	12,437.71	46.97	48.51	-104.21	-1,008.66	61.66	369.82	311.26	58.56	6.315	
13,400.00	12,072.55	13,796.79	12,436.87	47.64	49.23	-104.30	-1,104.37	79.40	366.44	307.85	58.59	6.255	
13,500.00	12,072.83	13,894.69	12,436.02	48.36	49.98	-105.16	-1,201.16	94.09	364.08	305.18	58.91	6.181	
13,600.00	12,073.12	13,993.46	12,435.17	49.13	50.78	-109.51	-1,299.25	105.55	362.39	302.94	59.45	6.096	
13,700.00	12,073.40	14,092.86	12,434.31	49.94	51.60	-125.41	-1,398.31	113.66	361.06	300.93	60.13	6.005	
13,800.00	12,073.68	14,192.67	12,433.45	50.80	52.46	-166.26	-1,498.00	118.35	359.88	298.99	60.89	5.911	
13,900.00	12,073.97	14,307.36	12,432.59	51.69	53.47	179.65	-1,597.95	119.74	358.73	297.00	61.73	5.811	
14,000.00	12,074.25	14,392.64	12,431.73	52.62	54.25	179.65	-1,697.94	120.36	357.59	295.10	62.49	5.723	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 517H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,100.00	12,074.54	14,507.37	12,430.87	53.58	55.34	179.65	-1,797.93	120.97	356.44	293.05	63.39	5.623	
14,200.00	12,074.82	14,607.38	12,430.01	54.58	56.32	179.65	-1,897.92	121.58	355.30	291.04	64.26	5.529	
14,300.00	12,075.11	14,692.62	12,429.15	55.61	57.19	179.65	-1,997.91	122.20	354.15	289.06	65.09	5.441	
14,400.00	12,075.39	14,807.39	12,428.29	56.67	58.38	179.65	-2,097.89	122.81	353.01	286.93	66.08	5.342	
14,500.00	12,075.68	14,892.60	12,427.42	57.76	59.30	179.65	-2,197.88	123.42	351.86	284.91	66.95	5.255	
14,600.00	12,075.96	15,007.40	12,426.56	58.87	60.56	179.65	-2,297.87	124.04	350.72	282.72	67.99	5.158	
14,700.00	12,076.24	15,107.41	12,425.70	60.01	61.68	179.65	-2,397.86	124.65	349.57	280.59	68.98	5.067	
14,800.00	12,076.53	15,192.58	12,424.84	61.17	62.66	179.65	-2,497.84	125.26	348.43	278.51	69.92	4.983	
14,900.00	12,076.81	15,307.42	12,423.98	62.36	64.00	179.65	-2,597.83	125.88	347.28	276.25	71.03	4.889	
15,000.00	12,077.10	15,392.57	12,423.12	63.57	65.01	179.65	-2,697.82	126.49	346.14	274.14	72.00	4.807	
15,100.00	12,077.38	15,507.44	12,422.26	64.79	66.41	179.65	-2,797.81	127.10	344.99	271.84	73.15	4.716	
15,200.00	12,077.67	15,607.44	12,421.40	66.04	67.64	179.65	-2,897.80	127.72	343.85	269.61	74.24	4.632	
15,300.00	12,077.95	15,692.55	12,420.54	67.30	68.70	179.65	-2,997.78	128.33	342.70	267.44	75.26	4.553	
15,400.00	12,078.23	15,807.46	12,419.68	68.58	70.15	179.65	-3,097.77	128.95	341.56	265.09	76.47	4.467	
15,500.00	12,078.52	15,892.54	12,418.82	69.88	71.24	179.65	-3,197.76	129.56	340.41	262.90	77.52	4.391	
15,600.00	12,078.80	16,007.47	12,417.96	71.19	72.73	179.65	-3,297.75	130.17	339.27	260.52	78.75	4.308	
15,700.00	12,079.09	16,107.48	12,417.10	72.51	74.04	179.65	-3,397.74	130.79	338.12	258.20	79.92	4.231	
15,800.00	12,079.37	16,192.52	12,416.24	73.85	75.17	179.65	-3,497.72	131.40	336.98	255.97	81.01	4.160	
15,900.00	12,079.66	16,307.49	12,415.38	75.21	76.71	179.65	-3,597.71	132.01	335.83	253.54	82.29	4.081	
16,000.00	12,079.94	16,392.50	12,414.52	76.57	77.85	179.65	-3,697.70	132.63	334.69	251.28	83.41	4.013	
16,100.00	12,080.22	16,507.50	12,413.66	77.94	79.42	179.65	-3,797.69	133.24	333.54	248.83	84.71	3.937	
16,200.00	12,080.51	16,607.51	12,412.80	79.33	80.79	179.65	-3,897.67	133.85	332.40	246.46	85.94	3.868	
16,300.00	12,080.79	16,692.48	12,411.94	80.73	81.97	179.65	-3,997.66	134.47	331.26	244.17	87.09	3.804	
16,400.00	12,081.08	16,807.52	12,411.08	82.13	83.57	179.65	-4,097.65	135.08	330.11	241.68	88.43	3.733	
16,500.00	12,081.36	16,892.47	12,410.22	83.55	84.76	179.65	-4,197.64	135.69	328.97	239.37	89.60	3.672	
16,600.00	12,081.65	17,007.54	12,409.35	84.97	86.38	179.65	-4,297.63	136.31	327.82	236.86	90.96	3.604	
16,700.00	12,081.93	17,107.54	12,408.49	86.40	87.80	179.65	-4,397.61	136.92	326.68	234.44	92.24	3.542	
16,800.00	12,082.22	17,192.45	12,407.63	87.84	89.02	179.65	-4,497.60	137.53	325.53	232.10	93.43	3.484	
16,900.00	12,082.50	17,307.56	12,406.77	89.29	90.67	179.65	-4,597.59	138.15	324.39	229.56	94.82	3.421	
17,000.00	12,082.78	17,392.44	12,405.91	90.75	91.90	179.65	-4,697.58	138.76	323.24	227.21	96.03	3.366	
17,100.00	12,083.07	17,507.57	12,405.05	92.21	93.57	179.65	-4,797.57	139.37	322.10	224.66	97.44	3.306	
17,200.00	12,083.35	17,607.57	12,404.19	93.68	95.02	179.65	-4,897.55	139.99	320.95	222.19	98.76	3.250	
17,300.00	12,083.64	17,692.42	12,403.33	95.15	96.27	179.65	-4,997.54	140.60	319.81	219.82	99.99	3.199	
17,400.00	12,083.92	17,807.59	12,402.47	96.63	97.96	179.65	-5,097.53	141.21	318.66	217.24	101.42	3.142	
17,500.00	12,084.21	17,892.41	12,401.61	98.12	99.21	179.65	-5,197.52	141.83	317.52	214.86	102.66	3.093	
17,600.00	12,084.49	18,007.60	12,400.75	99.61	100.92	179.65	-5,297.50	142.44	316.37	212.26	104.11	3.039	
17,700.00	12,084.77	18,107.61	12,399.89	101.11	102.41	179.65	-5,397.49	143.05	315.23	209.77	105.46	2.989	
17,800.00	12,085.06	18,192.39	12,399.03	102.61	103.67	179.65	-5,497.48	143.67	314.08	207.37	106.72	2.943	
17,900.00	12,085.34	18,307.62	12,398.17	104.11	105.40	179.65	-5,597.47	144.28	312.94	204.75	108.18	2.893	
18,000.00	12,085.63	18,392.37	12,397.31	105.63	106.67	179.65	-5,697.46	144.89	311.79	202.34	109.45	2.849	
18,100.00	12,085.91	18,507.63	12,396.45	107.14	108.41	179.65	-5,797.44	145.51	310.65	199.72	110.93	2.800	
18,200.00	12,086.20	18,607.64	12,395.59	108.66	109.92	179.65	-5,897.43	146.12	309.50	197.19	112.31	2.756	
18,300.00	12,086.48	18,692.35	12,394.73	110.18	111.20	179.65	-5,997.42	146.73	308.36	194.77	113.59	2.715	
18,400.00	12,086.76	18,807.65	12,393.87	111.71	112.95	179.65	-6,097.41	147.35	307.21	192.13	115.09	2.669	
18,500.00	12,087.05	18,892.34	12,393.01	113.24	114.24	179.65	-6,197.40	147.96	306.07	189.69	116.37	2.630	
18,600.00	12,087.33	19,007.67	12,392.15	114.78	116.00	179.65	-6,297.38	148.57	304.92	187.04	117.88	2.587	
18,700.00	12,087.62	19,107.67	12,391.29	116.32	117.53	179.65	-6,397.37	149.19	303.78	184.50	119.28	2.547	
18,800.00	12,087.90	19,192.32	12,390.42	117.86	118.83	179.65	-6,497.36	149.80	302.63	182.05	120.58	2.510	
18,900.00	12,088.19	19,307.69	12,389.56	119.40	120.60	179.65	-6,597.35	150.41	301.49	179.39	122.10	2.469	
19,000.00	12,088.47	19,392.31	12,388.70	120.95	121.91	179.65	-6,697.34	151.03	300.34	176.94	123.41	2.434	
19,100.00	12,088.76	19,507.70	12,387.84	122.50	123.69	179.65	-6,797.32	151.64	299.20	174.26	124.93	2.395	
19,200.00	12,089.04	19,607.71	12,386.98	124.05	125.23	179.65	-6,897.31	152.25	298.05	171.70	126.36	2.359	

ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Cotton Draw Unit - 517H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

urvey Program: 0-MWD — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,300.00	12,089.32	19,692.29	12,386.12	125.61	126.54	179.65	-6,997.30	152.87	296.91	169.24	127.67	2.326	
19,400.00	12,089.61	19,807.72	12,385.26	127.17	128.34	179.65	-7,097.29	153.48	295.76	166.55	129.21	2.289	
19,500.00	12,089.89	19,892.28	12,384.40	128.73	129.65	179.65	-7,197.27	154.09	294.62	164.09	130.53	2.257	
19,600.00	12,090.18	20,007.73	12,383.54	130.29	131.45	179.65	-7,297.26	154.71	293.47	161.39	132.08	2.222	
19,700.00	12,090.46	20,107.74	12,382.68	131.86	133.01	179.65	-7,397.25	155.32	292.33	158.81	133.52	2.189	
19,800.00	12,090.75	20,192.26	12,381.82	133.42	134.33	179.65	-7,497.24	155.93	291.18	156.34	134.85	2.159	
19,900.00	12,091.03	20,307.75	12,380.96	134.99	136.13	179.65	-7,597.23	156.55	290.04	153.64	136.40	2.126	
20,000.00	12,091.31	20,392.24	12,380.10	136.57	137.46	179.65	-7,697.21	157.16	288.89	151.16	137.74	2.097	
20,100.00	12,091.60	20,507.76	12,379.24	138.14	139.27	179.65	-7,797.20	157.77	287.75	148.45	139.30	2.066	
20,200.00	12,091.88	20,607.77	12,378.38	139.72	140.84	179.65	-7,897.19	158.39	286.61	145.85	140.75	2.036	
20,300.00	12,092.17	20,692.22	12,377.52	141.29	142.17	179.65	-7,997.18	159.00	285.46	143.37	142.09	2.009	
20,400.00	12,092.45	20,807.78	12,376.66	142.87	143.98	179.65	-8,097.17	159.61	284.32	140.65	143.66	1.979	
20,500.00	12,092.74	20,892.21	12,375.80	144.45	145.31	179.65	-8,197.15	160.23	283.17	138.16	145.01	1.953	
20,600.00	12,093.02	21,007.80	12,374.94	146.04	147.14	179.65	-8,297.14	160.84	282.03	135.44	146.59	1.924	
20,700.00	12,093.31	21,107.80	12,374.08	147.62	148.72	179.65	-8,397.13	161.46	280.88	132.83	148.05	1.897	
20,800.00	12,093.59	21,192.19	12,373.22	149.21	150.05	179.65	-8,497.12	162.07	279.74	130.33	149.40	1.872	
20,900.00	12,093.87	21,307.82	12,372.35	150.80	151.88	179.65	-8,597.10	162.68	278.59	127.61	150.98	1.845	
21,000.00	12,094.16	21,392.18	12,371.49	152.39	153.22	179.65	-8,697.09	163.30	277.45	125.11	152.34	1.821	
21,100.00	12,094.44	21,507.83	12,370.63	153.98	155.05	179.65	-8,797.08	163.91	276.30	122.37	153.93	1.795	
21,200.00	12,094.73	21,607.84	12,369.77	155.57	156.64	179.65	-8,897.07	164.52	275.16	119.76	155.40	1.771	
21,300.00	12,095.01	21,692.16	12,368.91	157.16	157.98	179.65	-8,997.06	165.14	274.01	117.25	156.76	1.748	
21,400.00	12,095.30	21,807.85	12,368.05	158.76	159.82	179.65	-9,097.04	165.75	272.87	114.51	158.35	1.723	
21,500.00	12,095.58	21,892.14	12,367.19	160.35	161.16	179.65	-9,197.03	166.36	271.72	112.00	159.72	1.701	
21,600.00	12,095.86	22,007.86	12,366.33	161.95	163.01	179.65	-9,297.02	166.98	270.58	109.26	161.32	1.677	
21,700.00	12,096.15	22,107.87	12,365.47	163.55	164.60	179.65	-9,397.01	167.59	269.43	106.63	162.80	1.655	
21,800.00	12,096.43	22,192.12	12,364.61	165.15	165.94	179.65	-9,497.00	168.20	268.29	104.12	164.17	1.634	
21,900.00	12,096.72	22,307.88	12,363.75	166.75	167.79	179.65	-9,596.98	168.82	267.14	101.37	165.77	1.612	
22,000.00	12,097.00	22,392.11	12,362.89	168.35	169.14	179.65	-9,696.97	169.43	266.00	98.86	167.14	1.591	
22,100.00	12,097.29	22,492.10	12,362.03	169.96	170.74	179.65	-9,796.96	170.04	264.85	96.23	168.63	1.571	
22,175.33	12,097.50	22,567.43	12,361.38	171.16	171.81	179.65	-9,872.28	170.50	263.99	94.49	169.50	1.557	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
WWW.MSENERGYSERVICES.COM

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 211- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	68.68	299.81	768.16	824.60				
100.00	100.00	91.96	91.95	0.13	0.15	68.68	299.90	768.57	825.05	824.76	0.28	2,934.421	
200.00	200.00	184.45	184.44	0.49	0.29	68.70	300.18	769.81	826.40	825.62	0.78	1,052.954	
300.00	300.00	291.67	291.64	0.85	0.62	68.71	300.62	771.49	828.03	826.56	1.47	562.088	
400.00	400.00	393.63	393.60	1.21	0.99	68.71	300.89	772.09	828.67	826.47	2.20	377.367	
500.00	500.00	491.48	491.45	1.57	1.34	68.72	301.04	772.90	829.50	826.59	2.90	285.615	
600.00	600.00	589.33	589.29	1.93	1.69	68.75	301.07	774.03	830.59	826.97	3.61	229.921	
700.00	700.00	687.17	687.12	2.29	2.04	68.79	300.98	775.48	831.93	827.61	4.32	192.551	
800.00	800.00	786.12	786.06	2.64	2.39	68.84	300.78	777.25	833.53	828.49	5.03	165.630	
900.00	900.00	890.06	889.99	3.00	2.76	68.91	300.45	778.90	834.89	829.13	5.76	144.904	
1,000.00	1,000.00	994.02	993.93	3.36	3.13	68.96	300.01	780.06	835.78	829.29	6.49	128.758	
1,100.00	1,100.00	1,091.85	1,091.76	3.72	3.48	69.03	299.42	781.16	836.61	829.41	7.20	116.224	
1,200.00	1,200.00	1,190.36	1,190.25	4.08	3.83	69.11	298.61	782.52	837.61	829.71	7.91	105.922	
1,300.00	1,300.00	1,290.03	1,289.91	4.44	4.19	69.21	297.63	784.11	838.75	830.13	8.62	97.273	
1,400.00	1,400.00	1,390.42	1,390.28	4.79	4.55	69.31	296.68	785.66	839.86	830.52	9.34	89.915	
1,500.00	1,500.00	1,490.80	1,490.65	5.15	4.91	69.40	295.80	787.13	840.92	830.87	10.06	83.602	
1,600.00	1,600.00	1,591.19	1,591.02	5.51	5.27	69.49	294.99	788.53	841.94	831.17	10.78	78.127	
1,700.00	1,700.00	1,691.58	1,691.40	5.87	5.63	69.57	294.24	789.85	842.91	831.42	11.49	73.331	
1,800.00	1,800.00	1,791.98	1,791.79	6.23	5.99	69.64	293.55	791.10	843.84	831.63	12.21	69.096	
1,900.00	1,900.00	1,892.37	1,892.17	6.59	6.35	69.71	292.94	792.27	844.72	831.79	12.93	65.327	
2,000.00	2,000.00	1,992.77	1,992.57	6.95	6.71	69.77	292.39	793.36	845.55	831.90	13.65	61.951	
2,100.00	2,100.00	2,093.17	2,092.96	7.30	7.07	69.82	291.90	794.38	846.33	831.97	14.37	58.909	
2,200.00	2,200.00	2,193.58	2,193.36	7.66	7.43	69.87	291.49	795.32	847.07	831.99	15.08	56.154	
2,300.00	2,300.00	2,292.42	2,292.19	8.02	7.78	69.92	291.07	796.36	847.92	832.12	15.80	53.672	
2,400.00	2,400.00	2,391.91	2,391.68	8.38	8.14	69.97	290.68	797.44	848.80	832.29	16.51	51.400	
2,500.00	2,500.00	2,491.40	2,491.17	8.74	8.50	70.02	290.31	798.57	849.74	832.51	17.23	49.321	
2,600.00	2,599.99	2,598.91	2,598.66	9.10	8.87	70.14	289.73	799.41	850.17	832.21	17.96	47.336	
2,700.00	2,699.96	2,706.83	2,706.58	9.45	9.24	70.37	288.74	799.32	849.44	830.75	18.69	45.447	
2,800.00	2,799.86	2,814.64	2,814.38	9.81	9.62	70.73	287.33	798.31	847.56	828.14	19.42	43.646	
2,900.00	2,899.68	2,899.97	2,899.71	10.17	9.92	71.20	286.41	798.26	846.33	826.25	20.08	42.152	
2,995.70	2,995.08	2,986.85	2,986.57	10.51	10.22	71.76	285.65	798.90	845.90	825.17	20.72	40.819	
3,000.00	2,999.37	2,990.75	2,990.47	10.53	10.23	71.79	285.62	798.95	845.90	825.14	20.75	40.762	
3,100.00	3,098.90	3,081.88	3,081.59	10.89	10.55	72.51	285.08	800.57	846.43	825.00	21.43	39.501	
3,200.00	3,198.26	3,181.10	3,180.78	11.25	10.91	73.36	284.43	802.83	847.40	825.26	22.15	38.264	
3,300.06	3,297.46	3,279.64	3,279.29	11.62	11.26	74.33	283.71	805.12	848.48	825.62	22.87	37.108	
3,400.00	3,396.43	3,377.96	3,377.59	11.98	11.61	75.34	283.10	807.43	849.81	826.23	23.59	36.030	
3,500.00	3,495.46	3,476.37	3,475.97	12.36	11.97	76.35	282.59	809.78	851.47	827.15	24.31	35.024	
3,600.00	3,594.48	3,575.12	3,574.69	12.73	12.32	77.35	282.17	812.15	853.42	828.38	25.04	34.083	
3,700.00	3,693.51	3,674.53	3,674.07	13.11	12.68	78.37	281.38	814.58	855.60	829.83	25.77	33.198	
3,800.00	3,792.54	3,776.20	3,775.70	13.49	13.05	79.42	280.07	817.02	857.92	831.41	26.52	32.353	
3,900.00	3,891.56	3,875.39	3,874.85	13.87	13.40	80.48	278.41	819.12	860.18	832.93	27.25	31.561	
4,000.00	3,990.59	3,974.06	3,973.48	14.25	13.76	81.55	276.59	821.34	862.84	834.85	27.99	30.825	
4,100.00	4,089.62	4,072.79	4,072.17	14.64	14.11	82.61	274.82	823.49	865.73	837.01	28.73	30.134	
4,200.00	4,188.64	4,171.08	4,170.41	15.03	14.47	83.66	272.99	825.68	868.96	839.49	29.47	29.489	
4,300.00	4,287.67	4,267.66	4,266.94	15.42	14.82	84.72	271.00	827.97	872.60	842.40	30.20	28.895	
4,400.00	4,386.70	4,369.61	4,368.84	15.81	15.18	85.79	268.53	830.41	876.54	845.59	30.95	28.318	
4,500.00	4,485.72	4,463.94	4,463.12	16.20	15.52	86.86	266.06	832.64	880.74	849.06	31.68	27.804	
4,600.00	4,584.75	4,562.78	4,561.89	16.59	15.88	87.93	263.53	835.03	885.30	852.88	32.42	27.307	
4,700.00	4,683.78	4,660.98	4,660.02	16.98	16.24	88.98	261.00	837.81	890.57	857.41	33.16	26.856	
4,800.00	4,782.80	4,782.79	4,781.80	17.38	16.67	89.99	258.91	839.59	894.80	860.82	33.99	26.327	
4,900.00	4,881.83	4,890.55	4,889.55	17.78	17.03	90.90	258.18	838.70	896.97	862.23	34.74	25.819	
5,000.00	4,980.86	4,987.19	4,986.18	18.17	17.35	91.82	257.41	837.92	899.42	863.96	35.46	25.366	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

urvey Program: 211- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	5,084.17	5,083.16	18.57	17.68	92.72	256.76	837.37	902.32	866.15	36.18	24.941	
5,200.00	5,178.91	5,183.73	5,182.72	18.97	18.02	93.62	256.02	836.91	905.56	868.65	36.91	24.534	
5,300.00	5,277.94	5,282.59	5,281.57	19.37	18.36	94.51	255.35	836.37	908.93	871.30	37.64	24.149	
5,400.00	5,376.96	5,385.50	5,384.48	19.77	18.71	95.39	254.62	835.64	912.37	873.99	38.38	23.773	
5,500.00	5,475.99	5,485.48	5,484.44	20.17	19.05	96.27	253.96	834.62	915.70	876.59	39.11	23.415	
5,600.00	5,575.02	5,583.82	5,582.78	20.57	19.38	97.14	253.32	833.61	919.24	879.41	39.83	23.078	
5,690.40	5,664.54	5,674.12	5,673.07	20.93	19.68	97.92	252.75	832.67	922.60	882.11	40.49	22.786	
5,700.00	5,674.04	5,683.80	5,682.75	20.97	19.72	98.00	252.69	832.56	922.96	882.40	40.56	22.755	
5,800.00	5,773.21	5,783.88	5,782.82	21.37	20.06	98.81	251.95	831.34	926.37	885.09	41.29	22.437	
5,900.00	5,872.58	5,879.79	5,878.72	21.76	20.38	99.49	251.43	830.40	929.54	887.54	41.99	22.135	
6,000.00	5,972.14	5,979.95	5,978.88	22.15	20.72	100.08	250.78	829.52	932.29	889.58	42.71	21.828	
6,100.00	6,071.84	6,079.93	6,078.85	22.52	21.06	100.54	250.50	828.64	934.39	890.97	43.42	21.520	
6,200.00	6,171.66	6,181.32	6,180.24	22.89	21.40	100.90	250.24	827.76	935.88	891.76	44.13	21.209	
6,300.00	6,271.57	6,284.69	6,283.59	23.25	21.75	101.19	249.75	826.34	936.28	891.44	44.83	20.883	
6,400.00	6,371.54	6,383.20	6,382.09	23.60	22.09	101.38	249.16	824.92	935.95	890.42	45.52	20.560	
6,490.46	6,462.00	6,473.04	6,471.93	23.92	22.40	101.47	248.47	823.76	935.23	889.08	46.14	20.268	
6,500.00	6,471.54	6,482.70	6,481.59	23.95	22.43	101.48	248.43	823.64	935.12	888.91	46.21	20.237	
6,600.00	6,571.54	6,582.91	6,581.79	24.29	22.77	101.50	248.30	822.41	933.95	887.05	46.89	19.916	
6,700.00	6,671.54	6,687.23	6,686.09	24.63	23.13	101.53	248.06	820.97	932.64	885.04	47.59	19.596	
6,800.00	6,771.54	6,788.30	6,787.15	24.98	23.47	101.58	247.68	819.09	930.89	882.61	48.28	19.280	
6,900.00	6,871.54	6,886.87	6,885.70	25.32	23.81	101.61	247.54	817.38	929.22	880.25	48.96	18.977	
7,000.00	6,971.54	6,989.17	6,987.99	25.66	24.15	101.62	247.69	815.64	927.53	877.87	49.66	18.678	
7,100.00	7,071.54	7,083.32	7,082.13	26.01	24.47	101.64	247.61	814.15	925.99	875.66	50.33	18.399	
7,200.00	7,171.54	7,190.31	7,189.10	26.35	24.84	101.66	247.62	812.44	924.42	873.39	51.04	18.113	
7,300.00	7,271.54	7,286.14	7,284.92	26.70	25.17	101.69	247.49	810.82	922.79	871.08	51.71	17.844	
7,400.00	7,371.54	7,389.17	7,387.93	27.04	25.52	101.73	247.23	808.98	921.09	868.68	52.41	17.573	
7,500.00	7,471.54	7,490.09	7,488.83	27.39	25.87	101.77	246.91	806.94	919.18	866.07	53.11	17.308	
7,600.00	7,571.54	7,589.42	7,588.14	27.73	26.21	101.83	246.51	804.90	917.25	863.45	53.80	17.050	
7,700.00	7,671.54	7,688.54	7,687.24	28.08	26.55	101.89	245.81	802.92	915.44	860.95	54.49	16.800	
7,800.00	7,771.54	7,774.89	7,773.56	28.43	26.86	102.01	244.27	801.32	914.06	858.91	55.14	16.577	
7,810.04	7,781.57	7,782.32	7,780.97	28.46	26.88	102.03	243.97	801.25	914.04	858.84	55.20	16.558	
7,900.00	7,871.54	7,843.83	7,842.25	28.77	27.10	102.34	238.86	801.08	915.41	859.71	55.70	16.435	
8,000.00	7,971.54	7,908.42	7,905.63	29.12	27.34	103.09	226.55	801.50	920.39	864.22	56.17	16.386 SF	
8,100.00	8,071.54	7,983.06	7,977.02	29.47	27.61	104.37	205.00	802.93	929.34	872.69	56.65	16.406	
8,200.00	8,171.54	8,053.00	8,041.33	29.82	27.87	106.00	177.58	803.28	941.07	884.05	57.02	16.504	
8,300.00	8,271.54	8,116.00	8,096.59	30.16	28.11	107.77	147.35	803.26	956.88	899.64	57.24	16.717	
8,400.00	8,371.54	8,163.75	8,136.58	30.51	28.29	109.26	121.27	803.52	977.88	920.72	57.17	17.106	
8,500.00	8,471.54	8,210.00	8,173.51	30.86	28.47	110.81	93.47	804.42	1,004.79	947.86	56.94	17.648	
8,600.00	8,571.54	8,265.89	8,215.28	31.21	28.70	112.85	56.37	804.53	1,036.59	979.86	56.72	18.274	
8,700.00	8,671.54	8,304.00	8,241.35	31.56	28.87	114.36	28.60	803.77	1,073.77	1,017.63	56.14	19.128	
8,800.00	8,771.54	8,336.00	8,261.76	31.91	29.00	115.67	3.97	803.06	1,116.70	1,061.33	55.36	20.171	
8,900.00	8,871.54	8,367.00	8,280.46	32.26	29.14	116.95	-20.75	802.66	1,165.15	1,110.63	54.52	21.370	
9,000.00	8,971.54	8,383.75	8,290.10	32.61	29.22	117.64	-34.44	802.58	1,218.59	1,165.16	53.43	22.805	
9,100.00	9,071.54	8,399.00	8,298.61	32.96	29.29	118.27	-47.10	802.61	1,276.72	1,224.39	52.34	24.395	
9,200.00	9,171.54	8,430.00	8,315.15	33.31	29.44	119.55	-73.31	802.96	1,338.82	1,287.28	51.55	25.972	
9,300.00	9,271.54	8,443.36	8,321.92	33.66	29.50	120.10	-84.83	803.21	1,404.63	1,354.11	50.52	27.801	
9,400.00	9,371.54	8,461.00	8,330.39	34.01	29.59	120.82	-100.30	803.64	1,473.83	1,424.18	49.65	29.687	
9,500.00	9,471.54	8,461.00	8,330.39	34.36	29.59	120.82	-100.30	803.64	1,546.05	1,497.49	48.57	31.833	
9,600.00	9,571.54	8,481.02	8,339.34	34.71	29.69	121.64	-118.19	804.25	1,620.75	1,572.85	47.90	33.839	
9,700.00	9,671.54	8,493.00	8,344.34	35.06	29.75	122.13	-129.07	804.65	1,697.85	1,650.67	47.18	35.985	
9,800.00	9,771.54	8,493.00	8,344.34	35.41	29.75	122.13	-129.07	804.65	1,777.08	1,730.70	46.38	38.314	
9,900.00	9,871.54	8,510.74	8,351.27	35.76	29.84	122.85	-145.39	805.28	1,857.96	1,812.04	45.92	40.464	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 211- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,971.54	8,524.00	8,356.08	36.11	29.91	123.39	-157.74	805.75	1,940.55	1,895.09	45.46	42.687	
10,100.00	10,071.54	8,524.00	8,356.08	36.46	29.91	123.39	-157.74	805.75	2,024.53	1,979.62	44.91	45.083	
10,200.00	10,171.54	8,524.00	8,356.08	36.81	29.91	123.39	-157.74	805.75	2,109.90	2,065.47	44.43	47.489	
10,300.00	10,271.54	8,541.70	8,362.03	37.17	30.01	124.10	-174.39	806.47	2,196.17	2,151.94	44.22	49.660	
10,400.00	10,371.54	8,556.00	8,366.49	37.52	30.08	124.67	-187.96	807.18	2,283.64	2,239.61	44.03	51.864	
10,500.00	10,471.54	8,556.00	8,366.49	37.87	30.08	124.67	-187.96	807.18	2,371.90	2,328.17	43.73	54.236	
10,600.00	10,571.54	8,556.00	8,366.49	38.22	30.08	124.67	-187.96	807.18	2,461.06	2,417.57	43.49	56.589	
10,700.00	10,671.54	8,556.00	8,366.49	38.57	30.08	124.67	-187.96	807.18	2,551.02	2,507.72	43.30	58.920	
10,800.00	10,771.54	8,556.00	8,366.49	38.93	30.08	124.67	-187.96	807.18	2,641.70	2,598.55	43.15	61.224	
10,900.00	10,871.54	8,575.65	8,372.10	39.28	30.19	125.44	-206.75	808.35	2,732.63	2,689.41	43.22	63.226	
11,000.00	10,971.54	8,596.00	8,377.28	39.63	30.30	126.21	-226.37	809.84	2,824.60	2,781.27	43.33	65.195	
11,100.00	11,071.54	8,596.00	8,377.28	39.98	30.30	126.21	-226.37	809.84	2,916.69	2,873.41	43.28	67.393	
11,200.00	11,171.54	8,596.00	8,377.28	40.34	30.30	126.21	-226.37	809.84	3,009.29	2,966.03	43.26	69.556	
11,300.00	11,271.54	8,596.00	8,377.28	40.69	30.30	126.21	-226.37	809.84	3,102.35	3,059.07	43.28	71.681	
11,400.00	11,371.54	8,596.00	8,377.28	41.04	30.30	126.21	-226.37	809.84	3,195.82	3,152.50	43.32	73.767	
11,500.00	11,471.54	8,596.00	8,377.28	41.40	30.30	126.21	-226.37	809.84	3,289.68	3,246.29	43.39	75.813	
11,525.27	11,496.81	8,596.00	8,377.28	41.48	30.30	126.21	-226.37	809.84	3,313.46	3,270.05	43.41	76.324	
11,550.00	11,521.53	8,596.00	8,377.28	41.57	30.30	126.19	-226.37	809.84	3,336.61	3,293.18	43.43	76.826	
11,600.00	11,571.33	8,596.00	8,377.28	41.72	30.30	126.04	-226.37	809.84	3,382.52	3,339.07	43.45	77.846	
11,650.00	11,620.56	8,596.00	8,377.28	41.85	30.30	125.74	-226.37	809.84	3,426.98	3,383.53	43.45	78.864	
11,700.00	11,668.84	8,611.12	8,380.69	41.98	30.39	125.86	-241.06	810.98	3,469.51	3,425.97	43.54	79.678	
11,750.00	11,715.82	8,628.00	8,384.02	42.10	30.48	125.91	-257.57	812.10	3,510.31	3,466.68	43.62	80.466	
11,800.00	11,761.13	8,628.00	8,384.02	42.20	30.48	125.16	-257.57	812.10	3,548.60	3,505.02	43.58	81.433	
11,850.00	11,804.43	8,628.00	8,384.02	42.30	30.48	124.23	-257.57	812.10	3,584.43	3,540.91	43.52	82.369	
11,900.00	11,845.39	8,628.00	8,384.02	42.39	30.48	123.14	-257.57	812.10	3,617.60	3,574.16	43.45	83.267	
11,950.00	11,883.69	8,628.00	8,384.02	42.47	30.48	121.86	-257.57	812.10	3,647.95	3,604.59	43.37	84.119	
12,000.00	11,919.06	8,628.00	8,384.02	42.54	30.48	120.38	-257.57	812.10	3,675.32	3,632.04	43.28	84.918	
12,050.00	11,951.20	8,659.00	8,388.76	42.61	30.66	120.21	-288.16	813.65	3,699.38	3,656.02	43.36	85.327	
12,100.00	11,979.89	8,659.00	8,388.76	42.68	30.66	118.39	-288.16	813.65	3,720.00	3,676.74	43.26	85.996	
12,150.00	12,004.90	8,659.00	8,388.76	42.75	30.66	116.37	-288.16	813.65	3,737.25	3,694.09	43.16	86.588	
12,200.00	12,026.05	8,659.00	8,388.76	42.82	30.66	114.12	-288.16	813.65	3,751.06	3,707.99	43.07	87.092	
12,250.00	12,043.17	8,659.00	8,388.76	42.89	30.66	111.66	-288.16	813.65	3,761.35	3,718.37	42.99	87.501	
12,300.00	12,056.13	8,676.04	8,390.56	42.97	30.76	110.01	-305.09	814.24	3,767.76	3,724.78	42.98	87.662	
12,350.00	12,064.83	8,690.00	8,391.60	43.05	30.84	108.05	-319.01	814.64	3,770.71	3,727.74	42.97	87.758	
12,400.00	12,069.21	8,690.00	8,391.60	43.13	30.84	105.05	-319.01	814.64	3,769.83	3,726.92	42.91	87.850	
12,423.64	12,069.77	8,690.00	8,391.60	43.17	30.84	103.56	-319.01	814.64	3,768.16	3,725.26	42.89	87.852	
12,500.00	12,069.98	8,707.28	8,392.47	43.32	30.94	99.76	-336.26	815.06	3,762.03	3,719.13	42.91	87.677	
12,600.00	12,070.27	8,722.00	8,392.96	43.58	31.03	93.85	-350.97	815.37	3,755.89	3,712.92	42.97	87.415	
12,667.68	12,070.46	8,753.00	8,393.29	43.79	31.21	91.22	-381.96	815.77	3,752.91	3,709.82	43.09	87.088	
12,700.00	12,070.55	8,753.00	8,393.29	43.90	31.21	88.79	-381.96	815.77	3,751.80	3,708.67	43.13	86.984	
12,800.00	12,070.84	8,814.43	8,392.48	44.29	31.61	85.86	-443.39	816.07	3,750.07	3,706.64	43.43	86.349	
12,900.00	12,071.12	8,973.63	8,392.27	44.73	32.74	90.56	-602.54	819.70	3,748.41	3,704.38	44.03	85.128	
12,989.01	12,071.38	9,008.65	8,392.26	45.17	33.02	86.27	-637.55	820.62	3,747.51	3,703.15	44.36	84.472	
13,000.00	12,071.41	9,013.03	8,392.22	45.22	33.06	85.74	-641.93	820.73	3,747.52	3,703.12	44.41	84.390	
13,100.00	12,071.69	9,067.00	8,391.12	45.76	33.49	82.05	-695.87	822.14	3,748.97	3,704.09	44.88	83.533	
13,200.00	12,071.98	9,130.23	8,389.17	46.34	34.04	79.15	-759.04	824.06	3,752.23	3,706.79	45.45	82.564	
13,200.11	12,071.98	9,130.34	8,389.17	46.34	34.04	79.15	-759.15	824.06	3,752.24	3,706.79	45.45	82.563	
13,300.00	12,072.26	9,422.47	8,386.65	46.97	36.81	94.54	-1,051.13	825.14	3,753.03	3,706.23	46.80	80.185	
13,400.00	12,072.55	9,529.02	8,387.43	47.64	37.91	95.09	-1,157.57	820.21	3,751.61	3,704.01	47.60	78.807	
13,500.00	12,072.83	9,575.76	8,387.62	48.36	38.41	90.77	-1,204.28	818.52	3,750.76	3,702.54	48.21	77.800	
13,505.55	12,072.85	9,578.08	8,387.61	48.41	38.43	90.50	-1,206.60	818.43	3,750.75	3,702.51	48.24	77.744	
13,600.00	12,073.12	9,631.00	8,386.77	49.13	39.01	87.10	-1,259.47	816.32	3,751.50	3,702.62	48.88	76.744	

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Vell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 211- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,700.00	12,073.40	9,846.28	8,387.34	49.94	41.48	96.53	-1,474.66	815.90	3,751.72	3,701.40	50.31	74.568	
13,800.00	12,073.68	9,914.00	8,388.93	50.80	42.29	93.88	-1,542.30	818.73	3,750.29	3,699.16	51.14	73.341	
13,865.87	12,073.87	9,937.40	8,389.30	51.38	42.58	90.40	-1,565.66	820.02	3,749.98	3,698.39	51.59	72.681	
13,900.00	12,073.97	9,952.22	8,389.46	51.69	42.76	88.82	-1,580.45	820.95	3,750.08	3,698.23	51.85	72.325	
14,000.00	12,074.25	10,008.00	8,389.51	52.62	43.45	85.23	-1,636.06	825.21	3,751.43	3,698.74	52.69	71.198	
14,100.00	12,074.54	10,161.13	8,390.96	53.58	45.39	89.51	-1,788.68	837.61	3,752.06	3,697.98	54.07	69.389	
14,200.00	12,074.82	10,320.16	8,393.94	54.58	47.48	94.11	-1,947.18	850.04	3,752.05	3,696.51	55.55	67.549	
14,300.00	12,075.11	10,417.04	8,396.86	55.61	48.77	93.82	-2,043.83	855.90	3,750.44	3,693.75	56.70	66.151	
14,400.00	12,075.39	10,478.00	8,397.63	56.67	49.59	90.77	-2,104.75	858.22	3,750.00	3,692.35	57.65	65.043	
14,500.00	12,075.68	14,500.00	8,398.82	57.76	104.46	90.58	-2,202.37	863.17	3,749.95	3,665.25	84.71	44.269	
14,530.94	12,075.76	10,595.86	8,399.20	58.10	51.20	89.74	-2,222.40	864.67	3,749.93	3,690.75	59.17	63.373	
14,600.00	12,075.96	10,625.73	8,399.38	58.87	51.62	86.71	-2,252.22	866.53	3,750.46	3,690.65	59.81	62.709	
14,700.00	12,076.24	10,673.80	8,398.91	60.01	52.28	82.75	-2,300.22	868.92	3,752.51	3,691.74	60.77	61.752	
14,800.00	12,076.53	10,784.03	8,398.04	61.17	53.83	83.57	-2,410.18	876.43	3,754.78	3,692.67	62.11	60.457	
14,900.00	12,076.81	10,855.00	8,397.22	62.36	54.84	81.44	-2,480.86	882.79	3,757.78	3,694.53	63.26	59.406	
15,000.00	12,077.10	10,962.43	8,395.54	63.57	56.37	82.04	-2,587.94	891.27	3,761.09	3,696.46	64.63	58.192	
15,100.00	12,077.38	11,175.05	8,392.23	64.79	59.42	90.42	-2,800.45	893.52	3,763.43	3,696.89	66.54	56.562	
15,200.00	12,077.67	11,278.75	8,391.88	66.04	60.92	90.70	-2,904.15	892.42	3,763.70	3,695.85	67.85	55.469	
15,300.00	12,077.95	11,416.74	8,392.05	67.30	62.91	93.56	-3,042.02	887.08	3,762.90	3,693.57	69.33	54.272	
15,400.00	12,078.23	11,522.18	8,392.53	68.58	64.45	93.99	-3,147.36	882.46	3,761.73	3,691.07	70.66	53.240	
15,500.00	12,078.52	11,585.94	8,392.48	69.88	65.38	91.24	-3,211.05	879.54	3,761.02	3,689.24	71.77	52.401	
15,600.00	12,078.80	11,790.52	8,393.84	71.19	68.39	99.27	-3,415.28	867.81	3,759.41	3,685.80	73.61	51.074	
15,700.00	12,079.09	11,842.89	8,394.57	72.51	69.16	95.66	-3,467.53	864.36	3,756.95	3,682.27	74.68	50.310	
15,800.00	12,079.37	11,893.12	8,394.85	73.85	69.91	91.79	-3,517.72	862.56	3,755.86	3,680.10	75.76	49.578	
15,900.00	12,079.66	11,989.03	8,394.83	75.21	71.35	91.48	-3,613.59	859.75	3,755.46	3,678.37	77.09	48.713	
15,932.24	12,079.75	12,008.53	8,394.75	75.64	71.64	90.47	-3,633.07	859.03	3,755.41	3,677.95	77.46	48.480	
16,000.00	12,079.94	12,052.85	8,394.32	76.57	72.30	88.62	-3,677.35	857.21	3,755.63	3,677.37	78.26	47.990	
16,100.00	12,080.22	12,149.08	8,392.55	77.94	73.74	88.29	-3,773.39	851.52	3,756.46	3,676.88	79.58	47.206	
16,200.00	12,080.51	12,402.90	8,393.26	79.33	77.55	100.68	-4,026.40	831.67	3,754.42	3,672.77	81.65	45.984	
16,300.00	12,080.79	12,496.22	8,395.28	80.73	78.97	100.23	-4,119.45	824.83	3,751.10	3,668.14	82.96	45.216	
16,400.00	12,081.08	12,567.30	8,396.56	82.13	80.04	97.94	-4,190.34	819.80	3,748.24	3,664.07	84.17	44.531	
16,500.00	12,081.36	12,618.98	8,396.98	83.55	80.83	93.96	-4,241.92	816.71	3,746.50	3,661.20	85.30	43.923	
16,585.85	12,081.61	12,664.07	8,396.92	84.77	81.52	90.53	-4,286.97	814.61	3,746.04	3,659.76	86.27	43.420	
16,600.00	12,081.65	12,671.63	8,396.87	84.97	81.64	89.98	-4,294.52	814.33	3,746.05	3,659.61	86.44	43.339	
16,700.00	12,081.93	12,737.00	8,396.08	86.40	82.64	87.04	-4,359.86	812.82	3,746.88	3,659.22	87.66	42.743	
16,800.00	12,082.22	12,781.10	8,395.17	87.84	83.33	82.34	-4,403.96	812.67	3,748.86	3,660.08	88.78	42.228	
16,900.00	12,082.50	12,831.00	8,393.79	89.29	84.10	78.21	-4,453.83	813.23	3,752.04	3,662.11	89.93	41.719	
17,000.00	12,082.78	17,000.00	8,389.55	90.75	149.67	81.30	-4,590.80	818.47	3,756.11	3,633.23	122.88	30.567	
17,100.00	12,083.07	13,097.19	8,388.52	92.21	88.28	83.75	-4,719.59	826.26	3,758.03	3,664.61	93.41	40.230	
17,200.00	12,083.35	13,152.26	8,387.79	93.68	89.15	80.11	-4,774.52	830.05	3,760.77	3,666.11	94.66	39.727	
17,300.00	12,083.64	13,207.00	8,386.40	95.15	90.02	76.56	-4,829.09	834.05	3,764.76	3,668.85	95.92	39.251	
17,400.00	12,083.92	13,458.56	8,385.17	96.63	94.00	88.82	-5,080.24	847.38	3,765.00	3,666.51	98.50	38.225	
17,500.00	12,084.21	13,539.96	8,384.82	98.12	95.29	87.32	-5,161.60	849.83	3,766.09	3,666.17	99.92	37.692	
17,600.00	12,084.49	13,624.95	8,384.46	99.61	96.64	86.11	-5,246.58	851.59	3,767.09	3,665.74	101.35	37.168	
17,700.00	12,084.77	13,807.18	8,384.77	101.11	99.53	92.73	-5,428.73	856.14	3,767.66	3,664.26	103.40	36.436	
17,751.90	12,084.92	13,831.29	8,385.06	101.89	99.92	90.49	-5,452.82	856.98	3,767.47	3,663.43	104.04	36.211	
17,800.00	12,085.06	13,866.00	8,385.18	102.61	100.47	89.42	-5,487.50	858.27	3,767.68	3,662.96	104.71	35.982	
17,900.00	12,085.34	13,912.58	8,384.96	104.11	101.21	85.15	-5,534.05	860.20	3,768.90	3,662.97	105.94	35.577	
18,000.00	12,085.63	14,019.86	8,383.91	105.63	102.93	85.75	-5,641.18	865.58	3,771.02	3,663.44	107.58	35.053	
18,100.00	12,085.91	14,128.41	8,384.00	107.14	104.67	86.44	-5,749.53	872.17	3,772.24	3,662.98	109.26	34.526	
18,200.00	12,086.20	14,286.31	8,386.29	108.66	107.21	90.95	-5,907.05	882.91	3,771.99	3,660.68	111.31	33.888	
18,213.48	12,086.23	14,293.53	8,386.40	108.87	107.33	90.47	-5,914.24	883.38	3,771.98	3,660.49	111.49	33.834	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys

Survey Program: 211-

Offset Site Error: 0.00 usft
Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,300.00	12,086.48	14,336.00	8,386.82	110.18	108.01	87.05	-5,956.62	886.22	3,772.45	3,659.84	112.60	33.502	
18,400.00	12,086.76	14,385.64	8,386.72	111.71	108.81	83.19	-6,006.13	889.69	3,774.24	3,660.34	113.89	33.138	
18,500.00	12,087.05	14,442.57	8,385.73	113.24	109.73	79.98	-6,062.91	893.86	3,777.45	3,662.22	115.23	32.781	
18,600.00	12,087.33	18,600.00	8,384.17	114.78	176.84	86.02	-6,242.13	904.41	3,779.29	3,629.74	149.55	25.272	
18,700.00	12,087.62	14,685.63	8,384.08	116.32	113.65	83.30	-6,305.48	908.87	3,781.12	3,662.26	118.86	31.812	
18,800.00	12,087.90	14,807.00	8,383.61	117.86	115.62	84.92	-6,426.51	917.83	3,783.11	3,662.41	120.70	31.342	
18,900.00	12,088.19	14,865.84	8,383.45	119.40	116.57	81.92	-6,485.23	921.62	3,785.16	3,663.08	122.08	31.007	
19,000.00	12,088.47	19,000.00	8,381.56	120.95	183.62	81.25	-6,575.29	927.39	3,788.63	3,632.09	156.54	24.202	
19,100.00	12,088.76	15,219.48	8,382.65	122.50	122.29	93.19	-6,838.45	936.01	3,787.87	3,661.48	126.39	29.970	
19,200.00	12,089.04	15,285.83	8,383.25	124.05	123.36	90.73	-6,904.79	936.80	3,787.36	3,659.57	127.79	29.638	
19,300.00	12,089.32	15,372.00	8,383.70	125.61	124.75	89.72	-6,990.96	936.86	3,787.07	3,657.78	129.29	29.292	
19,312.89	12,089.36	15,394.19	8,383.76	125.81	125.10	90.40	-7,013.15	936.66	3,786.99	3,657.45	129.54	29.234	
19,400.00	12,089.61	15,437.82	8,383.52	127.17	125.81	87.22	-7,056.78	936.45	3,787.50	3,656.85	130.65	28.989	
19,500.00	12,089.89	19,500.00	8,382.29	128.73	191.12	87.37	-7,158.82	935.87	3,788.72	3,624.20	164.52	23.029	
19,600.00	12,090.18	15,616.88	8,381.40	130.29	128.68	85.68	-7,235.81	934.92	3,789.83	3,656.19	133.64	28.359	
19,700.00	12,090.46	15,880.10	8,382.22	131.86	132.91	97.66	-7,498.94	930.23	3,789.19	3,653.15	136.05	27.852	
19,800.00	12,090.75	15,936.00	8,383.12	133.42	133.81	94.45	-7,554.81	928.57	3,787.17	3,649.80	137.37	27.570	
19,900.00	12,091.03	16,006.37	8,383.63	134.99	134.94	92.26	-7,625.15	926.81	3,786.11	3,647.36	138.75	27.287	
19,995.96	12,091.30	16,077.74	8,383.74	136.50	136.09	90.43	-7,696.51	925.76	3,785.82	3,645.71	140.11	27.021	
20,000.00	12,091.31	16,080.86	8,383.74	136.57	136.14	90.37	-7,699.63	925.73	3,785.82	3,645.65	140.17	27.009	
20,100.00	12,091.60	16,150.25	8,383.61	138.14	137.26	88.08	-7,769.02	925.75	3,786.19	3,644.62	141.57	26.744	
20,200.00	12,091.88	16,218.00	8,382.96	139.72	138.36	85.69	-7,836.76	926.93	3,787.57	3,644.59	142.99	26.489	
20,300.00	12,092.17	16,476.49	8,383.67	141.29	142.56	97.43	-8,095.19	929.88	3,788.52	3,642.99	145.53	26.032	
20,400.00	12,092.45	16,543.29	8,385.33	142.87	143.64	94.99	-8,161.97	929.33	3,786.20	3,639.25	146.95	25.766	
20,500.00	12,092.74	16,595.00	8,385.82	144.45	144.48	91.41	-8,213.68	929.25	3,785.31	3,637.03	148.27	25.529	
20,512.73	12,092.77	16,595.00	8,385.82	144.66	144.48	90.46	-8,213.68	929.25	3,785.29	3,636.88	148.40	25.506	
20,600.00	12,093.02	16,639.74	8,385.67	146.04	145.20	87.30	-8,258.42	929.46	3,785.77	3,636.23	149.55	25.315	
20,700.00	12,093.31	16,734.87	8,384.31	147.62	146.75	86.93	-8,353.53	930.35	3,787.49	3,636.37	151.13	25.062	
20,800.00	12,093.59	16,853.38	8,383.66	149.21	148.67	88.31	-8,472.04	929.41	3,787.94	3,635.13	152.81	24.789	
20,900.00	12,093.87	16,906.16	8,382.99	150.80	149.52	84.79	-8,524.81	928.91	3,789.22	3,635.13	154.10	24.590	
21,000.00	12,094.16	16,971.00	8,380.98	152.39	150.57	82.18	-8,589.61	928.75	3,792.13	3,636.68	155.45	24.394	
21,100.00	12,094.44	17,229.89	8,379.42	153.98	154.77	94.03	-8,848.41	925.52	3,792.08	3,634.17	157.91	24.014	
21,200.00	12,094.73	17,289.36	8,379.64	155.57	155.73	90.99	-8,907.86	923.80	3,791.32	3,632.07	159.25	23.808	
21,216.14	12,094.77	17,298.25	8,379.62	155.83	155.87	90.45	-8,916.74	923.56	3,791.30	3,631.84	159.46	23.776	
21,300.00	12,095.01	17,348.00	8,379.18	157.16	156.68	87.87	-8,966.48	922.34	3,791.72	3,631.15	160.57	23.615	
21,400.00	12,095.30	17,567.67	8,380.61	158.76	160.24	96.91	-9,186.10	919.94	3,790.99	3,628.22	162.77	23.290	
21,500.00	12,095.58	17,630.00	8,381.80	160.35	161.26	94.08	-9,248.42	920.12	3,789.30	3,625.11	164.19	23.079	
21,600.00	12,095.86	17,696.30	8,382.52	161.95	162.34	91.52	-9,314.71	920.75	3,788.54	3,622.92	165.62	22.874	
21,654.57	12,096.02	17,736.79	8,382.77	162.82	163.00	90.45	-9,355.19	921.30	3,788.45	3,622.01	166.43	22.763	
21,700.00	12,096.15	17,773.62	8,382.92	163.55	163.60	89.80	-9,392.02	921.96	3,788.50	3,621.37	167.13	22.668	
21,800.00	12,096.43	17,852.39	8,383.05	165.15	164.89	88.19	-9,470.77	923.92	3,788.99	3,620.33	168.66	22.466	
21,900.00	12,096.72	17,940.81	8,382.76	166.75	166.34	87.31	-9,559.14	926.62	3,790.06	3,619.81	170.26	22.261	
22,000.00	12,097.00	18,066.63	8,383.04	168.35	168.41	89.26	-9,684.88	931.20	3,790.70	3,618.57	172.14	22.021	
22,100.00	12,097.29	18,083.00	8,383.13	169.96	168.67	83.01	-9,701.24	931.82	3,792.04	3,618.80	173.24	21.889	
22,175.33	12,097.50	18,083.00	8,383.13	171.16	168.67	77.50	-9,701.24	931.82	3,794.76	3,620.84	173.92	21.819	

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Anticollision Report

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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
ite Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
/ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Redhead 31 Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 9815- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	164.06	-5,113.02	1,460.68	5,317.69				
100.00	100.00	67.68	67.68	0.13	0.05	164.06	-5,113.01	1,460.63	5,317.55	5,317.37	0.18	N/A	
164.48	164.48	128.98	128.98	0.37	0.12	164.06	-5,113.01	1,460.49	5,317.51	5,317.02	0.49	N/A	
200.00	200.00	159.55	159.55	0.49	0.18	164.06	-5,113.05	1,460.41	5,317.53	5,316.86	0.67	7,942.924	
300.00	300.00	264.94	264.94	0.85	0.36	164.06	-5,113.26	1,460.14	5,317.66	5,316.45	1.21	4,388.379	
400.00	400.00	379.55	379.55	1.21	0.57	164.06	-5,113.12	1,459.97	5,317.49	5,315.72	1.77	3,002.310	
500.00	500.00	492.38	492.38	1.57	0.77	164.07	-5,112.71	1,459.76	5,317.09	5,314.76	2.33	2,283.160	
600.00	600.00	617.75	617.74	1.93	0.99	164.07	-5,111.90	1,459.11	5,316.33	5,313.42	2.91	1,827.441	
700.00	700.00	713.43	713.42	2.29	1.16	164.07	-5,111.13	1,458.60	5,315.41	5,311.97	3.44	1,546.509	
800.00	800.00	813.64	813.62	2.64	1.34	164.08	-5,110.37	1,458.00	5,314.51	5,310.54	3.97	1,337.642	
900.00	900.00	927.35	927.32	3.00	1.54	164.08	-5,109.35	1,456.90	5,313.37	5,308.84	4.53	1,172.225	
1,000.00	1,000.00	1,013.02	1,012.99	3.36	1.69	164.09	-5,108.66	1,456.08	5,312.33	5,307.29	5.04	1,053.468	
1,100.00	1,100.00	1,107.28	1,107.24	3.72	1.86	164.10	-5,108.04	1,455.29	5,311.48	5,305.91	5.57	953.969	
1,200.00	1,200.00	1,204.26	1,204.22	4.08	2.03	164.11	-5,107.54	1,454.33	5,310.71	5,304.61	6.10	871.011	
1,300.00	1,300.00	1,315.54	1,315.49	4.44	2.23	164.12	-5,106.92	1,453.05	5,309.85	5,303.20	6.65	798.296	
1,400.00	1,400.00	1,408.82	1,408.76	4.79	2.39	164.12	-5,106.28	1,452.29	5,308.97	5,301.80	7.18	739.926	
1,500.00	1,500.00	1,496.73	1,496.67	5.15	2.55	164.13	-5,105.75	1,451.83	5,308.25	5,300.56	7.69	690.340	
1,600.00	1,600.00	1,590.44	1,590.37	5.51	2.72	164.13	-5,105.31	1,451.50	5,307.71	5,299.49	8.21	646.172	
1,700.00	1,700.00	1,700.34	1,700.27	5.87	2.91	164.13	-5,104.77	1,451.13	5,307.14	5,298.37	8.77	605.315	
1,800.00	1,800.00	1,779.16	1,779.10	6.23	3.05	164.13	-5,104.45	1,450.88	5,306.67	5,297.40	9.27	572.702	
1,900.00	1,900.00	1,872.76	1,872.70	6.59	3.22	164.13	-5,104.32	1,450.73	5,306.49	5,296.70	9.79	542.043	
2,000.00	2,000.00	1,986.37	1,986.31	6.95	3.42	164.14	-5,104.11	1,450.45	5,306.24	5,295.90	10.35	512.748	
2,100.00	2,100.00	2,067.50	2,067.43	7.30	3.56	164.14	-5,103.88	1,450.42	5,305.97	5,295.12	10.85	489.095	
2,112.34	2,112.34	2,076.90	2,076.84	7.35	3.58	164.14	-5,103.87	1,450.43	5,305.97	5,295.06	10.91	486.379	
2,200.00	2,200.00	2,174.18	2,174.12	7.66	3.74	164.13	-5,103.84	1,450.56	5,305.97	5,294.58	11.39	465.742	
2,300.00	2,300.00	2,267.02	2,266.95	8.02	3.91	164.14	-5,103.71	1,450.38	5,305.79	5,293.88	11.91	445.387	
2,315.04	2,315.04	2,279.61	2,279.54	8.07	3.93	164.14	-5,103.71	1,450.36	5,305.79	5,293.80	11.99	442.568	
2,400.00	2,400.00	2,357.73	2,357.66	8.38	4.06	164.14	-5,103.82	1,450.22	5,305.86	5,293.43	12.43	426.963	
2,500.00	2,500.00	2,460.22	2,460.15	8.74	4.24	164.14	-5,103.94	1,450.31	5,306.00	5,293.04	12.96	409.403	
2,600.00	2,599.99	2,575.87	2,575.80	9.10	4.43	164.14	-5,103.87	1,450.38	5,306.83	5,293.31	13.52	392.543	
2,700.00	2,699.96	2,662.32	2,662.25	9.45	4.58	164.14	-5,103.77	1,450.21	5,309.29	5,295.26	14.03	378.500	
2,800.00	2,799.86	2,761.83	2,761.76	9.81	4.76	164.14	-5,103.90	1,450.26	5,313.78	5,299.23	14.56	365.018	
2,900.00	2,899.68	2,867.66	2,867.59	10.17	4.94	164.15	-5,103.81	1,450.40	5,319.83	5,304.73	15.10	352.300	
3,000.00	2,999.37	2,958.81	2,958.74	10.53	5.10	164.15	-5,103.64	1,450.96	5,327.65	5,312.03	15.62	341.161	
3,100.00	3,098.90	3,048.01	3,047.94	10.89	5.25	164.14	-5,103.63	1,451.68	5,337.41	5,321.28	16.13	330.955	
3,200.00	3,198.26	3,153.32	3,153.24	11.25	5.43	164.14	-5,103.51	1,453.27	5,349.02	5,332.35	16.67	320.950	
3,300.06	3,297.46	3,261.08	3,260.97	11.62	5.62	164.12	-5,102.86	1,455.72	5,362.09	5,344.88	17.21	311.569	
3,400.00	3,396.43	3,374.12	3,373.98	11.98	5.81	164.10	-5,102.15	1,457.99	5,375.91	5,358.15	17.76	302.649	
3,500.00	3,495.46	3,477.25	3,477.08	12.36	5.99	164.09	-5,101.25	1,459.93	5,389.48	5,371.18	18.30	294.521	
3,600.00	3,594.48	3,582.31	3,582.11	12.73	6.17	164.07	-5,100.21	1,462.22	5,403.01	5,384.17	18.84	286.788	
3,700.00	3,693.51	3,689.74	3,689.52	13.11	6.36	164.06	-5,099.11	1,464.10	5,416.40	5,397.01	19.39	279.402	
3,800.00	3,792.54	3,798.78	3,798.55	13.49	6.55	164.06	-5,098.06	1,465.11	5,429.62	5,409.69	19.94	272.352	
3,900.00	3,891.56	3,876.45	3,876.22	13.87	6.69	164.06	-5,097.49	1,465.49	5,442.94	5,422.51	20.43	266.414	
4,000.00	3,990.59	3,964.72	3,964.49	14.25	6.84	164.07	-5,097.17	1,465.84	5,456.59	5,435.65	20.94	260.532	
4,100.00	4,089.62	4,044.07	4,043.84	14.64	6.98	164.08	-5,097.09	1,465.97	5,470.44	5,449.00	21.44	255.145	
4,200.00	4,188.64	4,100.00	4,099.77	15.03	7.08	164.09	-5,097.31	1,466.00	5,484.79	5,462.90	21.89	250.527	
4,300.00	4,287.67	4,173.22	4,172.98	15.42	7.20	164.10	-5,098.08	1,466.00	5,499.73	5,477.36	22.38	245.795	
4,400.00	4,386.70	4,246.33	4,246.08	15.81	7.33	164.11	-5,099.41	1,465.98	5,515.33	5,492.47	22.86	241.296	
4,500.00	4,485.72	4,334.70	4,334.43	16.20	7.48	164.13	-5,101.27	1,466.02	5,531.22	5,507.85	23.37	236.704	
4,600.00	4,584.75	4,453.03	4,452.73	16.59	7.68	164.15	-5,103.84	1,465.73	5,547.13	5,523.19	23.94	231.750	
4,700.00	4,683.78	4,580.31	4,579.99	16.98	7.90	164.17	-5,105.91	1,465.03	5,562.40	5,537.87	24.52	226.834	
4,800.00	4,782.80	4,685.73	4,685.40	17.38	8.09	164.19	-5,107.36	1,464.39	5,577.43	5,552.36	25.07	222.499	

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

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Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Redhead 31 Federal - #1H - Wellbore #1 - Surveys — Offset Site Error: 0.00 usft

Survey Program: 100-, 9815- — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,881.83	4,801.73	4,801.39	17.78	8.29	164.21	-5,108.77	1,463.55	5,592.28	5,566.65	25.63	218.163	
5,000.00	4,980.86	4,901.71	4,901.36	18.17	8.46	164.23	-5,109.81	1,462.77	5,606.96	5,580.79	26.17	214.253	
5,100.00	5,079.88	4,993.64	4,993.28	18.57	8.62	164.25	-5,110.85	1,461.97	5,621.68	5,594.99	26.69	210.620	
5,200.00	5,178.91	5,108.80	5,108.43	18.97	8.82	164.27	-5,112.07	1,460.95	5,636.34	5,609.09	27.26	206.782	
5,300.00	5,277.94	5,213.40	5,213.02	19.37	9.00	164.29	-5,112.99	1,459.91	5,650.81	5,623.01	27.80	203.238	
5,400.00	5,376.96	5,319.68	5,319.30	19.77	9.19	164.32	-5,113.78	1,458.81	5,665.13	5,636.77	28.35	199.798	
5,500.00	5,475.99	5,413.47	5,413.08	20.17	9.35	164.34	-5,114.47	1,457.89	5,679.46	5,650.58	28.88	196.654	
5,600.00	5,575.02	5,518.34	5,517.94	20.57	9.54	164.36	-5,115.29	1,456.71	5,693.80	5,664.37	29.43	193.478	
5,690.40	5,664.54	5,616.49	5,616.08	20.93	9.71	164.38	-5,115.87	1,455.55	5,706.58	5,676.65	29.93	190.658	
5,700.00	5,674.04	5,624.15	5,623.74	20.97	9.72	164.38	-5,115.92	1,455.46	5,707.93	5,677.95	29.98	190.398	
5,800.00	5,773.21	5,705.69	5,705.27	21.37	9.86	164.40	-5,116.52	1,454.61	5,721.21	5,690.73	30.48	187.697	
5,900.00	5,872.58	5,818.23	5,817.80	21.76	10.06	164.42	-5,117.35	1,453.48	5,732.78	5,701.74	31.04	184.670	
6,000.00	5,972.14	5,926.29	5,925.85	22.15	10.25	164.44	-5,118.05	1,452.15	5,742.48	5,710.88	31.60	181.747	
6,100.00	6,071.84	6,041.12	6,040.67	22.52	10.45	164.46	-5,118.53	1,450.38	5,750.13	5,717.96	32.16	178.791	
6,200.00	6,171.66	6,137.54	6,137.08	22.89	10.62	164.48	-5,118.93	1,448.83	5,756.02	5,723.33	32.69	176.086	
6,300.00	6,271.57	6,231.72	6,231.25	23.25	10.79	164.50	-5,119.23	1,447.74	5,760.21	5,727.00	33.21	173.447	
6,400.00	6,371.54	6,328.07	6,327.59	23.60	10.96	164.51	-5,119.78	1,446.43	5,762.84	5,729.11	33.73	170.831	
6,490.46	6,462.00	6,432.52	6,432.03	23.92	11.14	164.52	-5,120.08	1,445.15	5,763.50	5,729.26	34.24	168.324	
6,500.00	6,471.54	6,440.82	6,440.33	23.95	11.16	164.53	-5,120.10	1,445.07	5,763.49	5,729.20	34.29	168.088	
6,533.05	6,504.59	6,469.58	6,469.09	24.06	11.21	164.53	-5,120.16	1,444.79	5,763.48	5,729.02	34.45	167.277	
6,600.00	6,571.54	6,527.39	6,526.89	24.29	11.31	164.53	-5,120.33	1,444.34	5,763.53	5,728.74	34.79	165.664	
6,700.00	6,671.54	6,617.05	6,616.55	24.63	11.47	164.54	-5,120.69	1,444.00	5,763.81	5,728.51	35.30	163.289	
6,800.00	6,771.54	6,722.57	6,722.08	24.98	11.65	164.54	-5,121.05	1,443.66	5,764.05	5,728.21	35.84	160.837	
6,900.00	6,871.54	6,808.10	6,807.60	25.32	11.80	164.55	-5,121.49	1,443.24	5,764.41	5,728.08	36.34	158.635	
7,000.00	6,971.54	6,887.94	6,887.44	25.66	11.94	164.55	-5,122.14	1,442.92	5,765.08	5,728.26	36.83	156.549	
7,100.00	7,071.54	7,006.14	7,005.63	26.01	12.15	164.56	-5,123.16	1,442.43	5,765.82	5,728.43	37.39	154.202	
7,200.00	7,171.54	7,109.82	7,109.31	26.35	12.33	164.56	-5,123.82	1,442.00	5,766.32	5,728.40	37.93	152.035	
7,300.00	7,271.54	7,195.87	7,195.35	26.70	12.48	164.57	-5,124.42	1,441.79	5,766.92	5,728.49	38.43	150.067	
7,400.00	7,371.54	7,283.88	7,283.36	27.04	12.64	164.57	-5,125.26	1,441.41	5,767.73	5,728.80	38.93	148.139	
7,500.00	7,471.54	7,376.91	7,376.38	27.39	12.80	164.58	-5,126.35	1,440.89	5,768.71	5,729.26	39.45	146.229	
7,600.00	7,571.54	7,471.04	7,470.51	27.73	12.96	164.59	-5,127.50	1,440.57	5,769.80	5,729.83	39.97	144.361	
7,700.00	7,671.54	7,560.08	7,559.54	28.08	13.12	164.60	-5,128.76	1,440.08	5,771.02	5,730.54	40.48	142.581	
7,800.00	7,771.54	7,657.39	7,656.83	28.43	13.29	164.60	-5,130.23	1,439.83	5,772.41	5,731.41	41.00	140.791	
7,900.00	7,871.54	7,764.24	7,763.68	28.77	13.48	164.61	-5,131.81	1,439.40	5,773.72	5,732.18	41.54	138.979	
8,000.00	7,971.54	7,858.24	7,857.66	29.12	13.64	164.62	-5,133.11	1,439.16	5,774.99	5,732.93	42.06	137.297	
8,100.00	8,071.54	7,958.42	7,957.83	29.47	13.82	164.62	-5,134.70	1,438.68	5,776.40	5,733.80	42.59	135.619	
8,200.00	8,171.54	8,067.17	8,066.56	29.82	14.01	164.64	-5,136.36	1,437.85	5,777.67	5,734.52	43.14	133.926	
8,300.00	8,271.54	8,163.12	8,162.49	30.16	14.18	164.65	-5,137.75	1,437.17	5,778.87	5,735.21	43.66	132.351	
8,400.00	8,371.54	8,252.67	8,252.04	30.51	14.34	164.66	-5,139.17	1,436.60	5,780.23	5,736.06	44.17	130.855	
8,500.00	8,471.54	8,346.64	8,345.98	30.86	14.50	164.67	-5,140.90	1,435.73	5,781.76	5,737.07	44.69	129.371	
8,600.00	8,571.54	8,475.50	8,474.81	31.21	14.73	164.69	-5,143.26	1,434.00	5,783.20	5,737.92	45.28	127.720	
8,700.00	8,671.54	8,595.10	8,594.38	31.56	14.94	164.72	-5,144.93	1,431.70	5,784.04	5,738.19	45.85	126.150	
8,800.00	8,771.54	8,742.01	8,741.25	31.91	15.20	164.75	-5,145.91	1,428.63	5,784.03	5,737.55	46.47	124.459	
8,821.12	8,792.66	8,757.92	8,757.15	31.98	15.23	164.75	-5,146.01	1,428.26	5,784.02	5,737.44	46.58	124.186	
8,900.00	8,871.54	8,800.00	8,799.22	32.26	15.30	164.77	-5,146.35	1,427.19	5,784.19	5,737.26	46.92	123.275	
9,000.00	8,971.54	8,868.28	8,867.46	32.61	15.42	164.79	-5,147.39	1,425.22	5,784.96	5,737.57	47.39	122.075	
9,100.00	9,071.54	8,936.48	8,935.61	32.96	15.54	164.81	-5,149.07	1,423.08	5,786.48	5,738.63	47.85	120.917	
9,200.00	9,171.54	9,059.40	9,058.45	33.31	15.76	164.85	-5,152.15	1,419.87	5,788.26	5,739.83	48.43	119.512	
9,300.00	9,271.54	9,234.58	9,233.55	33.66	16.07	164.90	-5,154.36	1,415.10	5,788.64	5,739.53	49.11	117.864	
9,400.00	9,371.54	9,316.36	9,315.29	34.01	16.22	164.93	-5,155.19	1,412.58	5,788.82	5,739.21	49.61	116.691	
9,500.00	9,471.54	9,388.94	9,387.83	34.36	16.34	164.95	-5,156.17	1,410.62	5,789.42	5,739.33	50.08	115.593	
9,600.00	9,571.54	9,504.32	9,503.16	34.71	16.55	164.98	-5,157.88	1,407.58	5,790.17	5,739.53	50.65	114.326	

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

devon

MS Energy Services
Anticollision Report

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ompany:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
roject:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
eference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
te Error:	0.00 usft	**North Reference:**	Grid
eference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
ell Error:	0.00 usft	**Output errors are at**	2.00 sigma
eference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
eference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

ffset Design Redhead 31 Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

urvey Program: 100-, 9815- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,700.00	9,671.54	9,596.38	9,595.17	35.06	16.63	165.01	-5,159.19	1,404.98	5,790.82	5,739.74	51.08	113.367	
9,800.00	9,771.54	9,689.49	9,688.25	35.41	16.72	165.04	-5,160.59	1,402.53	5,791.59	5,740.07	51.52	112.416	
9,900.00	9,871.54	9,782.62	9,781.33	35.76	16.80	165.06	-5,162.04	1,400.26	5,792.47	5,740.51	51.96	111.483	
0,000.00	9,971.54	9,871.01	9,869.68	36.11	16.84	165.09	-5,163.56	1,398.12	5,793.50	5,741.15	52.35	110.669	
0,100.00	10,071.54	9,909.00	9,907.65	36.46	16.85	165.10	-5,164.32	1,397.03	5,795.00	5,742.30	52.70	109.972	
0,200.00	10,171.54	9,909.00	9,907.65	36.81	16.85	165.10	-5,164.32	1,397.03	5,798.08	5,745.06	53.02	109.360	
0,300.00	10,271.54	9,960.82	9,959.41	37.17	16.86	165.12	-5,166.34	1,395.48	5,801.73	5,748.37	53.37	108.711	
0,400.00	10,371.54	9,999.00	9,997.47	37.52	16.87	165.14	-5,169.03	1,394.35	5,807.33	5,753.62	53.71	108.127	
0,500.00	10,471.54	9,999.00	9,997.47	37.87	16.87	165.14	-5,169.03	1,394.35	5,814.01	5,759.99	54.02	107.631	
0,600.00	10,571.54	9,999.00	9,997.47	38.22	16.87	165.14	-5,169.03	1,394.35	5,822.41	5,768.09	54.32	107.183	
0,700.00	10,671.54	9,999.00	9,997.47	38.57	16.87	165.14	-5,169.03	1,394.35	5,832.51	5,777.89	54.62	106.784	
0,800.00	10,771.54	10,030.00	10,028.19	38.93	16.88	165.16	-5,172.95	1,393.05	5,843.93	5,788.99	54.94	106.368	
0,900.00	10,871.54	10,030.00	10,028.19	39.28	16.88	165.16	-5,172.95	1,393.05	5,856.88	5,801.65	55.23	106.049	
1,000.00	10,971.54	10,030.00	10,028.19	39.63	16.88	165.16	-5,172.95	1,393.05	5,871.51	5,816.00	55.51	105.775	
1,100.00	11,071.54	10,030.00	10,028.19	39.98	16.88	165.16	-5,172.95	1,393.05	5,887.80	5,832.02	55.79	105.544	
1,200.00	11,171.54	10,045.17	10,043.06	40.34	16.89	165.17	-5,175.79	1,392.19	5,905.45	5,849.38	56.07	105.315	
1,300.00	11,271.54	10,062.00	10,059.42	40.69	16.89	165.19	-5,179.60	1,391.15	5,924.85	5,868.49	56.36	105.124	
1,400.00	11,371.54	10,062.00	10,059.42	41.04	16.89	165.19	-5,179.60	1,391.15	5,945.52	5,888.90	56.62	105.004	
1,500.00	11,471.54	10,062.00	10,059.42	41.40	16.89	165.19	-5,179.60	1,391.15	5,967.79	5,910.91	56.88	104.922	
1,525.27	11,496.81	10,062.00	10,059.42	41.48	16.89	165.19	-5,179.60	1,391.15	5,973.67	5,916.73	56.94	104.908	
1,550.00	11,521.53	10,062.00	10,059.42	41.57	16.89	165.19	-5,179.60	1,391.15	5,979.00	5,922.01	57.00	104.897	
1,600.00	11,571.33	10,062.00	10,059.42	41.72	16.89	165.19	-5,179.60	1,391.15	5,986.89	5,929.79	57.10	104.847	
1,650.00	11,620.56	10,062.00	10,059.42	41.85	16.89	165.19	-5,179.60	1,391.15	5,990.87	5,933.67	57.20	104.742	
1,700.00	11,668.84	10,078.65	10,075.43	41.98	16.90	165.20	-5,184.03	1,390.02	5,990.58	5,933.28	57.31	104.532	
1,750.00	11,715.82	10,093.00	10,089.07	42.10	16.91	165.21	-5,188.35	1,388.99	5,986.68	5,929.28	57.41	104.282	
1,800.00	11,761.13	10,093.00	10,089.07	42.20	16.91	165.19	-5,188.35	1,388.99	5,978.63	5,921.15	57.48	104.017	
1,850.00	11,804.43	10,093.00	10,089.07	42.30	16.91	165.18	-5,188.35	1,388.99	5,966.72	5,909.18	57.53	103.707	
1,900.00	11,845.39	10,093.00	10,089.07	42.39	16.91	165.16	-5,188.35	1,388.99	5,951.01	5,893.43	57.58	103.353	
1,950.00	11,883.69	10,093.00	10,089.07	42.47	16.91	165.14	-5,188.35	1,388.99	5,931.59	5,873.98	57.61	102.956	
2,000.00	11,919.06	10,093.00	10,089.07	42.54	16.91	165.11	-5,188.35	1,388.99	5,908.58	5,850.95	57.63	102.519	
2,050.00	11,951.20	10,093.00	10,089.07	42.61	16.91	165.09	-5,188.35	1,388.99	5,882.12	5,824.47	57.64	102.043	
2,100.00	11,979.89	10,093.00	10,089.07	42.68	16.91	165.06	-5,188.35	1,388.99	5,852.34	5,794.70	57.64	101.529	
2,150.00	12,004.90	10,108.36	10,103.51	42.75	16.92	165.05	-5,193.46	1,387.81	5,819.19	5,761.53	57.66	100.927	
2,200.00	12,026.05	10,125.00	10,118.94	42.82	16.93	165.05	-5,199.53	1,386.46	5,783.48	5,725.81	57.67	100.292	
2,250.00	12,043.17	10,125.00	10,118.94	42.89	16.93	165.02	-5,199.53	1,386.46	5,744.78	5,687.14	57.64	99.669	
2,300.00	12,056.13	10,125.00	10,118.94	42.97	16.93	164.98	-5,199.53	1,386.46	5,703.63	5,646.02	57.61	99.012	
2,350.00	12,064.83	10,125.00	10,118.94	43.05	16.93	164.94	-5,199.53	1,386.46	5,660.29	5,602.73	57.57	98.325	
2,400.00	12,069.21	10,125.00	10,118.94	43.13	16.93	164.90	-5,199.53	1,386.46	5,615.06	5,557.53	57.53	97.607	
2,423.64	12,069.77	10,125.00	10,118.94	43.17	16.93	164.89	-5,199.53	1,386.46	5,593.10	5,535.59	57.51	97.256	
2,500.00	12,069.98	10,125.00	10,118.94	43.32	16.93	164.83	-5,199.53	1,386.46	5,521.68	5,464.24	57.44	96.126	
2,600.00	12,070.27	10,125.00	10,118.94	43.58	16.93	164.74	-5,199.53	1,386.46	5,428.35	5,371.00	57.35	94.648	
2,667.68	12,070.46	10,125.00	10,118.94	43.79	16.93	164.69	-5,199.53	1,386.46	5,365.33	5,308.03	57.29	93.648	
2,700.00	12,070.55	10,125.00	10,118.94	43.90	16.93	164.66	-5,199.53	1,386.46	5,335.28	5,278.02	57.26	93.171	
2,800.00	12,070.84	10,125.00	10,118.94	44.29	16.93	164.53	-5,199.53	1,386.46	5,242.71	5,185.53	57.18	91.695	
2,900.00	12,071.12	10,125.00	10,118.94	44.73	16.93	164.36	-5,199.53	1,386.46	5,150.82	5,093.73	57.09	90.223	
3,000.00	12,071.41	10,141.94	10,134.44	45.22	16.94	164.19	-5,206.23	1,385.01	5,059.51	5,002.47	57.05	88.692	
3,100.00	12,071.69	10,156.00	10,147.14	45.76	16.95	163.95	-5,212.12	1,383.72	4,969.38	4,912.38	57.00	87.176	
3,200.00	12,071.98	10,156.00	10,147.14	46.34	16.95	163.63	-5,212.12	1,383.72	4,880.23	4,823.29	56.94	85.708	
3,200.11	12,071.98	10,156.00	10,147.14	46.34	16.95	163.63	-5,212.12	1,383.72	4,880.14	4,823.20	56.94	85.707	
3,300.00	12,072.26	10,156.00	10,147.14	46.97	16.95	163.27	-5,212.12	1,383.72	4,791.95	4,735.06	56.89	84.237	
3,400.00	12,072.55	10,156.00	10,147.14	47.64	16.95	162.89	-5,212.12	1,383.72	4,704.13	4,647.29	56.84	82.756	
3,500.00	12,072.83	10,156.00	10,147.14	48.36	16.95	162.50	-5,212.12	1,383.72	4,616.81	4,560.00	56.81	81.267	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Redhead 31 Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 9815- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	12,073.12	10,173.73	10,162.94	49.13	16.96	162.15	-5,219.96	1,382.02	4,529.76	4,472.92	56.83	79.703	
13,700.00	12,073.40	10,188.00	10,175.51	49.94	16.97	161.77	-5,226.58	1,380.59	4,443.36	4,386.50	56.86	78.145	
13,800.00	12,073.68	10,188.00	10,175.51	50.80	16.97	161.32	-5,226.58	1,380.59	4,357.36	4,300.49	56.87	76.623	
13,900.00	12,073.97	10,188.00	10,175.51	51.69	16.97	160.85	-5,226.58	1,380.59	4,271.98	4,215.08	56.89	75.090	
14,000.00	12,074.25	10,188.00	10,175.51	52.62	16.97	160.36	-5,226.58	1,380.59	4,187.24	4,130.30	56.93	73.546	
14,100.00	12,074.54	10,206.22	10,191.32	53.58	16.98	159.92	-5,235.44	1,378.79	4,102.90	4,045.86	57.04	71.928	
14,200.00	12,074.82	10,220.00	10,203.13	54.58	16.99	159.44	-5,242.42	1,377.50	4,019.35	3,962.19	57.16	70.318	
14,300.00	12,075.11	10,220.00	10,203.13	55.61	16.99	158.87	-5,242.42	1,377.50	3,936.39	3,879.12	57.27	68.735	
14,400.00	12,075.39	10,220.00	10,203.13	56.67	16.99	158.27	-5,242.42	1,377.50	3,854.24	3,796.83	57.41	67.139	
14,500.00	12,075.68	10,233.52	10,214.57	57.76	17.01	157.70	-5,249.54	1,376.29	3,772.76	3,715.15	57.61	65.493	
14,600.00	12,075.96	10,251.00	10,229.08	58.87	17.02	157.12	-5,259.16	1,374.84	3,692.26	3,634.42	57.84	63.831	
14,700.00	12,076.24	10,251.00	10,229.08	60.01	17.02	156.42	-5,259.16	1,374.84	3,612.40	3,554.32	58.08	62.197	
14,800.00	12,076.53	10,251.00	10,229.08	61.17	17.02	155.67	-5,259.16	1,374.84	3,533.56	3,475.21	58.36	60.553	
14,900.00	12,076.81	10,251.00	10,229.08	62.36	17.02	154.88	-5,259.16	1,374.84	3,455.82	3,397.15	58.67	58.898	
15,000.00	12,077.10	10,283.00	10,254.92	63.57	17.06	154.25	-5,277.89	1,372.52	3,378.90	3,319.80	59.10	57.174	
15,100.00	12,077.38	10,283.00	10,254.92	64.79	17.06	153.36	-5,277.89	1,372.52	3,303.01	3,243.50	59.51	55.500	
15,200.00	12,077.67	10,283.00	10,254.92	66.04	17.06	152.42	-5,277.89	1,372.52	3,228.43	3,168.45	59.98	53.823	
15,300.00	12,077.95	10,300.37	10,268.53	67.30	17.09	151.54	-5,288.63	1,371.45	3,154.95	3,094.41	60.54	52.117	
15,400.00	12,078.23	10,315.00	10,279.75	68.58	17.11	150.59	-5,297.99	1,370.68	3,082.85	3,021.70	61.14	50.420	
15,500.00	12,078.52	10,315.00	10,279.75	69.88	17.11	149.45	-5,297.99	1,370.68	3,012.11	2,950.31	61.80	48.741	
15,600.00	12,078.80	10,346.00	10,302.79	71.19	17.17	148.52	-5,318.67	1,369.16	2,942.87	2,880.32	62.55	47.049	
15,700.00	12,079.09	10,346.00	10,302.79	72.51	17.17	147.23	-5,318.67	1,369.16	2,874.92	2,811.58	63.35	45.384	
15,800.00	12,079.37	10,362.26	10,314.45	73.85	17.21	146.02	-5,329.97	1,368.32	2,808.68	2,744.45	64.23	43.731	
15,900.00	12,079.66	10,377.00	10,324.76	75.21	17.24	144.71	-5,340.47	1,367.48	2,744.09	2,678.91	65.18	42.101	
16,000.00	12,079.94	10,390.70	10,334.11	76.57	17.28	143.30	-5,350.45	1,366.70	2,681.29	2,615.08	66.21	40.498	
16,100.00	12,080.22	10,409.00	10,346.24	77.94	17.33	141.85	-5,364.13	1,365.77	2,620.45	2,553.14	67.31	38.929	
16,200.00	12,080.51	10,409.00	10,346.24	79.33	17.33	140.02	-5,364.13	1,365.77	2,561.71	2,493.20	68.52	37.389	
16,300.00	12,080.79	10,441.00	10,366.50	80.73	17.42	138.58	-5,388.85	1,364.50	2,504.94	2,435.17	69.77	35.903	
16,400.00	12,081.08	10,441.00	10,366.50	82.13	17.42	136.47	-5,388.85	1,364.50	2,450.58	2,379.44	71.14	34.448	
16,500.00	12,081.36	10,472.00	10,385.03	83.55	17.53	134.79	-5,413.69	1,363.74	2,398.37	2,325.83	72.55	33.059	
16,600.00	12,081.65	10,485.33	10,392.60	84.97	17.58	132.63	-5,424.66	1,363.54	2,348.81	2,274.76	74.06	31.717	
16,700.00	12,081.93	10,504.00	10,402.71	86.40	17.65	130.45	-5,440.35	1,363.32	2,301.98	2,226.36	75.62	30.440	
16,800.00	12,082.22	10,516.77	10,409.25	87.84	17.70	127.97	-5,451.32	1,363.20	2,257.99	2,180.73	77.26	29.224	
16,900.00	12,082.50	10,535.00	10,418.00	89.29	17.78	125.46	-5,467.31	1,363.02	2,217.04	2,138.10	78.95	28.082	
17,000.00	12,082.78	10,548.00	10,423.75	90.75	17.84	122.64	-5,478.97	1,362.84	2,179.27	2,098.58	80.69	27.009	
17,100.00	12,083.07	10,567.00	10,431.34	92.21	17.93	119.84	-5,496.38	1,362.48	2,144.87	2,062.43	82.44	26.018	
17,200.00	12,083.35	10,580.39	10,436.12	93.68	18.00	116.68	-5,508.89	1,362.18	2,113.90	2,029.68	84.22	25.100	
17,300.00	12,083.64	10,599.00	10,442.07	95.15	18.10	113.53	-5,526.51	1,361.79	2,086.51	2,000.52	85.99	24.263	
17,400.00	12,083.92	10,617.56	10,447.29	96.63	18.20	110.22	-5,544.32	1,361.54	2,062.75	1,974.99	87.76	23.504	
17,500.00	12,084.21	10,630.00	10,450.46	98.12	18.27	106.51	-5,556.35	1,361.51	2,042.74	1,953.22	89.52	22.818	
17,600.00	12,084.49	10,662.00	10,457.76	99.61	18.47	103.50	-5,587.50	1,362.00	2,026.09	1,934.86	91.23	22.207	
17,700.00	12,084.77	10,694.00	10,464.09	101.11	18.68	100.40	-5,618.84	1,363.28	2,012.96	1,920.03	92.93	21.661	
17,800.00	12,085.06	10,726.00	10,469.42	102.61	18.90	97.26	-5,650.34	1,365.04	2,003.20	1,908.61	94.60	21.176	
17,900.00	12,085.34	10,774.10	10,475.73	104.11	19.26	94.82	-5,697.93	1,367.93	1,996.46	1,900.22	96.24	20.744	
18,000.00	12,085.63	10,821.00	10,480.34	105.63	19.63	92.32	-5,744.51	1,370.88	1,992.43	1,894.58	97.85	20.361	
18,092.32	12,085.89	10,853.00	10,482.77	107.03	19.90	89.50	-5,776.34	1,373.10	1,991.15	1,891.87	99.28	20.055	
18,100.00	12,085.91	10,862.91	10,483.38	107.14	19.98	89.60	-5,786.20	1,373.86	1,991.12	1,891.70	99.42	20.027	CC
18,200.00	12,086.20	10,910.82	10,485.10	108.66	20.41	87.17	-5,833.92	1,377.81	1,992.96	1,892.00	100.97	19.739	
18,300.00	12,086.48	10,988.18	10,485.74	110.18	21.15	86.13	-5,911.08	1,383.19	1,996.46	1,893.88	102.58	19.463	
18,400.00	12,086.76	11,086.43	10,485.18	111.71	22.16	86.06	-6,009.12	1,389.52	2,000.75	1,896.45	104.29	19.184	
18,500.00	12,087.05	11,223.25	10,487.84	113.24	23.69	87.75	-6,145.63	1,398.44	2,002.83	1,896.51	106.32	18.838	
18,600.00	12,087.33	11,330.43	10,489.76	114.78	24.96	88.08	-6,252.56	1,405.42	2,005.39	1,897.12	108.27	18.522	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	*5000.1 Conroe DB*
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Redhead 31 Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 9815- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,700.00	12,087.62	11,436.77	10,493.29	116.32	26.29	88.36	-6,358.58	1,412.79	2,006.99	1,896.67	110.32	18.192	
18,800.00	12,087.90	11,537.08	10,494.38	117.86	27.59	88.37	-6,458.79	1,417.02	2,008.63	1,896.36	112.28	17.890	
18,900.00	12,088.19	11,609.70	10,493.76	119.40	28.55	87.14	-6,531.38	1,418.97	2,010.85	1,896.80	114.05	17.631	
19,000.00	12,088.47	11,685.53	10,491.68	120.95	29.57	86.05	-6,607.15	1,421.05	2,014.53	1,898.70	115.82	17.393	
19,100.00	12,088.76	19,100.00	10,487.85	122.50	132.32	87.17	-6,731.87	1,423.78	2,018.13	1,834.88	183.25	11.013	ES, SF
19,200.00	12,089.04	11,925.91	10,485.97	124.05	32.91	87.87	-6,847.40	1,425.33	2,019.96	1,900.03	119.93	16.842	
19,300.00	12,089.32	12,082.01	10,485.78	125.61	35.15	90.39	-7,003.49	1,426.54	2,020.17	1,897.92	122.26	16.524	
19,400.00	12,089.61	12,176.26	10,487.52	127.17	36.53	90.13	-7,097.72	1,428.05	2,019.59	1,895.25	124.34	16.242	
19,452.98	12,089.76	12,222.93	10,488.75	127.99	37.21	89.85	-7,144.34	1,429.57	2,019.52	1,894.05	125.46	16.096	
19,500.00	12,089.89	12,267.79	10,490.00	128.73	37.88	89.75	-7,189.15	1,431.26	2,019.54	1,893.04	126.50	15.965	
19,600.00	12,090.18	12,360.34	10,492.31	130.29	39.26	89.41	-7,281.61	1,434.71	2,019.81	1,891.12	128.69	15.695	
19,700.00	12,090.46	12,452.87	10,493.34	131.86	40.66	89.08	-7,374.10	1,437.23	2,020.50	1,889.66	130.84	15.442	
19,800.00	12,090.75	12,536.01	10,494.22	133.42	41.92	88.32	-7,457.18	1,439.97	2,021.64	1,888.69	132.95	15.206	
19,900.00	12,091.03	12,627.31	10,494.32	134.99	43.31	87.94	-7,548.41	1,443.63	2,023.90	1,888.76	135.13	14.977	
20,000.00	12,091.31	12,747.81	10,494.59	136.57	45.16	88.85	-7,668.87	1,446.78	2,025.16	1,887.63	137.52	14.726	
20,100.00	12,091.60	12,845.33	10,495.40	138.14	46.67	88.74	-7,766.34	1,449.81	2,026.32	1,886.54	139.79	14.496	
20,200.00	12,091.88	12,945.13	10,496.14	139.72	48.22	88.73	-7,866.09	1,452.94	2,027.58	1,885.49	142.08	14.270	
20,300.00	12,092.17	13,047.85	10,496.37	141.29	49.82	88.85	-7,968.77	1,455.39	2,028.76	1,884.39	144.37	14.052	
20,400.00	12,092.45	13,135.05	10,495.94	142.87	51.19	88.29	-8,055.96	1,456.93	2,030.10	1,883.59	146.52	13.856	
20,500.00	*12,092.74*	*13,225.81*	*10,494.65*	*144.45*	*52.61*	*87.88*	*-8,146.70*	*1,458.51*	*2,032.13*	*1,883.46*	*148.67*	*13.669*	
20,600.00	12,093.02	13,369.05	10,492.73	146.04	54.86	89.79	-8,289.92	1,459.75	2,033.66	1,882.49	151.18	13.452	
20,700.00	12,093.31	13,474.55	10,492.07	147.62	56.52	90.03	-8,395.41	1,459.32	2,033.72	1,880.33	153.39	13.258	
20,800.00	12,093.59	13,585.95	10,491.72	149.21	58.28	90.53	-8,506.81	1,458.42	2,033.28	1,877.63	155.65	13.063	
20,900.00	12,093.87	13,675.95	10,491.86	150.80	59.70	90.09	-8,596.81	1,457.63	2,032.47	1,874.68	157.79	12.881	
20,917.71	12,093.92	13,688.08	10,491.76	151.08	59.89	89.85	-8,608.93	1,457.53	2,032.44	1,874.30	158.14	12.852	
21,000.00	12,094.16	13,733.00	10,491.04	152.39	60.60	88.19	-8,653.85	1,457.13	2,033.02	1,873.35	159.66	12.733	
21,100.00	12,094.44	13,807.99	10,488.77	153.98	61.79	87.08	-8,728.80	1,456.99	2,035.16	1,873.55	161.61	12.593	
21,200.00	12,094.73	13,963.36	10,484.71	155.57	64.27	89.53	-8,884.11	1,456.48	2,036.76	1,872.63	164.13	12.409	
21,300.00	12,095.01	14,055.04	10,483.06	157.16	65.73	89.16	-8,975.77	1,455.55	2,037.34	1,871.12	166.22	12.257	
21,400.00	12,095.30	14,144.47	10,481.57	158.76	67.16	88.69	-9,065.18	1,455.29	2,038.29	1,869.96	168.33	12.109	
21,500.00	12,095.58	14,229.11	10,480.02	160.35	68.51	88.01	-9,149.81	1,455.92	2,040.00	1,869.58	170.42	11.970	
21,600.00	12,095.86	14,320.33	10,478.14	161.95	69.98	87.62	-9,241.00	1,456.99	2,042.18	1,869.60	172.58	11.833	
21,700.00	12,096.15	14,398.51	10,475.85	163.55	71.24	86.65	-9,319.14	1,458.10	2,045.17	1,870.57	174.61	11.713	
21,800.00	12,096.43	14,507.40	10,472.08	165.15	72.99	87.04	-9,427.95	1,459.78	2,048.69	1,871.80	176.89	11.582	
21,900.00	12,096.72	14,647.18	10,469.59	166.75	75.24	88.80	-9,567.70	1,460.31	2,049.88	1,870.46	179.42	11.425	
22,000.00	12,097.00	14,739.81	10,467.55	168.35	76.73	88.47	-9,660.30	1,460.14	2,051.30	1,869.76	181.54	11.299	
22,100.00	12,097.29	14,760.00	10,467.06	169.96	77.06	84.94	-9,680.49	1,460.07	2,054.36	1,871.35	183.01	11.226	
22,175.33	12,097.50	14,760.00	10,467.06	171.16	77.06	81.64	-9,680.49	1,460.07	2,059.80	1,876.04	183.76	11.209	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 239-, 9817- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	70.91	300.51	868.16	918.70				
100.00	100.00	95.21	95.21	0.13	0.15	70.89	300.76	868.26	918.88	918.59	0.29	3,202.520	
200.00	200.00	191.86	191.86	0.49	0.31	70.86	301.51	868.55	919.42	918.62	0.80	1,149.527	
300.00	300.00	292.12	292.11	0.85	0.57	70.80	302.58	869.03	920.22	918.80	1.42	646.476	
400.00	400.00	388.71	388.70	1.21	0.92	70.78	303.19	869.67	921.06	918.93	2.13	432.949	
500.00	500.00	491.25	491.23	1.57	1.29	70.75	303.93	870.35	921.92	919.06	2.85	323.130	
600.00	600.00	590.55	590.52	1.93	1.64	70.72	304.61	870.98	922.74	919.18	3.57	258.665	
700.00	700.00	689.85	689.82	2.29	2.00	70.70	305.29	871.69	923.64	919.36	4.28	215.729	
800.00	800.00	791.32	791.28	2.64	2.36	70.68	305.88	872.51	924.60	919.60	5.00	184.815	
900.00	900.00	895.44	895.40	3.00	2.73	70.65	306.47	872.90	925.14	919.41	5.73	161.402	
1,000.00	1,000.00	1,000.31	1,000.27	3.36	3.10	70.60	307.25	872.72	925.23	918.77	6.46	143.285	
1,100.00	1,100.00	1,111.94	1,111.89	3.72	3.47	70.60	307.07	871.75	924.35	917.16	7.19	128.538	
1,200.00	1,200.00	1,206.61	1,206.55	4.08	3.79	70.64	305.96	870.82	923.04	915.17	7.87	117.350	
1,261.45	1,261.45	1,260.01	1,259.95	4.30	3.97	70.68	305.22	870.83	922.77	914.50	8.27	111.623	
1,300.00	1,300.00	1,294.03	1,293.96	4.44	4.09	70.71	304.83	871.06	922.87	914.35	8.52	108.308	
1,400.00	1,400.00	1,387.05	1,386.97	4.79	4.41	70.77	304.25	872.13	923.75	914.55	9.20	100.378	
1,500.00	1,500.00	1,483.44	1,483.35	5.15	4.75	70.74	305.21	873.35	925.27	915.37	9.90	93.443	
1,600.00	1,600.00	1,602.17	1,602.06	5.51	5.17	70.62	307.27	873.38	925.86	915.18	10.68	86.692	
1,700.00	1,700.00	1,714.78	1,714.65	5.87	5.56	70.50	308.65	871.51	924.69	913.26	11.43	80.914	
1,800.00	1,800.00	1,817.79	1,817.63	6.23	5.91	70.45	308.63	869.30	922.66	910.52	12.14	76.006	
1,900.00	1,900.00	1,910.47	1,910.29	6.59	6.23	70.48	307.66	867.87	920.86	908.05	12.82	71.856	
2,000.00	2,000.00	1,998.72	1,998.54	6.95	6.53	70.54	306.52	867.65	920.20	906.72	13.48	68.278	
2,000.28	2,000.28	1,998.97	1,998.78	6.95	6.53	70.54	306.52	867.65	920.20	906.72	13.48	68.268	
2,100.00	2,100.00	2,085.21	2,085.01	7.30	6.83	70.62	305.61	868.61	920.90	906.77	14.13	65.155	
2,200.00	2,200.00	2,177.19	2,176.97	7.66	7.15	70.67	305.36	870.76	923.01	908.19	14.81	62.312	
2,300.00	2,300.00	2,279.19	2,278.94	8.02	7.52	70.67	306.13	872.92	925.25	909.72	15.53	59.573	
2,400.00	2,400.00	2,392.69	2,392.42	8.38	7.92	70.57	308.25	874.07	926.85	910.56	16.29	56.885	
2,500.00	2,500.00	2,500.59	2,500.30	8.74	8.30	70.45	310.22	873.53	926.99	909.95	17.03	54.426	
2,600.00	2,599.99	2,608.44	2,608.13	9.10	8.67	70.40	311.48	872.38	926.26	908.49	17.76	52.142	
2,700.00	2,699.96	2,716.25	2,715.93	9.45	9.05	70.53	311.48	870.71	924.45	905.96	18.49	49.986	
2,800.00	2,799.86	2,812.64	2,812.30	9.81	9.38	70.83	310.49	869.44	922.32	903.14	19.18	48.080	
2,900.00	2,899.68	2,906.66	2,906.31	10.17	9.70	71.31	308.59	868.72	920.22	900.35	19.86	46.324	
2,989.07	2,988.47	2,978.96	2,978.58	10.49	9.95	71.83	307.12	869.22	919.46	899.03	20.43	44.997	
3,000.00	2,999.37	2,988.73	2,988.35	10.53	9.98	71.90	306.94	869.38	919.47	898.96	20.51	44.837	
3,100.00	3,098.90	3,082.60	3,082.19	10.89	10.31	72.62	305.43	871.20	919.87	898.68	21.19	43.406	
3,200.00	3,198.26	3,179.26	3,178.82	11.25	10.65	73.42	304.51	873.31	920.69	898.80	21.89	42.057	
3,300.06	3,297.46	3,276.90	3,276.44	11.62	10.99	74.26	304.49	875.38	921.78	899.18	22.60	40.787	
3,400.00	3,396.43	3,374.97	3,374.49	11.98	11.34	75.11	305.28	877.40	923.15	899.84	23.31	39.598	
3,500.00	3,495.46	3,471.22	3,470.71	12.36	11.68	75.92	306.66	879.19	924.71	900.69	24.02	38.492	
3,600.00	3,594.48	3,561.74	3,561.17	12.73	12.00	76.81	306.91	882.24	927.60	902.89	24.71	37.537	
3,700.00	3,693.51	3,692.68	3,692.09	13.11	12.46	77.63	308.05	884.29	929.13	903.57	25.56	36.353	
3,800.00	3,792.54	3,808.28	3,807.65	13.49	12.86	78.32	310.41	882.49	928.01	901.67	26.34	35.236	
3,900.00	3,891.56	3,906.79	3,906.12	13.87	13.20	79.08	311.59	880.40	926.37	899.31	27.06	34.233	
4,000.00	3,990.59	4,005.73	4,005.04	14.25	13.54	79.95	311.28	878.72	925.04	897.25	27.79	33.292	
4,095.84	4,085.50	4,091.29	4,090.59	14.62	13.84	80.86	309.70	877.91	924.43	895.98	28.45	32.490	
4,100.00	4,089.62	4,094.98	4,094.28	14.64	13.85	80.90	309.62	877.89	924.43	895.95	28.48	32.458	ES
4,200.00	4,188.64	4,181.04	4,180.31	15.03	14.15	81.90	307.45	878.23	925.28	896.11	29.17	31.725	
4,300.00	4,287.67	4,272.50	4,271.73	15.42	14.47	82.91	305.14	879.68	927.58	897.71	29.87	31.055	
4,400.00	4,386.70	4,370.42	4,369.61	15.81	14.81	83.89	303.27	881.54	930.55	899.96	30.60	30.412	
4,500.00	4,485.72	4,465.48	4,464.65	16.20	15.14	84.80	302.42	883.39	933.93	902.61	31.32	29.820	
4,600.00	4,584.75	4,567.27	4,566.42	16.59	15.50	85.62	303.13	885.40	937.70	905.63	32.07	29.240	
4,700.00	4,683.78	4,671.52	4,670.65	16.98	15.87	86.41	303.96	886.94	941.17	908.34	32.83	28.668	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 239-, 9817- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,782.80	4,775.37	4,774.49	17.38	16.23	87.17	305.27	887.83	944.22	910.63	33.59	28.110	
4,900.00	4,881.83	4,879.70	4,878.80	17.78	16.60	87.91	306.89	888.32	947.07	912.72	34.35	27.571	
5,000.00	4,980.86	4,980.07	4,979.15	18.17	16.95	88.61	309.03	888.16	949.47	914.37	35.10	27.053	
5,100.00	5,079.88	5,075.96	5,075.03	18.57	17.29	89.31	311.03	888.34	952.35	916.52	35.83	26.582	
5,200.00	5,178.91	5,172.41	5,171.45	18.97	17.63	90.01	312.96	888.79	955.64	919.08	36.56	26.139	
5,300.00	5,277.94	5,269.81	5,268.83	19.37	17.98	90.72	314.66	889.51	959.37	922.07	37.30	25.722	
5,400.00	5,376.96	5,369.29	5,368.30	19.77	18.33	91.44	316.10	890.33	963.31	925.27	38.04	25.322	
5,500.00	5,475.99	5,473.77	5,472.77	20.17	18.70	92.16	317.53	890.91	967.16	928.35	38.81	24.922	
5,600.00	5,575.02	5,574.95	5,573.93	20.57	19.05	92.87	319.08	891.01	970.68	931.12	39.56	24.537	
5,690.40	5,664.54	5,660.73	5,659.71	20.93	19.36	93.51	320.33	891.19	974.10	933.89	40.22	24.220	
5,700.00	5,674.04	5,669.79	5,668.76	20.97	19.39	93.57	320.49	891.23	974.50	934.21	40.29	24.188	
5,800.00	5,773.21	5,770.04	5,769.00	21.37	19.74	94.19	322.35	891.71	978.38	937.35	41.03	23.843	
5,900.00	5,872.58	5,869.25	5,868.19	21.76	20.10	94.71	324.12	892.13	981.83	940.06	41.77	23.506	
6,000.00	5,972.14	5,968.07	5,967.00	22.15	20.45	95.15	325.57	892.60	984.93	942.43	42.50	23.176	
6,100.00	6,071.84	6,070.99	6,069.91	22.52	20.81	95.50	326.74	892.90	987.41	944.17	43.23	22.839	
6,200.00	6,171.66	6,172.96	6,171.88	22.89	21.17	95.79	327.43	892.97	989.21	945.25	43.96	22.503	
6,300.00	6,271.57	6,276.00	6,274.92	23.25	21.53	96.01	327.75	892.51	990.02	945.34	44.68	22.159	
6,400.00	6,371.54	6,371.43	6,370.34	23.60	21.86	96.14	327.86	892.30	990.56	945.20	45.36	21.838	
6,490.46	6,462.00	6,461.16	6,460.08	23.92	22.17	96.19	327.54	892.33	990.84	944.86	45.98	21.548	
6,500.00	6,471.54	6,471.02	6,469.94	23.95	22.21	96.20	327.51	892.33	990.84	944.79	46.05	21.517	
6,600.00	6,571.54	6,574.79	6,573.71	24.29	22.56	96.21	327.29	892.13	990.67	943.92	46.75	21.191	
6,700.00	6,671.54	6,678.79	6,677.70	24.63	22.92	96.27	326.40	891.43	990.10	942.65	47.45	20.867	
6,800.00	6,771.54	6,774.94	6,773.84	24.98	23.25	96.30	325.80	890.66	989.38	941.26	48.12	20.560	
6,900.00	6,871.54	6,877.43	6,876.33	25.32	23.60	96.32	325.63	890.32	989.07	940.25	48.82	20.260	
7,000.00	6,971.54	6,974.98	6,973.88	25.66	23.93	96.34	325.31	889.64	988.42	938.92	49.50	19.968	
7,100.00	7,071.54	7,074.30	7,073.19	26.01	24.28	96.39	324.49	889.26	988.13	937.95	50.19	19.690	
7,200.00	7,171.54	7,173.96	7,172.86	26.35	24.62	96.43	323.83	888.87	987.82	936.95	50.87	19.417	
7,261.76	7,233.29	7,232.91	7,231.79	26.56	24.82	96.46	323.32	888.72	987.72	936.43	51.29	19.258	
7,300.00	7,271.54	7,269.08	7,267.96	26.70	24.95	96.48	322.93	888.71	987.76	936.21	51.54	19.163	
7,400.00	7,371.54	7,377.93	7,376.81	27.04	25.32	96.57	321.46	888.38	987.62	935.35	52.27	18.895	
7,500.00	7,471.54	7,475.71	7,474.56	27.39	25.66	96.69	319.45	887.60	987.06	934.11	52.95	18.641	
7,600.00	7,571.54	7,574.13	7,572.95	27.73	26.00	96.84	316.96	886.94	986.69	933.05	53.64	18.396	
7,700.00	7,671.54	7,673.91	7,672.69	28.08	26.34	97.00	314.30	886.34	986.41	932.09	54.33	18.157	
7,800.00	7,771.54	7,773.49	7,772.23	28.43	26.68	97.17	311.37	885.70	986.14	931.12	55.02	17.924	
7,900.00	7,871.54	7,871.98	7,870.68	28.77	27.03	97.32	308.81	885.28	986.05	930.34	55.70	17.701	
8,000.00	7,971.54	7,974.31	7,972.98	29.12	27.38	97.47	306.35	884.78	985.87	929.46	56.41	17.478	
8,100.00	8,071.54	8,074.35	8,072.99	29.47	27.73	97.61	303.88	884.08	985.50	928.40	57.10	17.259	
8,200.00	8,171.54	8,172.22	8,170.83	29.82	28.07	97.76	301.34	883.58	985.34	927.55	57.79	17.051	
8,290.71	8,262.24	8,262.21	8,260.74	30.13	28.38	97.96	297.97	883.08	985.30	926.89	58.42	16.867	
8,300.00	8,271.54	8,271.43	8,269.96	30.16	28.41	97.98	297.60	883.03	985.30	926.82	58.48	16.848	
8,400.00	8,371.54	8,371.27	8,369.73	30.51	28.76	98.21	293.69	882.50	985.34	926.16	59.18	16.651	
8,500.00	8,471.54	8,468.43	8,466.82	30.86	29.10	98.41	290.36	882.13	985.45	925.59	59.86	16.462	
8,600.00	8,571.54	8,564.73	8,563.10	31.21	29.43	98.55	287.90	882.29	985.99	925.45	60.54	16.285	
8,700.00	8,671.54	8,669.06	8,667.37	31.56	29.80	98.74	284.61	882.44	986.62	925.36	61.26	16.105	
8,800.00	8,771.54	8,760.97	8,759.23	31.91	30.12	98.91	281.63	882.42	987.10	925.18	61.92	15.940	
8,900.00	8,871.54	8,885.16	8,883.33	32.26	30.56	99.19	276.78	882.13	987.61	924.90	62.72	15.748	
8,975.65	8,947.19	8,947.57	8,945.69	32.52	30.77	99.32	274.51	881.35	987.12	923.92	63.20	15.620	
9,000.00	8,971.54	8,967.82	8,965.93	32.61	30.85	99.37	273.80	881.27	987.17	923.82	63.35	15.583	
9,100.00	9,071.54	9,066.31	9,064.35	32.96	31.19	99.57	270.22	881.26	987.75	923.71	64.04	15.423	
9,200.00	9,171.54	9,177.11	9,175.06	33.31	31.58	99.83	265.87	880.62	987.85	923.06	64.79	15.248	
9,300.00	9,271.54	9,286.04	9,283.96	33.66	31.96	99.93	264.25	878.99	986.61	921.09	65.52	15.059	
9,400.00	9,371.54	9,382.94	9,380.82	34.01	32.30	100.09	261.80	877.68	985.71	919.50	66.21	14.888	

devon

MS Energy Services

Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 239-, 9817- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,500.00	9,471.54	9,495.01	9,492.80	34.36	32.69	100.30	258.61	874.81	983.65	916.70	66.94	14.693	
9,600.00	9,571.54	9,580.01	9,577.74	34.71	32.99	100.45	256.43	872.76	981.79	914.19	67.60	14.524	
9,629.25	9,600.79	9,601.55	9,599.28	34.81	33.07	100.48	255.82	872.56	981.68	913.90	67.78	14.484	
9,700.00	9,671.54	9,680.09	9,677.79	35.06	33.34	100.61	253.72	872.46	981.99	913.69	68.30	14.378	
9,800.00	9,771.54	9,785.16	9,782.81	35.41	33.71	100.73	252.00	870.00	979.95	910.93	69.02	14.198	
9,900.00	9,871.54	9,874.22	9,871.62	35.76	33.78	101.09	246.17	868.03	979.03	909.60	69.44	14.100	
9,906.65	9,878.19	9,880.10	9,877.44	35.78	33.78	101.13	245.38	867.87	979.03	909.57	69.46	14.095	
10,000.00	9,971.54	9,942.00	9,938.44	36.11	33.79	101.75	234.93	866.88	980.64	910.89	69.75	14.059	SF
10,100.00	10,071.54	10,016.60	10,010.95	36.46	33.80	102.74	217.52	866.98	985.69	915.65	70.04	14.074	
10,200.00	10,171.54	10,095.23	10,085.18	36.81	33.83	104.21	191.67	866.31	992.92	922.63	70.30	14.125	
10,300.00	10,271.54	10,170.77	10,153.71	37.17	33.87	105.99	160.07	864.61	1,002.65	932.15	70.50	14.222	
10,400.00	10,371.54	10,224.00	10,199.65	37.52	33.90	107.49	133.24	862.97	1,016.43	945.95	70.48	14.421	
10,500.00	10,471.54	10,269.57	10,236.29	37.87	33.95	108.98	106.23	861.61	1,035.92	965.66	70.26	14.745	
10,600.00	10,571.54	10,305.85	10,262.69	38.22	33.99	110.33	81.42	860.15	1,061.63	991.87	69.76	15.218	
10,700.00	10,671.54	10,331.98	10,279.91	38.57	34.03	111.38	61.81	858.90	1,093.92	1,024.94	68.98	15.858	
10,800.00	10,771.54	10,350.00	10,290.93	38.93	34.06	112.14	47.58	858.16	1,132.87	1,064.91	67.96	16.670	
10,900.00	10,871.54	10,369.03	10,301.84	39.28	34.09	112.95	32.01	857.60	1,178.11	1,111.25	66.85	17.622	
11,000.00	10,971.54	10,381.00	10,308.35	39.63	34.11	113.47	21.96	857.43	1,229.14	1,163.52	65.62	18.731	
11,100.00	11,071.54	10,397.78	10,316.97	39.98	34.15	114.19	7.56	857.38	1,285.32	1,220.86	64.46	19.941	
11,200.00	11,171.54	10,413.00	10,324.25	40.34	34.18	114.86	-5.80	857.49	1,346.14	1,282.82	63.32	21.260	
11,300.00	11,271.54	10,424.19	10,329.32	40.69	34.20	115.35	-15.78	857.64	1,410.98	1,348.78	62.20	22.685	
11,400.00	11,371.54	10,438.00	10,335.29	41.04	34.23	115.95	-28.23	857.86	1,479.32	1,418.13	61.20	24.173	
11,500.00	11,471.54	10,451.23	10,340.74	41.40	34.27	116.53	-40.28	858.12	1,550.74	1,490.45	60.29	25.723	
11,525.27	11,496.81	10,454.44	10,342.03	41.48	34.28	116.67	-43.22	858.20	1,569.23	1,509.16	60.07	26.123	
11,550.00	11,521.53	10,457.66	10,343.31	41.57	34.28	116.79	-46.17	858.27	1,587.26	1,527.40	59.86	26.518	
11,600.00	11,571.33	10,469.00	10,347.70	41.72	34.31	117.10	-56.62	858.58	1,622.75	1,563.28	59.47	27.287	
11,650.00	11,620.56	10,469.00	10,347.70	41.85	34.31	116.73	-56.62	858.58	1,656.72	1,597.78	58.94	28.108	
11,700.00	11,668.84	10,487.31	10,354.46	41.98	34.36	116.99	-73.63	859.05	1,688.91	1,630.30	58.62	28.813	
11,750.00	11,715.82	10,501.00	10,359.27	42.10	34.40	116.87	-86.45	859.33	1,719.16	1,660.93	58.23	29.523	
11,800.00	11,761.13	10,514.12	10,363.68	42.20	34.44	116.56	-98.80	859.56	1,747.27	1,689.43	57.84	30.210	
11,850.00	11,804.43	10,531.00	10,369.06	42.30	34.49	116.25	-114.80	859.80	1,773.09	1,715.60	57.48	30.846	
11,900.00	11,845.39	10,541.52	10,372.24	42.39	34.53	115.48	-124.83	859.93	1,796.46	1,739.40	57.07	31.480	
11,950.00	11,883.69	10,563.00	10,378.26	42.47	34.60	115.07	-145.44	860.12	1,817.36	1,760.60	56.76	32.018	
12,000.00	11,919.06	10,563.00	10,378.26	42.54	34.60	113.43	-145.44	860.12	1,835.54	1,779.27	56.27	32.617	
12,050.00	11,951.20	10,584.27	10,383.58	42.61	34.67	112.70	-166.04	860.18	1,850.96	1,794.97	55.99	33.058	
12,100.00	11,979.89	10,594.00	10,385.81	42.68	34.71	111.20	-175.51	860.15	1,863.60	1,807.97	55.63	33.500	
12,150.00	12,004.90	10,613.26	10,389.81	42.75	34.78	110.05	-194.34	860.02	1,873.32	1,817.95	55.37	33.835	
12,200.00	12,026.05	10,626.00	10,392.16	42.82	34.83	108.39	-206.87	859.90	1,880.14	1,825.05	55.08	34.133	
12,250.00	12,043.17	10,643.42	10,394.99	42.89	34.90	106.86	-224.05	859.66	1,883.97	1,829.11	54.86	34.342	
12,300.00	12,056.13	10,657.00	10,396.90	42.97	34.95	104.96	-237.50	859.39	1,884.80	1,830.16	54.65	34.489	
12,350.00	12,064.83	10,674.22	10,398.93	43.05	35.02	103.16	-254.59	858.95	1,882.62	1,828.12	54.50	34.546	
12,400.00	12,069.21	10,688.00	10,400.22	43.13	35.08	101.03	-268.30	858.50	1,877.43	1,823.06	54.37	34.533	
12,423.64	12,069.77	10,688.00	10,400.22	43.17	35.08	99.56	-268.30	858.50	1,873.99	1,819.69	54.30	34.511	
12,500.00	12,069.98	10,720.00	10,402.12	43.32	35.23	96.82	-300.22	857.47	1,862.75	1,808.52	54.23	34.346	
12,600.00	12,070.27	10,761.56	10,403.01	43.58	35.42	93.00	-341.75	856.24	1,851.13	1,796.90	54.22	34.139	
12,667.68	12,070.46	10,810.07	10,403.29	43.79	35.67	91.76	-390.24	854.88	1,844.55	1,790.26	54.29	33.978	
12,700.00	12,070.55	10,834.74	10,403.35	43.90	35.81	91.25	-414.91	854.35	1,841.71	1,787.38	54.33	33.898	
12,800.00	12,070.84	10,922.10	10,403.39	44.29	36.30	90.44	-502.26	853.52	1,834.63	1,780.07	54.56	33.623	
12,900.00	12,071.12	11,033.09	10,404.83	44.73	37.01	91.34	-613.23	855.26	1,829.06	1,774.07	54.98	33.265	
13,000.00	12,071.41	11,155.83	10,409.18	45.22	37.88	93.09	-735.79	860.14	1,823.88	1,768.27	55.61	32.796	
13,100.00	12,071.69	11,217.93	10,411.42	45.76	38.36	90.22	-797.77	863.18	1,820.50	1,764.28	56.22	32.384	
13,200.00	12,071.98	11,323.65	10,413.57	46.34	39.22	90.64	-903.31	868.86	1,820.19	1,763.15	57.04	31.909	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 239-, 9817- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,200.11	12,071.98	11,323.83	10,413.57	46.34	39.22	90.65	-903.49	868.87	1,820.19	1,763.14	57.04	31.908	
13,300.00	12,072.26	11,456.33	10,418.53	46.97	40.38	93.09	-1,035.78	874.48	1,818.45	1,760.41	58.04	31.329	
13,400.00	12,072.55	11,536.00	10,421.42	47.64	41.12	91.54	-1,115.33	877.86	1,816.90	1,757.96	58.94	30.826	
13,472.27	12,072.75	11,587.90	10,422.74	48.16	41.62	90.00	-1,167.16	880.22	1,816.58	1,756.97	59.61	30.474	
13,500.00	12,072.83	11,609.62	10,423.15	48.36	41.83	89.55	-1,188.85	881.20	1,816.62	1,756.75	59.87	30.341	
13,600.00	12,073.12	11,744.88	10,426.72	49.13	43.20	92.16	-1,323.93	886.89	1,816.01	1,754.96	61.05	29.744	
13,700.00	12,073.40	11,826.27	10,429.47	49.94	44.05	90.77	-1,405.20	890.66	1,814.92	1,752.79	62.12	29.215	
13,748.27	12,073.54	11,864.20	10,430.53	50.36	44.46	89.99	-1,443.06	892.65	1,814.78	1,752.12	62.66	28.963	
13,800.00	12,073.68	11,904.85	10,431.45	50.80	44.91	89.17	-1,483.64	894.91	1,814.94	1,751.70	63.24	28.700	
13,900.00	12,073.97	12,025.65	10,434.22	51.69	46.26	90.69	-1,604.27	900.60	1,814.85	1,750.31	64.54	28.119	
14,000.00	12,074.25	12,126.28	10,436.42	52.62	47.42	90.72	-1,704.78	904.84	1,814.70	1,748.89	65.81	27.574	
14,100.00	12,074.54	12,240.80	10,439.75	53.58	48.77	91.77	-1,819.22	907.26	1,812.87	1,745.73	67.14	27.001	
14,200.00	12,074.82	12,344.90	10,441.55	54.58	50.03	92.07	-1,923.29	909.11	1,812.10	1,743.65	68.45	26.472	
14,300.00	12,075.11	12,452.86	10,445.00	55.61	51.37	92.64	-2,031.18	910.79	1,809.86	1,740.03	69.83	25.917	
14,400.00	12,075.39	12,534.16	10,447.21	56.67	52.39	91.28	-2,112.43	912.46	1,808.31	1,737.16	71.15	25.415	
14,500.00	12,075.68	12,660.24	10,450.09	57.76	54.01	93.15	-2,238.45	914.90	1,807.22	1,734.54	72.67	24.868	
14,600.00	12,075.96	12,775.35	10,454.84	58.87	55.51	94.23	-2,353.45	916.11	1,803.89	1,729.70	74.19	24.315	
14,700.00	12,076.24	12,832.26	10,456.20	60.01	56.26	91.12	-2,410.35	916.24	1,801.82	1,726.35	75.47	23.874	
14,800.00	12,076.53	12,985.28	10,458.59	61.17	58.29	94.97	-2,563.30	913.06	1,799.51	1,722.48	77.03	23.361	
14,900.00	12,076.81	13,068.31	10,460.56	62.36	59.41	93.75	-2,646.27	910.64	1,796.09	1,717.70	78.39	22.912	
15,000.00	12,077.10	13,154.84	10,461.79	63.57	60.59	92.78	-2,732.78	908.82	1,793.84	1,714.06	79.79	22.483	
15,100.00	12,077.38	13,266.26	10,464.11	64.79	62.12	93.62	-2,844.13	905.96	1,790.78	1,709.50	81.27	22.034	
15,200.00	12,077.67	13,345.66	10,464.99	66.04	63.22	92.11	-2,923.51	904.30	1,788.81	1,706.12	82.69	21.634	
15,300.00	12,077.95	13,489.20	10,466.16	67.30	65.22	95.35	-3,066.91	898.30	1,786.37	1,702.16	84.20	21.215	
15,400.00	12,078.23	13,666.64	10,472.74	68.58	67.71	101.14	-3,243.72	885.21	1,779.59	1,693.90	85.69	20.767	
15,500.00	12,078.52	13,758.77	10,477.76	69.88	69.01	100.64	-3,335.41	877.64	1,771.17	1,684.11	87.06	20.344	
15,600.00	12,078.80	13,835.97	10,481.19	71.19	70.11	99.00	-3,412.30	871.62	1,763.84	1,675.42	88.42	19.948	
15,700.00	12,079.09	13,907.16	10,483.48	72.51	71.13	96.85	-3,483.26	866.46	1,757.91	1,668.14	89.78	19.581	
15,800.00	12,079.37	13,969.11	10,484.39	73.85	72.02	93.93	-3,545.08	862.61	1,753.97	1,662.84	91.13	19.247	
15,900.00	12,079.66	14,031.32	10,484.21	75.21	72.92	90.98	-3,607.21	859.55	1,752.19	1,659.69	92.50	18.944	
15,932.62	12,079.75	14,051.64	10,483.93	75.65	73.22	90.01	-3,627.52	858.76	1,752.07	1,659.13	92.94	18.851	
16,000.00	12,079.94	14,123.87	10,482.73	76.57	74.27	90.39	-3,699.70	856.69	1,752.32	1,658.36	93.96	18.651	
16,100.00	12,080.22	14,269.17	10,484.23	77.94	76.42	93.98	-3,844.97	854.01	1,750.56	1,654.90	95.66	18.300	
16,200.00	12,080.51	14,397.76	10,488.91	79.33	78.33	96.24	-3,973.46	852.83	1,746.87	1,649.45	97.42	17.932	
16,300.00	12,080.79	14,512.06	10,495.07	80.73	80.04	97.36	-4,087.60	852.46	1,741.82	1,642.62	99.19	17.560	
16,400.00	12,081.08	14,595.49	10,499.90	82.13	81.29	96.05	-4,170.89	852.81	1,736.76	1,635.86	100.90	17.213	
16,500.00	12,081.36	14,674.70	10,502.92	83.55	82.49	94.41	-4,250.04	852.50	1,733.10	1,630.56	102.54	16.901	
16,600.00	12,081.65	14,763.75	10,505.38	84.97	83.83	93.54	-4,339.05	851.67	1,730.21	1,626.01	104.20	16.605	
16,700.00	12,081.93	14,854.47	10,507.14	86.40	85.20	92.80	-4,429.75	850.72	1,728.01	1,622.17	105.84	16.326	
16,752.37	12,082.08	14,872.00	10,507.44	87.16	85.47	90.01	-4,447.27	850.54	1,727.30	1,620.70	106.60	16.204	
16,800.00	12,082.22	14,872.00	10,507.44	87.84	85.47	86.19	-4,447.27	850.54	1,727.96	1,620.76	107.20	16.119	
16,900.00	12,082.50	14,872.00	10,507.44	89.29	85.47	78.30	-4,447.27	850.54	1,733.60	1,625.26	108.34	16.001	
17,000.00	12,082.78	14,872.00	10,507.44	90.75	85.47	70.83	-4,447.27	850.54	1,744.96	1,635.65	109.31	15.964	
17,100.00	12,083.07	14,872.00	10,507.44	92.21	85.47	63.96	-4,447.27	850.54	1,761.94	1,651.84	110.09	16.004	
17,200.00	12,083.35	14,872.00	10,507.44	93.68	85.47	57.80	-4,447.27	850.54	1,784.36	1,673.67	110.69	16.120	
17,300.00	12,083.64	14,872.00	10,507.44	95.15	85.47	52.36	-4,447.27	850.54	1,812.03	1,700.92	111.11	16.308	
17,400.00	12,083.92	14,872.00	10,507.44	96.63	85.47	47.61	-4,447.27	850.54	1,844.72	1,733.36	111.36	16.565	
17,500.00	12,084.21	14,872.00	10,507.44	98.12	85.47	43.47	-4,447.27	850.54	1,882.16	1,770.69	111.46	16.886	
17,600.00	12,084.49	14,872.00	10,507.44	99.61	85.47	39.88	-4,447.27	850.54	1,924.07	1,812.64	111.43	17.267	
17,700.00	12,084.77	14,872.00	10,507.44	101.11	85.47	36.75	-4,447.27	850.54	1,970.17	1,858.89	111.28	17.705	
17,800.00	12,085.06	14,872.00	10,507.44	102.61	85.47	34.01	-4,447.27	850.54	2,020.17	1,909.15	111.02	18.196	
17,900.00	12,085.34	14,872.00	10,507.44	104.11	85.47	31.61	-4,447.27	850.54	2,073.79	1,963.10	110.69	18.735	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #1H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 239-, 9817- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,000.00	12,085.63	14,872.00	10,507.44	105.63	85.47	29.50	-4,447.27	850.54	2,130.76	2,020.47	110.29	19.319	
18,100.00	12,085.91	14,872.00	10,507.44	107.14	85.47	27.62	-4,447.27	850.54	2,190.82	2,080.97	109.84	19.945	
18,200.00	12,086.20	14,872.00	10,507.44	108.66	85.47	25.95	-4,447.27	850.54	2,253.71	2,144.35	109.36	20.609	
18,300.00	12,086.48	14,872.00	10,507.44	110.18	85.47	24.46	-4,447.27	850.54	2,319.21	2,210.36	108.85	21.307	
18,400.00	12,086.76	14,872.00	10,507.44	111.71	85.47	23.11	-4,447.27	850.54	2,387.10	2,278.78	108.32	22.037	
18,500.00	12,087.05	14,872.00	10,507.44	113.24	85.47	21.90	-4,447.27	850.54	2,457.19	2,349.40	107.79	22.797	
18,600.00	12,087.33	14,872.00	10,507.44	114.78	85.47	20.80	-4,447.27	850.54	2,529.29	2,422.04	107.25	23.583	
18,700.00	12,087.62	14,872.00	10,507.44	116.32	85.47	19.81	-4,447.27	850.54	2,603.23	2,496.52	106.72	24.394	
18,800.00	12,087.90	14,872.00	10,507.44	117.86	85.47	18.89	-4,447.27	850.54	2,678.87	2,572.68	106.19	25.227	
18,900.00	12,088.19	14,872.00	10,507.44	119.40	85.47	18.06	-4,447.27	850.54	2,756.06	2,650.38	105.68	26.079	
19,000.00	12,088.47	14,872.00	10,507.44	120.95	85.47	17.29	-4,447.27	850.54	2,834.68	2,729.50	105.18	26.951	
19,100.00	12,088.76	14,872.00	10,507.44	122.50	85.47	16.58	-4,447.27	850.54	2,914.61	2,809.91	104.70	27.839	
19,200.00	12,089.04	14,872.00	10,507.44	124.05	85.47	15.92	-4,447.27	850.54	2,995.74	2,891.51	104.23	28.742	
19,300.00	12,089.32	14,872.00	10,507.44	125.61	85.47	15.32	-4,447.27	850.54	3,077.98	2,974.20	103.78	29.659	
19,400.00	12,089.61	14,872.00	10,507.44	127.17	85.47	14.75	-4,447.27	850.54	3,161.25	3,057.90	103.35	30.588	
19,500.00	12,089.89	14,872.00	10,507.44	128.73	85.47	14.22	-4,447.27	850.54	3,245.46	3,142.53	102.94	31.529	
19,600.00	12,090.18	14,872.00	10,507.44	130.29	85.47	13.73	-4,447.27	850.54	3,330.55	3,228.01	102.54	32.480	
19,700.00	12,090.46	14,872.00	10,507.44	131.86	85.47	13.27	-4,447.27	850.54	3,416.44	3,314.28	102.16	33.440	
19,800.00	12,090.75	14,872.00	10,507.44	133.42	85.47	12.84	-4,447.27	850.54	3,503.09	3,401.28	101.81	34.409	
19,900.00	12,091.03	14,872.00	10,507.44	134.99	85.47	12.43	-4,447.27	850.54	3,590.42	3,488.96	101.46	35.386	
20,000.00	12,091.31	14,872.00	10,507.44	136.57	85.47	12.05	-4,447.27	850.54	3,678.40	3,577.26	101.14	36.370	
20,100.00	12,091.60	14,872.00	10,507.44	138.14	85.47	11.69	-4,447.27	850.54	3,766.99	3,666.15	100.83	37.359	
20,200.00	12,091.88	14,872.00	10,507.44	139.72	85.47	11.35	-4,447.27	850.54	3,856.13	3,755.59	100.54	38.355	
20,300.00	12,092.17	14,872.00	10,507.44	141.29	85.47	11.03	-4,447.27	850.54	3,945.79	3,845.53	100.26	39.355	
20,400.00	12,092.45	14,872.00	10,507.44	142.87	85.47	10.73	-4,447.27	850.54	4,035.93	3,935.94	100.00	40.360	
20,500.00	12,092.74	14,872.00	10,507.44	144.45	85.47	10.44	-4,447.27	850.54	4,126.53	4,026.78	99.75	41.369	
20,600.00	12,093.02	14,872.00	10,507.44	146.04	85.47	10.16	-4,447.27	850.54	4,217.56	4,118.05	99.51	42.382	
20,700.00	12,093.31	14,872.00	10,507.44	147.62	85.47	9.90	-4,447.27	850.54	4,308.98	4,209.69	99.29	43.397	
20,800.00	12,093.59	14,872.00	10,507.44	149.21	85.47	9.65	-4,447.27	850.54	4,400.78	4,301.70	99.08	44.416	
20,900.00	12,093.87	14,872.00	10,507.44	150.80	85.47	9.42	-4,447.27	850.54	4,492.93	4,394.04	98.88	45.437	
21,000.00	12,094.16	14,872.00	10,507.44	152.39	85.47	9.19	-4,447.27	850.54	4,585.40	4,486.71	98.70	46.460	
21,100.00	12,094.44	14,872.00	10,507.44	153.98	85.47	8.98	-4,447.27	850.54	4,678.19	4,579.67	98.52	47.484	
21,200.00	12,094.73	14,872.00	10,507.44	155.57	85.47	8.77	-4,447.27	850.54	4,771.26	4,672.91	98.35	48.511	
21,300.00	12,095.01	14,872.00	10,507.44	157.16	85.47	8.57	-4,447.27	850.54	4,864.62	4,766.42	98.20	49.538	
21,400.00	12,095.30	14,872.00	10,507.44	158.76	85.47	8.38	-4,447.27	850.54	4,958.23	4,860.17	98.05	50.567	
21,500.00	12,095.58	14,872.00	10,507.44	160.35	85.47	8.20	-4,447.27	850.54	5,052.08	4,954.17	97.92	51.596	
21,600.00	12,095.86	14,872.00	10,507.44	161.95	85.47	8.03	-4,447.27	850.54	5,146.17	5,048.38	97.79	52.626	
21,700.00	12,096.15	14,872.00	10,507.44	163.55	85.47	7.86	-4,447.27	850.54	5,240.48	5,142.81	97.67	53.657	
21,800.00	12,096.43	14,872.00	10,507.44	165.15	85.47	7.70	-4,447.27	850.54	5,334.99	5,237.44	97.55	54.687	
21,900.00	12,096.72	14,872.00	10,507.44	166.75	85.47	7.54	-4,447.27	850.54	5,429.70	5,332.25	97.45	55.718	
22,000.00	12,097.00	14,872.00	10,507.44	168.35	85.47	7.40	-4,447.27	850.54	5,524.60	5,427.24	97.35	56.748	
22,100.00	12,097.29	14,872.00	10,507.44	169.96	85.47	7.25	-4,447.27	850.54	5,619.67	5,522.41	97.26	57.778	
22,175.33	12,097.50	14,872.00	10,507.44	171.16	85.47	7.15	-4,447.27	850.54	5,691.40	5,594.20	97.20	58.554	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #5H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 8399- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	73.81	281.22	968.41	1,008.42				
100.00	100.00	110.22	110.22	0.13	0.15	73.82	280.85	967.85	1,007.84	1,007.56	0.28	3,594.417	
200.00	200.00	209.54	209.53	0.49	0.52	73.83	280.28	966.90	1,006.77	1,005.76	1.01	999.000	
300.00	300.00	310.97	310.96	0.85	0.87	73.85	279.72	965.81	1,005.58	1,003.86	1.72	584.060	
400.00	400.00	410.82	410.80	1.21	1.22	73.86	279.15	964.71	1,004.36	1,001.93	2.43	413.293	
500.00	500.00	514.25	514.22	1.57	1.58	73.89	278.33	963.40	1,002.92	999.77	3.15	318.245	
600.00	600.00	613.97	613.92	1.93	1.93	73.92	277.40	962.05	1,001.36	997.50	3.86	259.445	
700.00	700.00	714.32	714.25	2.29	2.29	73.95	276.46	960.69	999.81	995.24	4.57	218.774	
800.00	800.00	816.05	815.97	2.64	2.64	73.96	275.77	959.11	998.13	992.84	5.29	188.856	
900.00	900.00	916.61	916.51	3.00	2.99	73.96	275.18	957.39	996.32	990.32	6.00	166.158	
1,000.00	1,000.00	1,014.93	1,014.83	3.36	3.34	73.97	274.63	955.78	994.59	987.89	6.70	148.456	
1,100.00	1,100.00	1,113.47	1,113.35	3.72	3.68	73.98	273.99	954.34	993.01	985.60	7.40	134.125	
1,200.00	1,200.00	1,212.28	1,212.15	4.08	4.03	74.00	273.31	953.06	991.57	983.46	8.11	122.286	
1,300.00	1,300.00	1,312.65	1,312.50	4.44	4.38	74.02	272.62	951.78	990.15	981.33	8.82	112.275	
1,400.00	1,400.00	1,410.79	1,410.64	4.79	4.73	74.03	272.08	950.58	988.82	979.30	9.52	103.850	
1,500.00	1,500.00	1,509.44	1,509.28	5.15	5.07	74.03	271.75	949.47	987.65	977.43	10.23	96.582	
1,600.00	1,600.00	1,607.90	1,607.74	5.51	5.42	74.02	271.63	948.45	986.63	975.70	10.93	90.270	
1,700.00	1,700.00	1,702.82	1,702.65	5.87	5.75	73.99	271.98	947.69	985.96	974.34	11.62	84.849	
1,800.00	1,800.00	1,799.44	1,799.27	6.23	6.09	73.94	272.68	947.23	985.70	973.38	12.32	80.038	
1,849.52	1,849.52	1,848.10	1,847.92	6.41	6.26	73.92	273.09	947.09	985.68	973.01	12.66	77.845	
1,900.00	1,900.00	1,897.70	1,897.52	6.59	6.43	73.89	273.57	946.98	985.70	972.68	13.02	75.732	
2,000.00	2,000.00	1,998.06	1,997.88	6.95	6.78	73.83	274.58	946.76	985.77	972.05	13.72	71.833	
2,100.00	2,100.00	2,094.72	2,094.54	7.30	7.12	73.77	275.59	946.69	985.99	971.57	14.42	68.389	
2,200.00	2,200.00	2,193.87	2,193.68	7.66	7.46	73.71	276.63	946.84	986.43	971.31	15.12	65.240	
2,300.00	2,300.00	2,297.73	2,297.54	8.02	7.82	73.67	277.39	946.94	986.73	970.89	15.84	62.295	
2,400.00	2,400.00	2,401.14	2,400.95	8.38	8.18	73.67	277.49	946.82	986.65	970.09	16.56	59.583	
2,500.00	2,500.00	2,506.46	2,506.26	8.74	8.55	73.71	276.67	946.48	986.12	968.83	17.29	57.047	
2,600.00	2,599.99	2,608.03	2,607.82	9.10	8.91	73.83	275.27	945.97	985.19	967.19	18.00	54.734	
2,700.00	2,699.96	2,707.02	2,706.80	9.45	9.25	74.07	273.53	945.55	984.11	965.41	18.70	52.617	
2,800.00	2,799.86	2,798.99	2,798.74	9.81	9.57	74.43	271.62	945.68	983.40	964.02	19.38	50.737	
2,835.58	2,835.38	2,830.66	2,830.40	9.94	9.68	74.59	270.91	945.92	983.33	963.71	19.62	50.120	CC
2,900.00	2,899.68	2,887.86	2,887.59	10.17	9.88	74.92	269.53	946.72	983.56	963.51	20.05	49.059	ES
3,000.00	2,999.37	2,975.27	2,974.95	10.53	10.19	75.53	267.41	948.80	984.86	964.15	20.71	47.561	
3,100.00	3,098.90	3,062.89	3,062.50	10.89	10.49	76.21	265.94	951.82	987.43	966.07	21.36	46.219	
3,200.00	3,198.26	3,155.23	3,154.76	11.25	10.81	76.92	265.90	955.61	991.11	969.07	22.04	44.967	
3,300.06	3,297.46	3,255.38	3,254.81	11.62	11.16	77.68	266.77	959.81	995.21	972.45	22.75	43.738	
3,400.00	3,396.43	3,356.70	3,356.06	11.98	11.51	78.44	268.29	963.57	999.14	975.66	23.48	42.561	
3,500.00	3,495.46	3,466.69	3,465.97	12.36	11.90	79.17	270.19	967.17	1,002.87	978.64	24.24	41.378	
3,600.00	3,594.48	3,575.24	3,574.47	12.73	12.28	79.86	272.35	969.17	1,005.40	980.40	24.99	40.226	
3,700.00	3,693.51	3,678.24	3,677.45	13.11	12.64	80.59	273.72	970.62	1,007.55	981.82	25.73	39.157	
3,800.00	3,792.54	3,777.49	3,776.69	13.49	12.98	81.34	274.55	971.89	1,009.65	983.20	26.46	38.164	
3,900.00	3,891.56	3,874.78	3,873.98	13.87	13.32	82.10	275.33	973.23	1,012.04	984.86	27.17	37.242	
4,000.00	3,990.59	3,969.87	3,969.04	14.25	13.65	82.86	275.86	974.84	1,014.87	986.98	27.89	36.392	
4,100.00	4,089.62	4,065.41	4,064.57	14.64	13.99	83.65	276.02	976.89	1,018.28	989.68	28.60	35.602	
4,200.00	4,188.64	4,162.68	4,161.80	15.03	14.33	84.45	275.92	979.25	1,022.15	992.82	29.33	34.855	
4,300.00	4,287.67	4,263.26	4,262.35	15.42	14.68	85.26	275.41	981.76	1,026.23	996.17	30.06	34.135	
4,400.00	4,386.70	4,363.10	4,362.16	15.81	15.03	86.10	274.37	984.07	1,030.31	999.51	30.80	33.451	
4,500.00	4,485.72	4,461.78	4,460.81	16.20	15.37	86.92	273.36	986.35	1,034.60	1,003.07	31.53	32.809	
4,600.00	4,584.75	4,560.56	4,559.55	16.59	15.72	87.75	272.29	988.64	1,039.11	1,006.84	32.27	32.203	
4,700.00	4,683.78	4,659.37	4,658.34	16.98	16.06	88.56	271.24	990.92	1,043.83	1,010.83	33.00	31.629	
4,800.00	4,782.80	4,758.23	4,757.17	17.38	16.41	89.37	270.23	993.20	1,048.76	1,015.02	33.74	31.085	
4,900.00	4,881.83	4,857.43	4,856.33	17.78	16.75	90.17	269.17	995.47	1,053.87	1,019.40	34.48	30.568	

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #5H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 8399- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,980.86	4,955.60	4,954.48	18.17	17.10	90.96	268.16	997.70	1,059.17	1,023.96	35.21	30.081	
5,100.00	5,079.88	5,076.77	5,075.62	18.57	17.52	91.71	267.74	999.77	1,064.19	1,028.15	36.04	29.531	
5,200.00	5,178.91	5,195.78	5,194.60	18.97	17.93	92.32	270.05	998.87	1,066.72	1,029.87	36.84	28.953	
5,300.00	5,277.94	5,297.99	5,296.76	19.37	18.29	92.89	272.81	997.16	1,068.47	1,030.87	37.59	28.422	
5,400.00	5,376.96	5,396.82	5,395.53	19.77	18.64	93.48	275.51	995.43	1,070.24	1,031.91	38.33	27.920	
5,500.00	5,475.99	5,496.48	5,495.15	20.17	18.98	94.05	278.21	993.70	1,072.14	1,033.07	39.07	27.438	
5,600.00	5,575.02	5,598.19	5,596.80	20.57	19.34	94.63	281.01	991.82	1,074.04	1,034.21	39.82	26.970	
5,690.40	5,664.54	5,685.50	5,684.06	20.93	19.64	95.15	283.41	990.21	1,075.84	1,035.36	40.49	26.573	
5,700.00	5,674.04	5,694.76	5,693.32	20.97	19.67	95.20	283.66	990.05	1,076.05	1,035.49	40.56	26.532	
5,800.00	5,773.21	5,793.69	5,792.20	21.37	20.02	95.72	286.36	988.40	1,078.02	1,036.73	41.29	26.107	
5,900.00	5,872.58	5,890.21	5,888.67	21.76	20.36	96.16	288.96	986.95	1,079.70	1,037.68	42.02	25.697	
6,000.00	5,972.14	5,989.45	5,987.87	22.15	20.70	96.50	291.50	985.62	1,081.07	1,038.32	42.74	25.293	
6,100.00	6,071.84	6,079.75	6,078.15	22.52	21.02	96.82	292.94	984.68	1,082.32	1,038.89	43.43	24.922	
6,200.00	6,171.66	6,176.00	6,174.40	22.89	21.35	97.12	292.99	984.21	1,083.76	1,039.63	44.13	24.559	
6,300.00	6,271.57	6,276.18	6,274.58	23.25	21.70	97.33	292.90	983.81	1,084.76	1,039.92	44.84	24.194	
6,400.00	6,371.54	6,376.91	6,375.30	23.60	22.05	97.46	292.80	983.33	1,085.11	1,039.57	45.54	23.828	
6,490.46	6,462.00	6,467.30	6,465.70	23.92	22.37	97.51	292.57	982.84	1,084.90	1,038.73	46.17	23.499	
6,500.00	6,471.54	6,476.81	6,475.20	23.95	22.40	97.52	292.54	982.79	1,084.85	1,038.62	46.23	23.465	
6,600.00	6,571.54	6,576.60	6,575.00	24.29	22.75	97.54	292.16	982.26	1,084.38	1,037.45	46.92	23.109	
6,700.00	6,671.54	6,677.12	6,675.51	24.63	23.10	97.57	291.72	981.71	1,083.89	1,036.28	47.62	22.762	
6,800.00	6,771.54	6,775.55	6,773.94	24.98	23.44	97.60	291.15	981.17	1,083.43	1,035.12	48.31	22.428	
6,900.00	6,871.54	6,875.35	6,873.73	25.32	23.79	97.67	289.98	980.68	1,083.09	1,034.09	49.00	22.104	
7,000.00	6,971.54	6,983.46	6,981.80	25.66	24.17	97.80	287.62	979.66	1,082.46	1,032.73	49.72	21.771	
7,100.00	7,071.54	7,087.37	7,085.61	26.01	24.53	98.03	283.46	977.70	1,081.14	1,030.71	50.43	21.439	
7,200.00	7,171.54	7,186.98	7,185.12	26.35	24.88	98.25	279.49	975.68	1,079.69	1,028.57	51.12	21.121	
7,300.00	7,271.54	7,288.87	7,286.92	26.70	25.23	98.47	275.60	973.59	1,078.22	1,026.40	51.82	20.807	
7,400.00	7,371.54	7,388.60	7,386.55	27.04	25.58	98.69	271.80	971.43	1,076.65	1,024.13	52.51	20.502	
7,500.00	7,471.54	7,485.02	7,482.87	27.39	25.92	98.91	267.93	969.48	1,075.26	1,022.06	53.20	20.212	
7,600.00	7,571.54	7,582.97	7,580.70	27.73	26.26	99.17	263.32	967.67	1,074.17	1,020.28	53.89	19.934	
7,700.00	7,671.54	7,683.47	7,681.07	28.08	26.61	99.44	258.52	965.86	1,073.17	1,018.58	54.58	19.661	
7,800.00	7,771.54	7,782.96	7,780.43	28.43	26.96	99.69	253.98	964.07	1,072.15	1,016.87	55.28	19.396	
7,900.00	7,871.54	7,881.05	7,878.42	28.77	27.30	99.93	249.75	962.45	1,071.25	1,015.29	55.97	19.141	
8,000.00	7,971.54	7,980.64	7,977.91	29.12	27.65	100.16	245.63	960.96	1,070.50	1,013.84	56.66	18.893	
8,100.00	8,071.54	8,078.84	8,076.02	29.47	28.00	100.39	241.49	959.54	1,069.83	1,012.48	57.35	18.654	
8,200.00	8,171.54	8,176.73	8,173.79	29.82	28.34	100.65	236.86	958.22	1,069.37	1,011.32	58.04	18.424	
8,300.00	8,271.54	8,276.57	8,273.50	30.16	28.69	100.92	231.98	956.96	1,069.04	1,010.30	58.74	18.200	
8,400.00	8,371.54	8,374.06	8,370.86	30.51	28.97	101.19	227.13	955.75	1,068.78	1,009.42	59.36	18.004	
8,418.86	8,390.39	8,392.02	8,388.79	30.58	29.00	101.24	226.19	955.56	1,068.77	1,009.31	59.46	17.974	
8,500.00	8,471.54	8,471.60	8,468.28	30.86	29.02	101.45	222.24	954.84	1,068.84	1,009.09	59.76	17.887	
8,600.00	8,571.54	8,567.58	8,564.17	31.21	29.02	101.67	218.16	954.32	1,069.16	1,009.06	60.11	17.787	
8,700.00	8,671.54	8,671.03	8,667.52	31.56	29.04	101.92	213.57	953.90	1,069.68	1,009.21	60.47	17.689	
8,800.00	8,771.54	8,774.70	8,770.71	31.91	29.05	102.42	204.38	951.84	1,069.60	1,008.76	60.84	17.581	
8,900.00	8,871.54	8,891.08	8,883.06	32.26	29.09	104.01	175.57	944.77	1,069.39	1,008.18	61.21	17.470	
8,978.16	8,949.70	8,961.88	8,948.10	32.53	29.12	105.50	148.80	936.99	1,068.60	1,007.10	61.50	17.374	
9,000.00	8,971.54	8,977.96	8,962.46	32.61	29.13	105.89	141.82	935.08	1,068.68	1,007.10	61.58	17.354	
9,100.00	9,071.54	9,054.19	9,028.05	32.96	29.19	107.97	104.30	925.29	1,071.04	1,009.11	61.92	17.297	
9,200.00	9,171.54	9,142.45	9,097.04	33.31	29.29	110.89	51.36	910.81	1,076.64	1,014.39	62.25	17.295	
9,300.00	9,271.54	9,211.56	9,143.74	33.66	29.41	113.59	2.88	895.35	1,085.58	1,023.13	62.45	17.384	
9,400.00	9,371.54	9,234.00	9,157.50	34.01	29.45	114.53	-14.01	890.00	1,100.90	1,038.68	62.23	17.691	
9,500.00	9,471.54	9,265.00	9,175.35	34.36	29.52	115.85	-38.44	883.26	1,123.81	1,061.97	61.84	18.172	
9,600.00	9,571.54	9,265.00	9,175.35	34.71	29.52	115.85	-38.44	883.26	1,154.06	1,093.07	60.99	18.921	
9,700.00	9,671.54	9,297.00	9,192.43	35.06	29.60	117.23	-64.89	877.55	1,191.13	1,130.85	60.28	19.758	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
WWW.MSENERGYSERVICES.COM

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #5H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 8399- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,800.00	9,771.54	9,307.24	9,197.54	35.41	29.63	117.68	-73.60	875.92	1,234.52	1,175.26	59.26	20.833	
9,900.00	9,871.54	9,328.00	9,207.31	35.76	29.68	118.59	-91.61	872.57	1,283.60	1,225.31	58.29	22.022	
10,000.00	9,971.54	9,339.71	9,212.43	36.11	29.72	119.11	-101.97	870.67	1,337.79	1,280.59	57.20	23.386	
10,100.00	10,071.54	9,360.00	9,220.53	36.46	29.78	120.02	-120.27	867.34	1,396.76	1,340.53	56.23	24.840	
10,200.00	10,171.54	9,360.00	9,220.53	36.81	29.78	120.02	-120.27	867.34	1,459.74	1,404.65	55.08	26.500	
10,300.00	10,271.54	9,371.95	9,224.82	37.17	29.82	120.56	-131.24	865.35	1,526.49	1,472.36	54.13	28.200	
10,400.00	10,371.54	9,391.00	9,230.92	37.52	29.88	121.43	-148.98	862.04	1,596.66	1,543.35	53.32	29.946	
10,500.00	10,471.54	9,391.00	9,230.92	37.87	29.88	121.43	-148.98	862.04	1,669.47	1,617.07	52.40	31.858	
10,600.00	10,571.54	9,391.00	9,230.92	38.22	29.88	121.43	-148.98	862.04	1,744.98	1,693.40	51.58	33.830	
10,700.00	10,671.54	9,391.00	9,230.92	38.57	29.88	121.43	-148.98	862.04	1,822.84	1,771.99	50.85	35.849	
10,800.00	10,771.54	9,407.10	9,235.35	38.93	29.94	122.17	-164.18	859.10	1,902.45	1,852.11	50.33	37.796	
10,900.00	10,871.54	9,423.00	9,239.04	39.28	30.00	122.90	-179.33	856.03	1,984.11	1,934.22	49.89	39.772	
11,000.00	10,971.54	9,423.00	9,239.04	39.63	30.00	122.90	-179.33	856.03	2,067.09	2,017.70	49.39	41.850	
11,100.00	11,071.54	9,423.00	9,239.04	39.98	30.00	122.90	-179.33	856.03	2,151.52	2,102.55	48.97	43.933	
11,200.00	11,171.54	9,423.00	9,239.04	40.34	30.00	122.90	-179.33	856.03	2,237.24	2,188.62	48.62	46.014	
11,300.00	11,271.54	9,423.00	9,239.04	40.69	30.00	122.90	-179.33	856.03	2,324.09	2,275.76	48.33	48.087	
11,400.00	11,371.54	9,423.00	9,239.04	41.04	30.00	122.90	-179.33	856.03	2,411.97	2,363.87	48.10	50.147	
11,500.00	11,471.54	9,423.00	9,239.04	41.40	30.00	122.90	-179.33	856.03	2,500.75	2,452.84	47.92	52.188	
11,525.27	11,496.81	9,423.00	9,239.04	41.48	30.00	122.90	-179.33	856.03	2,523.32	2,475.44	47.88	52.701	
11,550.00	11,521.53	9,423.00	9,239.04	41.57	30.00	122.88	-179.33	856.03	2,545.29	2,497.45	47.84	53.203	
11,600.00	11,571.33	9,423.00	9,239.04	41.72	30.00	122.72	-179.33	856.03	2,588.70	2,540.95	47.75	54.219	
11,650.00	11,620.56	9,436.79	9,241.67	41.85	30.05	123.05	-192.59	853.29	2,630.26	2,582.55	47.71	55.134	
11,700.00	11,668.84	9,439.13	9,242.06	41.98	30.06	122.68	-194.85	852.83	2,670.22	2,622.63	47.59	56.105	
11,750.00	11,715.82	9,454.00	9,244.16	42.10	30.12	122.75	-209.27	849.86	2,708.38	2,660.85	47.53	56.985	
11,800.00	11,761.13	9,454.00	9,244.16	42.20	30.12	121.96	-209.27	849.86	2,743.94	2,696.56	47.38	57.913	
11,850.00	11,804.43	9,454.00	9,244.16	42.30	30.12	120.99	-209.27	849.86	2,777.09	2,729.87	47.23	58.804	
11,900.00	11,845.39	9,454.00	9,244.16	42.39	30.12	119.84	-209.27	849.86	2,807.66	2,760.59	47.07	59.651	
11,950.00	11,883.69	9,454.00	9,244.16	42.47	30.12	118.50	-209.27	849.86	2,835.50	2,788.59	46.91	60.446	
12,000.00	11,919.06	9,454.00	9,244.16	42.54	30.12	116.96	-209.27	849.86	2,860.49	2,813.74	46.75	61.184	
12,050.00	11,951.20	9,454.00	9,244.16	42.61	30.12	115.22	-209.27	849.86	2,882.51	2,835.91	46.60	61.856	
12,100.00	11,979.89	9,470.65	9,245.78	42.68	30.19	114.23	-225.49	846.50	2,901.09	2,854.59	46.50	62.384	
12,150.00	12,004.90	9,485.00	9,246.62	42.75	30.25	112.94	-239.51	843.54	2,916.72	2,870.32	46.40	62.858	
12,200.00	12,026.05	9,485.00	9,246.62	42.82	30.25	110.63	-239.51	843.54	2,928.85	2,882.58	46.27	63.293	
12,250.00	12,043.17	9,485.00	9,246.62	42.89	30.25	108.09	-239.51	843.54	2,937.69	2,891.53	46.16	63.635	
12,300.00	12,056.13	9,485.00	9,246.62	42.97	30.25	105.35	-239.51	843.54	2,943.22	2,897.14	46.08	63.878	
12,350.00	12,064.83	9,521.34	9,247.74	43.05	30.42	104.83	-275.12	836.39	2,944.74	2,898.68	46.06	63.935	
12,400.00	12,069.21	9,537.16	9,248.03	43.13	30.50	102.85	-290.68	833.52	2,942.87	2,896.84	46.02	63.943	
12,423.64	12,069.77	9,544.70	9,248.12	43.17	30.53	101.88	-298.10	832.20	2,940.73	2,894.71	46.01	63.911	
12,500.00	12,069.98	9,579.00	9,248.17	43.32	30.70	99.32	-331.95	826.66	2,933.25	2,887.23	46.01	63.749	
12,600.00	12,070.27	9,626.29	9,247.93	43.58	30.95	95.88	-378.81	820.36	2,925.14	2,879.05	46.09	63.468	
12,667.68	12,070.46	9,674.00	9,247.84	43.79	31.21	94.58	-426.30	815.74	2,920.38	2,874.19	46.19	63.222	
12,700.00	12,070.55	9,697.94	9,247.88	43.90	31.36	94.03	-450.18	814.10	2,918.33	2,872.06	46.26	63.081	
12,800.00	12,070.84	9,768.00	9,248.42	44.29	31.78	91.88	-520.20	812.05	2,913.09	2,866.55	46.54	62.599	
12,900.00	12,071.12	9,828.11	9,248.72	44.73	32.18	88.78	-580.30	812.42	2,909.94	2,863.05	46.89	62.058	
12,971.83	12,071.33	9,862.00	9,248.50	45.08	32.41	85.73	-614.19	812.96	2,909.19	2,862.01	47.18	61.660	
13,000.00	12,071.41	9,862.00	9,248.50	45.22	32.41	83.46	-614.19	812.96	2,909.36	2,862.07	47.29	61.522	
13,100.00	12,071.69	9,926.74	9,247.04	45.76	32.88	80.61	-678.89	814.43	2,911.18	2,863.37	47.81	60.892	
13,200.00	12,071.98	10,040.54	9,242.24	46.34	33.76	81.69	-792.57	815.72	2,915.35	2,866.91	48.44	60.190	
13,200.11	12,071.98	10,040.77	9,242.23	46.34	33.76	81.70	-792.80	815.72	2,915.35	2,866.92	48.44	60.189	
13,300.00	12,072.26	10,098.23	9,239.48	46.97	34.24	78.29	-850.17	814.20	2,919.58	2,870.53	49.05	59.523	
13,400.00	12,072.55	10,451.24	9,231.16	47.64	37.58	98.94	-1,202.63	801.38	2,923.15	2,872.85	50.30	58.111	
13,500.00	12,072.83	10,522.00	9,232.65	48.36	38.32	96.57	-1,273.30	798.00	2,920.12	2,869.12	51.00	57.259	

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

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #5H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 8399- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	12,073.12	10,603.40	9,233.80	49.13	39.20	95.04	-1,354.62	794.66	2,917.91	2,866.14	51.77	56.359	
13,700.00	12,073.40	10,687.75	9,234.93	49.94	40.14	93.74	-1,438.94	792.93	2,916.27	2,863.66	52.61	55.434	
13,800.00	12,073.68	10,750.97	9,235.69	50.80	40.86	90.62	-1,502.15	793.29	2,915.43	2,862.01	53.42	54.577	
13,807.46	12,073.71	10,755.07	9,235.71	50.86	40.90	90.33	-1,506.26	793.33	2,915.42	2,861.94	53.48	54.516	
13,900.00	12,073.97	10,805.00	9,235.53	51.69	41.48	86.72	-1,556.18	793.80	2,916.08	2,861.85	54.23	53.771	
14,000.00	12,074.25	10,869.51	9,234.43	52.62	42.24	83.72	-1,620.68	794.48	2,918.13	2,863.01	55.12	52.944	
14,100.00	12,074.54	11,032.21	9,232.56	53.58	44.21	89.02	-1,783.35	796.33	2,919.59	2,863.22	56.37	51.790	
14,200.00	12,074.82	11,088.00	9,232.24	54.58	44.90	85.28	-1,839.13	797.01	2,920.71	2,863.42	57.28	50.989	
14,300.00	12,075.11	11,160.85	9,230.98	55.61	45.82	83.01	-1,911.95	798.24	2,922.99	2,864.71	58.28	50.151	
14,400.00	12,075.39	11,357.38	9,228.04	56.67	48.36	91.15	-2,108.42	801.28	2,925.55	2,865.75	59.80	48.924	
14,500.00	12,075.68	11,448.51	9,228.27	57.76	49.56	90.40	-2,199.55	800.17	2,925.18	2,864.27	60.90	48.029	
14,503.67	12,075.69	11,451.43	9,228.26	57.80	49.60	90.33	-2,202.46	800.11	2,925.18	2,864.23	60.94	47.998	
14,600.00	12,075.96	11,524.59	9,227.69	58.87	50.58	88.37	-2,275.60	798.50	2,925.55	2,863.58	61.96	47.213	
14,700.00	12,076.24	11,725.43	9,229.98	60.01	53.32	96.95	-2,476.34	793.47	2,923.37	2,859.80	63.56	45.992	
14,800.00	12,076.53	11,795.31	9,231.10	61.17	54.28	94.41	-2,546.18	791.28	2,921.23	2,856.60	64.63	45.198	
14,900.00	12,076.81	11,864.91	9,231.56	62.36	55.25	91.80	-2,615.74	789.46	2,920.13	2,854.41	65.72	44.432	
14,954.63	12,076.97	11,902.67	9,231.50	63.02	55.78	90.35	-2,653.50	788.48	2,919.97	2,853.65	66.32	44.027	
15,000.00	12,077.10	11,937.00	9,231.24	63.57	56.26	89.39	-2,687.81	787.55	2,920.08	2,853.25	66.83	43.691	
15,100.00	12,077.38	11,984.62	9,230.38	64.79	56.94	84.85	-2,735.41	786.41	2,921.39	2,853.53	67.86	43.048	
15,200.00	12,077.67	12,159.23	9,227.19	66.04	59.42	91.32	-2,909.94	783.10	2,923.33	2,853.89	69.44	42.098	
15,245.61	12,077.80	12,193.83	9,227.11	66.61	59.92	90.36	-2,944.53	782.26	2,923.24	2,853.27	69.98	41.774	
15,300.00	12,077.95	12,232.26	9,226.86	67.30	60.47	88.96	-2,982.94	781.32	2,923.38	2,852.77	70.61	41.405	
15,400.00	12,078.23	12,294.72	9,225.87	68.58	61.38	85.66	-3,045.38	779.90	2,924.57	2,852.83	71.74	40.769	
15,500.00	12,078.52	12,392.31	9,223.75	69.88	62.80	85.43	-3,142.94	779.04	2,926.63	2,853.58	73.04	40.068	
15,600.00	12,078.80	12,470.19	9,222.54	71.19	63.94	83.51	-3,220.78	780.89	2,928.83	2,854.53	74.31	39.415	
15,700.00	12,079.09	12,545.48	9,221.07	72.51	65.05	81.40	-3,295.97	784.55	2,931.95	2,856.35	75.60	38.785	
15,800.00	12,079.37	12,617.78	9,219.33	73.85	66.12	79.10	-3,368.11	789.09	2,935.87	2,858.98	76.89	38.182	
15,900.00	12,079.66	12,691.00	9,216.60	75.21	67.21	76.93	-3,441.12	793.86	2,941.02	2,862.82	78.20	37.608	
16,000.00	12,079.94	12,735.03	9,214.34	76.57	67.87	72.47	-3,484.99	796.75	2,947.47	2,868.12	79.35	37.144	
16,100.00	12,080.22	12,918.35	9,205.43	77.94	70.61	79.33	-3,667.76	807.35	2,953.95	2,872.66	81.29	36.337	
16,200.00	12,080.51	12,974.00	9,203.18	79.33	71.45	75.76	-3,723.31	809.81	2,959.08	2,876.56	82.52	35.860	
16,300.00	12,080.79	13,045.92	9,199.41	80.73	72.54	73.60	-3,795.06	813.13	2,965.41	2,881.57	83.84	35.371	
16,400.00	12,081.08	13,149.25	9,193.20	82.13	74.11	73.93	-3,898.09	817.73	2,972.42	2,887.09	85.34	34.831	
16,500.00	12,081.36	13,459.97	9,180.63	83.55	78.85	91.14	-4,208.42	819.89	2,978.81	2,890.97	87.84	33.912	
16,501.71	12,081.37	16,501.71	9,180.96	83.57	125.46	87.34	-4,164.69	820.01	2,978.66	2,867.29	111.36	26.748	
16,600.00	12,081.65	13,531.05	9,180.47	84.97	79.95	88.72	-4,279.51	820.07	2,979.15	2,889.98	89.16	33.412	
16,700.00	12,081.93	13,599.50	9,179.80	86.40	81.00	86.08	-4,347.95	820.21	2,980.30	2,889.82	90.48	32.939	
16,800.00	12,082.22	13,663.97	9,178.37	87.84	82.00	83.12	-4,412.41	820.15	2,982.59	2,890.82	91.77	32.502	
16,900.00	12,082.50	13,730.00	9,176.04	89.29	83.02	80.31	-4,478.40	820.18	2,986.12	2,893.06	93.06	32.088	
17,000.00	12,082.78	14,026.12	9,176.53	90.75	87.62	96.65	-4,774.42	821.79	2,984.94	2,889.38	95.56	31.235	
17,100.00	12,083.07	14,101.84	9,178.42	92.21	88.80	94.63	-4,850.11	822.34	2,982.82	2,885.85	96.97	30.761	
17,200.00	12,083.35	14,167.67	9,179.49	93.68	89.84	91.77	-4,915.92	823.17	2,981.66	2,883.33	98.33	30.323	
17,250.40	12,083.50	14,201.00	9,179.76	94.42	90.36	90.34	-4,949.25	823.71	2,981.52	2,882.50	99.02	30.111	
17,300.00	12,083.64	14,233.50	9,179.85	95.15	90.87	88.91	-4,981.74	824.33	2,981.67	2,881.97	99.70	29.908	
17,400.00	12,083.92	14,296.00	9,179.60	96.63	91.85	85.78	-5,044.22	825.86	2,982.81	2,881.76	101.05	29.519	
17,500.00	12,084.21	14,359.30	9,178.56	98.12	92.85	82.75	-5,107.49	827.56	2,985.19	2,882.79	102.40	29.152	
17,600.00	12,084.49	14,554.96	9,177.52	99.61	95.93	90.69	-5,303.08	831.44	2,985.97	2,881.47	104.50	28.575	
17,620.89	12,084.55	14,571.65	9,177.65	99.92	96.19	90.34	-5,319.76	831.84	2,985.95	2,881.15	104.81	28.490	
17,700.00	12,084.77	14,647.32	9,178.22	101.11	97.39	90.05	-5,395.40	834.08	2,986.02	2,879.97	106.05	28.157	
17,800.00	12,085.06	14,804.28	9,180.77	102.61	99.87	94.75	-5,552.30	835.68	2,984.60	2,876.69	107.91	27.658	
17,900.00	12,085.34	14,868.50	9,181.44	104.11	100.89	91.80	-5,616.51	834.89	2,983.42	2,874.15	109.27	27.303	
17,978.26	12,085.57	14,929.05	9,181.59	105.30	101.85	90.33	-5,677.06	834.40	2,983.19	2,872.81	110.39	27.025	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #5H - Wellbore #1 - Surveys — **Offset Site Error:** 0.00 usft

Survey Program: 100-, 8399- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,000.00	12,085.63	14,945.87	9,181.58	105.63	102.11	89.93	-5,693.88	834.34	2,983.21	2,872.51	110.70	26.950	
18,100.00	12,085.91	15,006.79	9,181.19	107.14	103.08	86.68	-5,754.80	834.34	2,983.99	2,871.95	112.04	26.633	
18,200.00	12,086.20	15,173.96	9,180.07	108.66	105.73	92.26	-5,921.94	833.55	2,984.90	2,870.98	113.91	26.203	
18,266.99	12,086.39	15,217.82	9,180.11	109.68	106.43	90.34	-5,965.80	832.74	2,984.64	2,869.81	114.82	25.993	
18,300.00	12,086.48	15,239.00	9,180.01	110.18	106.77	89.35	-5,986.98	832.34	2,984.70	2,869.43	115.27	25.893	
18,400.00	12,086.76	15,306.89	9,179.19	111.71	107.84	86.66	-6,054.85	831.21	2,985.63	2,869.00	116.63	25.599	
18,500.00	12,087.05	15,371.65	9,177.75	113.24	108.87	83.71	-6,119.59	830.44	2,987.67	2,869.70	117.97	25.325	
18,600.00	12,087.33	18,600.00	9,174.47	114.78	160.27	85.41	-6,240.14	829.19	2,990.26	2,845.51	144.76	20.657	
18,700.00	12,087.62	15,590.51	9,172.86	116.32	112.36	85.25	-6,338.36	827.54	2,991.64	2,870.52	121.11	24.701	
18,800.00	12,087.90	15,648.53	9,171.10	117.86	113.28	81.73	-6,396.35	826.72	2,994.38	2,871.97	122.41	24.461	
18,900.00	12,088.19	15,833.46	9,165.65	119.40	116.23	88.84	-6,581.15	823.78	2,997.58	2,873.24	124.35	24.107	
19,000.00	12,088.47	19,000.00	9,164.54	120.95	166.90	90.53	-6,700.98	821.84	2,998.34	2,847.58	150.76	19.888	
19,100.00	12,088.76	16,079.26	9,165.75	122.50	120.17	92.75	-6,826.90	820.43	2,997.16	2,869.52	127.64	23.481	
19,165.30	12,088.94	16,116.62	9,165.90	123.51	120.76	90.36	-6,864.25	819.99	2,996.83	2,868.31	128.52	23.317	
19,200.00	12,089.04	16,135.36	9,165.83	124.05	121.07	88.99	-6,883.00	819.80	2,996.93	2,867.94	128.98	23.235	
19,300.00	12,089.32	16,182.00	9,165.24	125.61	121.81	84.42	-6,929.63	819.42	2,998.24	2,867.98	130.26	23.017	
19,400.00	12,089.61	16,249.07	9,163.46	127.17	122.89	81.62	-6,996.68	819.11	3,000.95	2,869.32	131.63	22.798	
19,500.00	12,089.89	16,411.22	9,159.64	128.73	125.49	86.90	-7,158.76	817.87	3,003.15	2,869.64	133.51	22.494	
19,600.00	12,090.18	16,671.24	9,162.73	130.29	129.66	100.71	-7,418.52	809.11	3,000.69	2,865.07	135.62	22.126	
19,700.00	12,090.46	16,736.18	9,164.48	131.86	130.70	97.75	-7,483.38	806.40	2,997.30	2,860.29	137.00	21.878	
19,800.00	12,090.75	16,814.61	9,165.85	133.42	131.96	95.91	-7,561.74	803.38	2,994.89	2,856.47	138.42	21.636	
19,900.00	12,091.03	16,891.23	9,166.69	134.99	133.19	93.87	-7,638.30	800.50	2,993.16	2,853.33	139.83	21.406	
20,000.00	12,091.31	16,962.74	9,166.90	136.57	134.34	91.34	-7,709.78	798.06	2,992.30	2,851.08	141.22	21.189	
20,032.94	12,091.41	16,985.03	9,166.81	137.08	134.70	90.39	-7,732.05	797.31	2,992.24	2,850.58	141.67	21.122	
20,100.00	12,091.60	17,033.00	9,166.33	138.14	135.47	88.68	-7,779.99	795.65	2,992.49	2,849.90	142.58	20.988	
20,200.00	12,091.88	17,090.59	9,165.19	139.72	136.39	84.86	-7,837.54	793.83	2,993.87	2,849.99	143.88	20.808	
20,300.00	12,092.17	17,260.11	9,162.78	141.29	139.12	91.11	-8,006.99	790.11	2,995.06	2,849.34	145.72	20.554	
20,337.31	12,092.27	17,289.61	9,162.77	141.88	139.60	90.41	-8,036.48	789.66	2,995.01	2,848.75	146.26	20.477	
20,400.00	12,092.45	17,335.69	9,162.60	142.87	140.34	88.89	-8,082.55	789.08	2,995.17	2,848.01	147.15	20.354	
20,500.00	12,092.74	17,410.00	9,161.64	144.45	141.54	86.55	-8,156.85	788.17	2,996.28	2,847.71	148.57	20.167	
20,600.00	12,093.02	17,599.49	9,160.42	146.04	144.61	94.71	-8,346.33	787.59	2,997.71	2,847.13	150.58	19.908	
20,700.00	12,093.31	17,670.84	9,161.33	147.62	145.77	92.10	-8,417.67	787.64	2,996.62	2,844.58	152.05	19.708	
20,789.51	12,093.56	17,741.89	9,161.69	149.04	146.92	90.41	-8,488.72	787.93	2,996.38	2,842.99	153.39	19.534	
20,800.00	12,093.59	17,750.63	9,161.72	149.21	147.06	90.25	-8,497.46	788.02	2,996.39	2,842.83	153.55	19.514	
20,900.00	12,093.87	17,818.90	9,161.74	150.80	148.17	87.35	-8,565.72	789.01	2,996.86	2,841.85	155.01	19.333	
21,000.00	12,094.16	18,037.93	9,163.59	152.39	151.74	98.12	-8,784.64	793.59	2,997.37	2,840.06	157.31	19.054	
21,100.00	12,094.44	18,125.45	9,166.62	153.98	153.16	96.98	-8,872.08	795.66	2,994.64	2,835.70	158.94	18.841	
21,200.00	12,094.73	18,194.61	9,168.41	155.57	154.29	94.21	-8,941.21	796.73	2,992.63	2,832.17	160.45	18.651	
21,300.00	12,095.01	18,259.00	9,169.14	157.16	155.34	90.99	-9,005.59	797.70	2,991.93	2,830.01	161.92	18.478	
21,306.46	12,095.03	18,259.00	9,169.14	157.27	155.34	90.40	-9,005.59	797.70	2,991.92	2,829.93	161.99	18.469	
21,400.00	12,095.30	18,307.13	9,168.96	158.76	156.12	86.29	-9,053.71	798.44	2,992.67	2,829.40	163.27	18.329	
21,500.00	12,095.58	18,457.10	9,167.39	160.35	158.56	90.81	-9,203.65	800.56	2,994.54	2,829.34	165.19	18.127	
21,520.24	12,095.64	18,472.82	9,167.48	160.68	158.82	90.40	-9,219.37	800.80	2,994.52	2,829.02	165.50	18.093	
21,600.00	12,095.86	18,534.73	9,167.65	161.95	159.83	88.79	-9,281.27	802.05	2,994.76	2,828.03	166.73	17.961	
21,700.00	12,096.15	18,592.64	9,167.34	163.55	160.77	85.01	-9,339.16	803.63	2,996.03	2,827.87	168.15	17.817	
21,800.00	12,096.43	18,636.00	9,166.59	165.15	161.48	80.01	-9,382.48	805.10	2,998.81	2,829.36	169.45	17.698	
21,900.00	12,096.72	18,704.51	9,164.39	166.75	162.60	77.31	-9,450.91	807.52	3,002.97	2,832.07	170.90	17.572	
22,000.00	12,097.00	18,883.16	9,160.12	168.35	165.52	84.22	-9,629.36	814.40	3,006.02	2,832.79	173.22	17.354	
22,100.00	12,097.29	18,946.30	9,159.01	169.96	166.55	81.02	-9,692.43	817.21	3,008.88	2,834.19	174.69	17.224	
22,175.33	12,097.50	18,987.39	9,157.82	171.16	167.23	78.11	-9,733.44	819.37	3,011.98	2,836.24	175.73	17.140 SF	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #6H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-, 8720- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	2.20	-2.20	0.00	0.00	74.26	281.41	998.36	1,037.27				
100.00	100.00	102.20	97.80	0.13	0.05	74.26	281.41	998.36	1,037.27	1,037.10	0.16	6,314.530	
200.00	200.00	202.20	197.80	0.49	0.18	74.26	281.41	998.36	1,037.27	1,036.67	0.60	1,732.070	
300.00	300.00	302.20	297.80	0.85	0.32	74.26	281.41	998.36	1,037.27	1,036.23	1.03	1,003.691	
400.00	400.00	402.20	397.80	1.21	0.45	74.26	281.41	998.36	1,037.27	1,035.80	1.47	706.563	
500.00	500.00	502.20	497.80	1.57	0.58	74.26	281.41	998.36	1,037.27	1,035.36	1.90	545.173	
600.00	600.00	602.20	597.80	1.93	0.71	74.26	281.41	998.36	1,037.27	1,034.93	2.34	443.801	
700.00	700.00	702.20	697.80	2.29	0.84	74.26	281.41	998.36	1,037.27	1,034.50	2.77	374.218	
800.00	800.00	802.20	797.80	2.64	0.97	74.26	281.41	998.36	1,037.27	1,034.06	3.21	323.497	
900.00	900.00	902.20	897.80	3.00	1.11	74.26	281.41	998.36	1,037.27	1,033.63	3.64	284.884	
1,000.00	1,000.00	1,002.20	997.80	3.36	1.24	74.26	281.41	998.36	1,037.27	1,033.19	4.08	254.506	
1,100.00	1,100.00	1,102.20	1,097.80	3.72	1.37	74.26	281.41	998.36	1,037.27	1,032.76	4.51	229.983	
1,200.00	1,200.00	1,202.20	1,197.80	4.08	1.50	74.26	281.41	998.36	1,037.27	1,032.32	4.94	209.770	
1,300.00	1,300.00	1,302.20	1,297.80	4.44	1.63	74.26	281.41	998.36	1,037.27	1,031.89	5.38	192.823	
1,400.00	1,400.00	1,402.20	1,397.80	4.79	1.77	74.26	281.41	998.36	1,037.27	1,031.45	5.81	178.409	
1,500.00	1,500.00	1,502.20	1,497.80	5.15	1.90	74.26	281.41	998.36	1,037.27	1,031.02	6.25	166.001	
1,600.00	1,600.00	1,602.20	1,597.80	5.51	2.03	74.26	281.41	998.36	1,037.27	1,030.58	6.68	155.206	
1,700.00	1,700.00	1,702.20	1,697.80	5.87	2.16	74.26	281.41	998.36	1,037.27	1,030.15	7.12	145.729	
1,800.00	1,800.00	1,802.20	1,797.80	6.23	2.29	74.26	281.41	998.36	1,037.27	1,029.72	7.55	137.344	
1,900.00	1,900.00	1,902.20	1,897.80	6.59	2.42	74.26	281.41	998.36	1,037.27	1,029.28	7.99	129.870	
2,000.00	2,000.00	2,002.20	1,997.80	6.95	2.56	74.26	281.41	998.36	1,037.27	1,028.85	8.42	123.168	
2,100.00	2,100.00	2,102.20	2,097.80	7.30	2.69	74.26	281.41	998.36	1,037.27	1,028.41	8.86	117.124	
2,200.00	2,200.00	2,202.20	2,197.80	7.66	2.82	74.26	281.41	998.36	1,037.27	1,027.98	9.29	111.645	
2,300.00	2,300.00	2,302.20	2,297.80	8.02	2.95	74.26	281.41	998.36	1,037.27	1,027.54	9.73	106.656	
2,400.00	2,400.00	2,402.20	2,397.80	8.38	3.08	74.26	281.41	998.36	1,037.27	1,027.11	10.16	102.094	
2,500.00	2,500.00	2,502.20	2,497.80	8.74	3.22	74.26	281.41	998.36	1,037.27	1,026.67	10.59	97.906	
2,600.00	2,599.99	2,602.21	2,597.79	9.10	3.35	74.31	281.41	998.36	1,037.21	1,026.18	11.03	94.055	
2,700.00	2,699.96	2,702.24	2,697.76	9.45	3.48	74.45	281.41	998.36	1,037.05	1,025.59	11.46	90.505	
2,800.00	2,799.86	2,802.34	2,797.66	9.81	3.61	74.69	281.41	998.36	1,036.79	1,024.90	11.89	87.221	
2,900.00	2,899.68	2,902.52	2,897.48	10.17	3.74	75.03	281.41	998.36	1,036.46	1,024.15	12.31	84.173	
3,000.00	2,999.37	3,002.83	2,997.17	10.53	3.88	75.46	281.41	998.36	1,036.09	1,023.35	12.74	81.335	
3,100.00	3,098.90	3,103.30	3,096.70	10.89	4.01	75.99	281.41	998.36	1,035.72	1,022.56	13.16	78.685	
3,200.00	3,198.26	3,203.94	3,196.06	11.25	4.14	76.62	281.41	998.36	1,035.39	1,021.81	13.59	76.203	
3,300.06	3,297.46	3,304.74	3,295.26	11.62	4.27	77.34	281.41	998.36	1,035.17	1,021.16	14.01	73.873	
3,379.43	3,376.06	3,373.86	3,373.86	11.91	4.37	77.95	281.41	998.36	1,035.11	1,020.77	14.34	72.162	CC
3,400.00	3,396.43	3,405.77	3,394.23	11.98	4.41	78.11	281.41	998.36	1,035.12	1,020.68	14.44	71.681	
3,500.00	3,495.46	3,506.74	3,493.26	12.36	4.54	78.88	281.41	998.36	1,035.25	1,020.38	14.87	69.614	
3,600.00	3,594.48	3,607.72	3,592.28	12.73	4.67	79.65	281.41	998.36	1,035.57	1,020.26	15.30	67.663	ES
3,700.00	3,693.51	3,708.69	3,691.31	13.11	4.81	80.42	281.41	998.36	1,036.07	1,020.33	15.74	65.821	
3,800.00	3,792.54	3,809.66	3,790.34	13.49	4.94	81.19	281.41	998.36	1,036.77	1,020.59	16.18	64.080	
3,900.00	3,891.56	3,889.36	3,889.36	13.87	5.04	81.96	281.41	998.36	1,037.65	1,021.04	16.60	62.491	
4,000.00	3,990.59	3,988.39	3,988.39	14.25	5.18	82.72	281.41	998.36	1,038.71	1,021.66	17.05	60.934	
4,100.00	4,089.62	4,087.42	4,087.42	14.64	5.31	83.49	281.41	998.36	1,039.96	1,022.47	17.49	59.459	
4,200.00	4,188.64	4,186.44	4,186.44	15.03	5.44	84.25	281.41	998.36	1,041.39	1,023.46	17.94	58.061	
4,300.00	4,287.67	4,285.47	4,285.47	15.42	5.57	85.01	281.41	998.36	1,043.01	1,024.63	18.38	56.734	
4,400.00	4,386.70	4,384.50	4,384.50	15.81	5.70	85.77	281.41	998.36	1,044.81	1,025.98	18.83	55.474	
4,500.00	4,485.72	4,483.52	4,483.52	16.20	5.83	86.52	281.41	998.36	1,046.80	1,027.51	19.29	54.277	
4,600.00	4,584.75	4,582.55	4,582.55	16.59	5.96	87.27	281.41	998.36	1,048.96	1,029.22	19.74	53.138	
4,700.00	4,683.78	4,681.58	4,681.58	16.98	6.09	88.02	281.41	998.36	1,051.31	1,031.11	20.20	52.055	
4,800.00	4,782.80	4,780.60	4,780.60	17.38	6.22	88.77	281.41	998.36	1,053.83	1,033.17	20.65	51.023	
4,900.00	4,881.83	4,879.63	4,879.63	17.78	6.35	89.51	281.41	998.36	1,056.53	1,035.41	21.11	50.041	
5,000.00	4,980.86	4,978.66	4,978.66	18.17	6.48	90.24	281.41	998.36	1,059.40	1,037.83	21.57	49.104	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #6H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-, 8720- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	5,077.68	5,077.68	18.57	6.61	90.98	281.41	998.36	1,062.45	1,040.42	22.04	48.210	
5,200.00	5,178.91	5,176.71	5,176.71	18.97	6.74	91.71	281.41	998.36	1,065.68	1,043.17	22.50	47.357	
5,300.00	5,277.94	5,275.74	5,275.74	19.37	6.87	92.43	281.41	998.36	1,069.07	1,046.10	22.97	46.543	
5,400.00	5,376.96	5,374.76	5,374.76	19.77	7.00	93.15	281.41	998.36	1,072.64	1,049.20	23.44	45.764	
5,500.00	5,475.99	5,473.79	5,473.79	20.17	7.13	93.87	281.41	998.36	1,076.37	1,052.46	23.91	45.021	
5,600.00	5,575.02	5,572.82	5,572.82	20.57	7.26	94.58	281.41	998.36	1,080.27	1,055.89	24.38	44.309	
5,690.40	5,664.54	5,662.34	5,662.34	20.93	7.38	95.21	281.41	998.36	1,083.94	1,059.13	24.81	43.693	
5,700.00	5,674.04	5,671.84	5,671.84	20.97	7.39	95.28	281.41	998.36	1,084.33	1,059.48	24.85	43.629	
5,800.00	5,773.21	5,771.01	5,771.01	21.37	7.53	95.93	281.41	998.36	1,088.24	1,062.91	25.32	42.972	
5,900.00	5,872.58	5,870.38	5,870.38	21.76	7.66	96.49	281.41	998.36	1,091.73	1,065.94	25.79	42.334	
6,000.00	5,972.14	5,969.94	5,969.94	22.15	7.79	96.95	281.41	998.36	1,094.76	1,068.52	26.25	41.711	
6,100.00	6,071.84	6,069.64	6,069.64	22.52	7.92	97.33	281.41	998.36	1,097.29	1,070.59	26.70	41.102	
6,200.00	6,171.66	6,169.46	6,169.46	22.89	8.05	97.62	281.41	998.36	1,099.27	1,072.13	27.14	40.505	
6,300.00	6,271.57	6,269.37	6,269.37	23.25	8.18	97.83	281.41	998.36	1,100.69	1,073.12	27.57	39.919	
6,400.00	6,371.54	6,369.34	6,369.34	23.60	8.31	97.95	281.41	998.36	1,101.53	1,073.53	28.00	39.341	
6,490.46	6,462.00	6,459.80	6,459.80	23.92	8.43	97.98	281.41	998.36	1,101.77	1,073.39	28.38	38.825	
6,500.00	6,471.54	6,469.34	6,469.34	23.95	8.45	97.98	281.41	998.36	1,101.77	1,073.36	28.42	38.771	
6,600.00	6,571.54	6,569.34	6,569.34	24.29	8.58	97.98	281.41	998.36	1,101.77	1,072.94	28.83	38.213	
6,700.00	6,671.54	6,669.34	6,669.34	24.63	8.71	97.98	281.41	998.36	1,101.77	1,072.52	29.25	37.670	
6,800.00	6,771.54	6,769.34	6,769.34	24.98	8.84	97.98	281.41	998.36	1,101.77	1,072.11	29.66	37.142	
6,900.00	6,871.54	6,869.34	6,869.34	25.32	8.97	97.98	281.41	998.36	1,101.77	1,071.69	30.08	36.628	
7,000.00	6,971.54	6,969.34	6,969.34	25.66	9.11	97.98	281.41	998.36	1,101.77	1,071.28	30.50	36.128	
7,100.00	7,071.54	7,069.34	7,069.34	26.01	9.24	97.98	281.41	998.36	1,101.77	1,070.86	30.91	35.641	
7,200.00	7,171.54	7,169.34	7,169.34	26.35	9.37	97.98	281.41	998.36	1,101.77	1,070.44	31.33	35.166	
7,300.00	7,271.54	7,269.34	7,269.34	26.70	9.50	97.98	281.41	998.36	1,101.77	1,070.02	31.75	34.704	
7,400.00	7,371.54	7,369.34	7,369.34	27.04	9.63	97.98	281.41	998.36	1,101.77	1,069.61	32.17	34.253	
7,500.00	7,471.54	7,469.34	7,469.34	27.39	9.76	97.98	281.41	998.36	1,101.77	1,069.19	32.58	33.813	
7,600.00	7,571.54	7,569.34	7,569.34	27.73	9.90	97.98	281.41	998.36	1,101.77	1,068.77	33.00	33.385	
7,700.00	7,671.54	7,669.34	7,669.34	28.08	10.03	97.98	281.41	998.36	1,101.77	1,068.35	33.42	32.966	
7,800.00	7,771.54	7,769.34	7,769.34	28.43	10.16	97.98	281.41	998.36	1,101.77	1,067.93	33.84	32.558	
7,900.00	7,871.54	7,869.34	7,869.34	28.77	10.29	97.98	281.41	998.36	1,101.77	1,067.51	34.26	32.159	
8,000.00	7,971.54	7,969.34	7,969.34	29.12	10.42	97.98	281.41	998.36	1,101.77	1,067.09	34.68	31.770	
8,100.00	8,071.54	8,069.34	8,069.34	29.47	10.56	97.98	281.41	998.36	1,101.77	1,066.67	35.10	31.390	
8,200.00	8,171.54	8,169.34	8,169.34	29.82	10.69	97.98	281.41	998.36	1,101.77	1,066.25	35.52	31.019	
8,300.00	8,271.54	8,269.34	8,269.34	30.16	10.82	97.98	281.41	998.36	1,101.77	1,065.83	35.94	30.656	
8,400.00	8,371.54	8,369.34	8,369.34	30.51	10.95	97.98	281.41	998.36	1,101.77	1,065.41	36.36	30.302	
8,500.00	8,471.54	8,469.34	8,469.34	30.86	11.08	97.98	281.41	998.36	1,101.77	1,064.99	36.78	29.955	
8,600.00	8,571.54	8,569.34	8,569.34	31.21	11.21	97.98	281.41	998.36	1,101.77	1,064.57	37.20	29.616	
8,700.00	8,671.54	8,669.34	8,669.34	31.56	11.35	97.98	281.41	998.36	1,101.77	1,064.15	37.62	29.285	
8,703.61	8,675.15	8,672.95	8,672.95	31.57	11.35	97.98	281.41	998.36	1,101.77	1,064.13	37.64	29.273	
8,800.00	8,771.54	8,739.62	8,739.62	31.91	11.42	98.00	281.05	998.59	1,102.44	1,064.44	38.00	29.012	
8,900.00	8,871.54	8,775.00	8,774.88	32.26	11.42	98.11	278.68	1,000.06	1,107.87	1,069.52	38.35	28.891	
9,000.00	8,971.54	8,825.00	8,824.14	32.61	11.43	98.44	271.56	1,004.49	1,118.70	1,079.98	38.72	28.893	
9,100.00	9,071.54	8,856.79	8,854.90	32.96	11.44	98.76	264.77	1,008.70	1,134.87	1,095.76	39.10	29.024	
9,200.00	9,171.54	8,892.99	8,889.20	33.31	11.46	99.21	254.94	1,014.81	1,156.43	1,116.95	39.49	29.288	
9,300.00	9,271.54	8,925.00	8,918.72	33.66	11.47	99.68	244.44	1,021.33	1,183.29	1,143.43	39.86	29.690	
9,400.00	9,371.54	8,959.33	8,949.38	34.01	11.49	100.26	231.33	1,029.48	1,215.31	1,175.10	40.21	30.227	
9,500.00	9,471.54	8,989.22	8,975.11	34.36	11.51	100.82	218.42	1,037.50	1,252.33	1,211.81	40.52	30.906	
9,600.00	9,571.54	9,016.93	8,998.07	34.71	11.54	101.38	205.25	1,045.68	1,294.16	1,253.36	40.80	31.723	
9,700.00	9,671.54	9,050.00	9,024.24	35.06	11.56	102.10	188.09	1,056.34	1,340.60	1,299.54	41.05	32.655	
9,800.00	9,771.54	9,066.05	9,036.42	35.41	11.58	102.47	179.21	1,061.85	1,391.17	1,349.94	41.23	33.742	
9,900.00	9,871.54	9,087.70	9,052.29	35.76	11.60	102.97	166.70	1,069.63	1,445.80	1,404.40	41.39	34.928	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #6H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-, 8720- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,000.00	9,971.54	9,100.00	9,061.00	36.11	11.61	103.27	159.32	1,074.21	1,504.17	1,462.67	41.50	36.247	
10,100.00	10,071.54	9,125.00	9,078.00	36.46	11.64	103.88	143.75	1,083.88	1,565.78	1,524.14	41.64	37.605	
10,200.00	10,171.54	9,150.00	9,094.01	36.81	11.66	104.50	127.45	1,094.01	1,630.62	1,588.85	41.77	39.038	
10,300.00	10,271.54	9,150.00	9,094.01	37.17	11.66	104.50	127.45	1,094.01	1,698.23	1,656.44	41.79	40.640	
10,400.00	10,371.54	9,175.00	9,109.00	37.52	11.69	105.14	110.46	1,104.56	1,768.31	1,726.40	41.92	42.186	
10,500.00	10,471.54	9,185.65	9,115.07	37.87	11.70	105.42	103.02	1,109.18	1,840.79	1,798.80	41.99	43.842	
10,600.00	10,571.54	9,200.00	9,122.92	38.22	11.72	105.79	92.82	1,115.52	1,915.38	1,873.30	42.08	45.516	
10,700.00	10,671.54	9,200.00	9,122.92	38.57	11.72	105.79	92.82	1,115.52	1,991.98	1,949.86	42.12	47.294	
10,800.00	10,771.54	9,225.00	9,135.74	38.93	11.75	106.44	74.59	1,126.85	2,070.15	2,027.86	42.28	48.957	
10,900.00	10,871.54	9,225.00	9,135.74	39.28	11.75	106.44	74.59	1,126.85	2,149.94	2,107.59	42.35	50.767	
11,000.00	10,971.54	9,238.37	9,142.13	39.63	11.77	106.79	64.62	1,133.04	2,231.14	2,188.65	42.49	52.511	
11,100.00	11,071.54	9,250.00	9,147.42	39.98	11.78	107.09	55.82	1,138.51	2,313.68	2,271.04	42.63	54.268	
11,200.00	11,171.54	9,250.00	9,147.42	40.34	11.78	107.09	55.82	1,138.51	2,397.39	2,354.64	42.75	56.085	
11,300.00	11,271.54	9,262.09	9,152.64	40.69	11.79	107.41	46.55	1,144.26	2,482.14	2,439.21	42.92	57.829	
11,400.00	11,371.54	9,275.00	9,157.92	41.04	11.81	107.75	36.55	1,150.48	2,567.93	2,524.81	43.12	59.559	
11,500.00	11,471.54	9,275.00	9,157.92	41.40	11.81	107.75	36.55	1,150.48	2,654.53	2,611.26	43.27	61.344	
11,525.27	11,496.81	9,275.00	9,157.92	41.48	11.81	107.75	36.55	1,150.48	2,676.57	2,633.25	43.31	61.793	
11,550.00	11,521.53	9,275.00	9,157.92	41.57	11.81	107.73	36.55	1,150.48	2,698.05	2,654.70	43.35	62.233	
11,600.00	11,571.33	9,275.00	9,157.92	41.72	11.81	107.56	36.55	1,150.48	2,740.75	2,697.33	43.43	63.113	
11,650.00	11,620.56	9,286.29	9,162.27	41.85	11.82	107.52	27.70	1,155.98	2,782.09	2,738.55	43.53	63.905	
11,700.00	11,668.84	9,300.00	9,167.22	41.98	11.84	107.39	16.84	1,162.72	2,822.06	2,778.42	43.65	64.659	
11,750.00	11,715.82	9,300.00	9,167.22	42.10	11.84	106.73	16.84	1,162.72	2,860.09	2,816.38	43.70	65.447	
11,800.00	11,761.13	9,300.00	9,167.22	42.20	11.84	105.90	16.84	1,162.72	2,896.16	2,852.41	43.75	66.196	
11,850.00	11,804.43	9,300.00	9,167.22	42.30	11.84	104.91	16.84	1,162.72	2,930.10	2,886.30	43.80	66.901	
11,900.00	11,845.39	9,311.59	9,171.12	42.39	11.85	104.09	7.57	1,168.48	2,961.56	2,917.68	43.88	67.496	
11,950.00	11,883.69	9,325.00	9,175.29	42.47	11.87	103.18	-3.25	1,175.21	2,990.56	2,946.60	43.96	68.032	
12,000.00	11,919.06	9,325.00	9,175.29	42.54	11.87	101.71	-3.25	1,175.21	3,016.70	2,972.71	43.99	68.572	
12,050.00	11,951.20	9,325.00	9,175.29	42.61	11.87	100.08	-3.25	1,175.21	3,040.07	2,996.05	44.03	69.048	
12,100.00	11,979.89	9,336.01	9,178.46	42.68	11.88	98.68	-12.22	1,180.77	3,060.42	3,016.33	44.10	69.404	
12,150.00	12,004.90	9,350.00	9,182.12	42.75	11.90	97.26	-23.68	1,187.90	3,077.79	3,033.62	44.17	69.678	
12,200.00	12,026.05	9,350.00	9,182.12	42.82	11.90	95.24	-23.68	1,187.90	3,091.86	3,047.65	44.21	69.930	
12,250.00	12,043.17	9,350.00	9,182.12	42.89	11.90	93.09	-23.68	1,187.90	3,102.81	3,058.54	44.26	70.101	
12,300.00	12,056.13	9,362.01	9,184.95	42.97	11.91	91.32	-33.59	1,194.05	3,110.41	3,066.06	44.35	70.137	
12,350.00	12,064.83	9,375.00	9,187.68	43.05	11.93	89.53	-44.38	1,200.76	3,114.77	3,070.33	44.44	70.086	
12,400.00	12,069.21	9,375.00	9,187.68	43.13	11.93	87.17	-44.38	1,200.76	3,115.72	3,071.20	44.52	69.988	
12,423.64	12,069.77	9,375.00	9,187.68	43.17	11.93	86.04	-44.38	1,200.76	3,115.04	3,070.48	44.56	69.910	
12,500.00	12,069.98	9,387.93	9,190.05	43.32	11.94	82.92	-55.18	1,207.46	3,112.42	3,067.68	44.74	69.573	
12,583.99	12,070.22	9,400.00	9,191.95	43.54	11.96	79.39	-65.30	1,213.75	3,111.45	3,066.48	44.97	69.185	
12,600.00	12,070.27	9,400.00	9,191.95	43.58	11.96	78.62	-65.30	1,213.75	3,111.49	3,066.47	45.02	69.118	
12,667.68	12,070.46	9,400.00	9,191.95	43.79	11.96	75.36	-65.30	1,213.75	3,112.57	3,067.34	45.23	68.815	
12,700.00	12,070.55	9,414.03	9,193.78	43.90	11.97	74.45	-77.12	1,221.09	3,113.46	3,068.09	45.36	68.633	
12,800.00	12,070.84	9,425.00	9,194.93	44.29	11.99	70.25	-86.39	1,226.85	3,119.28	3,073.50	45.77	68.146	
12,900.00	12,071.12	9,450.00	9,196.61	44.73	12.01	66.87	-107.57	1,240.01	3,129.34	3,083.08	46.26	67.646	
13,000.00	12,071.41	9,450.00	9,196.61	45.22	12.01	62.59	-107.57	1,240.01	3,143.29	3,096.51	46.78	67.194	
13,100.00	12,071.69	9,469.54	9,197.01	45.76	12.04	59.47	-124.16	1,250.32	3,161.40	3,114.04	47.36	66.750	
13,200.00	12,071.98	10,269.33	9,197.01	46.34	13.74	89.52	-883.57	1,466.07	3,174.46	3,125.13	49.33	64.354	
13,200.11	12,071.98	10,269.43	9,197.01	46.34	13.74	89.52	-883.68	1,466.07	3,174.46	3,125.13	49.33	64.353	
13,300.00	12,072.26	10,369.33	9,197.01	46.97	14.07	89.52	-983.57	1,466.91	3,174.81	3,124.66	50.15	63.311	
13,400.00	12,072.55	10,469.33	9,197.01	47.64	14.46	89.52	-1,083.57	1,467.74	3,175.16	3,124.15	51.01	62.243	
13,500.00	12,072.83	10,569.33	9,197.01	48.36	14.92	89.52	-1,183.56	1,468.58	3,175.51	3,123.59	51.93	61.156	
13,600.00	12,073.12	10,669.33	9,197.01	49.13	15.42	89.52	-1,283.56	1,469.42	3,175.87	3,122.99	52.88	60.056	
13,700.00	12,073.40	10,769.32	9,197.01	49.94	15.97	89.52	-1,383.55	1,470.25	3,176.22	3,122.34	53.88	58.950	

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

devon

MS Energy Services
Anticollision Report

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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #6H - Wellbore #1 - Design #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-, 8720- — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,800.00	12,073.68	10,869.32	9,197.01	50.80	16.55	89.52	-1,483.55	1,471.09	3,176.57	3,121.65	54.92	57.842	
13,900.00	12,073.97	10,969.32	9,197.01	51.69	17.16	89.52	-1,583.54	1,471.93	3,176.92	3,120.93	56.00	56.736	
14,000.00	12,074.25	11,069.32	9,197.01	52.62	17.80	89.52	-1,683.54	1,472.77	3,177.28	3,120.18	57.10	55.646	
14,100.00	12,074.54	11,169.32	9,197.01	53.58	18.44	89.52	-1,783.54	1,473.60	3,177.63	3,119.39	58.24	54.559	
14,200.00	12,074.82	11,269.32	9,197.01	54.58	19.11	89.52	-1,883.53	1,474.44	3,177.98	3,118.57	59.42	53.488	
14,300.00	12,075.11	11,369.32	9,197.01	55.61	19.78	89.52	-1,983.53	1,475.28	3,178.34	3,117.72	60.62	52.433	
14,400.00	12,075.39	11,469.32	9,197.01	56.67	20.47	89.52	-2,083.52	1,476.12	3,178.69	3,116.84	61.85	51.396	
14,500.00	12,075.68	11,569.32	9,197.01	57.76	21.16	89.52	-2,183.52	1,476.95	3,179.04	3,115.94	63.10	50.379	
14,600.00	12,075.96	11,669.32	9,197.01	58.87	21.86	89.52	-2,283.52	1,477.79	3,179.39	3,115.01	64.38	49.383	
14,700.00	12,076.24	11,769.32	9,197.01	60.01	22.56	89.52	-2,383.51	1,478.63	3,179.75	3,114.06	65.69	48.409	
14,800.00	12,076.53	11,869.32	9,197.01	61.17	23.27	89.52	-2,483.51	1,479.47	3,180.10	3,113.09	67.01	47.457	
14,900.00	12,076.81	11,969.32	9,197.01	62.36	23.98	89.52	-2,583.50	1,480.30	3,180.45	3,112.10	68.35	46.529	
15,000.00	12,077.10	12,069.32	9,197.01	63.57	24.70	89.52	-2,683.50	1,481.14	3,180.80	3,111.08	69.72	45.623	
15,100.00	12,077.38	12,169.32	9,197.01	64.79	25.43	89.52	-2,783.49	1,481.98	3,181.16	3,110.06	71.10	44.741	
15,200.00	12,077.67	12,269.31	9,197.01	66.04	26.15	89.52	-2,883.49	1,482.81	3,181.51	3,109.01	72.50	43.883	
15,300.00	12,077.95	12,369.31	9,197.01	67.30	26.88	89.52	-2,983.49	1,483.65	3,181.86	3,107.95	73.92	43.047	
15,400.00	12,078.23	12,469.31	9,197.01	68.58	27.61	89.52	-3,083.48	1,484.49	3,182.21	3,106.87	75.35	42.234	
15,500.00	12,078.52	12,569.31	9,197.01	69.88	28.34	89.52	-3,183.48	1,485.33	3,182.57	3,105.77	76.79	41.443	
15,600.00	12,078.80	12,669.31	9,197.01	71.19	29.08	89.52	-3,283.47	1,486.16	3,182.92	3,104.67	78.25	40.675	
15,700.00	12,079.09	12,769.31	9,197.01	72.51	29.81	89.52	-3,383.47	1,487.00	3,183.27	3,103.55	79.72	39.928	
15,800.00	12,079.37	12,869.31	9,197.01	73.85	30.55	89.52	-3,483.47	1,487.84	3,183.62	3,102.42	81.21	39.203	
15,900.00	12,079.66	12,969.31	9,197.01	75.21	31.29	89.52	-3,583.46	1,488.68	3,183.98	3,101.27	82.71	38.498	
16,000.00	12,079.94	13,069.31	9,197.01	76.57	32.03	89.52	-3,683.46	1,489.51	3,184.33	3,100.12	84.21	37.813	
16,100.00	12,080.22	13,169.31	9,197.01	77.94	32.78	89.52	-3,783.45	1,490.35	3,184.68	3,098.95	85.73	37.148	
16,200.00	12,080.51	13,269.31	9,197.01	79.33	33.52	89.52	-3,883.45	1,491.19	3,185.04	3,097.78	87.26	36.501	
16,300.00	12,080.79	13,369.31	9,197.01	80.73	34.27	89.52	-3,983.44	1,492.02	3,185.39	3,096.59	88.80	35.873	
16,400.00	12,081.08	13,469.31	9,197.01	82.13	35.01	89.52	-4,083.44	1,492.86	3,185.74	3,095.40	90.34	35.263	
16,500.00	12,081.36	13,569.31	9,197.01	83.55	35.76	89.52	-4,183.44	1,493.70	3,186.09	3,094.20	91.90	34.671	
16,600.00	12,081.65	13,669.31	9,197.01	84.97	36.51	89.52	-4,283.43	1,494.54	3,186.45	3,092.99	93.46	34.095	
16,700.00	12,081.93	13,769.30	9,197.01	86.40	37.26	89.52	-4,383.43	1,495.37	3,186.80	3,091.77	95.03	33.535	
16,800.00	12,082.22	13,869.30	9,197.01	87.84	38.01	89.52	-4,483.42	1,496.21	3,187.15	3,090.54	96.61	32.991	
16,900.00	12,082.50	13,969.30	9,197.01	89.29	38.76	89.52	-4,583.42	1,497.05	3,187.50	3,089.31	98.19	32.462	
17,000.00	12,082.78	14,069.30	9,197.01	90.75	39.51	89.52	-4,683.42	1,497.89	3,187.86	3,088.07	99.78	31.948	
17,100.00	12,083.07	14,169.30	9,197.01	92.21	40.27	89.52	-4,783.41	1,498.72	3,188.21	3,086.83	101.38	31.447	
17,200.00	12,083.35	14,269.30	9,197.01	93.68	41.02	89.52	-4,883.41	1,499.56	3,188.56	3,085.58	102.99	30.961	
17,300.00	12,083.64	14,369.30	9,197.01	95.15	41.77	89.52	-4,983.40	1,500.40	3,188.91	3,084.32	104.60	30.488	
17,400.00	12,083.92	14,469.30	9,197.01	96.63	42.53	89.52	-5,083.40	1,501.23	3,189.27	3,083.05	106.21	30.027	
17,500.00	12,084.21	14,584.16	9,197.00	98.12	43.39	90.15	-5,198.25	1,501.85	3,189.50	3,081.61	107.89	29.562	
17,600.00	12,084.49	14,684.15	9,197.00	99.61	44.14	90.15	-5,298.25	1,501.59	3,189.39	3,079.89	109.50	29.126	
17,700.00	12,084.77	14,784.15	9,197.00	101.11	44.90	90.15	-5,398.24	1,501.34	3,189.28	3,078.16	111.12	28.701	
17,800.00	12,085.06	14,884.15	9,197.00	102.61	45.65	90.15	-5,498.24	1,501.08	3,189.17	3,076.43	112.74	28.287	
17,900.00	12,085.34	14,984.14	9,197.00	104.11	46.40	90.15	-5,598.24	1,500.83	3,189.05	3,074.69	114.37	27.884	
18,000.00	12,085.63	15,084.14	9,197.00	105.63	47.16	90.15	-5,698.23	1,500.57	3,188.94	3,072.95	116.00	27.492	
18,100.00	12,085.91	15,184.13	9,197.00	107.14	47.91	90.15	-5,798.23	1,500.31	3,188.83	3,071.20	117.63	27.109	
18,200.00	12,086.20	15,284.13	9,197.00	108.66	48.67	90.15	-5,898.22	1,500.06	3,188.72	3,069.45	119.26	26.736	
18,300.00	12,086.48	15,384.12	9,197.00	110.18	49.42	90.15	-5,998.22	1,499.80	3,188.61	3,067.70	120.90	26.373	
18,400.00	12,086.76	15,484.12	9,197.00	111.71	50.18	90.15	-6,098.21	1,499.55	3,188.50	3,065.95	122.55	26.019	
18,500.00	12,087.05	15,584.12	9,197.00	113.24	50.94	90.15	-6,198.21	1,499.29	3,188.39	3,064.19	124.19	25.673	
18,600.00	12,087.33	15,684.11	9,197.00	114.78	51.69	90.15	-6,298.20	1,499.04	3,188.28	3,062.44	125.84	25.336	
18,700.00	12,087.62	15,784.11	9,197.00	116.32	52.45	90.15	-6,398.20	1,498.78	3,188.17	3,060.67	127.49	25.007	
18,800.00	12,087.90	15,884.10	9,197.00	117.86	53.21	90.15	-6,498.20	1,498.53	3,188.06	3,058.91	129.15	24.686	
18,900.00	12,088.19	15,984.10	9,197.00	119.40	53.96	90.15	-6,598.19	1,498.27	3,187.95	3,057.14	130.80	24.372	

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

devon

MS Energy Services
Anticollision Report

MS Energy Services.
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Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Offset Design Windward Federal - #6H - Wellbore #1 - Design #1

Offset Site Error: 0.00 usft

Survey Program: 0-, 8720-

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,088.47	16,084.10	9,197.00	120.95	54.72	90.15	-6,698.19	1,498.02	3,187.84	3,055.38	132.46	24.066	
19,100.00	12,088.76	16,184.09	9,197.00	122.50	55.48	90.15	-6,798.18	1,497.76	3,187.73	3,053.61	134.12	23.767	
19,200.00	12,089.04	16,284.09	9,197.00	124.05	56.24	90.15	-6,898.18	1,497.51	3,187.62	3,051.83	135.79	23.475	
19,300.00	12,089.32	16,384.08	9,197.00	125.61	57.00	90.15	-6,998.17	1,497.25	3,187.51	3,050.06	137.45	23.190	
19,400.00	12,089.61	16,484.08	9,197.00	127.17	57.76	90.15	-7,098.17	1,497.00	3,187.40	3,048.28	139.12	22.911	
19,500.00	12,089.89	16,584.07	9,197.00	128.73	58.51	90.15	-7,198.16	1,496.74	3,187.29	3,046.51	140.79	22.639	
19,600.00	12,090.18	16,684.07	9,197.00	130.29	59.27	90.15	-7,298.16	1,496.49	3,187.19	3,044.73	142.46	22.373	
19,700.00	12,090.46	16,784.07	9,197.00	131.86	60.03	90.15	-7,398.15	1,496.23	3,187.08	3,042.95	144.13	22.112	
19,800.00	12,090.75	16,884.06	9,197.00	133.42	60.79	90.15	-7,498.15	1,495.98	3,186.97	3,041.17	145.81	21.858	
19,900.00	12,091.03	16,984.06	9,197.00	134.99	61.55	90.15	-7,598.15	1,495.72	3,186.86	3,039.38	147.48	21.608	
20,000.00	12,091.31	17,084.05	9,197.00	136.57	62.31	90.15	-7,698.14	1,495.46	3,186.76	3,037.60	149.16	21.365	
20,100.00	12,091.60	17,184.05	9,197.00	138.14	63.07	90.15	-7,798.14	1,495.21	3,186.65	3,035.81	150.84	21.126	
20,200.00	12,091.88	17,284.05	9,197.00	139.72	63.83	90.15	-7,898.13	1,494.95	3,186.54	3,034.02	152.52	20.893	
20,300.00	12,092.17	17,384.04	9,197.00	141.29	64.59	90.15	-7,998.13	1,494.70	3,186.44	3,032.24	154.20	20.664	
20,400.00	12,092.45	17,484.04	9,197.00	142.87	65.35	90.15	-8,098.12	1,494.44	3,186.33	3,030.45	155.88	20.440	
20,500.00	12,092.74	17,584.03	9,197.00	144.45	66.12	90.15	-8,198.12	1,494.19	3,186.23	3,028.66	157.57	20.221	
20,600.00	12,093.02	17,684.03	9,197.00	146.04	66.88	90.15	-8,298.11	1,493.93	3,186.12	3,026.87	159.25	20.006	
20,700.00	12,093.31	17,784.02	9,197.00	147.62	67.64	90.15	-8,398.11	1,493.68	3,186.02	3,025.08	160.94	19.796	
20,800.00	12,093.59	17,884.02	9,197.00	149.21	68.40	90.15	-8,498.11	1,493.42	3,185.91	3,023.28	162.63	19.590	
20,900.00	12,093.87	17,984.02	9,197.00	150.80	69.16	90.15	-8,598.10	1,493.17	3,185.81	3,021.49	164.32	19.388	
21,000.00	12,094.16	18,084.01	9,197.00	152.39	69.92	90.15	-8,698.10	1,492.91	3,185.70	3,019.70	166.01	19.190	
21,100.00	12,094.44	18,184.01	9,197.00	153.98	70.68	90.15	-8,798.09	1,492.66	3,185.60	3,017.90	167.70	18.996	
21,200.00	12,094.73	18,284.00	9,197.00	155.57	71.45	90.15	-8,898.09	1,492.40	3,185.50	3,016.11	169.39	18.806	
21,300.00	12,095.01	18,384.00	9,197.00	157.16	72.21	90.15	-8,998.08	1,492.15	3,185.39	3,014.31	171.08	18.619	
21,400.00	12,095.30	18,483.99	9,197.00	158.76	72.97	90.15	-9,098.08	1,491.89	3,185.29	3,012.51	172.78	18.436	
21,500.00	12,095.58	18,583.99	9,197.00	160.35	73.73	90.15	-9,198.07	1,491.64	3,185.19	3,010.72	174.47	18.256	
21,600.00	12,095.86	18,683.99	9,197.00	161.95	74.49	90.15	-9,298.07	1,491.38	3,185.08	3,008.92	176.17	18.080	
21,700.00	12,096.15	18,783.98	9,197.00	163.55	75.26	90.15	-9,398.06	1,491.12	3,184.98	3,007.12	177.86	17.907	
21,800.00	12,096.43	18,883.98	9,197.00	165.15	76.02	90.15	-9,498.06	1,490.87	3,184.88	3,005.32	179.56	17.737	
21,900.00	12,096.72	18,983.97	9,197.00	166.75	76.78	90.15	-9,598.06	1,490.61	3,184.78	3,003.52	181.25	17.571	
22,000.00	12,097.00	19,083.97	9,197.00	168.35	77.54	90.15	-9,698.05	1,490.36	3,184.68	3,001.72	182.95	17.407	
22,100.00	12,097.29	19,183.97	9,197.00	169.96	78.31	90.15	-9,798.05	1,490.10	3,184.57	2,999.92	184.65	17.247	
22,138.99	12,097.40	19,222.96	9,197.00	170.58	78.60	90.15	-9,837.04	1,490.00	3,184.53	2,999.22	185.31	17.185	
22,175.33	12,097.50	19,220.87	9,197.00	171.16	78.59	88.48	-9,834.95	1,490.01	3,184.73	2,998.96	185.76	17.144 SF	

devon

MS Energy Services
Anticollision Report

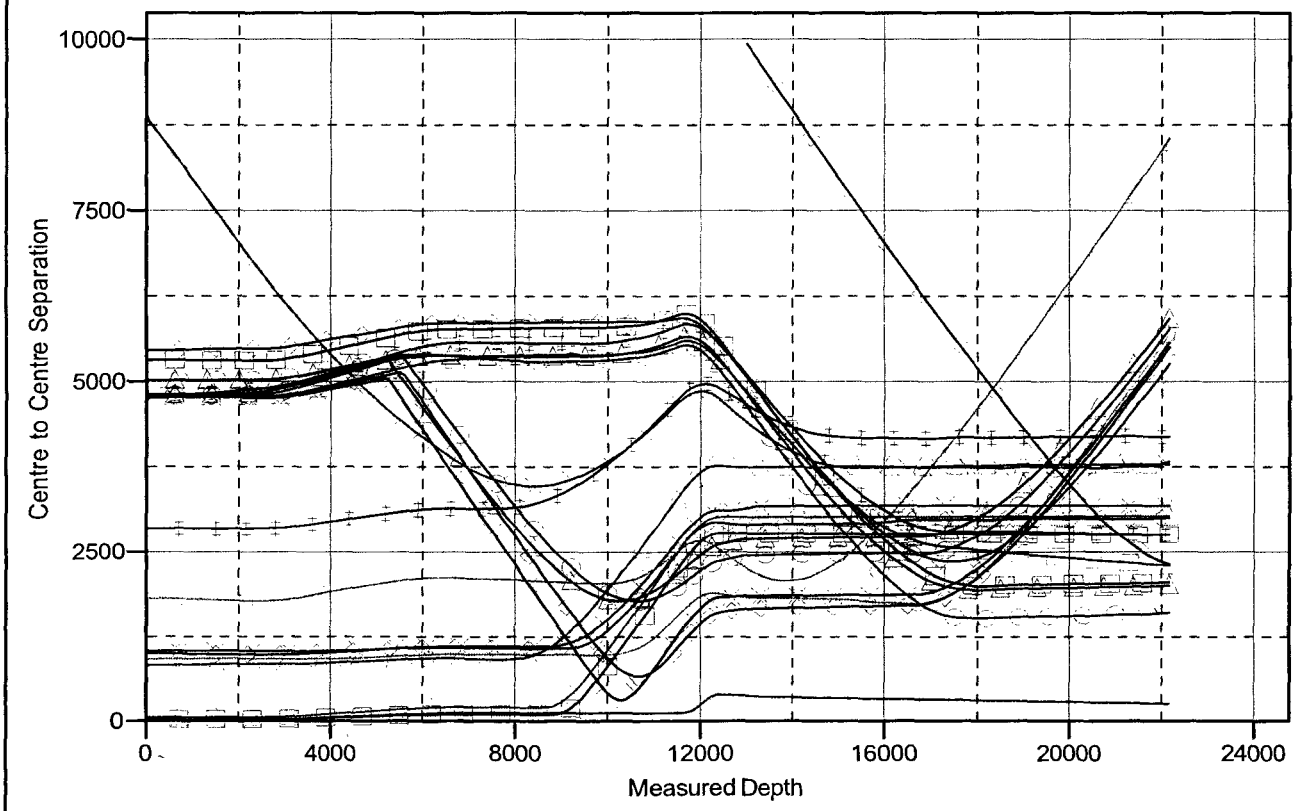
MS Energy Services.
WWW.MSENERGYSERVICES.COM

Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

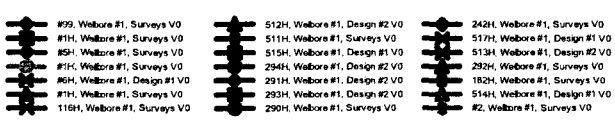
Reference Depths are relative to Well @ 3566.50usft (Cactus 126)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 516H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.32°

Ladder Plot



LEGEND



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MS Energy Services
Anticollision Report

MS Energy Services.
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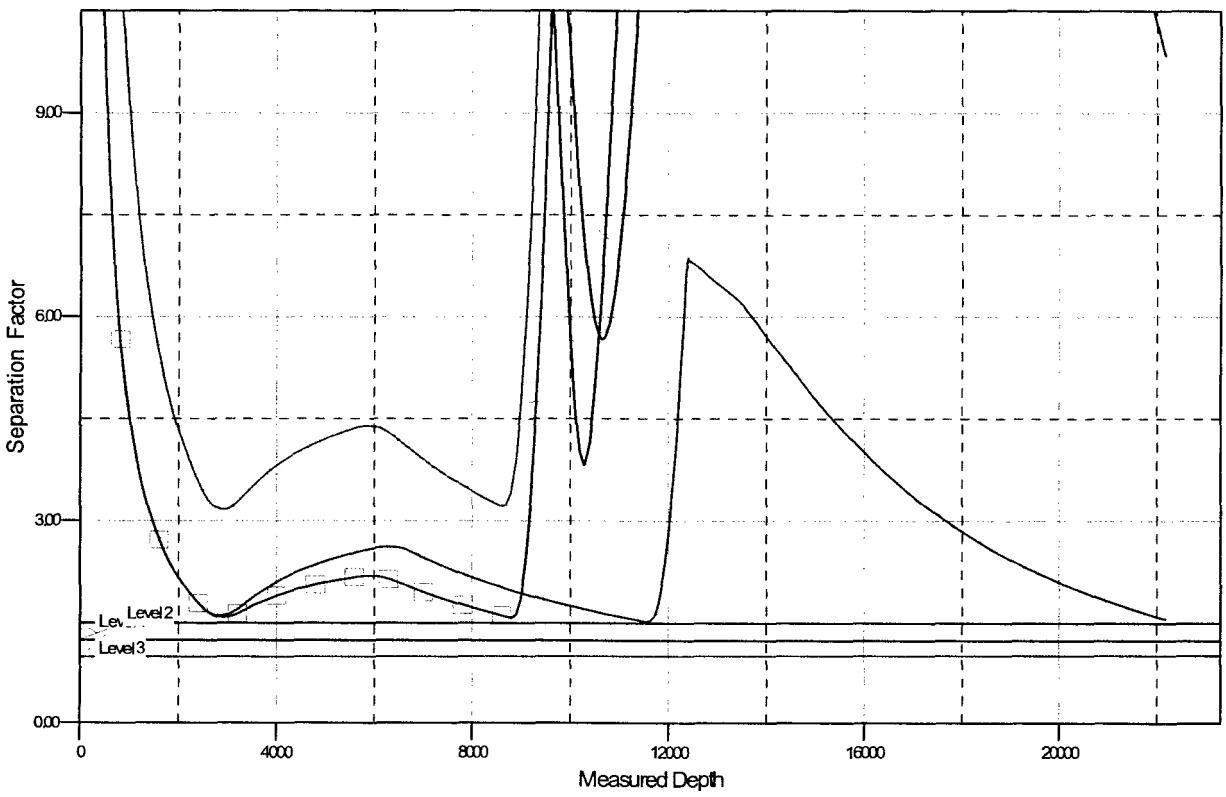
Company:	Devon Energy	**Local Co-ordinate Reference:**	Well 516H
Project:	Eddy County, New Mexico (NAD 83)	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Reference Site:	Cotton Draw Unit	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	5000.1 Conroe DB
Reference Design:	Design #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 3566.50usft (Cactus 126)	Coordinates are relative to: 516H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.32°

Separation Factor Plot



LEGEND

devon

Company: Devon Energy
Site: Cotton Draw Unit
Well: 516H
Project: Eddy County, New Mexico (NAD 83)
Rig: Cactus 126

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ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	KOP, 1.00°/100' Build
3300.06	8.00	347.95	3297.46	54.54	-11.64	-54.61	55.77	Begin 8.00° Tangent
5690.40	8.00	347.95	5664.54	379.91	-81.09	-380.40	388.46	Begin 1.00°/100' Drop
6490.46	0.00	0.00	6462.00	434.45	-92.73	-435.01	444.23	Begin Vertical Hold
11525.27	0.00	0.00	11496.81	434.45	-92.73	-435.01	444.23	Begin 10.00°/100' Build
12423.64	89.84	169.00	12069.77	-126.38	16.29	126.48	1015.56	Begin 89.84° Lateral
12667.68	89.84	169.00	12070.46	-365.94	62.85	366.32	1259.60	Begin 2.00°/100' Turn
13200.11	89.84	179.65	12071.98	-894.99	115.43	895.68	1792.02	Hold 179.65° Azm
22175.33	89.84	179.65	12097.50	-9870.01	170.49	9870.87	10767.21	PBHL

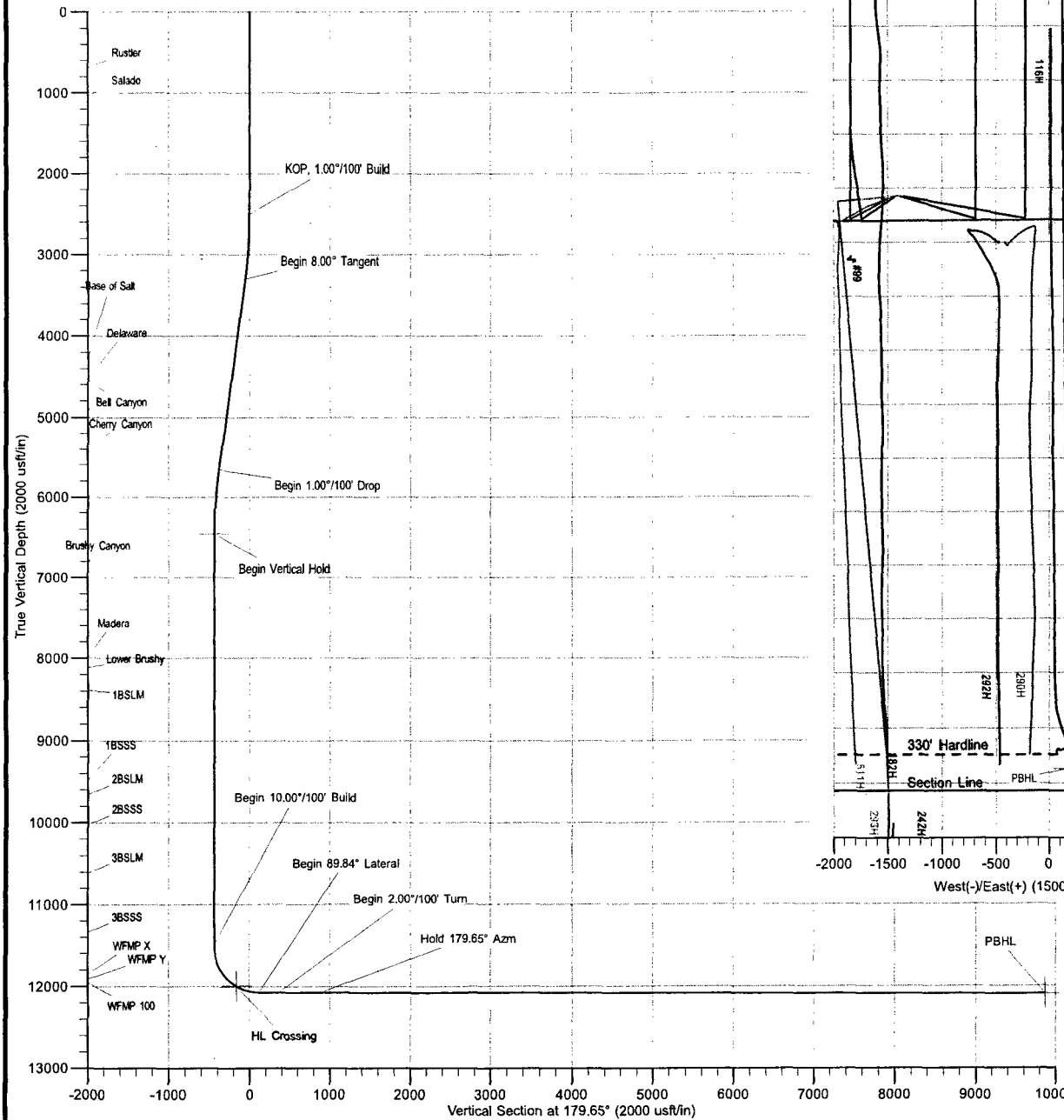
T G M

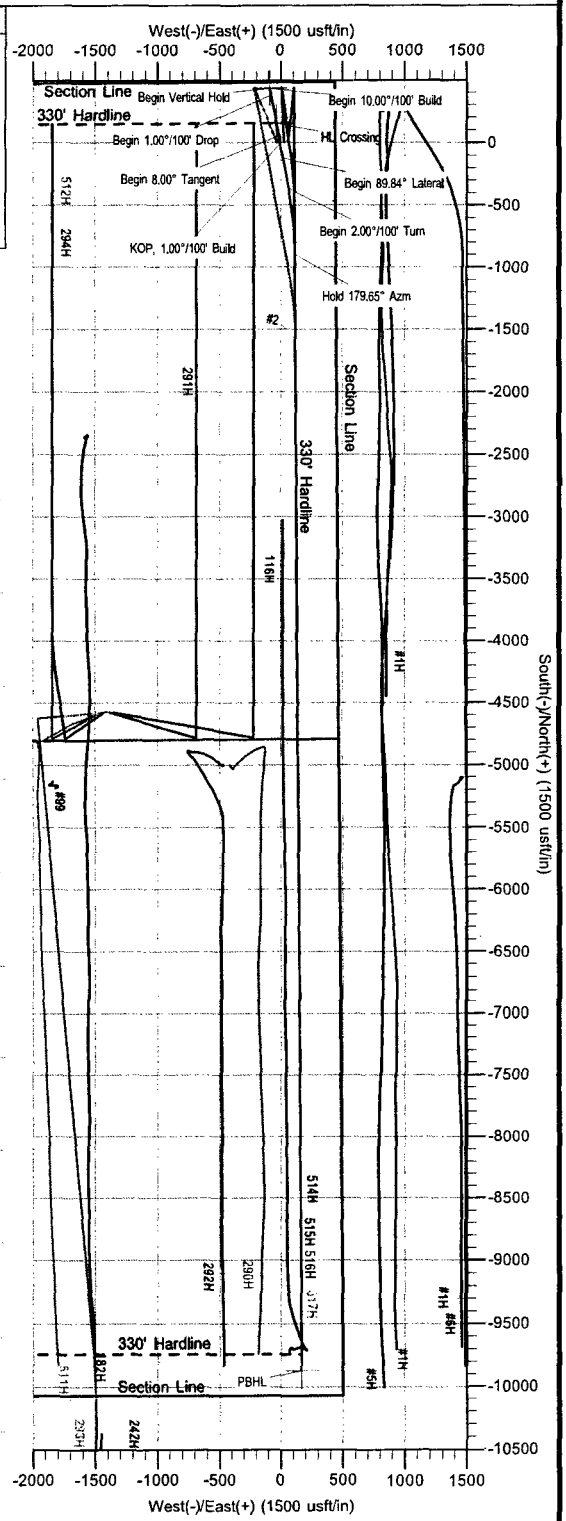
Azimuths to Grid North
True North: -0.32°
Magnetic North: 6.70°

Magnetic Field
Strength: 47878.9snT
Dip Angle: 59.97°
Date: 3/1/2018
Model: BGGM2017

US State Plane 1983
New Mexico Eastern Zone

Created By: VLS
Date: 15:41, August 22 2017
Plan: Design #1





devon

Company: Devon Energy
Site: Cotton Draw Unit
Well: 516H
Project: Eddy County, New Mexico (NAD 83)
Rig: Cactus 126

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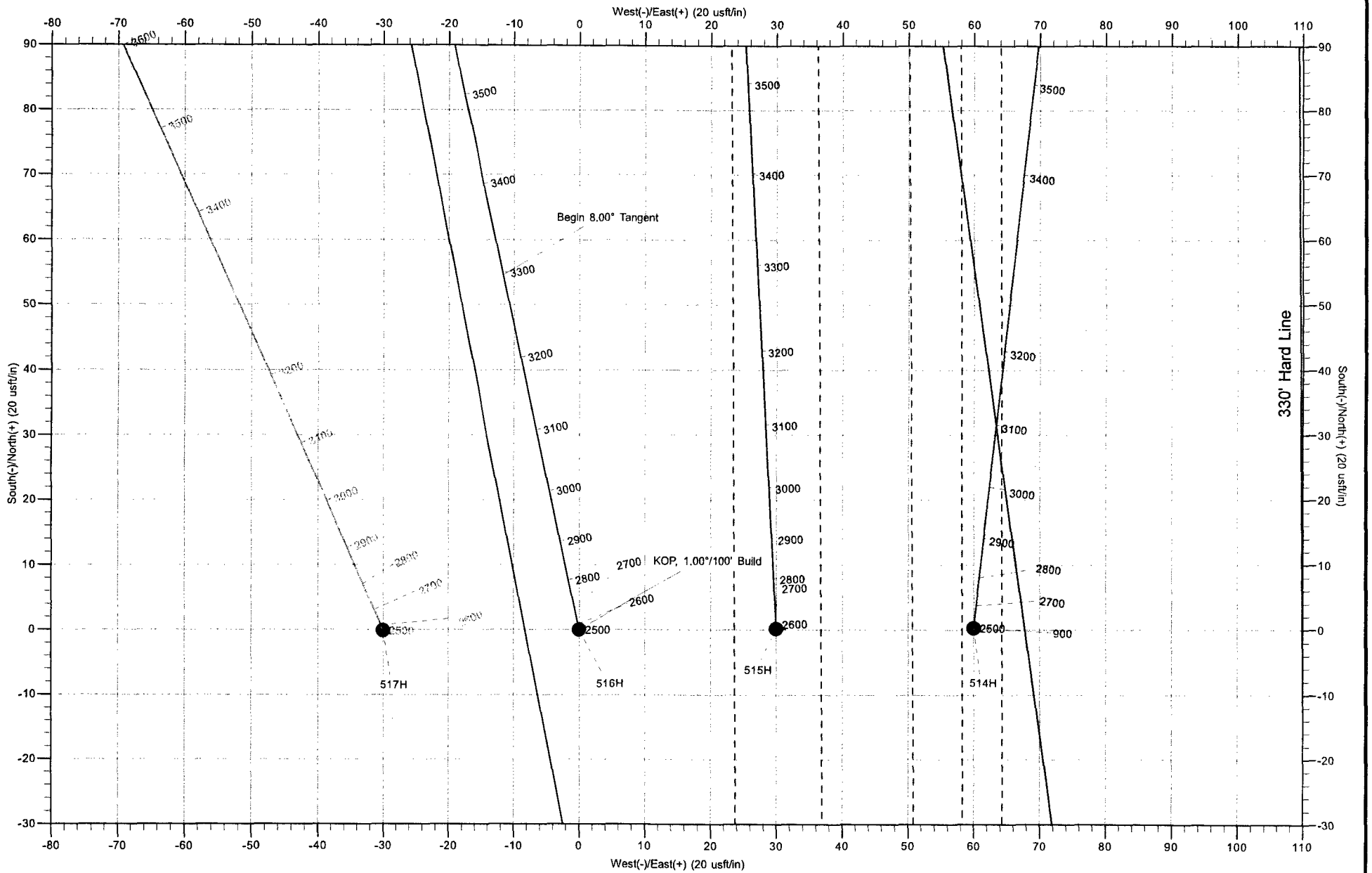

devon

Devon Energy

Eddy County, New Mexico (NAD 83)
Cotton Draw Unit
516H

Wellbore #1

Plan: Design #1

Standard Planning Report

22 August, 2017

MS Energy Services
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Database:	EDM 5000.14 Conroe Server	**Local Co-ordinate Reference:**	Well 516H
Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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

Well	516H				
Well Position	**+N/-S**	434,942.73 usft	**Northing:**	434,942.73 usft	**Latitude:** 32° 11' 39.368 N
	+E/-W	729,703.82 usft	**Easting:**	729,703.82 usft	**Longitude:** 103° 43' 27.819 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:** 3,541.50 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2017	3/1/2018	7.03	59.97	47,879

Design Design #1

Audit Notes:

Version:	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.65

Plan Survey Tool Program **Date** 8/22/2017

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,175.33	Design #1 (Wellbore #1)	MWD	
				OWSG MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	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	
3,300.06	8.00	347.95	3,297.46	54.54	-11.64	1.00	1.00	0.00	347.95	
5,690.40	8.00	347.95	5,664.54	379.91	-81.09	0.00	0.00	0.00	0.00	
6,490.46	0.00	0.00	6,462.00	434.45	-92.73	1.00	-1.00	0.00	180.00	Vert - CDU 516H
11,525.27	0.00	0.00	11,496.81	434.45	-92.73	0.00	0.00	0.00	0.00	
12,423.64	89.84	169.00	12,069.77	-126.38	16.29	10.00	10.00	0.00	169.00	
12,667.68	89.84	169.00	12,070.46	-365.94	62.85	0.00	0.00	0.00	0.00	
13,200.11	89.84	179.65	12,071.98	-894.99	115.43	2.00	0.00	2.00	90.01	
22,175.33	89.84	179.65	12,097.50	-9,870.01	170.49	0.00	0.00	0.00	0.00	PBHL - CDU 516H

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Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
699.50	0.00	0.00	699.50	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,043.50	0.00	0.00	1,043.50	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	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
KOP, 1.00°/100' Build									
2,600.00	1.00	347.95	2,599.99	0.85	-0.18	-0.85	1.00	1.00	0.00
2,700.00	2.00	347.95	2,699.96	3.41	-0.73	-3.42	1.00	1.00	0.00
2,800.00	3.00	347.95	2,799.86	7.68	-1.64	-7.69	1.00	1.00	0.00
2,900.00	4.00	347.95	2,899.68	13.65	-2.91	-13.67	1.00	1.00	0.00
3,000.00	5.00	347.95	2,999.37	21.32	-4.55	-21.35	1.00	1.00	0.00
3,100.00	6.00	347.95	3,098.90	30.70	-6.55	-30.74	1.00	1.00	0.00
3,200.00	7.00	347.95	3,198.26	41.77	-8.91	-41.82	1.00	1.00	0.00
3,300.06	8.00	347.95	3,297.46	54.54	-11.64	-54.61	1.00	1.00	0.00
Begin 8.00° Tangent									
3,400.00	8.00	347.95	3,396.43	68.14	-14.54	-68.23	0.00	0.00	0.00
3,500.00	8.00	347.95	3,495.46	81.76	-17.45	-81.86	0.00	0.00	0.00
3,600.00	8.00	347.95	3,594.48	95.37	-20.35	-95.49	0.00	0.00	0.00
3,700.00	8.00	347.95	3,693.51	108.98	-23.26	-109.12	0.00	0.00	0.00
3,800.00	8.00	347.95	3,792.54	122.59	-26.17	-122.75	0.00	0.00	0.00
3,900.00	8.00	347.95	3,891.56	136.20	-29.07	-136.38	0.00	0.00	0.00
4,000.00	8.00	347.95	3,990.59	149.81	-31.98	-150.01	0.00	0.00	0.00
4,100.00	8.00	347.95	4,089.62	163.43	-34.88	-163.64	0.00	0.00	0.00
4,200.00	8.00	347.95	4,188.64	177.04	-37.79	-177.27	0.00	0.00	0.00
4,285.16	8.00	347.95	4,272.97	188.63	-40.26	-188.87	0.00	0.00	0.00
Base of Salt									
4,300.00	8.00	347.95	4,287.67	190.65	-40.69	-190.90	0.00	0.00	0.00
4,400.00	8.00	347.95	4,386.70	204.26	-43.60	-204.52	0.00	0.00	0.00
4,500.00	8.00	347.95	4,485.72	217.87	-46.50	-218.15	0.00	0.00	0.00

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Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,534.49	8.00	347.95	4,519.88	222.57	-47.50	-222.85	0.00	0.00	0.00
Delaware									
4,560.74	8.00	347.95	4,545.87	226.14	-48.27	-226.43	0.00	0.00	0.00
Bell Canyon									
4,600.00	8.00	347.95	4,584.75	231.48	-49.41	-231.78	0.00	0.00	0.00
4,700.00	8.00	347.95	4,683.78	245.10	-52.31	-245.41	0.00	0.00	0.00
4,800.00	8.00	347.95	4,782.80	258.71	-55.22	-259.04	0.00	0.00	0.00
4,900.00	8.00	347.95	4,881.83	272.32	-58.12	-272.67	0.00	0.00	0.00
5,000.00	8.00	347.95	4,980.86	285.93	-61.03	-286.30	0.00	0.00	0.00
5,100.00	8.00	347.95	5,079.88	299.54	-63.93	-299.93	0.00	0.00	0.00
5,200.00	8.00	347.95	5,178.91	313.16	-66.84	-313.56	0.00	0.00	0.00
5,300.00	8.00	347.95	5,277.94	326.77	-69.74	-327.19	0.00	0.00	0.00
5,400.00	8.00	347.95	5,376.96	340.38	-72.65	-340.82	0.00	0.00	0.00
5,484.37	8.00	347.95	5,460.52	351.86	-75.10	-352.32	0.00	0.00	0.00
Cherry Canyon									
5,500.00	8.00	347.95	5,475.99	353.99	-75.56	-354.45	0.00	0.00	0.00
5,600.00	8.00	347.95	5,575.02	367.60	-78.46	-368.08	0.00	0.00	0.00
5,690.40	8.00	347.95	5,664.54	379.91	-81.09	-380.40	0.00	0.00	0.00
Begin 1.00°/100' Drop									
5,700.00	7.90	347.95	5,674.04	381.21	-81.36	-381.70	1.00	-1.00	0.00
5,800.00	6.90	347.95	5,773.21	393.81	-84.05	-394.32	1.00	-1.00	0.00
5,900.00	5.90	347.95	5,872.58	404.72	-86.38	-405.24	1.00	-1.00	0.00
6,000.00	4.90	347.95	5,972.14	413.93	-88.35	-414.46	1.00	-1.00	0.00
6,100.00	3.90	347.95	6,071.84	421.44	-89.95	-421.98	1.00	-1.00	0.00
6,200.00	2.90	347.95	6,171.66	427.25	-91.19	-427.80	1.00	-1.00	0.00
6,300.00	1.90	347.95	6,271.57	431.35	-92.07	-431.91	1.00	-1.00	0.00
6,400.00	0.90	347.95	6,371.54	433.75	-92.58	-434.31	1.00	-1.00	0.00
6,490.46	0.00	0.00	6,462.00	434.45	-92.73	-435.01	1.00	-1.00	0.00
Begin Vertical Hold									
6,500.00	0.00	0.00	6,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
6,600.00	0.00	0.00	6,571.54	434.45	-92.73	-435.01	0.00	0.00	0.00
6,700.00	0.00	0.00	6,671.54	434.45	-92.73	-435.01	0.00	0.00	0.00
6,800.00	0.00	0.00	6,771.54	434.45	-92.73	-435.01	0.00	0.00	0.00
6,868.75	0.00	0.00	6,840.29	434.45	-92.73	-435.01	0.00	0.00	0.00
Brushy Canyon									
6,900.00	0.00	0.00	6,871.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,000.00	0.00	0.00	6,971.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,100.00	0.00	0.00	7,071.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,200.00	0.00	0.00	7,171.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,300.00	0.00	0.00	7,271.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,400.00	0.00	0.00	7,371.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,500.00	0.00	0.00	7,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,600.00	0.00	0.00	7,571.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,700.00	0.00	0.00	7,671.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,800.00	0.00	0.00	7,771.54	434.45	-92.73	-435.01	0.00	0.00	0.00
7,900.00	0.00	0.00	7,871.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,000.00	0.00	0.00	7,971.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,034.75	0.00	0.00	8,006.29	434.45	-92.73	-435.01	0.00	0.00	0.00
Madera									
8,100.00	0.00	0.00	8,071.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,151.75	0.00	0.00	8,123.29	434.45	-92.73	-435.01	0.00	0.00	0.00
Lower Brushy									
8,200.00	0.00	0.00	8,171.54	434.45	-92.73	-435.01	0.00	0.00	0.00

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Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,300.00	0.00	0.00	8,271.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,400.00	0.00	0.00	8,371.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,423.75	0.00	0.00	8,395.29	434.45	-92.73	-435.01	0.00	0.00	0.00
1BSLM									
8,500.00	0.00	0.00	8,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,600.00	0.00	0.00	8,571.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,700.00	0.00	0.00	8,671.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,800.00	0.00	0.00	8,771.54	434.45	-92.73	-435.01	0.00	0.00	0.00
8,900.00	0.00	0.00	8,871.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,000.00	0.00	0.00	8,971.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,100.00	0.00	0.00	9,071.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,200.00	0.00	0.00	9,171.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,300.00	0.00	0.00	9,271.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,400.00	0.00	0.00	9,371.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,500.00	0.00	0.00	9,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,513.75	0.00	0.00	9,485.29	434.45	-92.73	-435.01	0.00	0.00	0.00
1BSSS									
9,600.00	0.00	0.00	9,571.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,689.75	0.00	0.00	9,661.29	434.45	-92.73	-435.01	0.00	0.00	0.00
2BSLM									
9,700.00	0.00	0.00	9,671.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,800.00	0.00	0.00	9,771.54	434.45	-92.73	-435.01	0.00	0.00	0.00
9,900.00	0.00	0.00	9,871.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,000.00	0.00	0.00	9,971.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,057.75	0.00	0.00	10,029.29	434.45	-92.73	-435.01	0.00	0.00	0.00
2BSSS									
10,100.00	0.00	0.00	10,071.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,200.00	0.00	0.00	10,171.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,300.00	0.00	0.00	10,271.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,400.00	0.00	0.00	10,371.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,500.00	0.00	0.00	10,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,600.00	0.00	0.00	10,571.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,644.75	0.00	0.00	10,616.29	434.45	-92.73	-435.01	0.00	0.00	0.00
3BSLM									
10,700.00	0.00	0.00	10,671.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,800.00	0.00	0.00	10,771.54	434.45	-92.73	-435.01	0.00	0.00	0.00
10,900.00	0.00	0.00	10,871.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,000.00	0.00	0.00	10,971.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,100.00	0.00	0.00	11,071.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,200.00	0.00	0.00	11,171.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,300.00	0.00	0.00	11,271.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,374.75	0.00	0.00	11,346.29	434.45	-92.73	-435.01	0.00	0.00	0.00
3BSSS									
11,400.00	0.00	0.00	11,371.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,500.00	0.00	0.00	11,471.54	434.45	-92.73	-435.01	0.00	0.00	0.00
11,525.27	0.00	0.00	11,496.81	434.45	-92.73	-435.01	0.00	0.00	0.00
Begin 10.00°/100' Build									
11,550.00	2.47	169.00	11,521.53	433.92	-92.63	-434.48	10.00	10.00	0.00
11,600.00	7.47	169.00	11,571.33	429.67	-91.80	-430.23	10.00	10.00	0.00
11,650.00	12.47	169.00	11,620.56	421.17	-90.15	-421.72	10.00	10.00	0.00
11,700.00	17.47	169.00	11,668.84	408.50	-87.68	-409.03	10.00	10.00	0.00
11,750.00	22.47	169.00	11,715.82	391.74	-84.43	-392.25	10.00	10.00	0.00
11,800.00	27.47	169.00	11,761.13	371.02	-80.40	-371.51	10.00	10.00	0.00

Database:	EDM 5000.14 Conroe Server	**Local Co-ordinate Reference:**	Well 516H
Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,850.00	32.47	169.00	11,804.43	346.51	-75.63	-346.97	10.00	10.00	0.00
11,900.00	37.47	169.00	11,845.39	318.39	-70.17	-318.81	10.00	10.00	0.00
11,911.74	38.65	169.00	11,854.63	311.28	-68.79	-311.70	10.00	10.00	0.00
WFMP X									
11,950.00	42.47	169.00	11,883.69	286.86	-64.04	-287.25	10.00	10.00	0.00
12,000.00	47.47	169.00	11,919.06	252.19	-57.30	-252.53	10.00	10.00	0.00
12,001.10	47.58	169.00	11,919.80	251.39	-57.15	-251.74	10.00	10.00	0.00
WFMP Y									
12,050.00	52.47	169.00	11,951.20	214.61	-50.00	-214.92	10.00	10.00	0.00
12,066.28	54.10	169.00	11,960.94	201.80	-47.51	-202.09	10.00	10.00	0.00
WFMP 100									
12,100.00	57.47	169.00	11,979.89	174.43	-42.19	-174.69	10.00	10.00	0.00
12,150.00	62.47	169.00	12,004.90	131.95	-33.93	-132.16	10.00	10.00	0.00
12,200.00	67.47	169.00	12,026.05	87.50	-25.29	-87.65	10.00	10.00	0.00
12,250.00	72.47	169.00	12,043.17	41.40	-16.33	-41.50	10.00	10.00	0.00
12,300.00	77.47	169.00	12,056.13	-5.99	-7.12	5.95	10.00	10.00	0.00
12,350.00	82.47	169.00	12,064.83	-54.31	2.28	54.32	10.00	10.00	0.00
12,400.00	87.47	169.00	12,069.21	-103.18	11.78	103.25	10.00	10.00	0.00
12,423.64	89.84	169.00	12,069.77	-126.38	16.29	126.48	10.00	10.00	0.00
Begin 89.84° Lateral									
12,500.00	89.84	169.00	12,069.98	-201.34	30.86	201.52	0.00	0.00	0.00
12,600.00	89.84	169.00	12,070.27	-299.50	49.94	299.80	0.00	0.00	0.00
12,667.68	89.84	169.00	12,070.46	-365.94	62.85	366.32	0.00	0.00	0.00
Begin 2.00°/100' Turn									
12,700.00	89.84	169.65	12,070.55	-397.70	68.84	398.11	2.00	0.00	2.00
12,800.00	89.84	171.65	12,070.84	-496.36	85.09	496.88	2.00	0.00	2.00
12,900.00	89.84	173.65	12,071.12	-595.53	97.89	596.12	2.00	0.00	2.00
13,000.00	89.84	175.65	12,071.41	-695.09	107.22	695.74	2.00	0.00	2.00
13,100.00	89.84	177.65	12,071.69	-794.92	113.07	795.60	2.00	0.00	2.00
13,200.11	89.84	179.65	12,071.98	-894.99	115.43	895.68	2.00	0.00	2.00
Hold 179.65° Azm									
13,300.00	89.84	179.65	12,072.26	-994.88	116.04	995.57	0.00	0.00	0.00
13,400.00	89.84	179.65	12,072.55	-1,094.88	116.66	1,095.57	0.00	0.00	0.00
13,500.00	89.84	179.65	12,072.83	-1,194.88	117.27	1,195.57	0.00	0.00	0.00
13,600.00	89.84	179.65	12,073.12	-1,294.87	117.88	1,295.57	0.00	0.00	0.00
13,700.00	89.84	179.65	12,073.40	-1,394.87	118.50	1,395.57	0.00	0.00	0.00
13,800.00	89.84	179.65	12,073.68	-1,494.87	119.11	1,495.57	0.00	0.00	0.00
13,900.00	89.84	179.65	12,073.97	-1,594.87	119.73	1,595.57	0.00	0.00	0.00
14,000.00	89.84	179.65	12,074.25	-1,694.86	120.34	1,695.57	0.00	0.00	0.00
14,100.00	89.84	179.65	12,074.54	-1,794.86	120.95	1,795.57	0.00	0.00	0.00
14,200.00	89.84	179.65	12,074.82	-1,894.86	121.57	1,895.57	0.00	0.00	0.00
14,300.00	89.84	179.65	12,075.11	-1,994.86	122.18	1,995.57	0.00	0.00	0.00
14,400.00	89.84	179.65	12,075.39	-2,094.86	122.79	2,095.57	0.00	0.00	0.00
14,500.00	89.84	179.65	12,075.68	-2,194.85	123.41	2,195.57	0.00	0.00	0.00
14,600.00	89.84	179.65	12,075.96	-2,294.85	124.02	2,295.57	0.00	0.00	0.00
14,700.00	89.84	179.65	12,076.24	-2,394.85	124.63	2,395.57	0.00	0.00	0.00
14,800.00	89.84	179.65	12,076.53	-2,494.85	125.25	2,495.57	0.00	0.00	0.00
14,900.00	89.84	179.65	12,076.81	-2,594.84	125.86	2,595.57	0.00	0.00	0.00
15,000.00	89.84	179.65	12,077.10	-2,694.84	126.47	2,695.57	0.00	0.00	0.00
15,100.00	89.84	179.65	12,077.38	-2,794.84	127.09	2,795.57	0.00	0.00	0.00
15,200.00	89.84	179.65	12,077.67	-2,894.84	127.70	2,895.57	0.00	0.00	0.00
15,300.00	89.84	179.65	12,077.95	-2,994.84	128.31	2,995.57	0.00	0.00	0.00
15,400.00	89.84	179.65	12,078.23	-3,094.83	128.93	3,095.57	0.00	0.00	0.00

Database:	EDM 5000.14 Conroe Server	**Local Co-ordinate Reference:**	Well 516H
Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,500.00	89.84	179.65	12,078.52	-3,194.83	129.54	3,195.57	0.00	0.00	0.00
15,600.00	89.84	179.65	12,078.80	-3,294.83	130.15	3,295.56	0.00	0.00	0.00
15,700.00	89.84	179.65	12,079.09	-3,394.83	130.77	3,395.56	0.00	0.00	0.00
15,800.00	89.84	179.65	12,079.37	-3,494.82	131.38	3,495.56	0.00	0.00	0.00
15,900.00	89.84	179.65	12,079.66	-3,594.82	131.99	3,595.56	0.00	0.00	0.00
16,000.00	89.84	179.65	12,079.94	-3,694.82	132.61	3,695.56	0.00	0.00	0.00
16,100.00	89.84	179.65	12,080.22	-3,794.82	133.22	3,795.56	0.00	0.00	0.00
16,200.00	89.84	179.65	12,080.51	-3,894.81	133.83	3,895.56	0.00	0.00	0.00
16,300.00	89.84	179.65	12,080.79	-3,994.81	134.45	3,995.56	0.00	0.00	0.00
16,400.00	89.84	179.65	12,081.08	-4,094.81	135.06	4,095.56	0.00	0.00	0.00
16,500.00	89.84	179.65	12,081.36	-4,194.81	135.68	4,195.56	0.00	0.00	0.00
16,600.00	89.84	179.65	12,081.65	-4,294.81	136.29	4,295.56	0.00	0.00	0.00
16,700.00	89.84	179.65	12,081.93	-4,394.80	136.90	4,395.56	0.00	0.00	0.00
16,800.00	89.84	179.65	12,082.22	-4,494.80	137.52	4,495.56	0.00	0.00	0.00
16,900.00	89.84	179.65	12,082.50	-4,594.80	138.13	4,595.56	0.00	0.00	0.00
17,000.00	89.84	179.65	12,082.78	-4,694.80	138.74	4,695.56	0.00	0.00	0.00
17,100.00	89.84	179.65	12,083.07	-4,794.79	139.36	4,795.56	0.00	0.00	0.00
17,200.00	89.84	179.65	12,083.35	-4,894.79	139.97	4,895.56	0.00	0.00	0.00
17,300.00	89.84	179.65	12,083.64	-4,994.79	140.58	4,995.56	0.00	0.00	0.00
17,400.00	89.84	179.65	12,083.92	-5,094.79	141.20	5,095.56	0.00	0.00	0.00
17,500.00	89.84	179.65	12,084.21	-5,194.78	141.81	5,195.56	0.00	0.00	0.00
17,600.00	89.84	179.65	12,084.49	-5,294.78	142.42	5,295.56	0.00	0.00	0.00
17,700.00	89.84	179.65	12,084.77	-5,394.78	143.04	5,395.56	0.00	0.00	0.00
17,800.00	89.84	179.65	12,085.06	-5,494.78	143.65	5,495.56	0.00	0.00	0.00
17,900.00	89.84	179.65	12,085.34	-5,594.78	144.26	5,595.56	0.00	0.00	0.00
18,000.00	89.84	179.65	12,085.63	-5,694.77	144.88	5,695.56	0.00	0.00	0.00
18,100.00	89.84	179.65	12,085.91	-5,794.77	145.49	5,795.55	0.00	0.00	0.00
18,200.00	89.84	179.65	12,086.20	-5,894.77	146.10	5,895.55	0.00	0.00	0.00
18,300.00	89.84	179.65	12,086.48	-5,994.77	146.72	5,995.55	0.00	0.00	0.00
18,400.00	89.84	179.65	12,086.76	-6,094.76	147.33	6,095.55	0.00	0.00	0.00
18,500.00	89.84	179.65	12,087.05	-6,194.76	147.94	6,195.55	0.00	0.00	0.00
18,600.00	89.84	179.65	12,087.33	-6,294.76	148.56	6,295.55	0.00	0.00	0.00
18,700.00	89.84	179.65	12,087.62	-6,394.76	149.17	6,395.55	0.00	0.00	0.00
18,800.00	89.84	179.65	12,087.90	-6,494.76	149.78	6,495.55	0.00	0.00	0.00
18,900.00	89.84	179.65	12,088.19	-6,594.75	150.40	6,595.55	0.00	0.00	0.00
19,000.00	89.84	179.65	12,088.47	-6,694.75	151.01	6,695.55	0.00	0.00	0.00
19,100.00	89.84	179.65	12,088.76	-6,794.75	151.62	6,795.55	0.00	0.00	0.00
19,200.00	89.84	179.65	12,089.04	-6,894.75	152.24	6,895.55	0.00	0.00	0.00
19,300.00	89.84	179.65	12,089.32	-6,994.74	152.85	6,995.55	0.00	0.00	0.00
19,400.00	89.84	179.65	12,089.61	-7,094.74	153.47	7,095.55	0.00	0.00	0.00
19,500.00	89.84	179.65	12,089.89	-7,194.74	154.08	7,195.55	0.00	0.00	0.00
19,600.00	89.84	179.65	12,090.18	-7,294.74	154.69	7,295.55	0.00	0.00	0.00
19,700.00	89.84	179.65	12,090.46	-7,394.73	155.31	7,395.55	0.00	0.00	0.00
19,800.00	89.84	179.65	12,090.75	-7,494.73	155.92	7,495.55	0.00	0.00	0.00
19,900.00	89.84	179.65	12,091.03	-7,594.73	156.53	7,595.55	0.00	0.00	0.00
20,000.00	89.84	179.65	12,091.31	-7,694.73	157.15	7,695.55	0.00	0.00	0.00
20,100.00	89.84	179.65	12,091.60	-7,794.73	157.76	7,795.55	0.00	0.00	0.00
20,200.00	89.84	179.65	12,091.88	-7,894.72	158.37	7,895.55	0.00	0.00	0.00
20,300.00	89.84	179.65	12,092.17	-7,994.72	158.99	7,995.55	0.00	0.00	0.00
20,400.00	89.84	179.65	12,092.45	-8,094.72	159.60	8,095.55	0.00	0.00	0.00
20,500.00	89.84	179.65	12,092.74	-8,194.72	160.21	8,195.54	0.00	0.00	0.00
20,600.00	89.84	179.65	12,093.02	-8,294.71	160.83	8,295.54	0.00	0.00	0.00
20,700.00	89.84	179.65	12,093.31	-8,394.71	161.44	8,395.54	0.00	0.00	0.00
20,800.00	89.84	179.65	12,093.59	-8,494.71	162.05	8,495.54	0.00	0.00	0.00

Database:	EDM 5000.14 Conroe Server	**Local Co-ordinate Reference:**	Well 516H
Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,900.00	89.84	179.65	12,093.87	-8,594.71	162.67	8,595.54	0.00	0.00	0.00
21,000.00	89.84	179.65	12,094.16	-8,694.70	163.28	8,695.54	0.00	0.00	0.00
21,100.00	89.84	179.65	12,094.44	-8,794.70	163.89	8,795.54	0.00	0.00	0.00
21,200.00	89.84	179.65	12,094.73	-8,894.70	164.51	8,895.54	0.00	0.00	0.00
21,300.00	89.84	179.65	12,095.01	-8,994.70	165.12	8,995.54	0.00	0.00	0.00
21,400.00	89.84	179.65	12,095.30	-9,094.70	165.73	9,095.54	0.00	0.00	0.00
21,500.00	89.84	179.65	12,095.58	-9,194.69	166.35	9,195.54	0.00	0.00	0.00
21,600.00	89.84	179.65	12,095.86	-9,294.69	166.96	9,295.54	0.00	0.00	0.00
21,700.00	89.84	179.65	12,096.15	-9,394.69	167.57	9,395.54	0.00	0.00	0.00
21,800.00	89.84	179.65	12,096.43	-9,494.69	168.19	9,495.54	0.00	0.00	0.00
21,900.00	89.84	179.65	12,096.72	-9,594.68	168.80	9,595.54	0.00	0.00	0.00
22,000.00	89.84	179.65	12,097.00	-9,694.68	169.42	9,695.54	0.00	0.00	0.00
22,100.00	89.84	179.65	12,097.29	-9,794.68	170.03	9,795.54	0.00	0.00	0.00
22,175.33	89.84	179.65	12,097.50	-9,870.01	170.49	9,870.87	0.00	0.00	0.00
PBHL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Vert - CDU 516H - plan hits target center - Point	0.00	0.00	6,462.00	434.45	-92.73	435,377.17	729,611.09	32° 11' 43.672 N	103° 43' 28.870 W
HL Crossing - CDU 5' - plan hits target center - Point	0.00	0.00	11,992.12	154.73	-38.36	435,097.46	729,665.46	32° 11' 40.901 N	103° 43' 28.255 W
PBHL - CDU 516H - plan hits target center - Point	0.00	0.00	12,097.50	-9,870.01	170.49	425,072.72	729,874.31	32° 10' 1.689 N	103° 43' 26.486 W

Database:	EDM 5000.14 Conroe Server	**Local Co-ordinate Reference:**	Well 516H
Company:	Devon Energy	**TVD Reference:**	Well @ 3566.50usft (Cactus 126)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	Well @ 3566.50usft (Cactus 126)
Site:	Cotton Draw Unit	**North Reference:**	Grid
Well:	516H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
699.50	699.50	Rustler		0.16	179.65
1,043.50	1,043.50	Salado		0.16	179.65
4,285.16	4,272.97	Base of Salt		0.16	179.65
4,534.49	4,519.88	Delaware		0.16	179.65
4,560.74	4,545.87	Bell Canyon		0.16	179.65
5,484.37	5,460.52	Cherry Canyon		0.16	179.65
6,868.75	6,840.29	Brushy Canyon		0.16	179.65
8,034.75	8,006.29	Madera		0.16	179.65
8,151.75	8,123.29	Lower Brushy		0.16	179.65
8,423.75	8,395.29	1BSLM		0.16	179.65
9,513.75	9,485.29	1BSSS		0.16	179.65
9,689.75	9,661.29	2BSLM		0.16	179.65
10,057.75	10,029.29	2BSSS		0.16	179.65
10,644.75	10,616.29	3BSLM		0.16	179.65
11,374.75	11,346.29	3BSSS		0.16	179.65
11,911.74	11,854.63	WFMP X		0.16	179.65
12,001.10	11,919.80	WFMP Y		0.16	179.65
12,066.28	11,960.94	WFMP 100		0.16	179.65

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,500.00	2,500.00	0.00	0.00	KOP, 1.00°/100' Build
3,300.06	3,297.46	54.54	-11.64	Begin 8.00° Tangent
5,690.40	5,664.54	379.91	-81.09	Begin 1.00°/100' Drop
6,490.46	6,462.00	434.45	-92.73	Begin Vertical Hold
11,525.27	11,496.81	434.45	-92.73	Begin 10.00°/100' Build
12,423.64	12,069.77	-126.38	16.29	Begin 89.84° Lateral
12,667.68	12,070.46	-365.94	62.85	Begin 2.00°/100' Turn
13,200.11	12,071.98	-894.99	115.43	Hold 179.65° Azm
22,175.33	12,097.50	-9,870.01	170.49	PBHL

Devon Energy

Cotton Draw Unit 516H
Eddy County, New Mexico (NAD 83)
North Reference: Grid
KB-MSL: 3566.50
Ground Level: 3541.50
Design #1

MD	INC	AZI	Course Length	TVD	Subsea Depth	N/-S	E/-W	X	Y	Lat	Long	Dogleg Severity	T.Face	Vert Sec	
0.00	0.00	0.00	0.00	0.00	3566.50	0.00	0.00	729703.82	434942.73	32° 11' 39..	103° 43' 27	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	100.00	3466.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
200.00	0.00	0.00	100.00	200.00	3366.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
300.00	0.00	0.00	100.00	300.00	3266.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
400.00	0.00	0.00	100.00	400.00	3166.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
500.00	0.00	0.00	100.00	500.00	3066.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
600.00	0.00	0.00	100.00	600.00	2966.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
700.00	0.00	0.00	100.00	700.00	2866.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
800.00	0.00	0.00	100.00	800.00	2766.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
900.00	0.00	0.00	100.00	900.00	2666.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1000.00	0.00	0.00	100.00	1000.00	2566.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1100.00	0.00	0.00	100.00	1100.00	2466.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1200.00	0.00	0.00	100.00	1200.00	2366.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1300.00	0.00	0.00	100.00	1300.00	2266.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1400.00	0.00	0.00	100.00	1400.00	2166.50	0.00	0.00	729703.82	434942.73	32° 11' 39..	103° 43' 27	0.00	0.00	0.00	
1500.00	0.00	0.00	100.00	1500.00	2066.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1600.00	0.00	0.00	100.00	1600.00	1966.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1700.00	0.00	0.00	100.00	1700.00	1866.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1800.00	0.00	0.00	100.00	1800.00	1766.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
1900.00	0.00	0.00	100.00	1900.00	1666.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2000.00	0.00	0.00	100.00	2000.00	1566.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2100.00	0.00	0.00	100.00	2100.00	1466.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2200.00	0.00	0.00	100.00	2200.00	1366.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2300.00	0.00	0.00	100.00	2300.00	1266.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2400.00	0.00	0.00	100.00	2400.00	1166.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	
2500.00	0.00	0.00	100.00	2500.00	1066.50	0.00	0.00	729703.82	434942.73	32° 11' 39.	103° 43' 27	0.00	0.00	0.00	KOP, 1.00°/100' Build
2600.00	1.00	347.95	100.00	2599.99	966.51	0.85	-0.18	729703.64	434943.58	32° 11' 39.	103° 43' 27	1.00	347.95	-0.85	
2700.00	2.00	347.95	100.00	2699.96	866.54	3.41	-0.73	729703.09	434946.14	32° 11' 39.	103° 43' 27	1.00	0.00	-3.42	
2800.00	3.00	347.95	100.00	2799.86	766.64	7.68	-1.64	729702.18	434950.41	32° 11' 39.	103° 43' 27	1.00	0.00	-7.69	
2900.00	4.00	347.95	100.00	2899.68	666.82	13.65	-2.91	729700.91	434956.38	32° 11' 39.	103° 43' 27	1.00	0.00	-13.67	
3000.00	5.00	347.95	100.00	2999.37	567.13	21.32	-4.55	729699.27	434964.05	32° 11' 39.	103° 43' 27	1.00	0.00	-21.35	
3100.00	6.00	347.95	100.00	3098.90	467.60	30.70	-6.55	729697.27	434973.42	32° 11' 39.	103° 43' 27	1.00	0.00	-30.74	
3200.00	7.00	347.95	100.00	3198.26	368.24	41.77	-8.91	729694.90	434984.49	32° 11' 39.	103° 43' 27	1.00	0.00	-41.82	
3300.06	8.00	347.95	100.06	3297.46	269.04	54.54	-11.64	729692.18	434997.27	32° 11' 39.	103° 43' 27	1.00	0.00	-54.61	Begin 8.00° Tangent
3400.00	8.00	347.95	99.94	3396.43	170.07	68.14	-14.54	729689.27	435010.87	32° 11' 40.	103° 43' 27	0.00	0.00	-68.23	
3500.00	8.00	347.95	100.00	3495.46	71.04	81.76	-17.45	729686.37	435024.48	32° 11' 40.	103° 43' 28	0.00	0.00	-81.86	
3600.00	8.00	347.95	100.00	3594.48	-27.98	95.37	-20.35	729683.46	435038.09	32° 11' 40.	103° 43' 28	0.00	0.00	-95.49	
3700.00	8.00	347.95	100.00	3693.51	-127.01	108.98	-23.26	729680.56	435051.71	32° 11' 40.	103° 43' 28	0.00	0.00	-109.12	
3800.00	8.00	347.95	100.00	3792.54	-226.04	122.59	-26.17	729677.65	435065.32	32° 11' 40.	103° 43' 28	0.00	0.00	-122.75	
3900.00	8.00	347.95	100.00	3891.56	-325.06	136.20	-29.07	729674.75	435078.93	32° 11' 40.	103° 43' 28	0.00	0.00	-136.38	
4000.00	8.00	347.95	100.00	3990.59	-424.09	149.81	-31.98	729671.84	435092.54	32° 11' 40.	103° 43' 28	0.00	0.00	-150.01	
4100.00	8.00	347.95	100.00	4089.62	-523.12	163.43	-34.88	729668.94	435106.15	32° 11' 40.	103° 43' 28	0.00	0.00	-163.64	
4200.00	8.00	347.95	100.00	4188.64	-622.14	177.04	-37.79	729666.03	435119.76	32° 11' 41.	103° 43' 28	0.00	0.00	-177.27	
4300.00	8.00	347.95	100.00	4287.67	-721.17	190.65	-40.69	729663.13	435133.38	32° 11' 41.	103° 43' 28	0.00	0.00	-190.90	
4400.00	8.00	347.95	100.00	4386.70	-820.20	204.26	-43.60	729660.22	435146.99	32° 11' 41.	103° 43' 28	0.00	0.00	-204.52	
4500.00	8.00	347.95	100.00	4485.72	-919.22	217.87	-46.50	729657.32	435160.60	32° 11' 41.	103° 43' 28	0.00	0.00	-218.15	
4600.00	8.00	347.95	100.00	4584.75	-1018.25	231.48	-49.41	729654.41	435174.21	32° 11' 41.	103° 43' 28	0.00	0.00	-231.78	
4700.00	8.00	347.95	100.00	4683.78	-1117.28	245.10	-52.31	729651.51	435187.82	32° 11' 41.	103° 43' 28	0.00	0.00	-245.41	
4800.00	8.00	347.95	100.00	4782.80	-1216.30	258.71	-55.22	729648.60	435201.44	32° 11' 41.	103° 43' 28	0.00	0.00	-259.04	
4900.00	8.00	347.95	100.00	4881.83	-1315.33	272.32	-58.12	729645.70	435215.05	32° 11' 42.	103° 43' 28	0.00	0.00	-272.67	
5000.00	8.00	347.95	100.00	4980.86	-1414.36	285.93	-61.03	729642.79	435228.66	32° 11' 42.	103° 43' 28	0.00	0.00	-286.30	
5100.00	8.00	347.95	100.00	5079.88	-1513.38	299.54	-63.93	729639.89	435242.27	32° 11' 42.	103° 43' 28	0.00	0.00	-299.93	
5200.00	8.00	347.95	100.00	5178.91	-1612.41	313.16	-66.84	729636.98	435255.88	32° 11' 42.	103° 43' 28	0.00	0.00	-313.56	
5300.00	8.00	347.95	100.00	5277.94	-1711.44	326.77	-69.74	729634.07	435269.49	32° 11' 42.	103° 43' 28	0.00	0.00	-327.19	
5400.00	8.00	347.95	100.00	5376.96	-1810.46	340.38	-72.65	729631.17	435283.11	32° 11' 42.	103° 43' 28	0.00	0.00	-340.82	
5500.00	8.00	347.95	100.00	5475.99	-1909.49	353.99	-75.56	729628.26	435296.72	32° 11' 42.	103° 43' 28	0.00	0.00	-354.45	
5600.00	8.00	347.95	100.00	5575.02	-2008.52	367.60	-78.46	729625.36	435310.33	32° 11' 43.	103° 43' 28	0.00	0.00	-368.08	
5690.40	8.00	347.95	90.40	5664.54	-2098.04	379.91	-81.09	729622.73	435322.63	32° 11' 43.	103° 43' 28	0.00	0.00	-380.40	Begin 1.00°/100' Drop
5700.00	7.90	347.95	9.60	5674.04	-2107.54	381.21	-81.36	729622.45	435323.93	32° 11' 43.	103° 43' 28	1.00	180.00	-381.70	
5800.00	6.90	347.95	100.00	5773.21	-2206.71	393.81	-84.05	729619.76	435336.54	32° 11' 43.	103° 43' 28	1.00	180.00	-394.32	
5900.00	5.90	347.95	100.00	5872.58	-2306.08	404.72	-86.38	729617.44	435347.45	32° 11' 43.	103° 43' 28	1.00	180.00	-405.24	
6000.00	4.90	347.95	100.00	5972.14	-2405.64	413.93	-88.35	729615.47	435356.66	32° 11' 43.	103° 43' 28	1.00	180.00	-414.46	
6100.00	3.90	347.95	100.00	6071.84	-2505.34	421.44	-89.95	729613.87	435364.17	32° 11' 43.	103° 43' 28	1.00	180.00	-421.98	
6200.00	2.90	347.95	100.00	6171.66	-2605.16	427.25	-91.19	729612.63	435369.98	32° 11' 43.	103° 43' 28	1.00	180.00	-427.80	
6300.00	1.90	347.95	100.00	6271.57	-2705.07	431.35	-92.07	729611.75	435374.08	32° 11' 43.	103° 43' 28	1.00	180.00	-431.91	
6400.00	0.90	347.95	100.00	6371.54	-2805.04	433.75	-92.58	729611.24	435376.48	32° 11' 43.	103° 43' 28	1.00	180.00	-434.31	
6490.46	0.00	0.00	90.46	6462.00	-2895.50	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	1.00	180.00	-435.01	Begin Vertical Hold
6500.00	0.00	0.00	9.54	6471.54	-2905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
6600.00	0.00	0.00	100.00	6571.54	-3005.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
6700.00	0.00	0.00	100.00	6671.54	-3105.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
6800.00	0.00	0.00	100.00	6771.54	-3205.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
6900.00	0.00	0.00	100.00	6871.54	-3305.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
7000.00	0.00	0.00	100.00	6971.54	-3405.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
7100.00	0.00	0.00	100.00	7071.54	-3505.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	
7200.00	0.00	0.00	100.00	7171.54	-3605.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 28	0.00	0.00	-435.01	

7300.00	0.00	0.00	100.00	7271.54	-3705.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7400.00	0.00	0.00	100.00	7371.54	-3805.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7500.00	0.00	0.00	100.00	7471.54	-3905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7600.00	0.00	0.00	100.00	7571.54	-4005.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7700.00	0.00	0.00	100.00	7671.54	-4105.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7800.00	0.00	0.00	100.00	7771.54	-4205.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
7900.00	0.00	0.00	100.00	7871.54	-4305.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8000.00	0.00	0.00	100.00	7971.54	-4405.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8100.00	0.00	0.00	100.00	8071.54	-4505.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8200.00	0.00	0.00	100.00	8171.54	-4605.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8300.00	0.00	0.00	100.00	8271.54	-4705.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8400.00	0.00	0.00	100.00	8371.54	-4805.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8500.00	0.00	0.00	100.00	8471.54	-4905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8600.00	0.00	0.00	100.00	8571.54	-5005.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8700.00	0.00	0.00	100.00	8671.54	-5105.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8800.00	0.00	0.00	100.00	8771.54	-5205.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
8900.00	0.00	0.00	100.00	8871.54	-5305.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9000.00	0.00	0.00	100.00	8971.54	-5405.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9100.00	0.00	0.00	100.00	9071.54	-5505.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9200.00	0.00	0.00	100.00	9171.54	-5605.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9300.00	0.00	0.00	100.00	9271.54	-5705.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9400.00	0.00	0.00	100.00	9371.54	-5805.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9500.00	0.00	0.00	100.00	9471.54	-5905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9600.00	0.00	0.00	100.00	9571.54	-6005.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9700.00	0.00	0.00	100.00	9671.54	-6105.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9800.00	0.00	0.00	100.00	9771.54	-6205.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
9900.00	0.00	0.00	100.00	9871.54	-6305.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10000.00	0.00	0.00	100.00	9971.54	-6405.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10100.00	0.00	0.00	100.00	10071.54	-6505.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10200.00	0.00	0.00	100.00	10171.54	-6605.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10300.00	0.00	0.00	100.00	10271.54	-6705.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10400.00	0.00	0.00	100.00	10371.54	-6805.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10500.00	0.00	0.00	100.00	10471.54	-6905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10600.00	0.00	0.00	100.00	10571.54	-7005.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10700.00	0.00	0.00	100.00	10671.54	-7105.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10800.00	0.00	0.00	100.00	10771.54	-7205.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
10900.00	0.00	0.00	100.00	10871.54	-7305.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11000.00	0.00	0.00	100.00	10971.54	-7405.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11100.00	0.00	0.00	100.00	11071.54	-7505.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11200.00	0.00	0.00	100.00	11171.54	-7605.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11300.00	0.00	0.00	100.00	11271.54	-7705.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11400.00	0.00	0.00	100.00	11371.54	-7805.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11500.00	0.00	0.00	100.00	11471.54	-7905.04	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	
11525.27	0.00	0.00	25.27	11496.81	-7930.31	434.45	-92.73	729611.09	435377.17	32° 11' 43.	103° 43' 2E	0.00	0.00	-435.01	Begin 10.00°/100' Build
11550.00	2.47	169.00	24.73	11521.53	-7955.03	433.92	-92.63	729611.19	435376.65	32° 11' 43.	103° 43' 2E	10.00	169.00	-434.48	
11600.00	7.47	169.00	50.00	11571.33	-8004.83	429.67	-91.80	729612.02	435372.40	32° 11' 43.	103° 43' 2E	10.00	0.00	-430.23	
11650.00	12.47	169.00	50.00	11620.56	-8054.06	421.17	-90.15	729613.67	435363.90	32° 11' 43.	103° 43' 2E	10.00	0.00	-421.72	
11700.00	17.47	169.00	50.00	11668.84	-8102.34	408.50	-87.68	729616.14	435351.22	32° 11' 43.	103° 43' 2E	10.00	0.00	-409.03	
11750.00	22.47	169.00	50.00	11715.82	-8149.32	391.74	-84.43	729619.39	435334.46	32° 11' 43.	103° 43' 2E	10.00	0.00	-392.25	
11800.00	27.47	169.00	50.00	11761.13	-8194.63	371.02	-80.40	729623.42	435313.75	32° 11' 43.	103° 43' 2E	10.00	0.00	-371.51	
11850.00	32.47	169.00	50.00	11804.43	-8237.93	346.51	-75.63	729628.18	435289.24	32° 11' 42.	103° 43' 2E	10.00	0.00	-346.97	
11900.00	37.47	169.00	50.00	11845.39	-8278.89	318.39	-70.17	729633.65	435261.11	32° 11' 42.	103° 43' 2E	10.00	0.00	-318.81	
11950.00	42.47	169.00	50.00	11883.69	-8317.19	286.86	-64.04	729639.78	435229.59	32° 11' 42.	103° 43' 2E	10.00	0.00	-287.25	
12000.00	47.47	169.00	50.00	11919.06	-8352.56	252.19	-57.30	729646.52	435194.91	32° 11' 41.	103° 43' 2E	10.00	0.00	-252.53	
12050.00	52.47	169.00	50.00	11951.20	-8384.70	214.61	-50.00	729653.82	435157.34	32° 11' 41.	103° 43' 2E	10.00	0.00	-214.92	
12100.00	57.47	169.00	50.00	11979.89	-8413.39	174.43	-42.19	729661.63	435117.16	32° 11' 41.	103° 43' 2E	10.00	0.00	-174.69	
12150.00	62.47	169.00	50.00	12004.90	-8438.40	131.95	-33.93	729669.89	435074.68	32° 11' 40.	103° 43' 2E	10.00	0.00	-132.16	
12200.00	67.47	169.00	50.00	12026.05	-8459.55	87.50	-25.29	729678.53	435030.22	32° 11' 40.	103° 43' 2E	10.00	0.00	-87.65	
12250.00	72.47	169.00	50.00	12043.17	-8476.67	41.40	-16.33	729687.49	434984.12	32° 11' 39.	103° 43' 2E	10.00	0.00	-41.50	
12300.00	77.47	169.00	50.00	12056.13	-8489.63	-5.99	-7.12	729696.70	434936.74	32° 11' 39.	103° 43' 27	10.00	0.00	5.95	
12350.00	82.47	169.00	50.00	12064.83	-8498.33	-54.31	2.28	729706.10	434888.42	32° 11' 38.	103° 43' 27	10.00	0.00	54.32	
12400.00	87.47	169.00	50.00	12069.21	-8502.71	-103.18	11.78	729715.60	434839.54	32° 11' 38.	103° 43' 27	10.00	0.00	103.25	
12423.64	89.84	169.00	23.64	12069.77	-8503.27	-126.38	16.29	729720.11	434816.34	32° 11' 38.	103° 43' 27	10.00	0.00	126.48	Begin 89.84° Lateral
12500.00	89.84	169.00	76.36	12069.98	-8503.48	-201.34	30.86	729734.68	434741.39	32° 11' 37.	103° 43' 27	0.00	0.00	201.52	
12600.00	89.84	169.00	100.00	12070.27	-8503.77	-299.50	49.94	729753.76	434643.23	32° 11' 36.	103° 43' 27	0.00	0.00	299.80	
12667.68	89.84	169.00	67.68	12070.46	-8503.96	-365.94	62.85	729766.67	434576.79	32° 11' 35.	103° 43' 27	0.00	0.00	366.32	Begin 2.00°/100' Turn
12700.00	89.84	169.65	32.32	12070.55	-8504.05	-397.70	68.84	729772.66	434545.03	32° 11' 35.	103° 43' 27	2.00	90.01	398.11	
12800.00	89.84	171.65	100.00	12070.84	-8504.34	-496.36	85.09	729788.91	434446.36	32° 11' 34.	103° 43' 2E	2.00	90.01	496.88	
12900.00	89.84	173.65	100.00	12071.12	-8504.62	-595.53	97.89	729801.71	434347.19	32° 11' 33.	103° 43' 2E	2.00	90.01	596.12	
13000.00	89.84	175.65	100.00	12071.41	-8504.91	-695.09	107.22	729811.04	434247.63	32° 11' 32.	103° 43' 2E	2.00	90.00	695.74	
13100.00	89.84	177.65	100.00	12071.69	-8505.19	-794.92	113.07	729816.89	434147.81	32° 11' 31.	103° 43' 2E	2.00	90.00	795.60	
13200.11	89.84	179.65	100.11	12071.98	-8505.48	-894.99	115.43	729819.25	434047.74	32° 11' 30.	103° 43' 2E	2.00	89.99	895.68	Hold 179.65° Azm
13300.00	89.84	179.65	99.89	12072.26	-8505.76	-994.88	116.04	729819.86	433947.85	32° 11' 29.	103° 43' 2E	0.00	0.00	995.57	
13400.00	89.84	179.65	100.00	12072.55	-8506.05	-1094.88	116.66	729820.48	433847.85	32° 11' 28.	103° 43' 2E	0.00	0.00	1095.57	
13500.00	89.84	179.65	100.00	12072.83	-8506.33	-1194.88	117.27	729821.09	433747.85	32° 11' 27.	103° 43' 2E	0.00	0.00	1195.57	
13600.00	89.84	179.65	100.00	12073.12	-8506.62	-1294.87	117.88	729821.70	433647.85	32° 11' 26.	103° 43' 2E	0.00	0.00	1295.57	
13700.00	89.84	179.65	100.00	12073.40	-8506.90	-1394.87	118.50	729822.32	433547.86	32° 11' 25.	103° 43' 2E	0.00	0.00	1395.57	
13800.00	89.84	179.65	100.00	12073.68	-8507.18	-1494.87	119.11	729822.93	433447.86	32° 11' 24.	103° 43' 2E	0.00	0.00	1495.57	
13900.00	89.84	179.65	100.00	12073.97	-8507.47	-1594.87	119.73	729823.54	433347.86	32° 11' 23.	103° 43' 2E	0.00	0.00	1595.57	
14000.00	89.84	179.65	100.00	12074.25	-8507.75	-1694.86	120.34	729824.16	433247.86	32° 11' 22.	103° 43' 2E	0.00	0.00	1695.57	
14100.00	89.84	179.65	100.00	12074.54	-8508.04	-1794.86	120.95	729824.77	433147.86	32° 11' 21.	103° 43' 2E	0.00	0.00	1795.57	
14200.00	89.84	179.65	100.00	12074.82	-8508.32	-1894.86	121.57	729825.38	433047.87	32° 11' 20.	103° 43' 2E	0.00	0.00	1895.57	
14300.00	89.84	179.65	100.00	12075.11	-8508.61	-1994.86	122.18	729826.00	432947.87	32° 11' 19.	103° 43' 2E	0.00	0.00	1995.57	
14400.00	89.84	179.65	100.00	12075.39	-8508.89	-2094.86	122.79	729826.61	432847.87	32° 11' 18.	103° 43' 2E	0.00	0.00	2095.57	
14500.00	89.84	179.65	100.00	12075.67	-8509.17	-2194.85	123.41	729827.23	432747.87	32° 11' 17.	103° 43' 2E	0.00	0.00	2195.57	
14600.00	89.84	179.65	100.00	12075.96	-8509.46	-2294.85	124.02	729827.84	432647.88	32° 11' 16.	103° 43' 2E	0.00	0.00	2295.57	
14700.00	89.84	179.65	100.00	12076.24	-8509.74	-2394.85	124.63	729828.45	432547.88	32° 11' 15.	103° 43' 2E	0.00	0.00	2395.57	

14800.00	89.84	179.65	100.00	12076.53	-8510.03	-2494.85	125.25	729829.07	432447.88	32° 11' 14.	103° 43' 2E	0.00	0.00	2495.57
14900.00	89.84	179.65	100.00	12076.81	-8510.31	-2594.84	125.86	729829.68	432347.88	32° 11' 13.	103° 43' 2E	0.00	0.00	2595.57
15000.00	89.84	179.65	100.00	12077.10	-8510.60	-2694.84	126.47	729830.29	432247.89	32° 11' 12.	103° 43' 2E	0.00	0.00	2695.57
15100.00	89.84	179.65	100.00	12077.38	-8510.88	-2794.84	127.09	729830.91	432147.89	32° 11' 11.	103° 43' 2E	0.00	0.00	2795.57
15200.00	89.84	179.65	100.00	12077.67	-8511.17	-2894.84	127.70	729831.52	432047.89	32° 11' 10.	103° 43' 2E	0.00	0.00	2895.57
15300.00	89.84	179.65	100.00	12077.95	-8511.45	-2994.84	128.31	729832.13	431947.89	32° 11' 9.7	103° 43' 2E	0.00	0.00	2995.57
15400.00	89.84	179.65	100.00	12078.23	-8511.73	-3094.83	128.93	729832.75	431847.89	32° 11' 8.7	103° 43' 2E	0.00	0.00	3095.57
15500.00	89.84	179.65	100.00	12078.52	-8512.02	-3194.83	129.54	729833.36	431747.90	32° 11' 7.7	103° 43' 2E	0.00	0.00	3195.56
15600.00	89.84	179.65	100.00	12078.80	-8512.30	-3294.83	130.15	729833.97	431647.90	32° 11' 6.7	103° 43' 2E	0.00	0.00	3295.56
15700.00	89.84	179.65	100.00	12079.09	-8512.59	-3394.83	130.77	729834.59	431547.90	32° 11' 5.7	103° 43' 2E	0.00	0.00	3395.56
15800.00	89.84	179.65	100.00	12079.37	-8512.87	-3494.82	131.38	729835.20	431447.90	32° 11' 4.7	103° 43' 2E	0.00	0.00	3495.56
15900.00	89.84	179.65	100.00	12079.66	-8513.16	-3594.82	131.99	729835.81	431347.91	32° 11' 3.7	103° 43' 2E	0.00	0.00	3595.56
16000.00	89.84	179.65	100.00	12079.94	-8513.44	-3694.82	132.61	729836.43	431247.91	32° 11' 2.7	103° 43' 2E	0.00	0.00	3695.56
16100.00	89.84	179.65	100.00	12080.22	-8513.72	-3794.82	133.22	729837.04	431147.91	32° 11' 1.8	103° 43' 2E	0.00	0.00	3795.56
16200.00	89.84	179.65	100.00	12080.51	-8514.01	-3894.81	133.83	729837.65	431047.91	32° 11' 0.8	103° 43' 2E	0.00	0.00	3895.56
16300.00	89.84	179.65	100.00	12080.79	-8514.29	-3994.81	134.45	729838.27	430947.91	32° 10' 59.	103° 43' 2E	0.00	0.00	3995.56
16400.00	89.84	179.65	100.00	12081.08	-8514.58	-4094.81	135.06	729838.88	430847.92	32° 10' 58.	103° 43' 2E	0.00	0.00	4095.56
16500.00	89.84	179.65	100.00	12081.36	-8514.86	-4194.81	135.68	729839.49	430747.92	32° 10' 57.	103° 43' 2E	0.00	0.00	4195.56
16600.00	89.84	179.65	100.00	12081.65	-8515.15	-4294.81	136.29	729840.11	430647.92	32° 10' 56.	103° 43' 2E	0.00	0.00	4295.56
16700.00	89.84	179.65	100.00	12081.93	-8515.43	-4394.80	136.90	729840.72	430547.92	32° 10' 55.	103° 43' 2E	0.00	0.00	4395.56
16800.00	89.84	179.65	100.00	12082.21	-8515.71	-4494.80	137.52	729841.33	430447.93	32° 10' 54.	103° 43' 2E	0.00	0.00	4495.56
16900.00	89.84	179.65	100.00	12082.50	-8516.00	-4594.80	138.13	729841.95	430347.93	32° 10' 53.	103° 43' 2E	0.00	0.00	4595.56
17000.00	89.84	179.65	100.00	12082.78	-8516.28	-4694.80	138.74	729842.56	430247.93	32° 10' 52.	103° 43' 2E	0.00	0.00	4695.56
17100.00	89.84	179.65	100.00	12083.07	-8516.57	-4794.79	139.36	729843.17	430147.93	32° 10' 51.	103° 43' 2E	0.00	0.00	4795.56
17200.00	89.84	179.65	100.00	12083.35	-8516.85	-4894.79	139.97	729843.79	430047.94	32° 10' 50.	103° 43' 2E	0.00	0.00	4895.56
17300.00	89.84	179.65	100.00	12083.64	-8517.14	-4994.79	140.58	729844.40	429947.94	32° 10' 49.	103° 43' 2E	0.00	0.00	4995.56
17400.00	89.84	179.65	100.00	12083.92	-8517.42	-5094.79	141.20	729845.02	429847.94	32° 10' 48.	103° 43' 2E	0.00	0.00	5095.56
17500.00	89.84	179.65	100.00	12084.21	-8517.71	-5194.78	141.81	729845.63	429747.94	32° 10' 47.	103° 43' 2E	0.00	0.00	5195.56
17600.00	89.84	179.65	100.00	12084.49	-8517.99	-5294.78	142.42	729846.24	429647.94	32° 10' 46.	103° 43' 2E	0.00	0.00	5295.56
17700.00	89.84	179.65	100.00	12084.77	-8518.27	-5394.78	143.04	729846.86	429547.95	32° 10' 45.	103° 43' 2E	0.00	0.00	5395.56
17800.00	89.84	179.65	100.00	12085.06	-8518.56	-5494.78	143.65	729847.47	429447.95	32° 10' 44.	103° 43' 2E	0.00	0.00	5495.56
17900.00	89.84	179.65	100.00	12085.34	-8518.84	-5594.78	144.26	729848.08	429347.95	32° 10' 43.	103° 43' 2E	0.00	0.00	5595.56
18000.00	89.84	179.65	100.00	12085.63	-8519.13	-5694.77	144.88	729848.70	429247.95	32° 10' 43.	103° 43' 2E	0.00	0.00	5695.55
18100.00	89.84	179.65	100.00	12085.91	-8519.41	-5794.77	145.49	729849.31	429147.96	32° 10' 42.	103° 43' 2E	0.00	0.00	5795.55
18200.00	89.84	179.65	100.00	12086.20	-8519.70	-5894.77	146.10	729849.92	429047.96	32° 10' 41.	103° 43' 2E	0.00	0.00	5895.55
18300.00	89.84	179.65	100.00	12086.48	-8519.98	-5994.77	146.72	729850.54	428947.96	32° 10' 40.	103° 43' 2E	0.00	0.00	5995.55
18400.00	89.84	179.65	100.00	12086.76	-8520.26	-6094.76	147.33	729851.15	428847.96	32° 10' 39.	103° 43' 2E	0.00	0.00	6095.55
18500.00	89.84	179.65	100.00	12087.05	-8520.55	-6194.76	147.94	729851.76	428747.97	32° 10' 38.	103° 43' 2E	0.00	0.00	6195.55
18600.00	89.84	179.65	100.00	12087.33	-8520.83	-6294.76	148.56	729852.38	428647.97	32° 10' 37.	103° 43' 2E	0.00	0.00	6295.55
18700.00	89.84	179.65	100.00	12087.62	-8521.12	-6394.76	149.17	729852.99	428547.97	32° 10' 36.	103° 43' 2E	0.00	0.00	6395.55
18800.00	89.84	179.65	100.00	12087.90	-8521.40	-6494.75	149.78	729853.60	428447.97	32° 10' 35.	103° 43' 2E	0.00	0.00	6495.55
18900.00	89.84	179.65	100.00	12088.19	-8521.69	-6594.75	150.40	729854.22	428347.97	32° 10' 34.	103° 43' 2E	0.00	0.00	6595.55
19000.00	89.84	179.65	100.00	12088.47	-8521.97	-6694.75	151.01	729854.83	428247.98	32° 10' 33.	103° 43' 2E	0.00	0.00	6695.55
19100.00	89.84	179.65	100.00	12088.76	-8522.26	-6794.75	151.62	729855.44	428147.98	32° 10' 32.	103° 43' 2E	0.00	0.00	6795.55
19200.00	89.84	179.65	100.00	12089.04	-8522.54	-6894.75	152.24	729856.06	428047.98	32° 10' 31.	103° 43' 2E	0.00	0.00	6895.55
19300.00	89.84	179.65	100.00	12089.32	-8522.82	-6994.74	152.85	729856.67	427947.98	32° 10' 30.	103° 43' 2E	0.00	0.00	6995.55
19400.00	89.84	179.65	100.00	12089.61	-8523.11	-7094.74	153.47	729857.28	427847.99	32° 10' 29.	103° 43' 2E	0.00	0.00	7095.55
19500.00	89.84	179.65	100.00	12089.89	-8523.39	-7194.74	154.08	729857.90	427747.99	32° 10' 28.	103° 43' 2E	0.00	0.00	7195.55
19600.00	89.84	179.65	100.00	12090.18	-8523.68	-7294.74	154.69	729858.51	427647.99	32° 10' 27.	103° 43' 2E	0.00	0.00	7295.55
19700.00	89.84	179.65	100.00	12090.46	-8523.96	-7394.73	155.31	729859.12	427547.99	32° 10' 26.	103° 43' 2E	0.00	0.00	7395.55
19800.00	89.84	179.65	100.00	12090.75	-8524.25	-7494.73	155.92	729859.74	427447.99	32° 10' 25.	103° 43' 2E	0.00	0.00	7495.55
19900.00	89.84	179.65	100.00	12091.03	-8524.53	-7594.73	156.53	729860.35	427348.00	32° 10' 24.	103° 43' 2E	0.00	0.00	7595.55
20000.00	89.84	179.65	100.00	12091.31	-8524.81	-7694.73	157.15	729860.97	427248.00	32° 10' 23.	103° 43' 2E	0.00	0.00	7695.55
20100.00	89.84	179.65	100.00	12091.60	-8525.10	-7794.73	157.76	729861.58	427148.00	32° 10' 22.	103° 43' 2E	0.00	0.00	7795.55
20200.00	89.84	179.65	100.00	12091.88	-8525.38	-7894.72	158.37	729862.19	427048.00	32° 10' 21.	103° 43' 2E	0.00	0.00	7895.55
20300.00	89.84	179.65	100.00	12092.17	-8525.67	-7994.72	158.99	729862.81	426948.01	32° 10' 20.	103° 43' 2E	0.00	0.00	7995.55
20400.00	89.84	179.65	100.00	12092.45	-8525.95	-8094.72	159.60	729863.42	426848.01	32° 10' 19.	103° 43' 2E	0.00	0.00	8095.55
20500.00	89.84	179.65	100.00	12092.74	-8526.24	-8194.72	160.21	729864.03	426748.01	32° 10' 18.	103° 43' 2E	0.00	0.00	8195.54
20600.00	89.84	179.65	100.00	12093.02	-8526.52	-8294.71	160.83	729864.65	426648.01	32° 10' 17.	103° 43' 2E	0.00	0.00	8295.54
20700.00	89.84	179.65	100.00	12093.30	-8526.80	-8394.71	161.44	729865.26	426548.02	32° 10' 16.	103° 43' 2E	0.00	0.00	8395.54
20800.00	89.84	179.65	100.00	12093.59	-8527.09	-8494.71	162.05	729865.87	426448.02	32° 10' 15.	103° 43' 2E	0.00	0.00	8495.54
20900.00	89.84	179.65	100.00	12093.87	-8527.37	-8594.71	162.67	729866.49	426348.02	32° 10' 14.	103° 43' 2E	0.00	0.00	8595.54
21000.00	89.84	179.65	100.00	12094.16	-8527.66	-8694.70	163.28	729867.10	426248.02	32° 10' 13.	103° 43' 2E	0.00	0.00	8695.54
21100.00	89.84	179.65	100.00	12094.44	-8527.94	-8794.70	163.89	729867.71	426148.02	32° 10' 12.	103° 43' 2E	0.00	0.00	8795.54
21200.00	89.84	179.65	100.00	12094.73	-8528.23	-8894.70	164.51	729868.33	426048.03	32° 10' 11.	103° 43' 2E	0.00	0.00	8895.54
21300.00	89.84	179.65	100.00	12095.01	-8528.51	-8994.70	165.12	729868.94	425948.03	32° 10' 10.	103° 43' 2E	0.00	0.00	8995.54
21400.00	89.84	179.65	100.00	12095.30	-8528.80	-9094.70	165.73	729869.55	425848.03	32° 10' 9.3	103° 43' 2E	0.00	0.00	9095.54
21500.00	89.84	179.65	100.00	12095.58	-8529.08	-9194.69	166.35	729870.17	425748.03	32° 10' 8.3	103° 43' 2E	0.00	0.00	9195.54
21600.00	89.84	179.65	100.00	12095.86	-8529.36	-9294.69	166.96	729870.78	425648.04	32° 10' 7.3	103° 43' 2E	0.00	0.00	9295.54
21700.00	89.84	179.65	100.00	12096.15	-8529.65	-9394.69	167.57	729871.39	425548.04	32° 10' 6.3	103° 43' 2E	0.00	0.00	9395.54
21800.00	89.84	179.65	100.00	12096.43	-8529.93	-9494.69	168.19	729872.01	425448.04	32° 10' 5.4	103° 43' 2E	0.00	0.00	9495.54
21900.00	89.84	179.65	100.00	12096.72	-8530.22	-9594.68	168.80	729872.62	425348.04	32° 10' 4.4	103° 43' 2E	0.00	0.00	9595.54
22000.00	89.84	179.65	100.00	12097.00	-8530.50	-9694.68	169.42	729873.23	425248.05	32° 10' 3.4	103° 43' 2E	0.00	0.00	9695.54
22100.00	89.84	179.65	100.00	12097.29	-8530.79	-9794.68	170.03	729873.85	425148.05	32° 10' 2.4	103° 43' 2E	0.00	0.00	9795.54
22175.33	89.84	179.65	75.33	12097.50	-8531.00	-9870.01	170.49	729874.31	425072.72	32° 10' 1.6	103° 43' 2E	0.00	0.00	9870.87 PBHL

Devon Energy Prod. Co., L.P./Cotton Draw Unit 516H

1. Geologic Formations

TVD of target	12,097'	Pilot hole depth	
MD at TD:	22,175'	Deepest expected fresh water:	400

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	699		
Salado	1043		
Base of Salt	4273		
Delaware	4520		
Bell Canyon	4546		
Cherry Canyon	5461		
Brushy Canyon	6841		
Madera	8007		
Lower Brushy	8124		
1BSLM	8396		
1BSSS	9486		
2BSLM	9662		
2BSSS	10030		
3BSLM	10617		
3BSSS	11347		
WFMP X	11855		
WFMP Y	11920		
WFMP 100	11961		

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

Devon Energy Prod. Co., L.P./Cotton Draw Unit 516H

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
14.75"	0	725	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	8,375	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	8,375	12,225	7.625"	29.7	P110	Flushmax III	1.125	1.25	1.6
6.75	0	22,175	5.5"	20.0	P110	VAM SG	1.125	1.25	1.6

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for the 7-5/8" flush casing in the 8-3/4" hole and the 5-1/2" SF/Flush casing in the 6-3/4" hole.

Must have table for contingency casing

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N

If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	Slurry Description
10-3/4" Surface	605	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
7-5/8" Int	828	9	13.5	3.27	Lead: Tuned Light® Cement
	108	14.5	5.31	1.2	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
7-5/8" Intermediate Squeeze Contingency	1321	14.8	6.32	1.32	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	270	13.2	6.32	1.46	Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	108	14.4	6.32	1.2	(50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
5-1/2" Prod.	1091	14.8	6.32	1.33	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
9-7/8" Surface	0'	50%
7-5/8" Intermediate	0'	30%
7-5/8" Intermediate Contingency	0'	30%
5-1/2" Production	11,725'	25%

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
9-7/8"	13-5/8"	5M	Annular	x	50% of rated working pressure
			Blind Ram		5M
			Pipe Ram		
			Double Ram		
			Other*		
			Annular	x	50% of rated working pressure
			Blind Ram	x	
			Pipe Ram	x	
			Double Ram		
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or 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. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Y /N | Are anchors required by manufacturer?
Y	A multibowl wellhead is being 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 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 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system 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' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead.

	The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP. Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	725'	FW Gel	8.6-8.8	28-34	N/C
725'	12,225'	OBM/Cut Brine	8.6-10	34-65	N/C-6
12,225'	22,175'	OBM	10.0-11	28-65	N/C-6

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

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

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL 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

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6920 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? If yes, describe.
Will be pre-setting casing? If yes, describe.

Is this a walking operation? Yes

1. In the event the spudder rig is unable to drill the surface holes the 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 with either OBM or cut brine 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? Yes

1. Spudder rig will move in and drill surface hole.
    a. Rig will utilize fresh water based mud to drill 17½" surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the 13-3/8" surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.

6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
    a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments
_X_ Directional Plan
___ Other, describe

devon

Commitment Runs Deep

Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

I. Design Plan

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

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

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

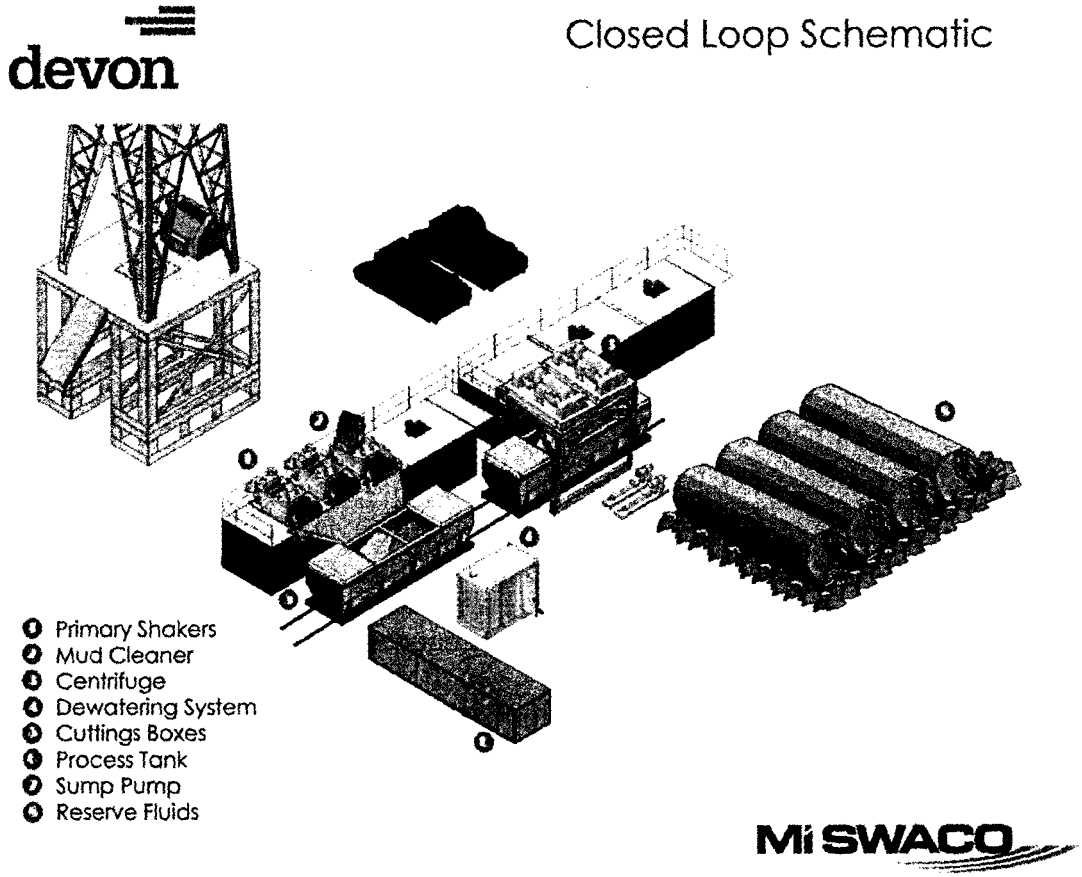
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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

II. Operations and Maintenance Plan

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

III. Closure Plan

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

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

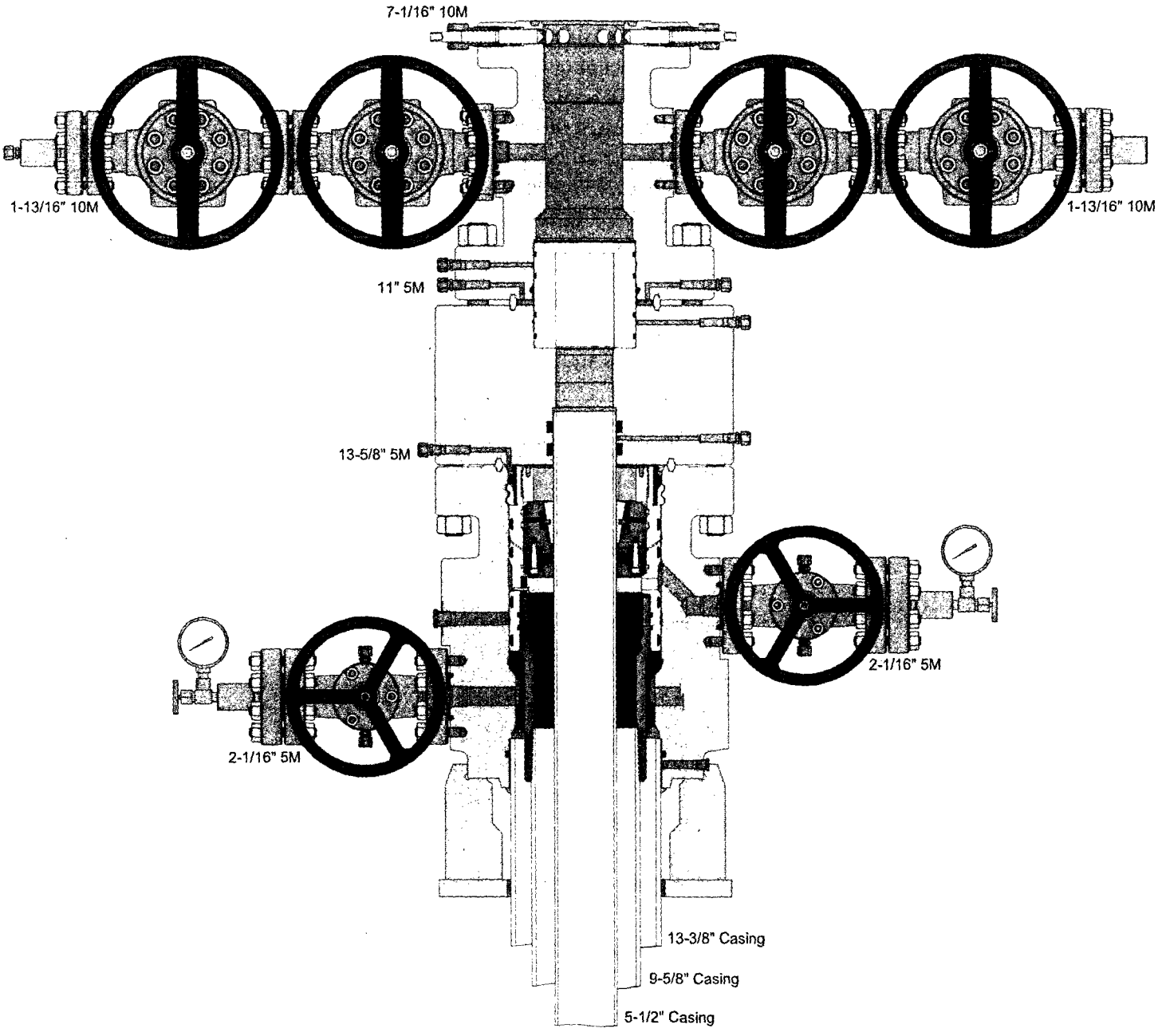
Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.

- 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 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.
After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead.

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

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


7-1/16" 10M
1-13/16" 10M
1-13/16" 10M
11" 5M
13-5/8" 5M
2-1/16" 5M
2-1/16" 5M
13-3/8" Casing
9-5/8" Casing
5-1/2" Casing

Continental CONTITECH

Fluid Technology

ContiTech Beattie Corp.
Website: www.contitechbeattie.com

Monday, June 14, 2010

RE: Drilling & Production Hoses
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly It is good practice to use lifting & safety equipment but not mandatory

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

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson
Sales Manager
ContiTech Beattie Corp

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

RIG 212

PHOENIX

QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.

6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
Phone: (3662) 556-737 • Fax: (3662) 568-738

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

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552
PURCHASER: Phoenix Beattie Co.				P.O. N°: 1519FA-871
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH:		11,43 m
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS

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

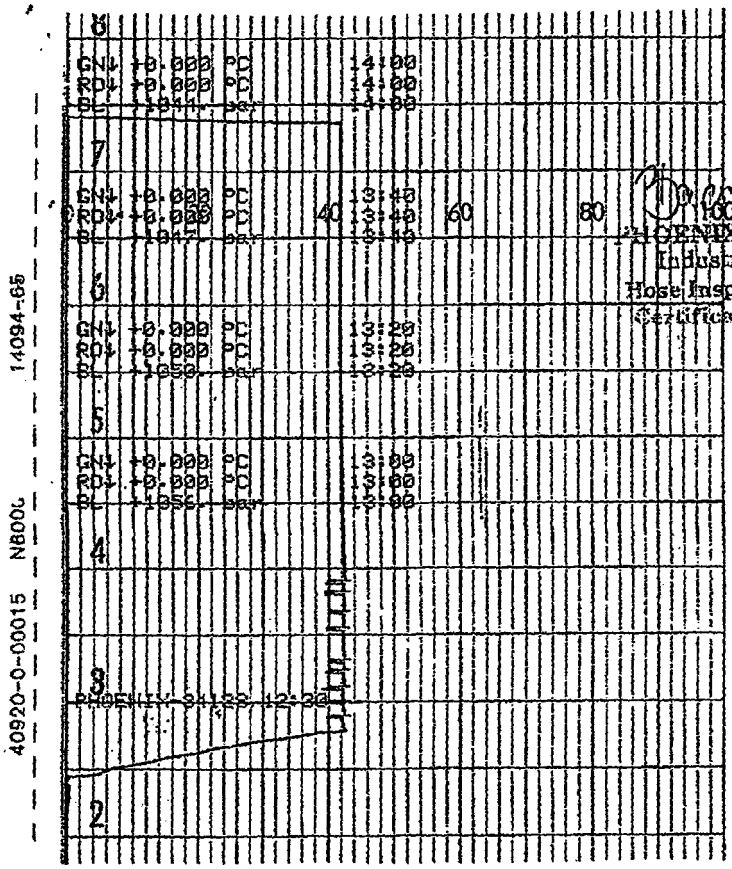
API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
29. April. 2002.		PHOENIX RUBBER Industrial Ltd. Hose Inspection and Verification Dept.

VERIFIED TRUE COPY
PHOENIX RUBBER Q.C.



PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE COPY
PHOENIX RUBBER I.C.

AFMSS

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

SUPO Data Report

02/08/2018

APD ID: 10400017572 **Submission Date:** 08/28/2017

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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:

CDU_516H_Ex_Access_Rd_08-25-2017.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? YES

Existing Road Improvement Description: Improve road to accommodate Drilling and Completion operations.

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

CDU_516H_Access_Rd_08-25-2017.pdf

New road type: COLLECTOR,RESOURCE

Length: 2618 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: 30

New road access erosion control: WATER DRAINAGE DITCH

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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 ATTACHED INTERIM RECLAMATION DIAGRAM.

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

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:

CDU_516H_1_Mile_Map_08-03-2017.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 Flow lines will be buried going to the Cotton Draw Unit 25 CTB 2, located in Sec 25-T24S-R31E.

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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): 350000 **Source volume (acre-feet):** 45.112583

Source volume (gal): 14700000

Water source and transportation map:

CDU_516H_Wtr_Xfr_Map_08-03-2017.pdf

Water source comments: The attached Water Transfer Map is a proposal only and the final route and documentation will be provided by a Devon contractor prior to installation. When available Devon will always follow existing disturbance.
New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Section 6 - Construction Materials

Construction Materials description: Dirt fill and caliche will be used to construct well pad.

Construction Materials source location attachment:

CDU_516H_Caliche_Pit_08-25-2017.pdf

Section 7 - Methods for Handling Waste

Waste type: FLOWBACK

Waste content description: Produced water during flowback operations. This amount is a daily average during flowback (BWPD).
Amount of waste: 1500 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: ON-LEASE INJECTION **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

Waste type: PRODUCED WATER

Waste content description: Produced water during production operations. This amount is a daily average during the first year of production (BWPD).
Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: ON-LEASE INJECTION **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

Waste type: DRILLING

Waste content description: WATER BASED CUTTINGS

Amount of waste: 1600 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Disposal type description:

Disposal location description: ALL CUTTINGS WILL BE DISPOSED OF AT R360, SUNDANCE OR EQUIVALENT.

Waste type: COMPLETIONS/STIMULATION

Waste content description: FLOW BACK WATER DURING COMPLETION OPERATIONS.

Amount of waste: 3000 barrels

Waste disposal frequency : One Time Only

Safe containment description: N/A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: VARIOUS DISPOSAL LOCATIONS IN LEA AND EDDY COUNTIES.

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

CDU_516H_Rig_Layout_08-03-2017.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** COTTON DRAW UNIT

Multiple Well Pad Number: 514H/515H/516H/517H

Recontouring attachment:

CDU_516H_Reclamation_08-03-2017.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.

Wellpad long term disturbance (acres): 2.677 **Wellpad short term disturbance (acres):** 4.099

Access road long term disturbance (acres): 1.802 **Access road short term disturbance (acres):** 1.802

Pipeline long term disturbance (acres): 0.06887052 **Pipeline short term disturbance (acres):** 0.06887052

Other long term disturbance (acres): 5.741 **Other short term disturbance (acres):** 5.741

Total long term disturbance: 10.288871 **Total short term disturbance:** 11.710871

Reconstruction method: Operator will use Best Management Practices "BMP" to mechanically recontour to obtain the desired outcome.
Topsoil redistribution: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
Soil treatment: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.
Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

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: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

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

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information: Flowline Plat CTB Plat Grading and Cross Section Misc Plats Gas Capture Plan Battery Connect Plat Electric Plat Flowline Plat
Use a previously conducted onsite? NO

Previous Onsite information:

Other SUPO Attachment

CDU_516H_Flowline_08-25-2017.pdf
CDU_516H_CTB_08-25-2017.pdf
CDU_516H_Grading___X_Sec_08-25-2017.pdf
CDU_516H_Misc_Plats_08-25-2017.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT **Well Number:** 516H

CDU_516H_GasCapturePlan_08-25-2017.pdf

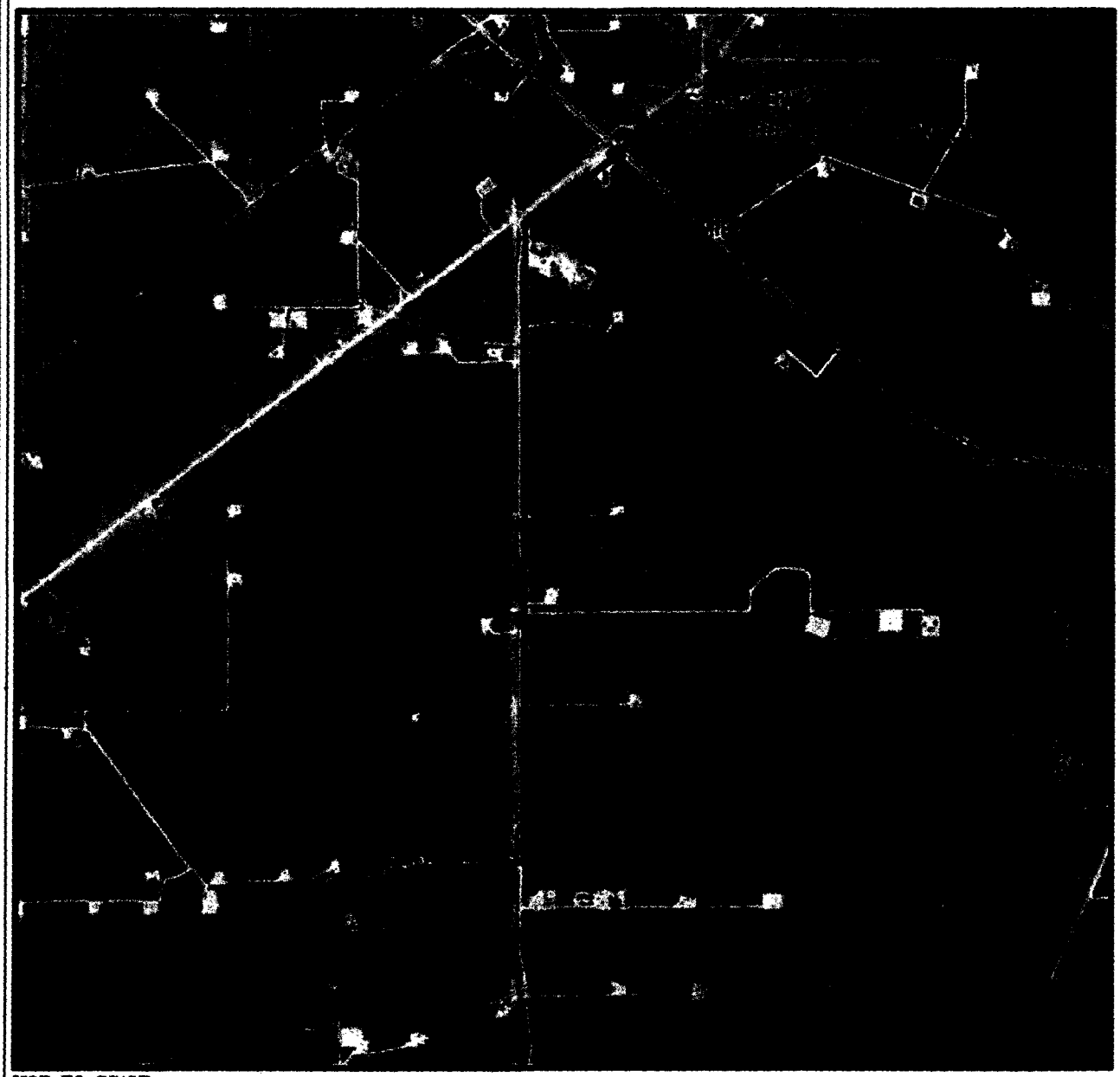
CDU_516H_Battery_Connect_20170828085604.pdf

CDU_516H_Electric_20170828085625.pdf

CDU_516H_Flowline_20170828085643.pdf

SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL ACCESS ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

COTTON DRAW UNIT 516H

LOCATED 485 FT. FROM THE NORTH LINE
AND 440 FT. FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017

SURVEY NO. 5334

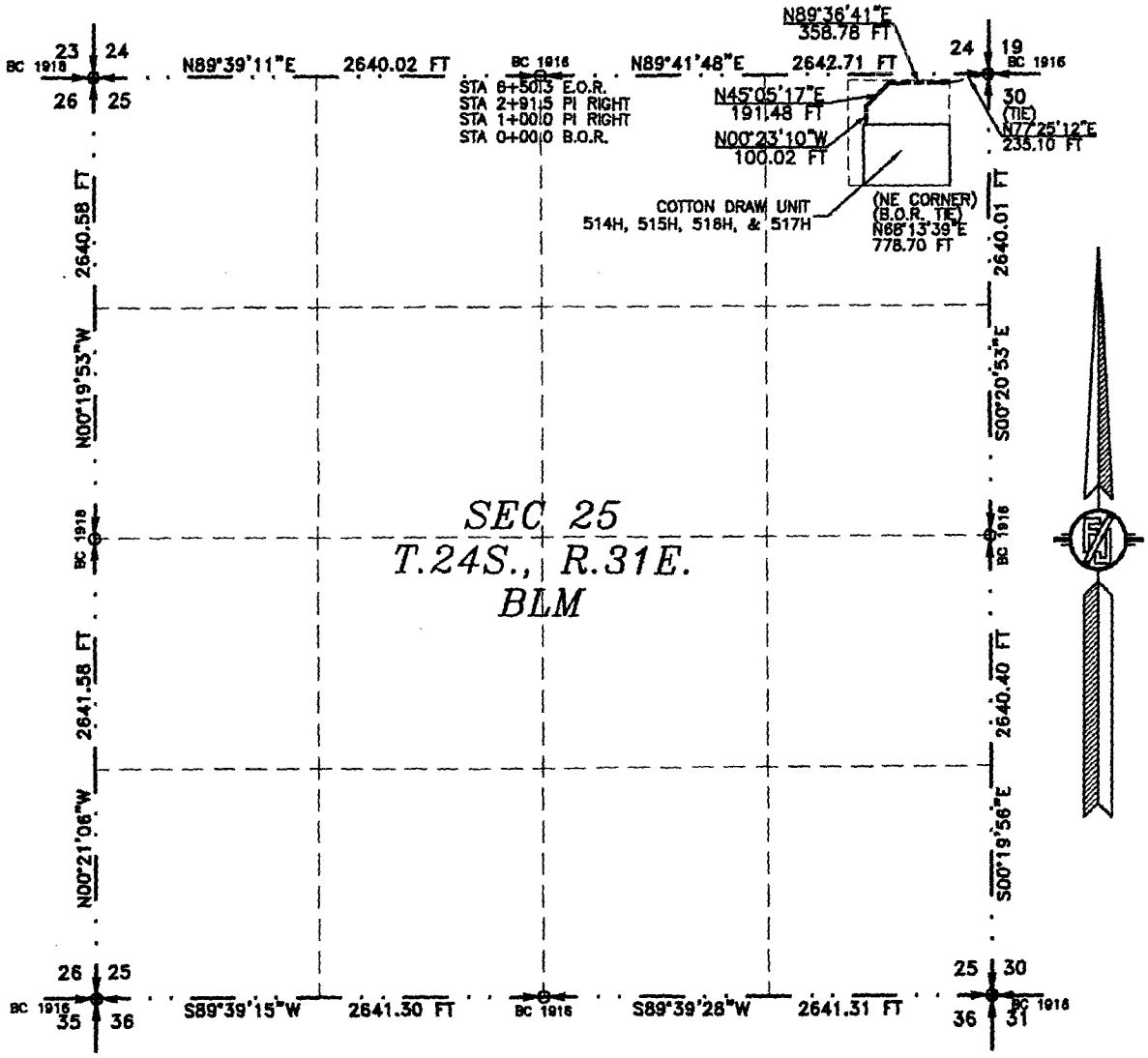
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD FOR COTTON DRAW UNIT 514H, 515H, 516H, & 517H

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 17, 2017



SEE NEXT SHEET (2-2) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS ___ DAY OF JULY, 2017.

FILIMON F. JARAMILLO
NEW MEXICO
12797
REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO PLS. 12797
301 SOUTH CANAL
(575) 234-3341

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

SHEET: 1-2

SURVEY NO. 5334

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD FOR COTTON DRAW UNIT 514H, 515H, 516H, & 517H

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 17, 2017

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 25, TOWNSHIP 24 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 NE/4 OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N68°13'39"E, A DISTANCE OF 778.70 FEET;
THENCE N00°23'10"W A DISTANCE OF 100.02 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N45°05'17"E A DISTANCE OF 191.48 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N89°36'41"E A DISTANCE OF 358.78 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N77°25'12"E, A DISTANCE OF 235.10 FEET;

SAID STRIP OF LAND BEING 650.28 FEET OR 39.41 RODS IN LENGTH, CONTAINING 0.448 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	650.28 L.F.	39.41 RODS	0.448 ACRES

GENERAL NOTES

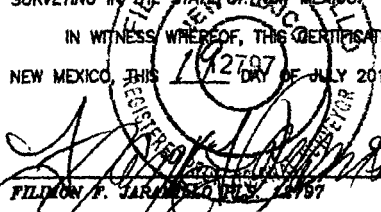
1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 17 DAY OF JULY 2017

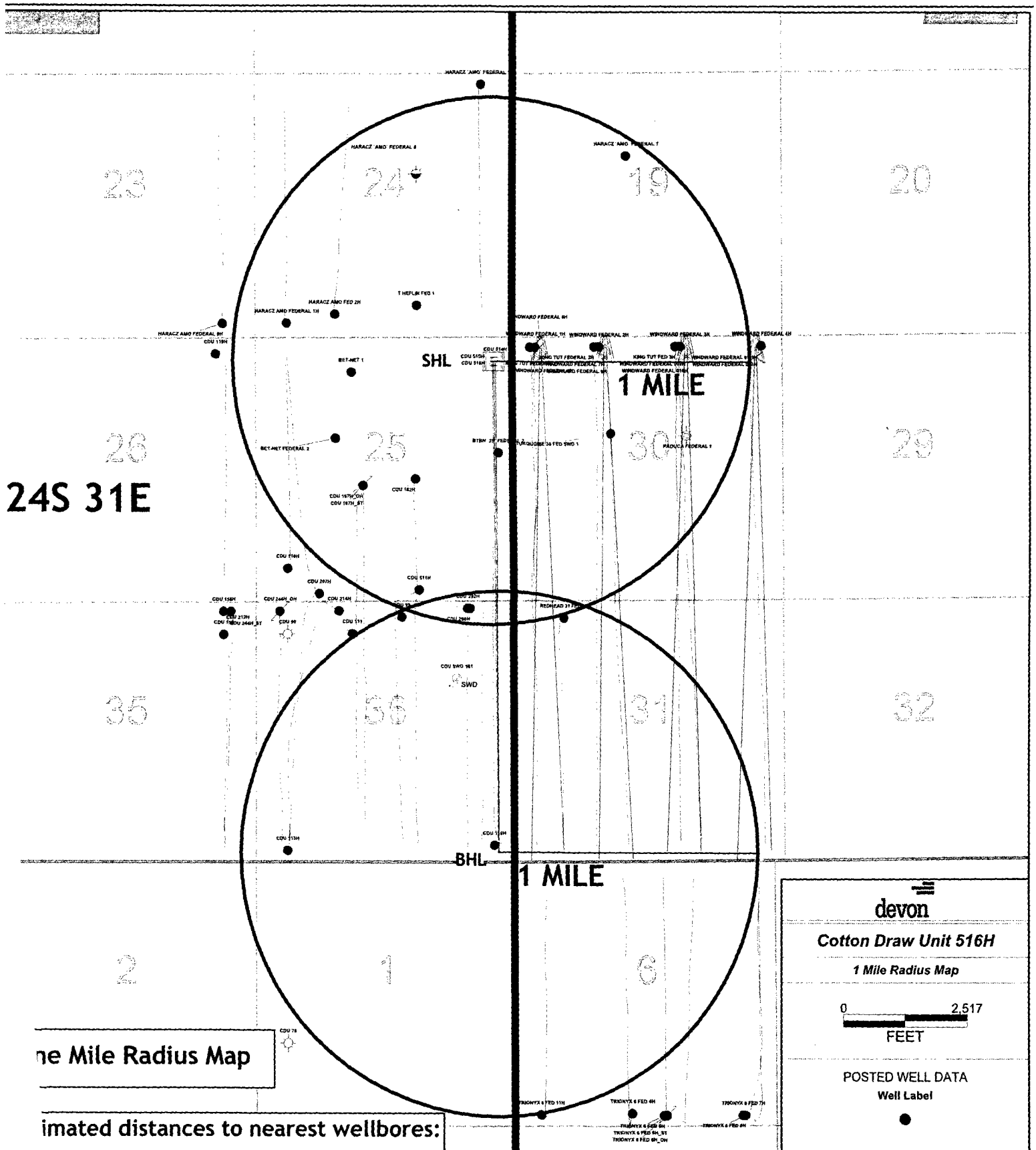


FILIMON F. JARAMILLO, P.S. 12797

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

SURVEY NO. 5334

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO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SWD
devon
Cotton Draw Unit 516H
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FEET
POSTED WELL DATA
Well Label
WELL SYMBOLS
DRY HOLE WITH SHOW OF O&G
GAS PRODUCING WELL
JUNKED AND ABANDONDED
OIL PRODUCING WELL
PROPOSED
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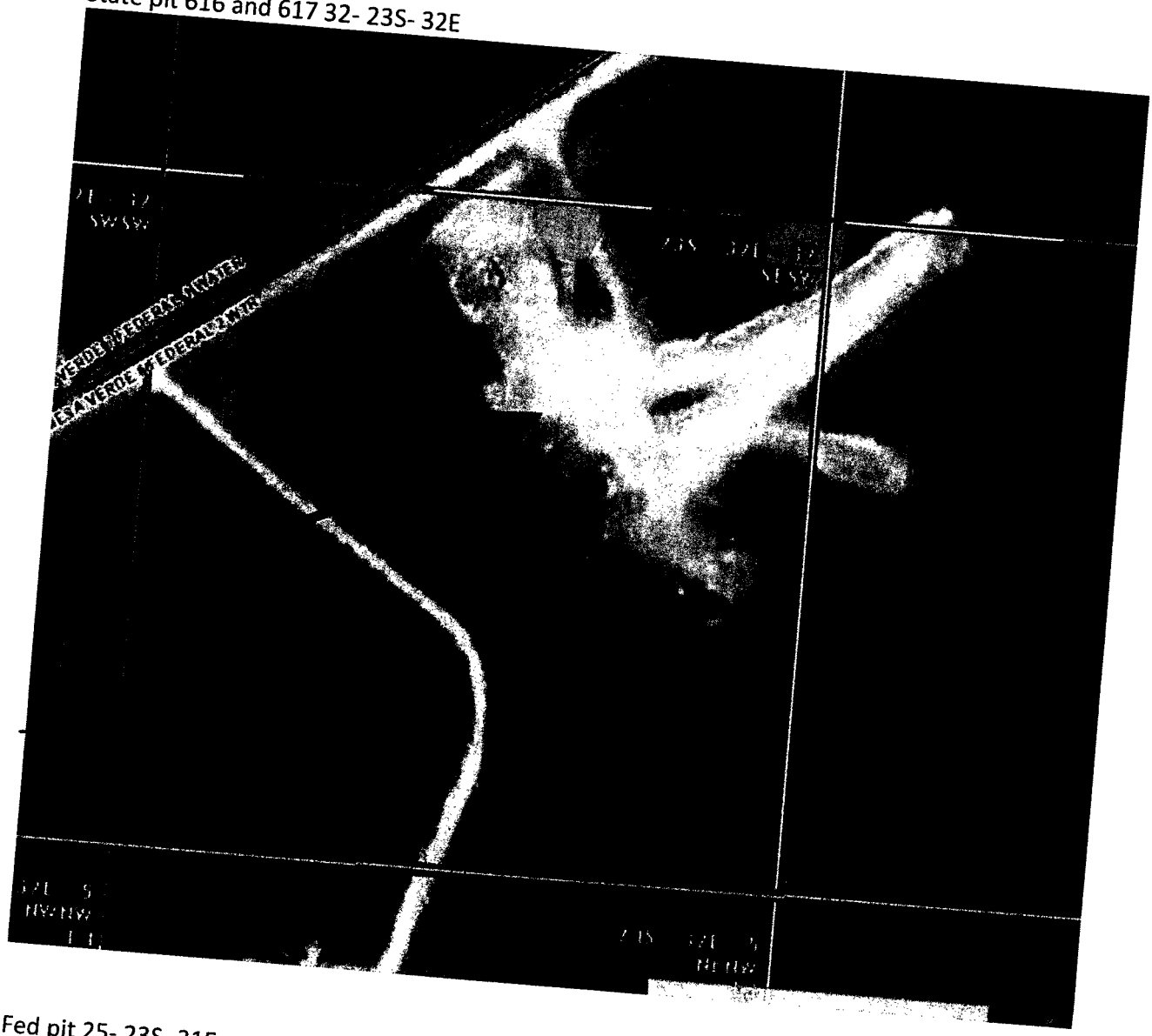
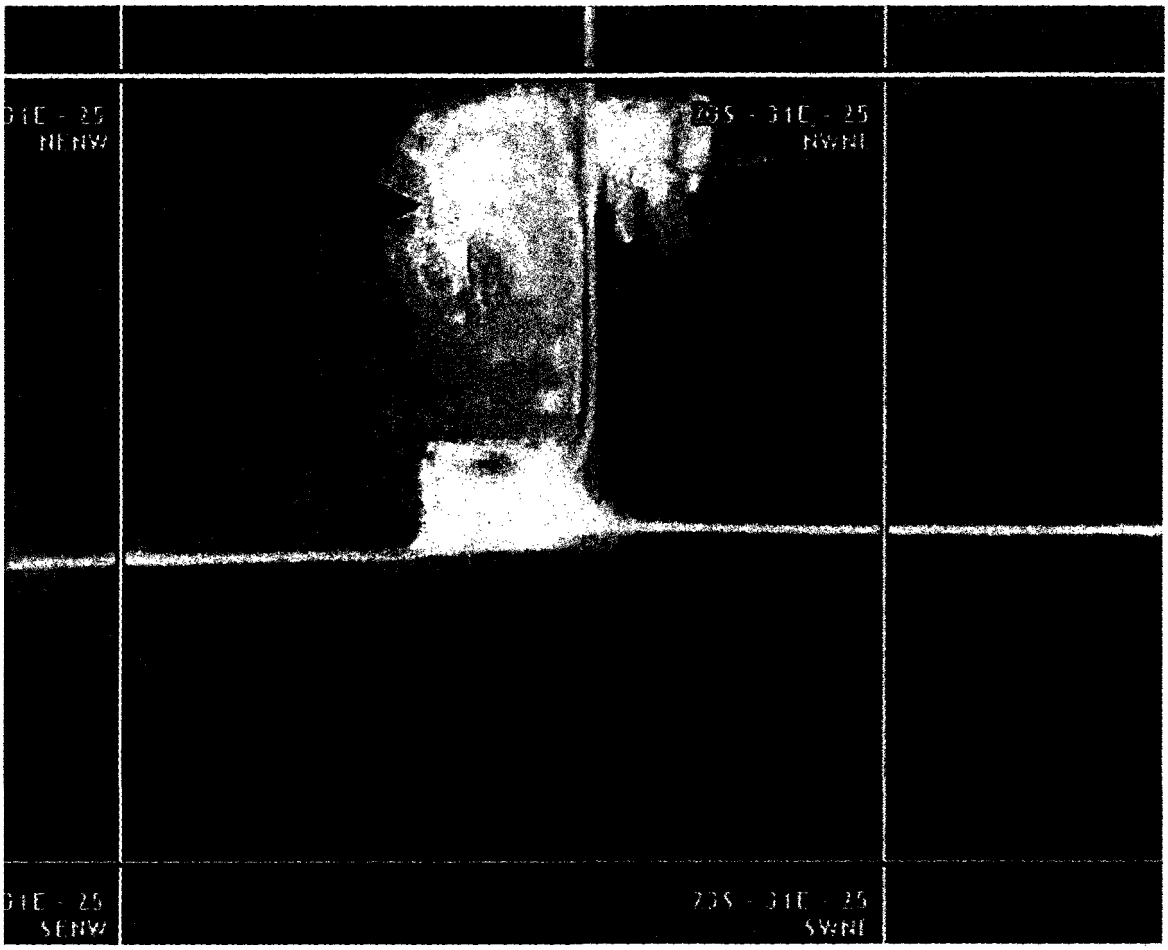
ton Draw Unit 515H 30 Ft East
on Draw Unit 514H 60 Ft East
Tut Federal 1H 813 Ft NE
m BHL
on Draw Unit 116H 171 Ft NW


CDU 515 H
water delivery routes
This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map.
_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: Stephen Richards
Map is current as of: 01-Aug-2017
N
Miles
0.14
0.28
0.56
1:28,457
Frac Pond Centerpoint (DVN)
Frac Pond (DVN)
AS BUILT/AFTER BUILT
CONSTRUCTION
PROPOSED
SD (Norf.)
RE

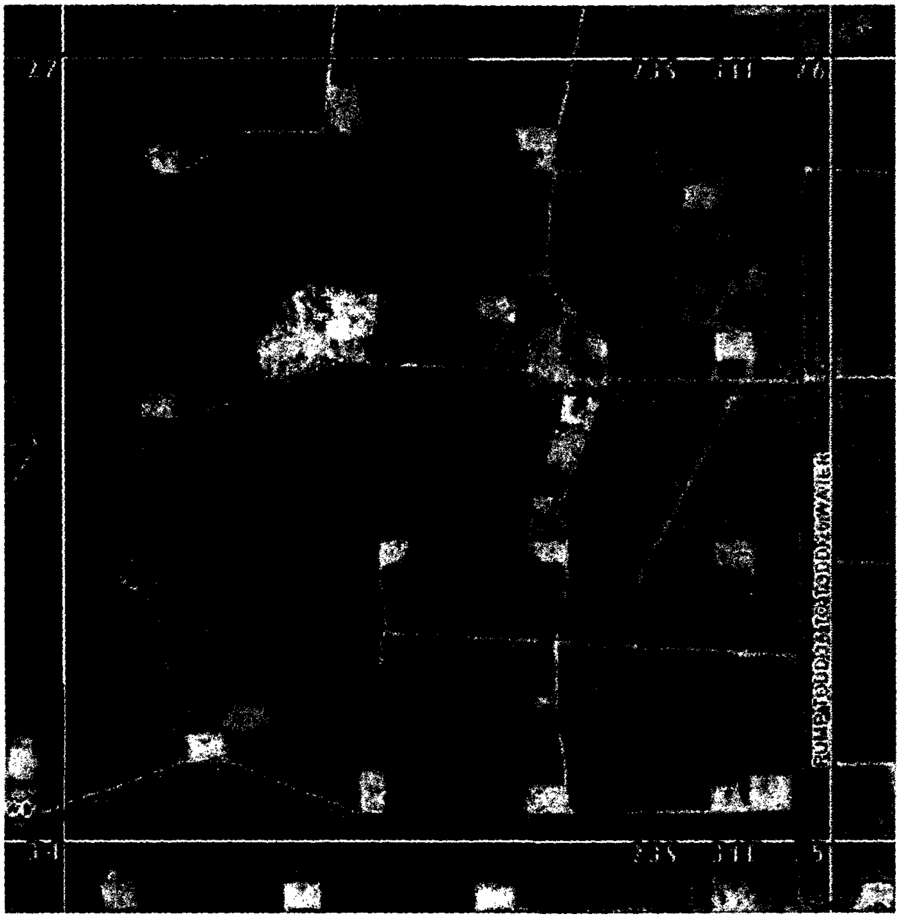
- State pit 616 and 617 32- 23S- 32E

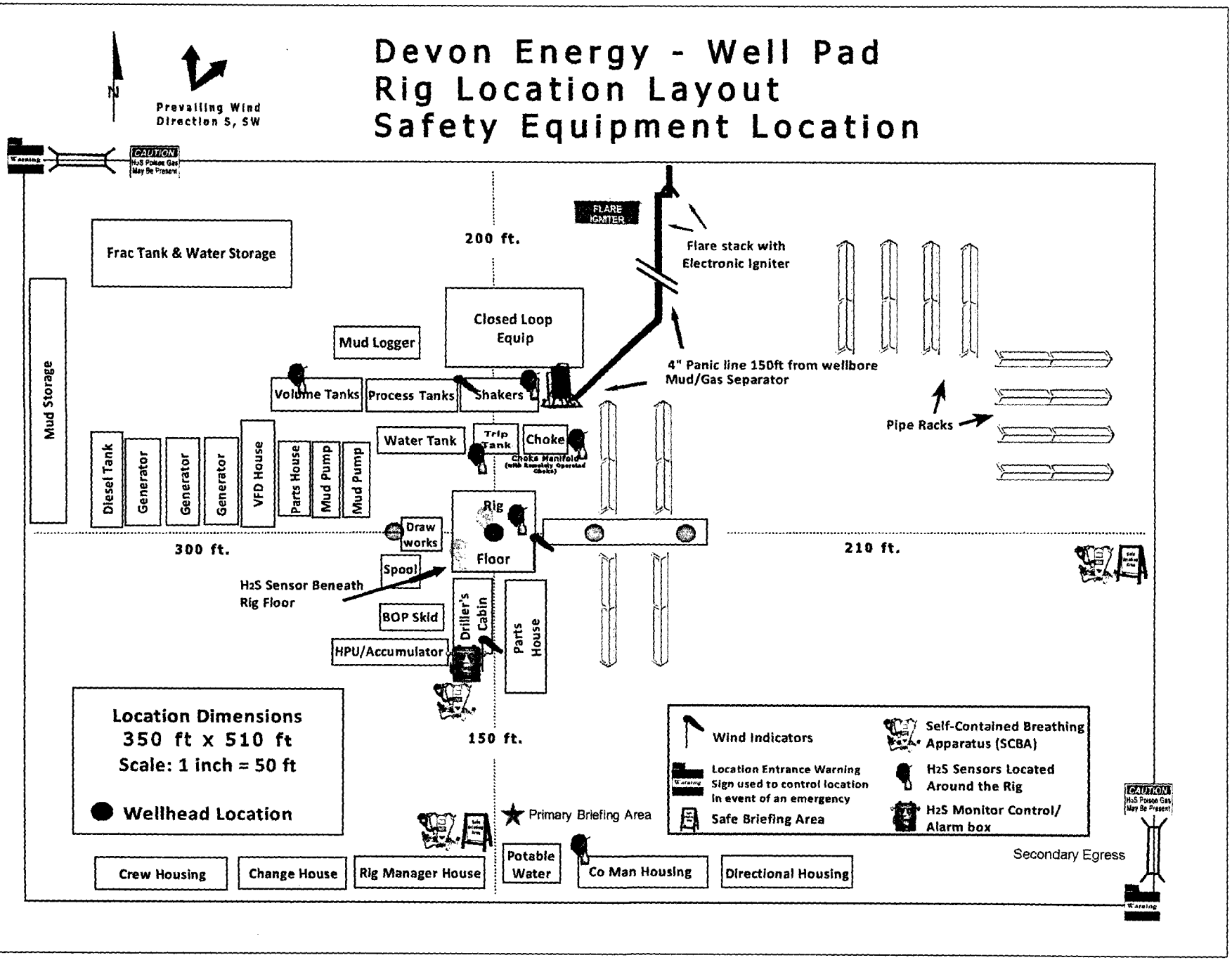


- Fed pit 25- 23S- 31E

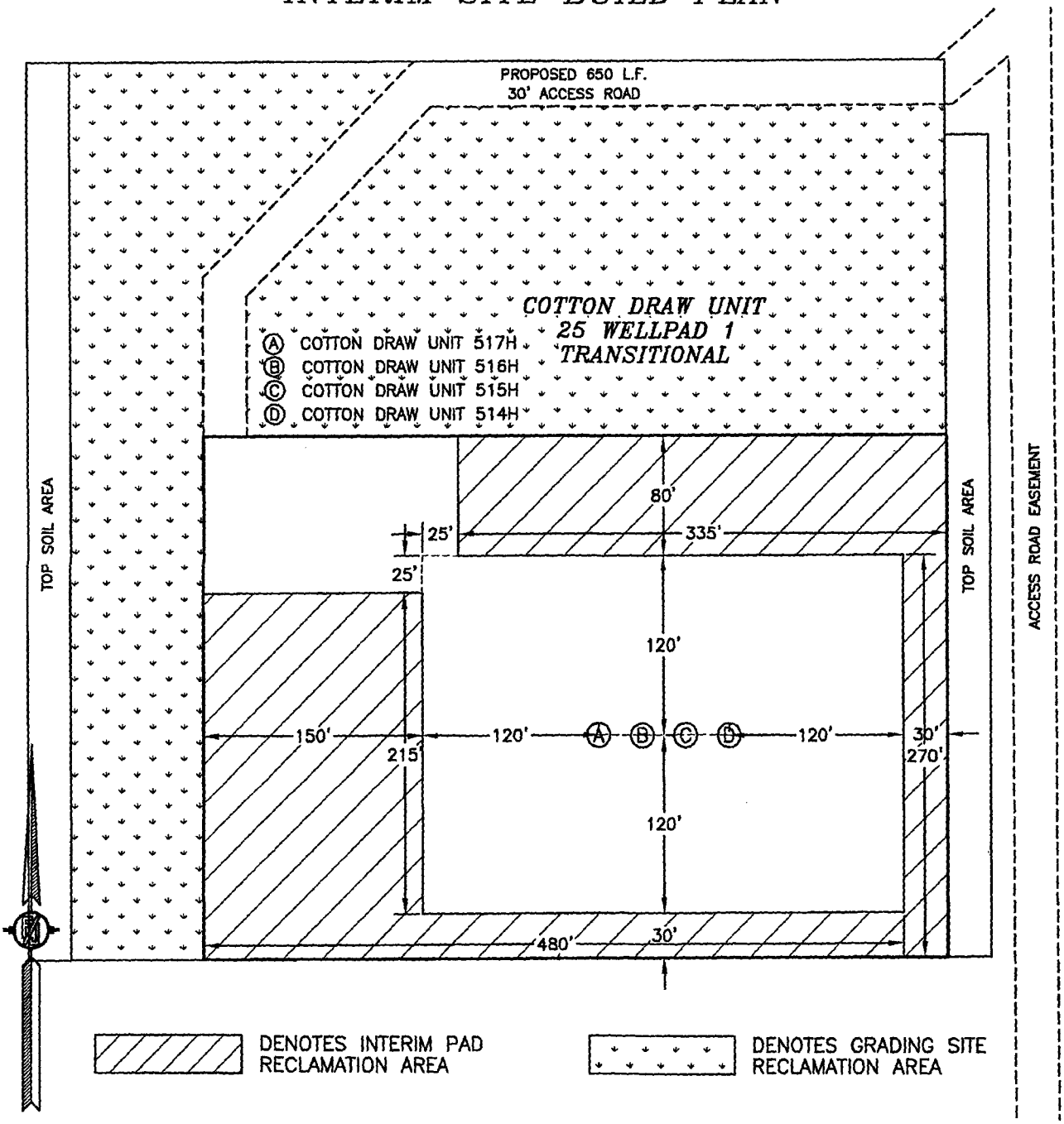


- Private pit 26- 23S- 31E




Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location
N
Prevailing Wind Direction S, SW
Warning
CAUTION H2S Poison Gas May Be Present
FLARE IGNITER
Flare stack with Electronic Igniter
200 ft.
Frac Tank & Water Storage
Mud Storage
Closed Loop Equip
Mud Logger
4" Panic line 150ft from wellbore Mud/Gas Separator
Volume Tanks
Process Tanks
Shakers
Pipe Racks
Water Tank
Trip Tank
Choke
Choke Manifold
Diesel Tank
Generator
Generator
Generator
VFD House
Parts House
Mud Pump
Mud Pump
Rig Floor
Draw works
300 ft.
210 ft.
Spool
H2S Sensor Beneath Rig Floor
BOP Skid
Driller's Cabin
Parts House
HPU/Accumulator
150 ft.
Location Dimensions
350 ft x 510 ft
Scale: 1 inch = 50 ft
Wellhead Location
Wind Indicators
Location Entrance Warning Sign used to control location in event of an emergency
Safe Briefing Area
Self-Contained Breathing Apparatus (SCBA)
H2S Sensors Located Around the Rig
H2S Monitor Control/ Alarm box
Primary Briefing Area
Potable Water
Crew Housing
Change House
Rig Manager House
Co Man Housing
Directional Housing
Secondary Egress

SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN



010 50 100 200
SCALE 1" = 100'

1.872± ACRES INTERIM PAD RECLAMATION AREA
3.718± ACRES GRADING SITE RECLAMATION AREA
2.677± ACRES NON-RECLAIMED AREA
8.267± ACRES COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL

DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 516H
LOCATED 485 FT. FROM THE NORTH LINE AND 440 FT. FROM THE EAST LINE OF SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017

SURVEY NO. 5334

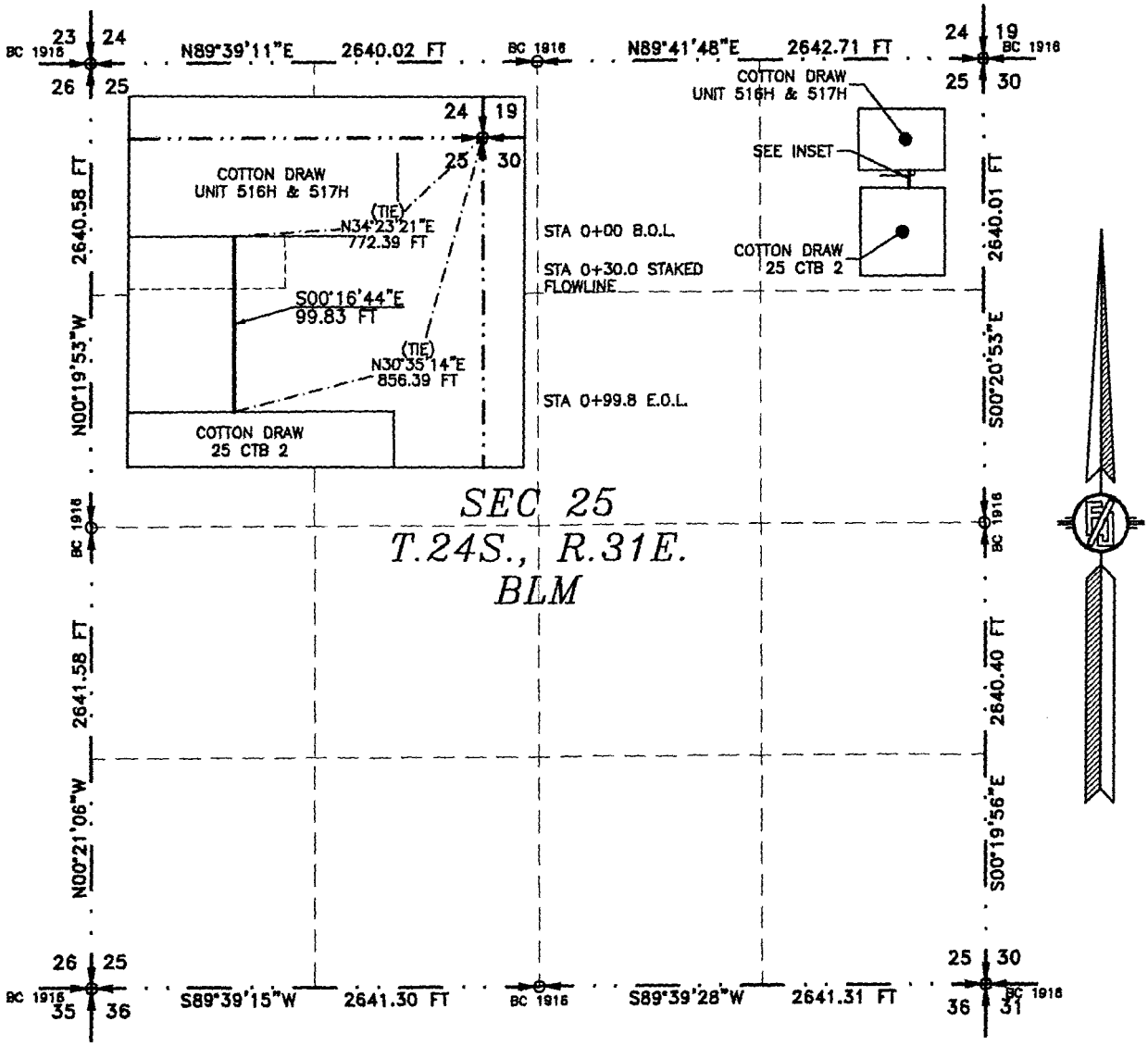
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



SEE NEXT SHEET (2-4) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 27TH DAY OF JULY 2017

FILIMON F. JARAMILLO
NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
12797

FILIMON F. JARAMILLO P.S. 12797

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

SURVEY NO. 5366

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 25, TOWNSHIP 24 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 NE/4 OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N34°23'21"E, A DISTANCE OF 772.39 FEET;
THENCE S00°16'44"E A DISTANCE OF 99.83 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N30°35'14"E, A DISTANCE OF 856.39 FEET;

SAID STRIP OF LAND BEING 99.83 FEET OR 6.05 RODS IN LENGTH, CONTAINING 0.069 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	99.83 L.F.	6.05 RODS	0.069 ACRES

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 21 DAY OF JULY 2017

FILIMON F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO, P.S. 12797

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

SHEET: 2-4

SURVEY NO. 5366

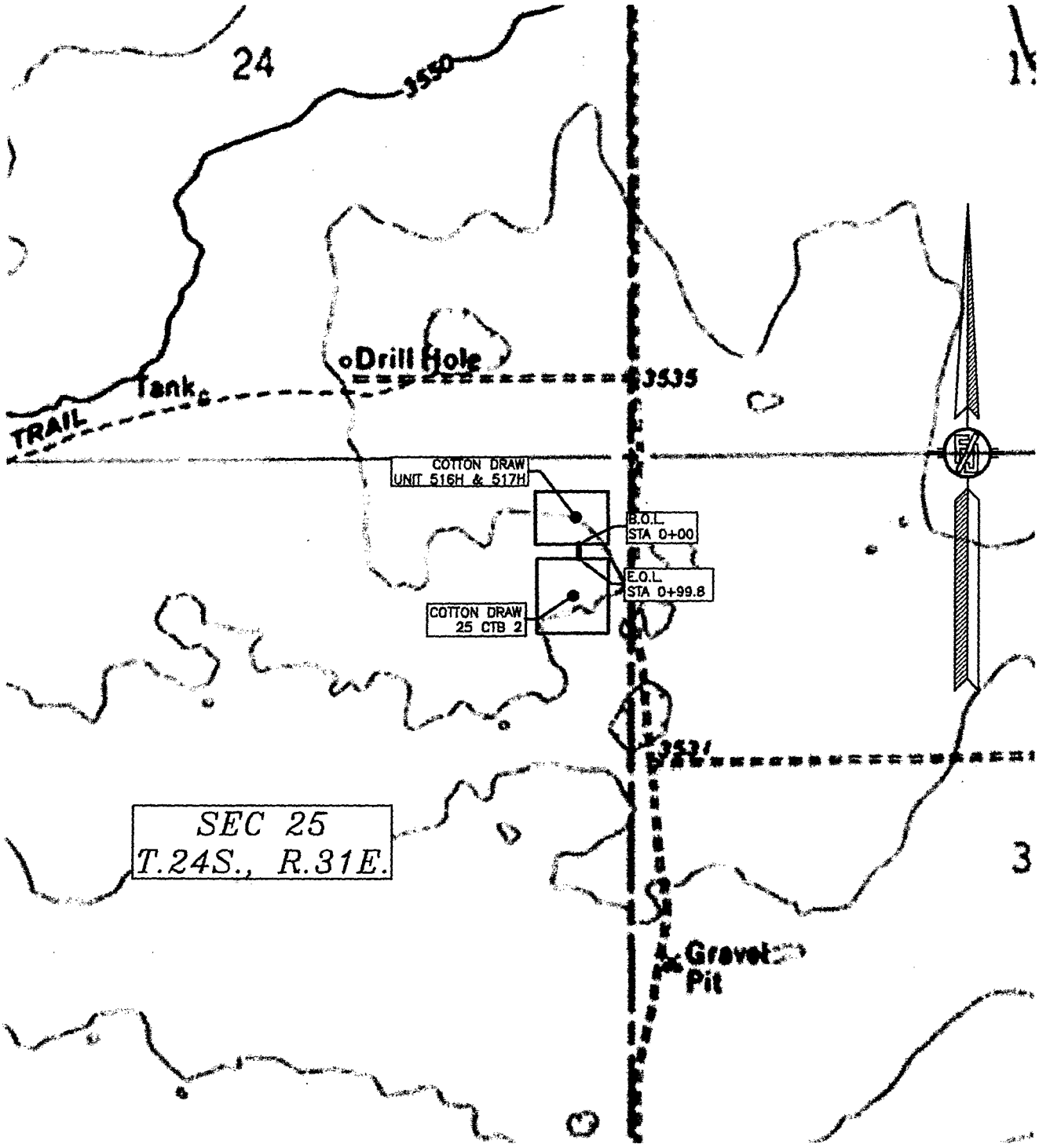
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD NEW MEXICO

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



SHEET: 3-4

SURVEY NO. 5366

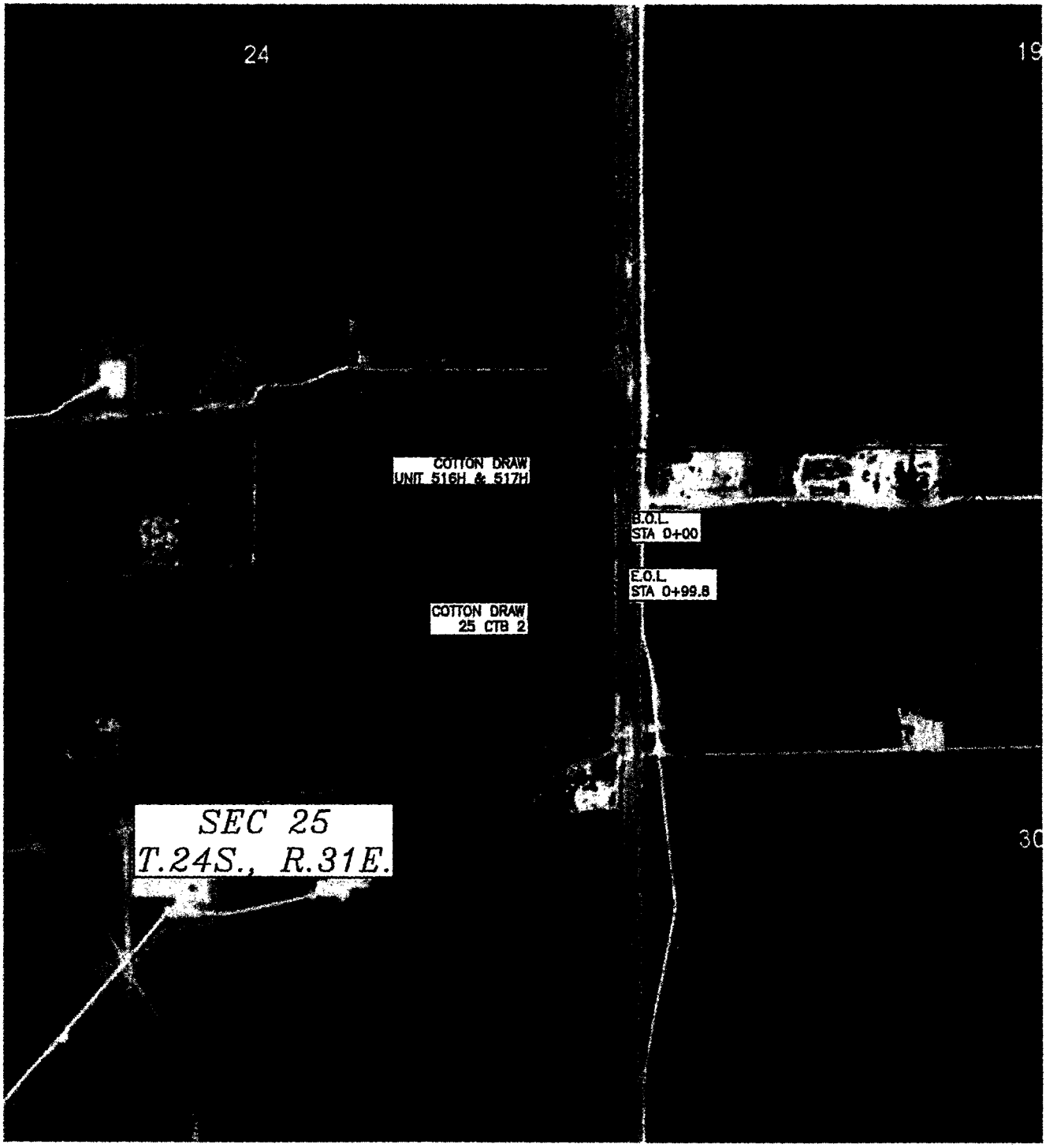
SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



SHEET: 4-4

SURVEY NO. 5366

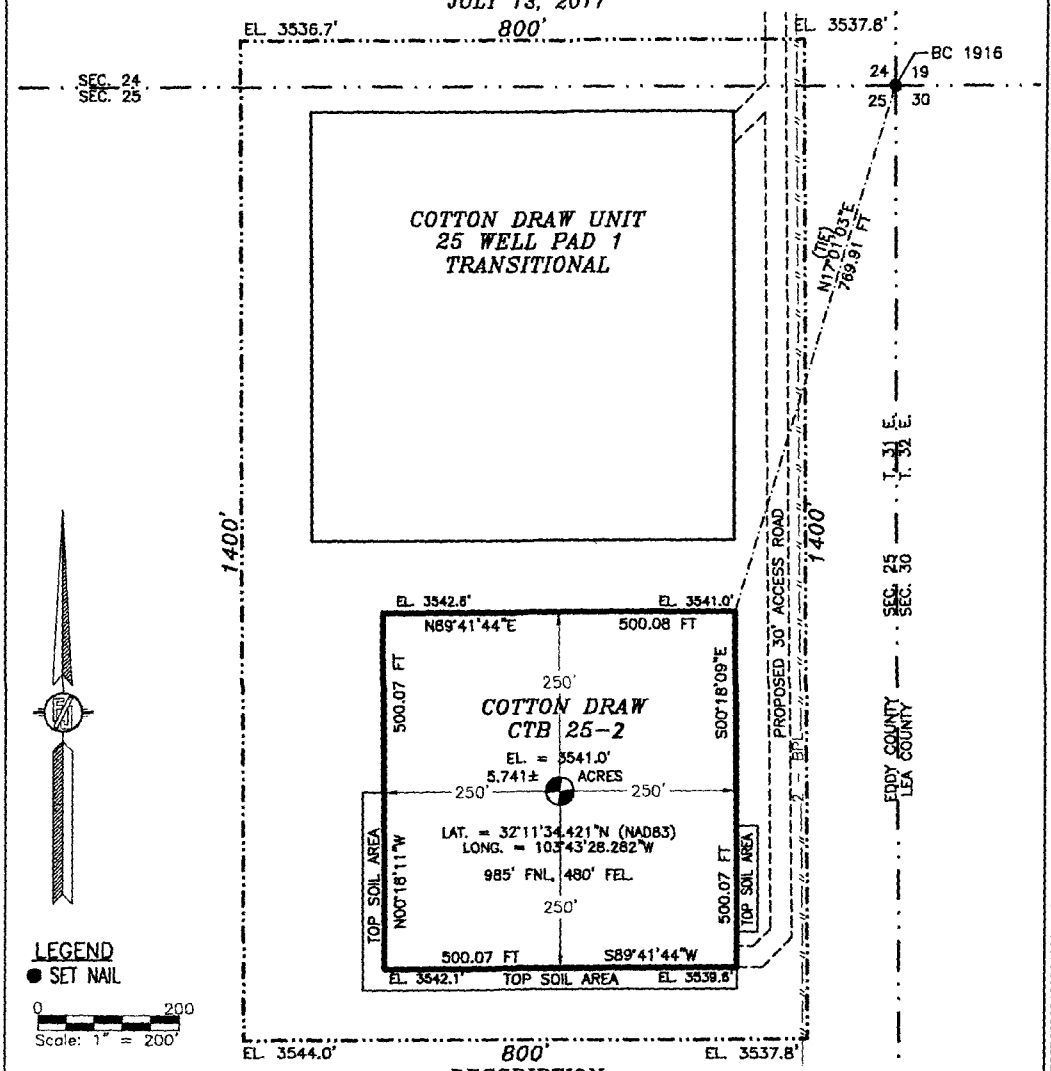
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD*

COTTON DRAW CTB 25-2

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE S/2 NE/4 NE/4 OF
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017



DESCRIPTION

A CERTAIN PIECE OR PARCEL OF LAND AND REAL ESTATE LYING IN BUREAU OF LAND MANAGEMENT LAND IN THE S/2 NE/4 NE/4 OF SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BEGINNING AT THE NORTHEAST CORNER OF THE PARCEL, WHENCE THE NORTHEAST CORNER OF SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N17°01'03"E, A DISTANCE OF 769.91 FEET;
THENCE S00°18'09"E A DISTANCE OF 500.07 FEET TO THE SOUTHEAST CORNER OF THE PARCEL;
THENCE S89°41'44"W A DISTANCE OF 500.07 FEET TO THE SOUTHWEST CORNER OF THE PARCEL;
THENCE N00°18'11"W A DISTANCE OF 500.07 FEET TO THE NORTHWEST CORNER OF THE PARCEL;
THENCE N89°41'44"E A DISTANCE OF 500.08 FEET TO THE NORTHEAST CORNER OF THE PARCEL, THE POINT OF BEGINNING;
CONTAINING 5.741 ACRES MORE OR LESS.

GENERAL NOTES

1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A CENTRAL TANK BATTERY

2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE MODIFIED TO THE SURFACE (NAD83), COORDINATES ARE NAD 83, ELEVATIONS ARE NAVD 88

DRIVING DIRECTIONS: FROM THE INTERSECTION OF STATE HWY. 128 & CR. 786 (BUCK JACKSON ROAD), GO WEST ON BUCK JACKSON RD. APPROX. 0.4 MILE TO A LEASE ROAD ON LEFT (SOUTH). TURN SOUTH GO APPROX 2.4 MILES TO A GATE ON RIGHT WEST AND ROAD LATHS WITH RED & YELLOW FLAGGING, FOLLOW ROAD LATHS WEST AND SOUTH APPROX. 0.37 MILE TO THE SOUTHEAST CORNER OF THE PAD FOR THIS LOCATION.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 27th DAY OF JULY 2017

FILIMON F. JARAMILLO
NEW MEXICO
12797
REGISTERED PROFESSIONAL SURVEYOR

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

SHEET: 1-3

SURVEY NO. 5338

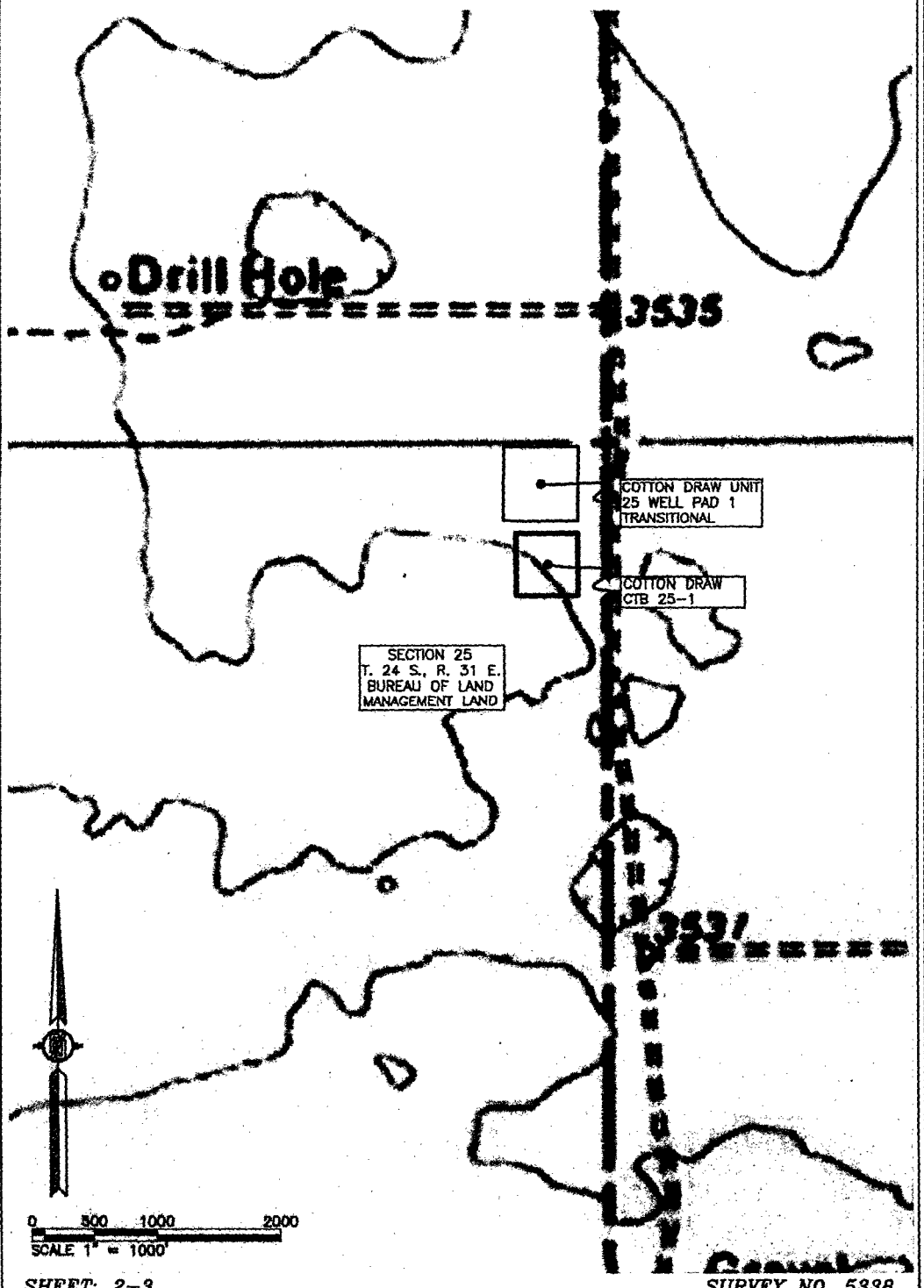
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

COTTON DRAW CTB 25-1

DEVON ENERGY PRODUCTION COMPANY, L.P.
IN THE S/2 NE/4 NE/4 OF
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017

QUAD MAP



SHEET: 2-3

SURVEY NO. 5338

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

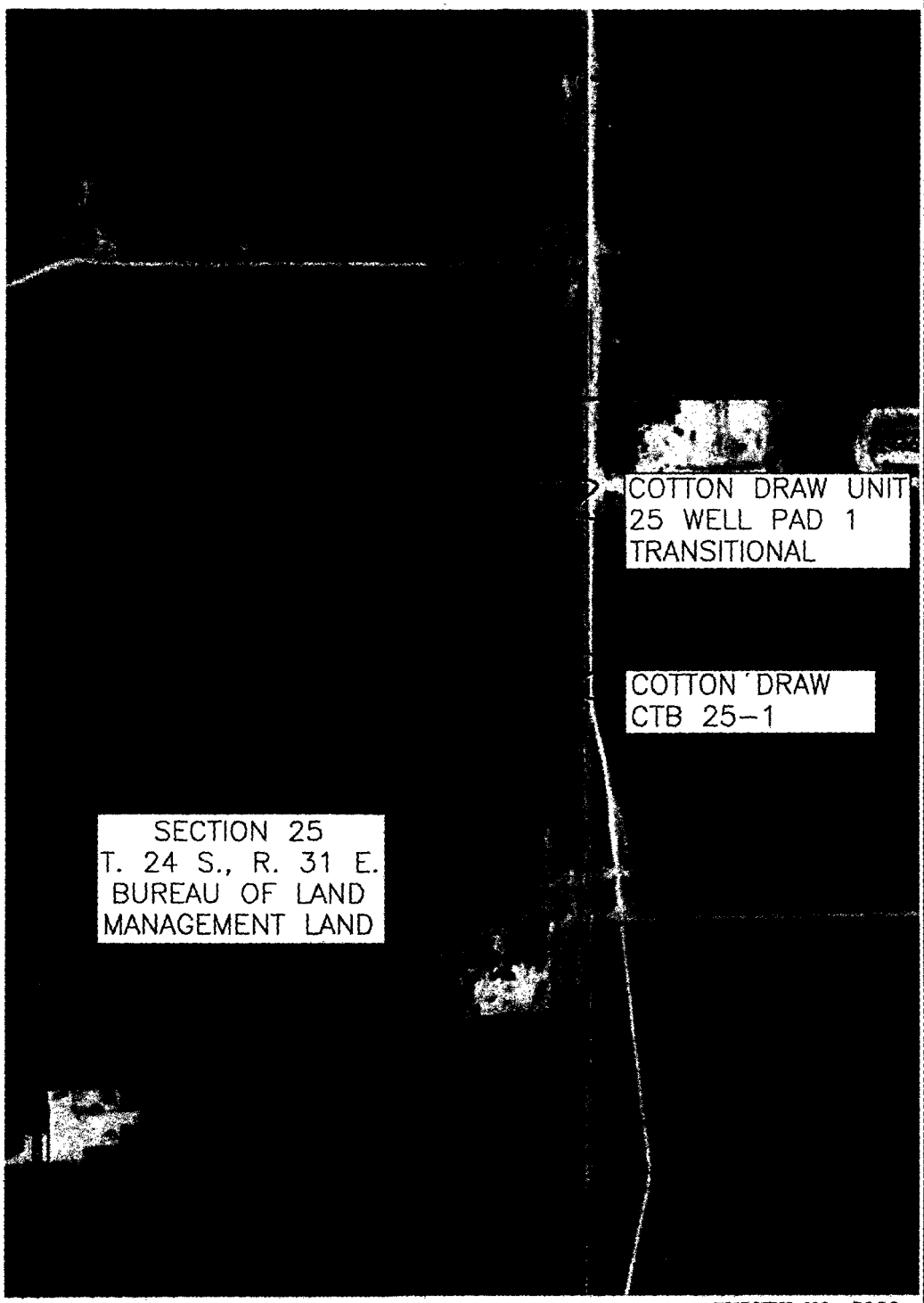
COTTON DRAW CTB 25-1

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE S/2 NE/4 NE/4 OF
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

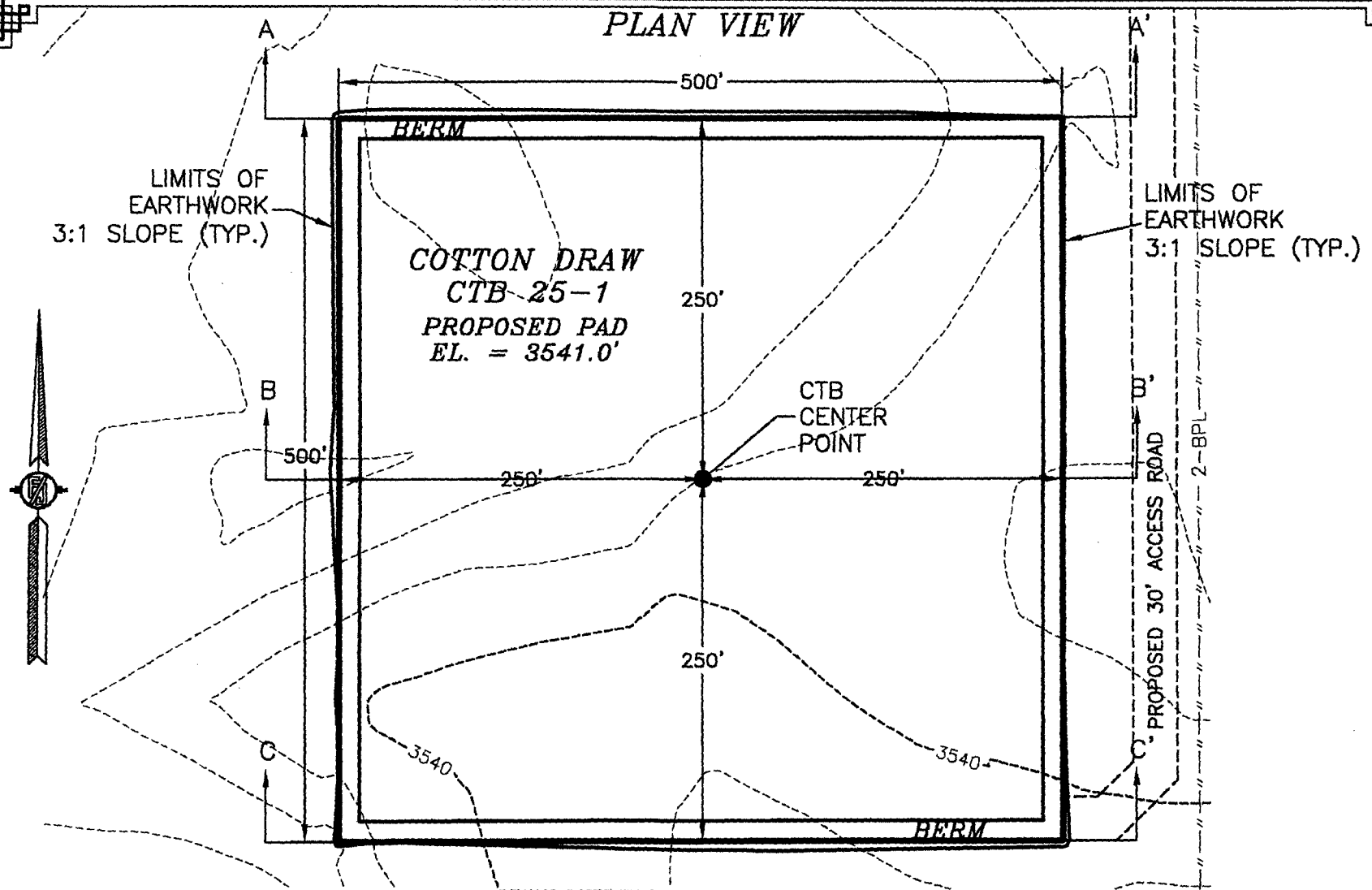
JULY 13, 2017

AERIAL PHOTO



SHEET: 3-3 SURVEY NO. 5338

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



CUT	FILL	NET
5106 CU. YD	4419 CU. YD	687 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

DEVON ENERGY PRODUCTION COMPANY, L.P.
PAD ELEVATIONS AND CROSS SECTIONS
FOR COTTON DRAW CTB 25-1
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

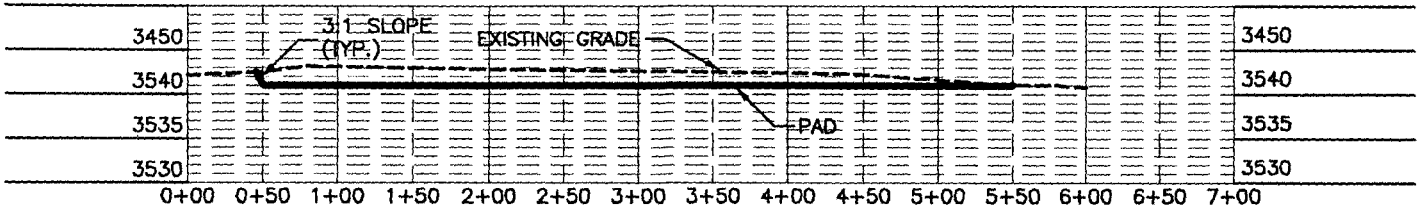
JULY 13, 2017

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

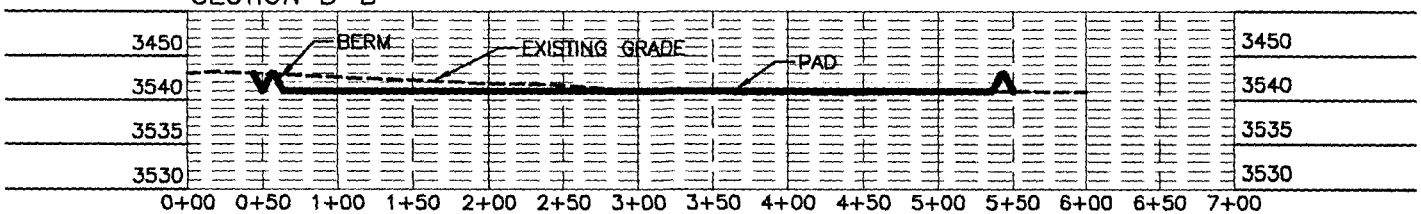
SHEET 1-2
SURVEY NO. 6338

CROSS-SECTIONS

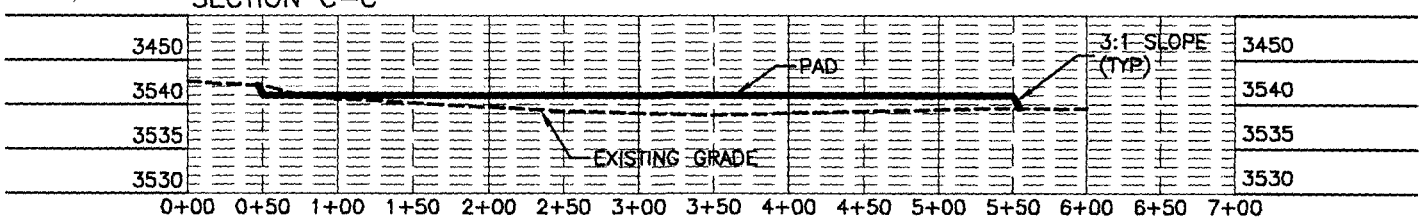
SECTION A-A'



SECTION B-B'



SECTION C-C'



012 60 120 240

SCALE 1" = 120' - 1" = 20' VER

DEVON ENERGY PRODUCTION COMPANY, L.P.
PAD ELEVATIONS AND CROSS SECTIONS
FOR COTTON DRAW CTB 25-1
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

CUT	FILL	NET
5106 CU. YD	4419 CU. YD	687 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

JULY 13, 2017

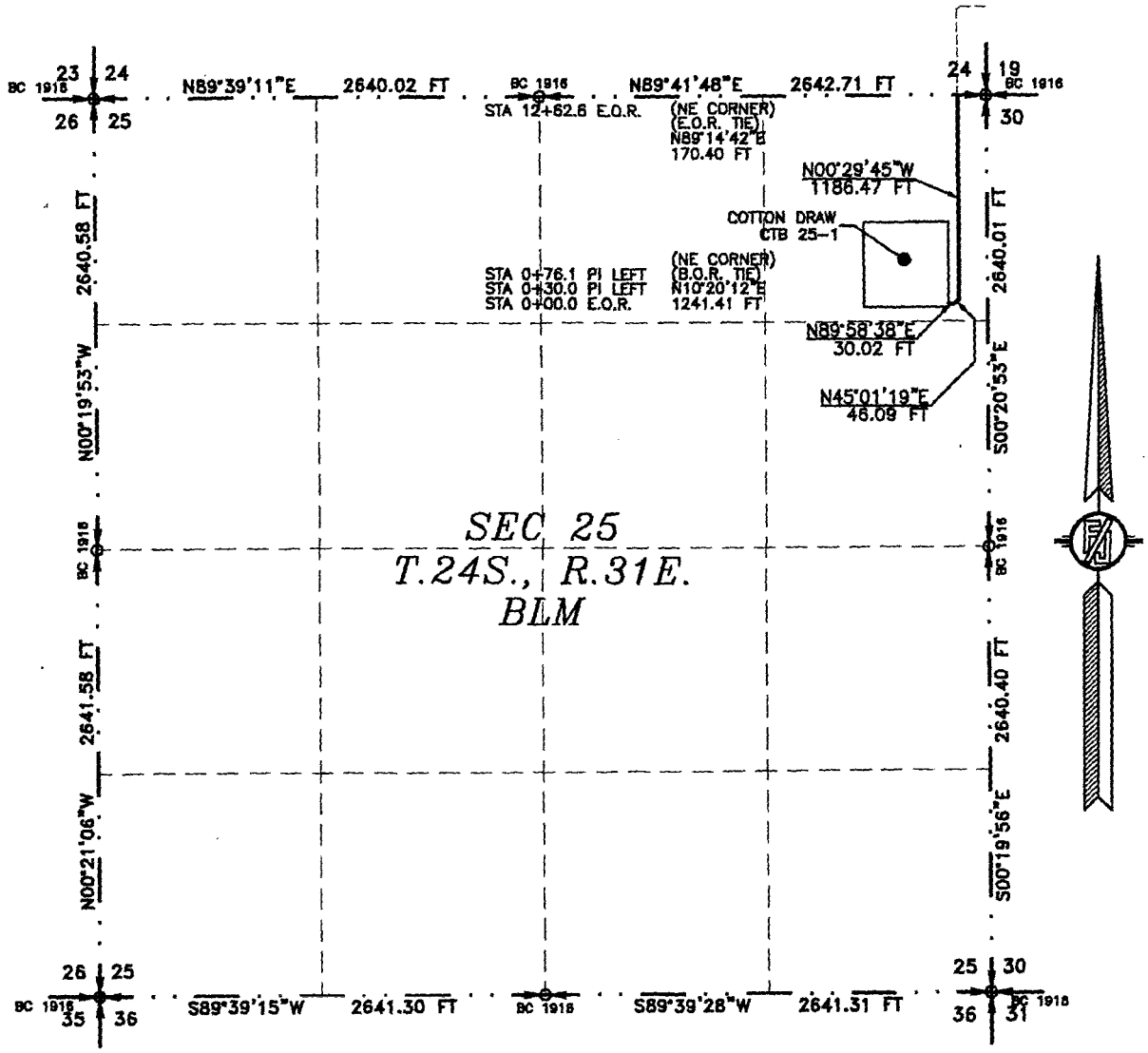
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

ACCESS ROAD PLAT

ACCESS ROAD FOR COTTON DRAW CTB 25-1

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 13, 2017



SEE NEXT SHEET (2-2) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS [illegible] DAY OF JULY 2017

FILIMON F. JARAMILLO
NEW MEXICO
12797

FILIMON F. JARAMILLO, PLS 12797

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

ACCESS ROAD PLAT

ACCESS ROAD FOR COTTON DRAW CTB 25-1

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 13, 2017

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 25, TOWNSHIP 24 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 NE/4 OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N10°20'12"E, A DISTANCE OF 1241.41 FEET;
THENCE N89°58'38"E A DISTANCE OF 30.02 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N45°01'19"E A DISTANCE OF 46.09 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N00°29'45"W A DISTANCE OF 1186.47 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N89°14'42"E, A DISTANCE OF 170.40 FEET;

SAID STRIP OF LAND BEING 1262.58 FEET OR 76.52 RODS IN LENGTH, CONTAINING 0.870 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1262.58 L.F.	76.52 RODS	0.870 ACRES

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 18 DAY OF JULY 2017.

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

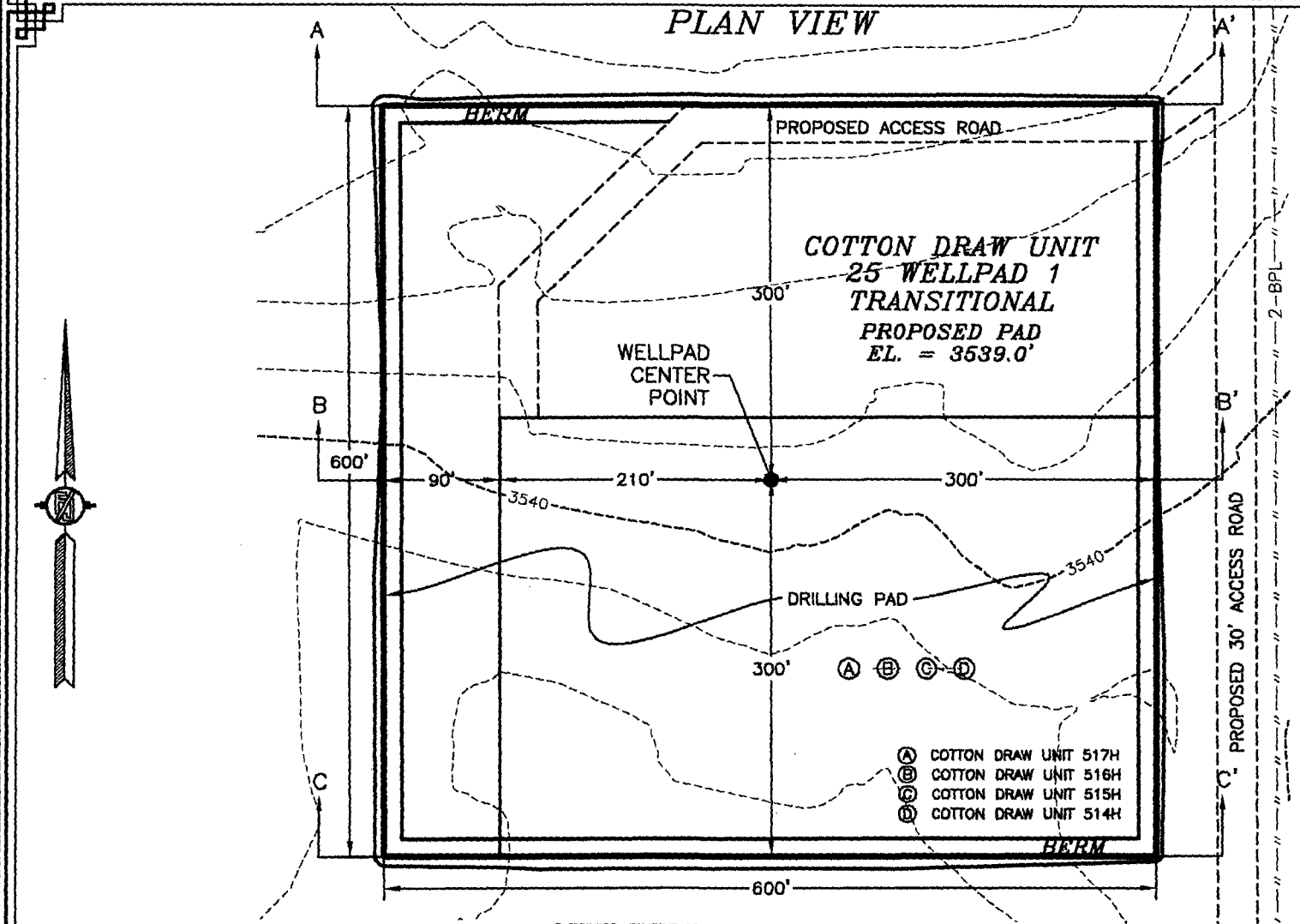
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 2-2

SURVEY NO. 5338

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

PLAN VIEW



012 60 120 240
SCALE 1" = 120'

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR COTTON DRAW UNIT 516H
SECTION 26, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

EARTHWORK QUANTITIES FOR
COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL

CUT	FILL	NET
13827 CU. YD	6937 CU. YD	6890 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

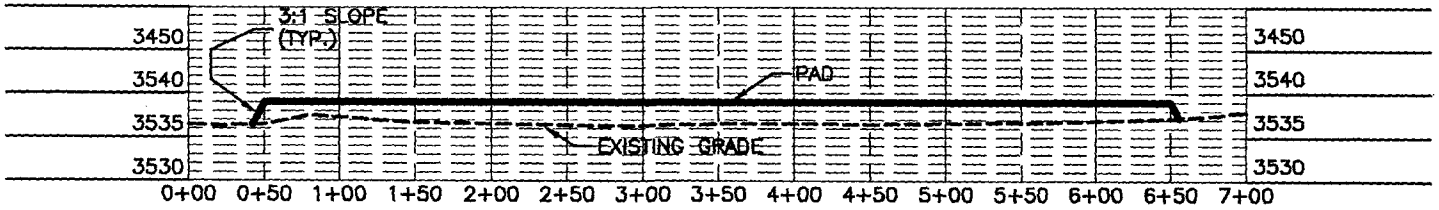
JULY 13, 2017

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

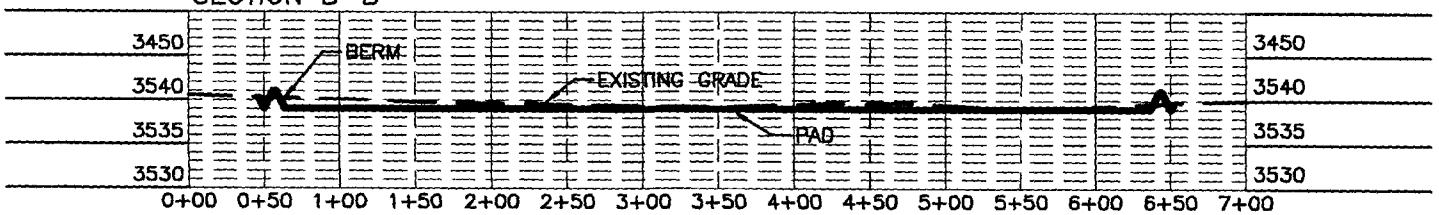
SHEET 1-2
SURVEY NO. 6334

CROSS-SECTIONS

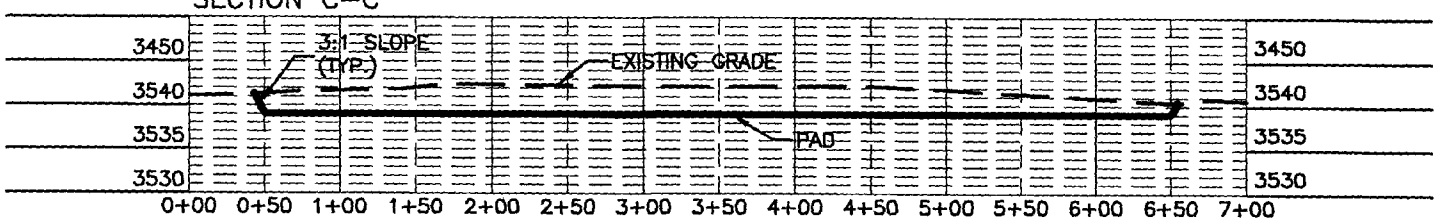
SECTION A-A'



SECTION B-B'



SECTION C-C'



012 60 120 240

SCALE 1" = 120' - 1" = 20' VER

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR COTTON DRAW UNIT 516H
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

EARTHWORK QUANTITIES FOR
COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL

CUT	FILL	NET
13827 CU. YD	6937 CU. YD	6890 CU. YD (CUT)

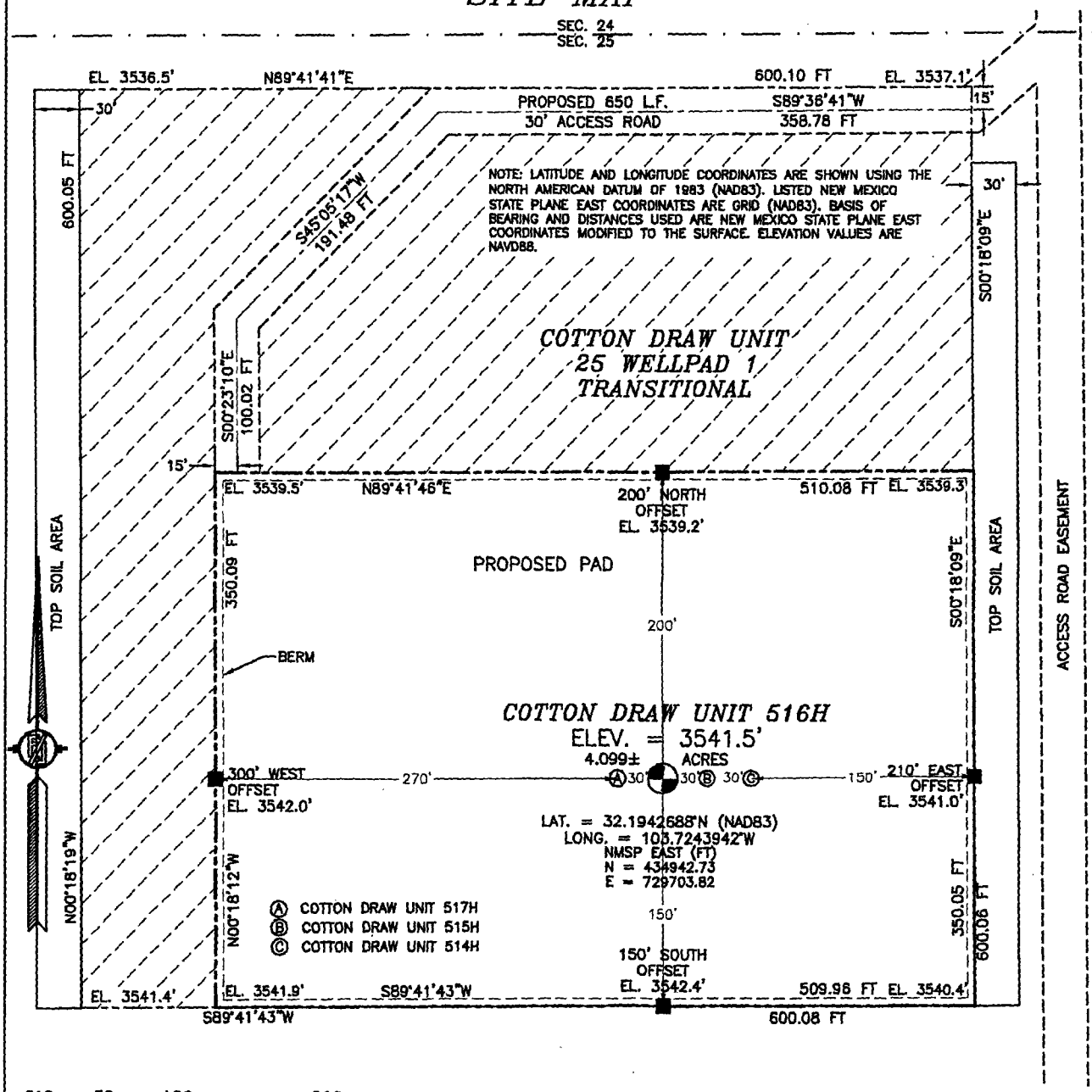
EARTHWORK QUANTITIES ARE ESTIMATED

JULY 13, 2017

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

SHEET 2-2
SURVEY NO. 6334

SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP



010 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF STATE HWY. 128 & CR. 786 (BUCK JACKSON ROAD), GO WEST ON BUCK JACKSON RD. APPROX. 0.4 MILE TO A LEASE ROAD ON LEFT (SOUTH), TURN SOUTH GO APPROX 2.4 MILES TO A GATE ON RIGHT WEST AND ROAD LATHS WITH RED & YELLOW FLAGGING, FOLLOW ROAD LATHS WEST AND SOUTH APPROX. 0.1 MILE TO THE NORTHEAST CORNER OF THE COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL, THEN FOLLOW ROAD SURVEY WEST AND SOUTH 650 FEET TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

COTTON DRAW UNIT 516H

LOCATED 485 FT. FROM THE NORTH LINE AND 440 FT. FROM THE EAST LINE OF SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

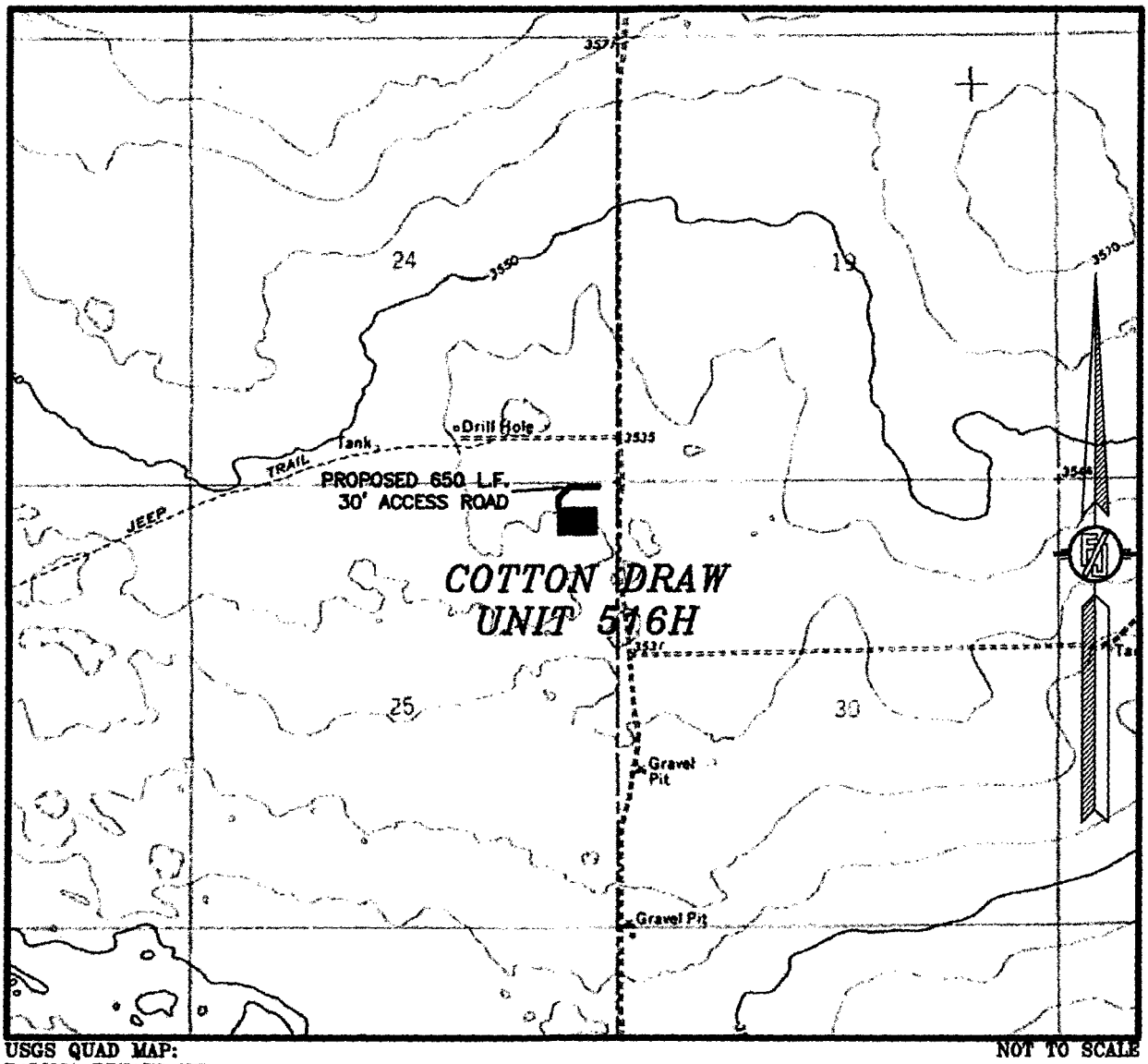
JULY 13, 2017

SURVEY NO. 6334

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

SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

LOCATION VERIFICATION MAP



USGS QUAD MAP:
PADUCA BREAKS NW

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 516H
LOCATED 485 FT. FROM THE NORTH LINE
AND 440 FT. FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

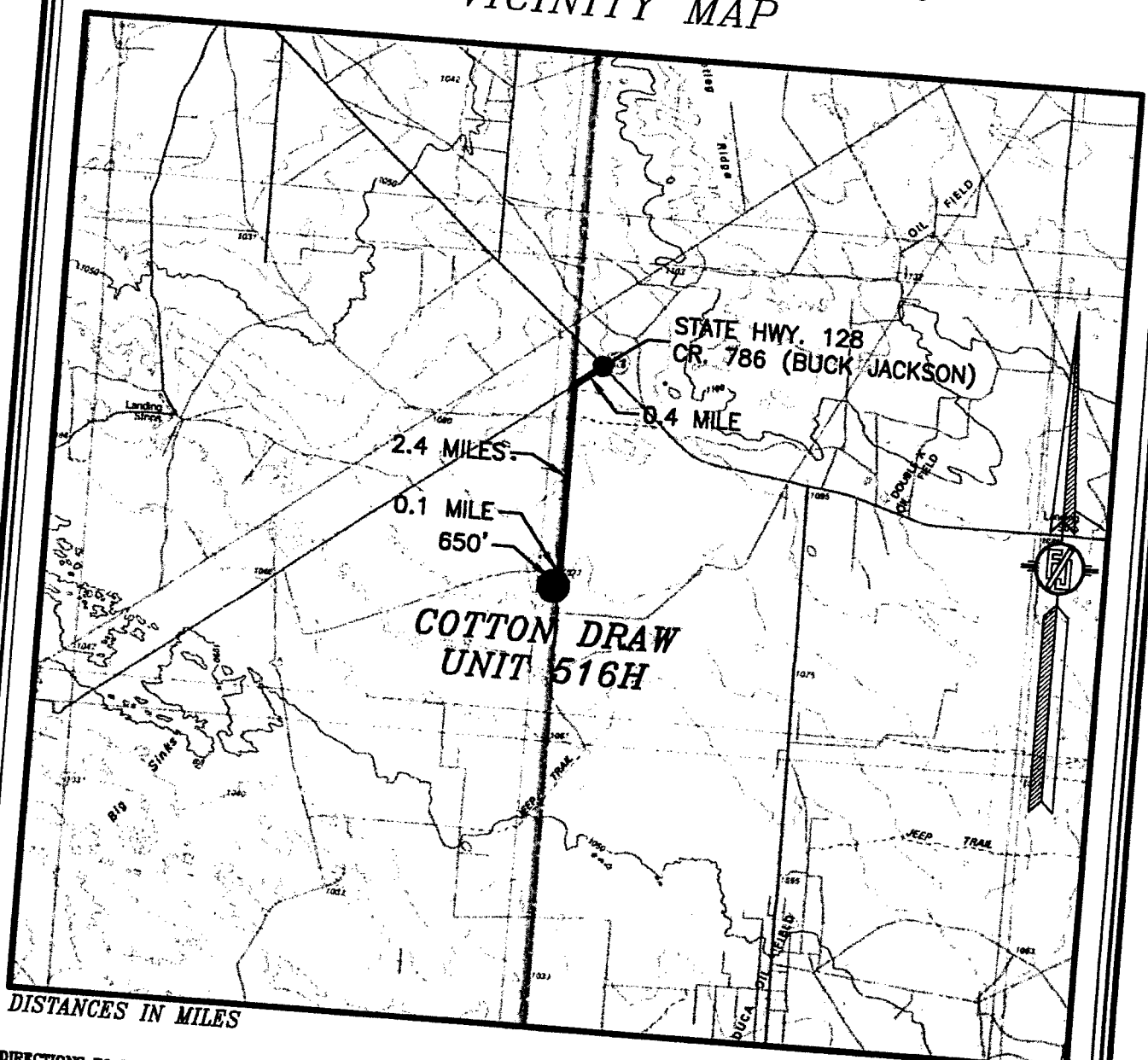
JULY 13, 2017

SURVEY NO. 5334

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

SECTION 25, TOWNSHIP 24 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 THE INTERSECTION OF STATE HWY. 128 & CR. 786 (BUCK JACKSON ROAD), GO WEST ON BUCK JACKSON RD. APPROX. 0.4 MILE TO A LEASE ROAD ON LEFT (SOUTH), TURN SOUTH GO APPROX 2.4 MILES TO A GATE ON RIGHT WEST AND ROAD LATHS WITH RED & YELLOW FLAGGING, FOLLOW ROAD LATHS WEST AND SOUTH APPROX. 0.1 MILE TO THE NORTHEAST CORNER OF THE COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL, THEN FOLLOW ROAD SURVEY WEST AND SOUTH 650 FEET TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

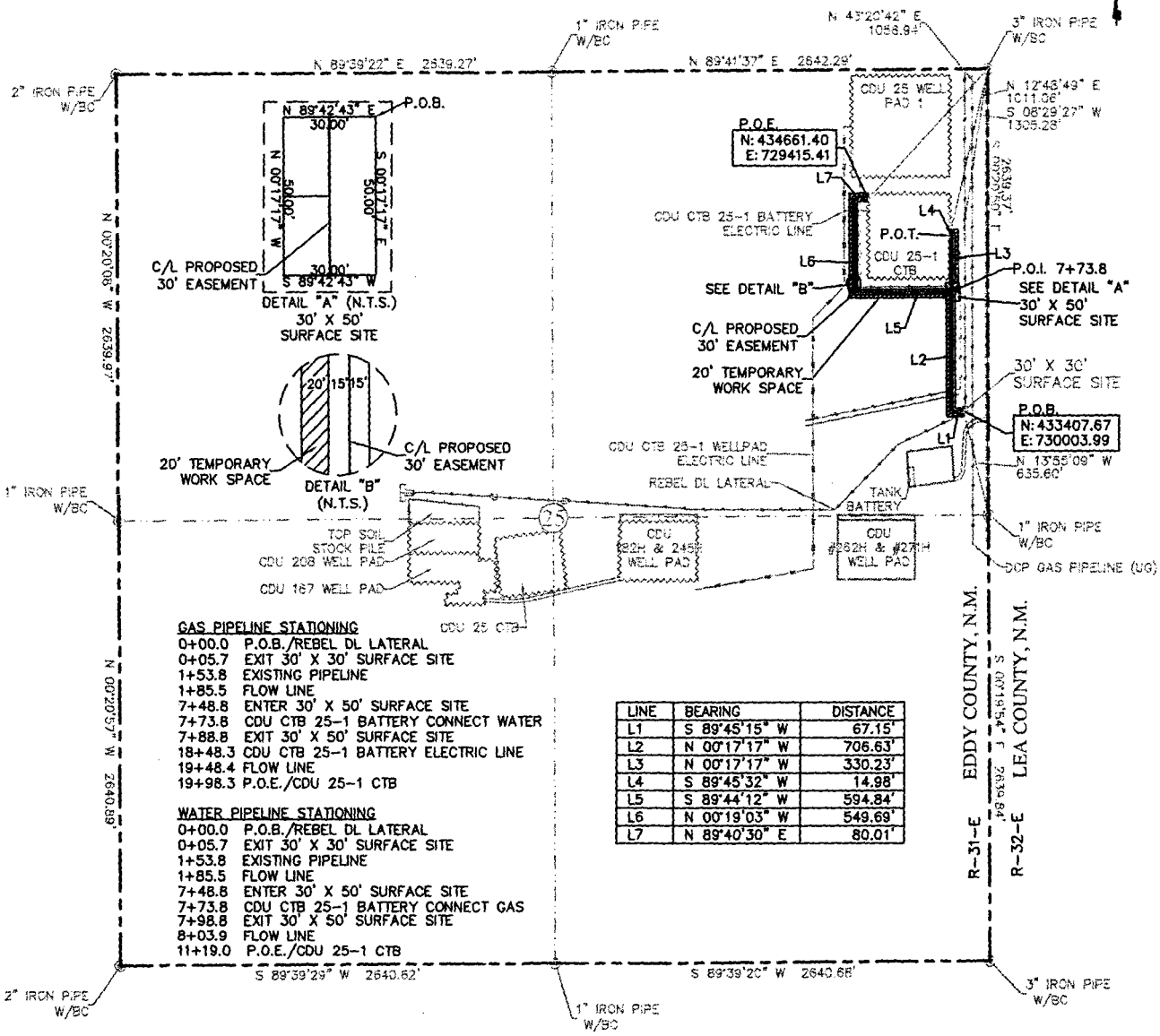
DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 516H
LOCATED 485 FT. FROM THE NORTH LINE
AND 440 FT. FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017

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

SURVEY NO. 5334

EXHIBIT "A"
PAGE 1 of 5
SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



GAS PIPELINE STATIONING
0+00.0 P.O.B./REBEL DL LATERAL
0+05.7 EXIT 30' X 30' SURFACE SITE
1+53.8 EXISTING PIPELINE
1+85.5 FLOW LINE
7+48.8 ENTER 30' X 50' SURFACE SITE
7+73.8 CDU CTB 25-1 BATTERY CONNECT WATER
7+88.8 EXIT 30' X 50' SURFACE SITE
18+48.3 CDU CTB 25-1 BATTERY ELECTRIC LINE
19+48.4 FLOW LINE
19+98.3 P.O.E./CDU 25-1 CTB

WATER PIPELINE STATIONING
0+00.0 P.O.B./REBEL DL LATERAL
0+05.7 EXIT 30' X 30' SURFACE SITE
1+53.8 EXISTING PIPELINE
1+85.5 FLOW LINE
7+48.8 ENTER 30' X 50' SURFACE SITE
7+73.8 CDU CTB 25-1 BATTERY CONNECT GAS
7+98.8 EXIT 30' X 50' SURFACE SITE
8+03.9 FLOW LINE
11+19.0 P.O.E./CDU 25-1 CTB

LINE	BEARING	DISTANCE
L1	S 89°45'15" W	67.15'
L2	N 00°17'17" W	706.63'
L3	N 00°17'17" W	330.23'
L4	S 89°45'32" W	14.98'
L5	S 89°44'12" W	594.84'
L6	N 00°19'03" W	549.69'
L7	N 89°40'30" E	80.01'

30' X 50' SURFACE SITE AREA = 0.034 ACRE(S)
30' EASEMENT AREA = 1.604 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 1.145 ACRE(S)
2343.53' FEET OR 142.03 RODS

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

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

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Signed: 08-27-2017
353 CR 526 Magnolia Springs, TX
(903) 388-3045 75956
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC Drawn for: devon	DEVON ENERGY PRODUCTION COMPANY, L.P. CDU CTB 25-1 BATTERY CONNECT GAS & WATER	LINE NUMBER: 760139X,Z WBS NUMBER: XX-124092.01 SCALE: 1" = 1000'
Drawn by: CHRIS MAAS Date: 8/17/2017	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 25, T24S-R31E, N.M.P.M.	REVISIONS: SHEET: 1 OF 5

SECTION 25, T24S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 25, Township 24 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 for the east quarter corner of Section 25, T24S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 13°55'09" W a distance of 635.60' to the **Point of Beginning** of this easement having coordinates of Northing=433407.67, Easting=730003.99 feet and continuing the following courses;

Thence S 89°45'15" W a distance of 67.15' to an angle point;

Thence N 00°17'17" W a distance of 706.63' to a point of intersection;

Thence N 00°17'17" W a distance of 330.23' to an angle point;

Thence S 89°45'32" W, a distance of 14.98' to the point of termination of this portion of said easement, from said point a 3" iron pipe w/BC found for the northeast corner of Section 25, T24S-R31E, N.M.P.M., Eddy County, New Mexico bears N 12°48'49" E a distance of 1011.06';

Thence continuing from said point of intersection the following courses;

Thence S 89°44'12" W a distance of 594.84' to an angle point;

Thence N 00°19'03" W a distance of 549.69' to an angle point;

Thence N 89°40'30" E a distance of 80.01' to the **Point of Ending** having coordinates of Northing=434661.40, Easting=729415.41 feet, from said point a 3" iron pipe w/BC for the northeast corner of Section 25, T24S-R31E bears N 43°20'42" E a distance of 1056.94', covering **2343.53' or 142.03 rods** and having an area of **1.604 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 from Sta: 0+00.0 to Sta: 19+98.3, and also 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 for the water line segment from Sta: 7+73.8 to Sta: 11+19.0, having a total combined area of **1.145 acres.**

30' X 50' SURFACE SITE EASEMENT DESCRIPTION:

Being a surface site easement thirty (30) feet in width and fifty (50) feet in length and out of the northeast quarter (NE ¼) of Section 25, Township 24 South, Range 31 East, N.M.P.M. Eddy County, New Mexico, and being more particularly described as follows;

Commencing from a 3" iron pipe for the northeast corner of Section 25, T24S-R31E, N.M.P.M., Eddy County, New Mexico;

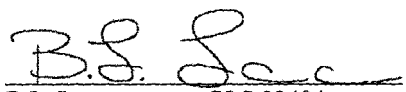
Thence S 08°29'27" W a distance of 1305.28' to the **Point of Beginning** of this surface site and continuing the following courses;

S 00°17'17" E a distance of 50.00' to a point;
S 89°42'43" W a distance of 30.00' to a point;
N 00°17'17" W a distance of 50.00' to a point;
N 89°42'43" E a distance of 30.00' to the point of beginning, having an area of **0.034 acre**.

NOTES:

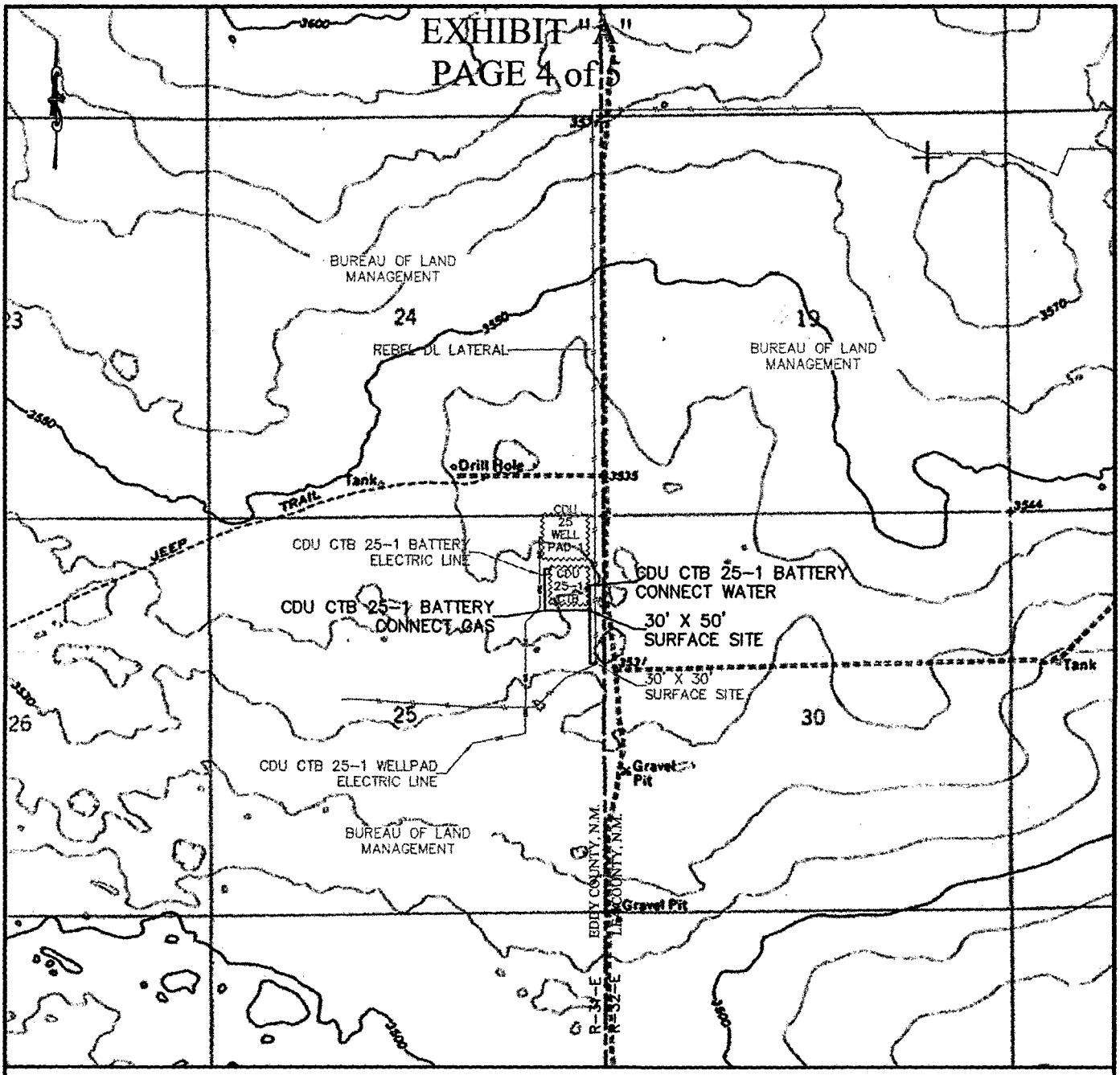
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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: 08/27/2017
Horizon Row, LLC
924 Richardson Dr., Jasper, TX
(903) 388-3045 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 4 of 5

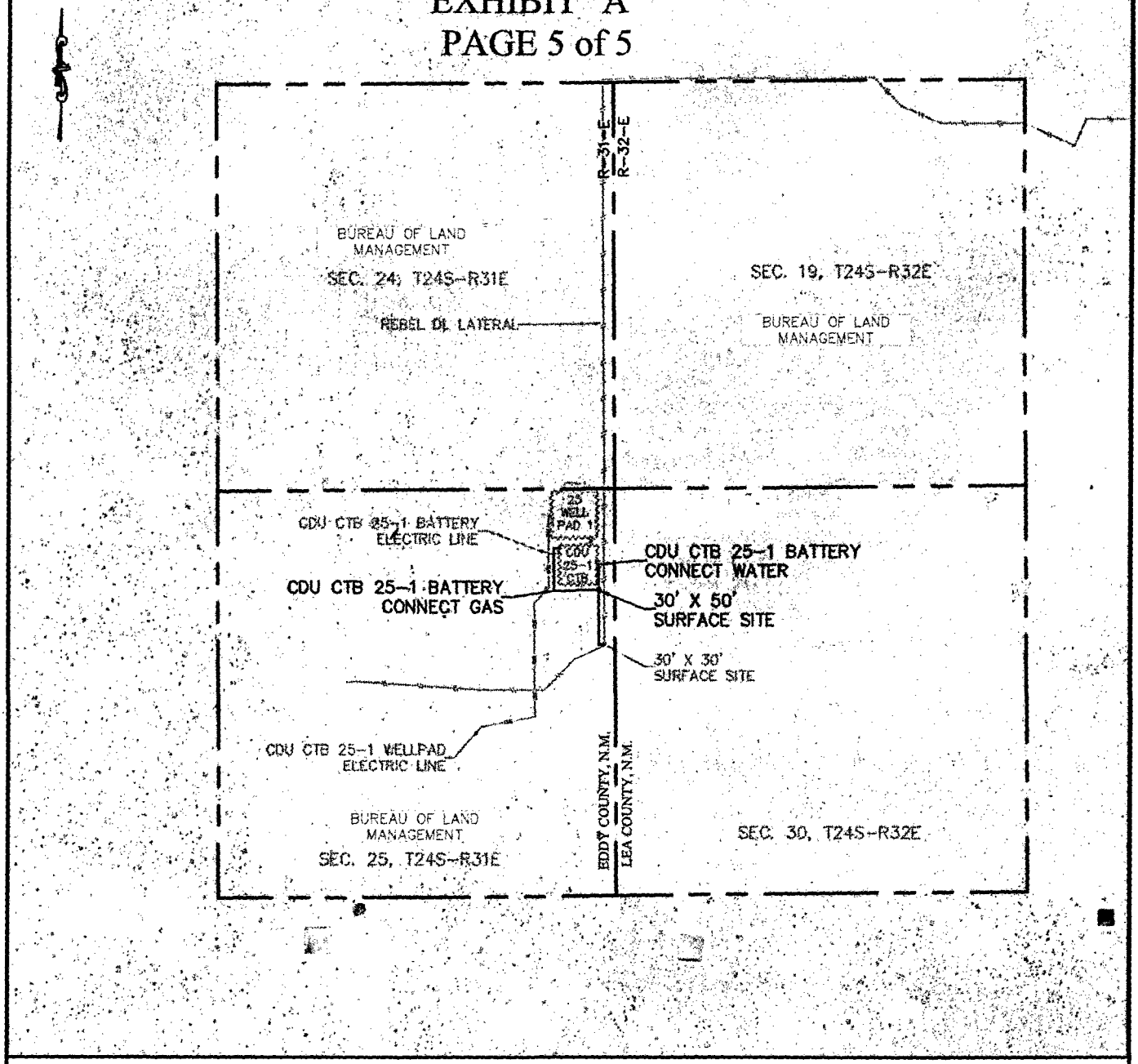


QUAD MAP

SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC		Drawn for: devon	LINE NUMBER: 760139XZ
DEVON ENERGY PRODUCTION CO., L.P.			WBS NUMBER: XX-124092.01
PROPOSED 30' EASEMENT			SCALE: 1" = 2000'
Drawn by: CHRIS MAAS	Date: 08/17/2017		REVISIONS:
			SHEET: 4 OF 5

EXHIBIT "A"
PAGE 5 of 5

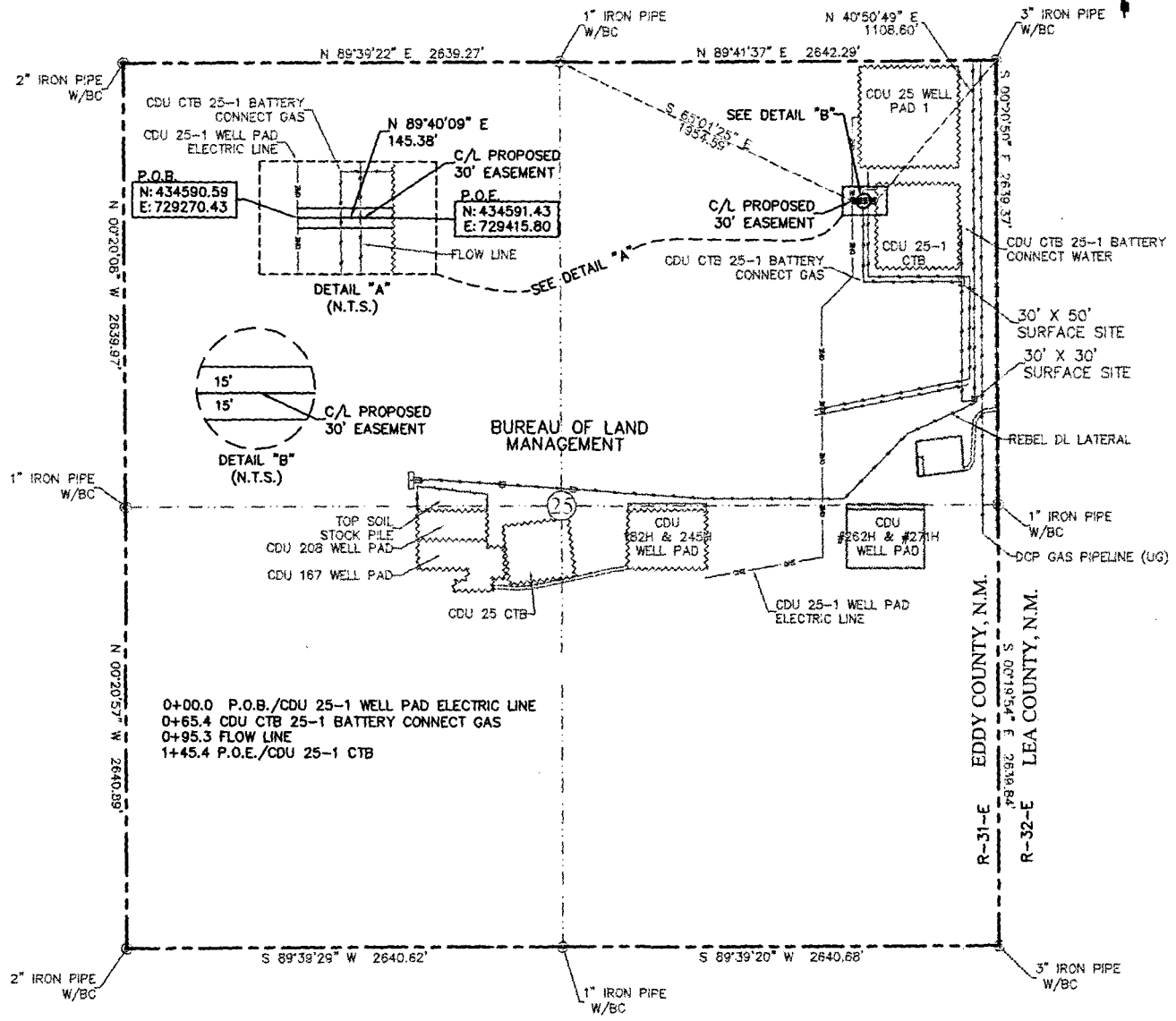


AERIAL MAP

SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC	Drawn for:	LINE NUMBER: 760139XZ
DEVON ENERGY PRODUCTION CO., L.P.	devon	WBS NUMBER: XX-124092.01
PROPOSED 30' EASEMENT		SCALE: 1" = 2000'
Drawn by: CHRIS MAAS / Date: 08/17/2017		REVISIONS:
		SHEET: 5 OF 5

EXHIBIT "A"
PAGE 1 of 4
ELECTRIC LINE PLAT
SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



0+00.0 P.O.B./CDU 25-1 WELL PAD ELECTRIC LINE
0+65.4 CDU CTB 25-1 BATTERY CONNECT GAS
0+95.3 FLOW LINE
1+45.4 P.O.E./CDU 25-1 CTB

30' EASEMENT AREA = 0.100 ACRE(S)
145.38' FEET OR 8.81 RODS

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

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

LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Signed: 08-23-2017
1224 Richardson Dr., Jasper, TX. 75951
(903) 388-3045
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC Drawn for: devon	DEVON ENERGY PRODUCTION COMPANY, L.P. CDU CTB 25-1 BATTERY ELECTRIC LINE	LINE NUMBER: EL8038 WBS NUMBER: XX-124092.01 SCALE: 1" = 1000'
Drawn by: CHRIS MAAS Date: 8/20/2017	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 25, T24S-R31E, N.M.P.M.	REVISIONS: SHEET: 1 OF 4

SECTION 25, T24S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 25, Township 24 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 for the north quarter corner of Section 25, T24S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 65°01'25" E a distance of 1954.59' to the **Point of Beginning** of this easement having coordinates of Northing=434590.59, Easting=729270.43 feet and continuing the following course;

Thence N 89°40'09" E, a distance of 145.38' to the **Point of Ending** having coordinates of Northing=434591.43, Easting=729415.80 feet, from said point a 3" iron pipe w/BC for the northeast corner of Section 25, T24S-R31E bears N 40°50'49" E a distance of 1108.60', covering **145.38' or 8.81 rods** and having an area of **0.100 acres**.

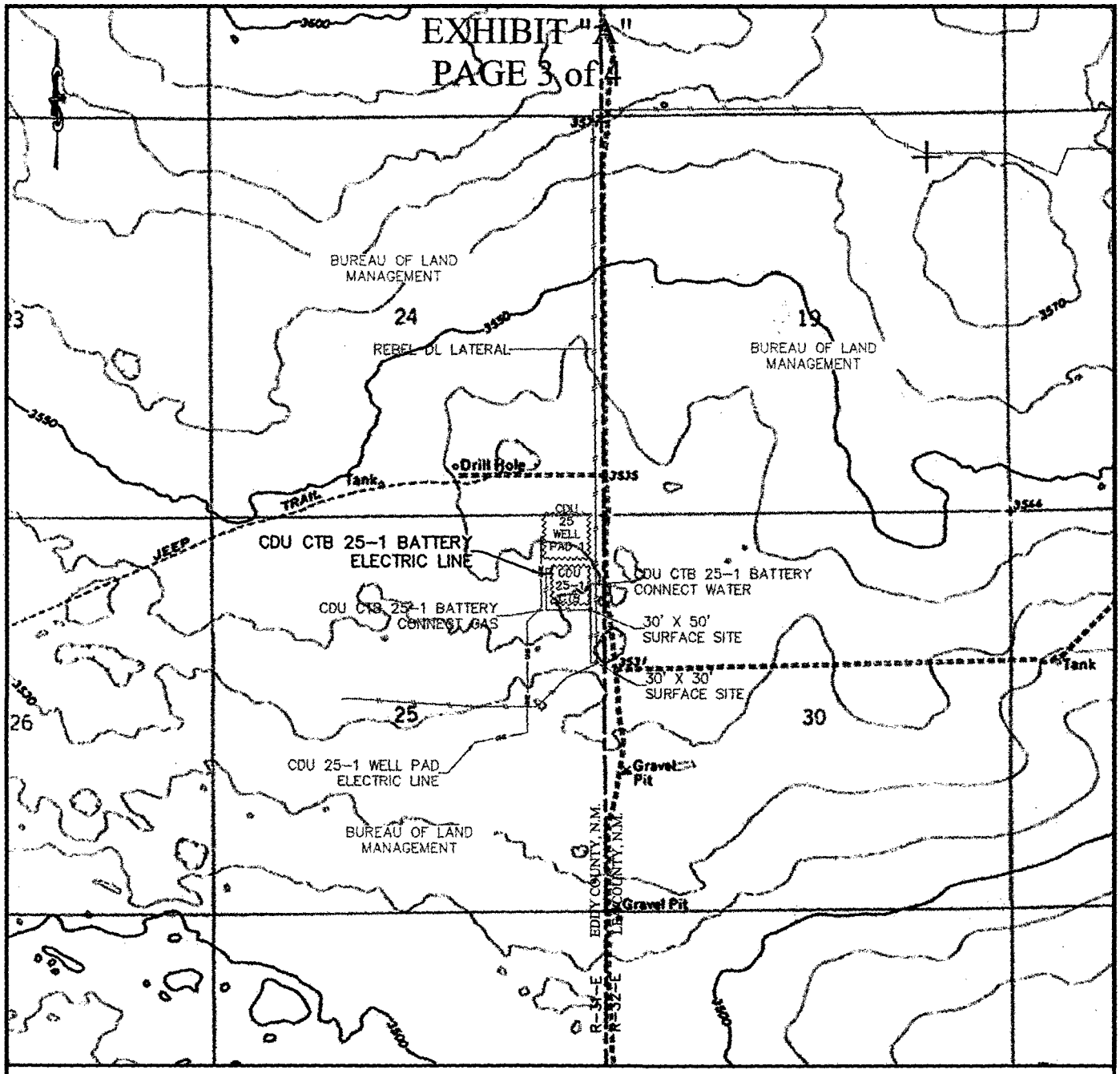
NOTES:

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: 08/23/2017
Horizon Row, LLC
924 Richardson Dr., Jasper, TX
(903) 388-3045 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 3 of 4

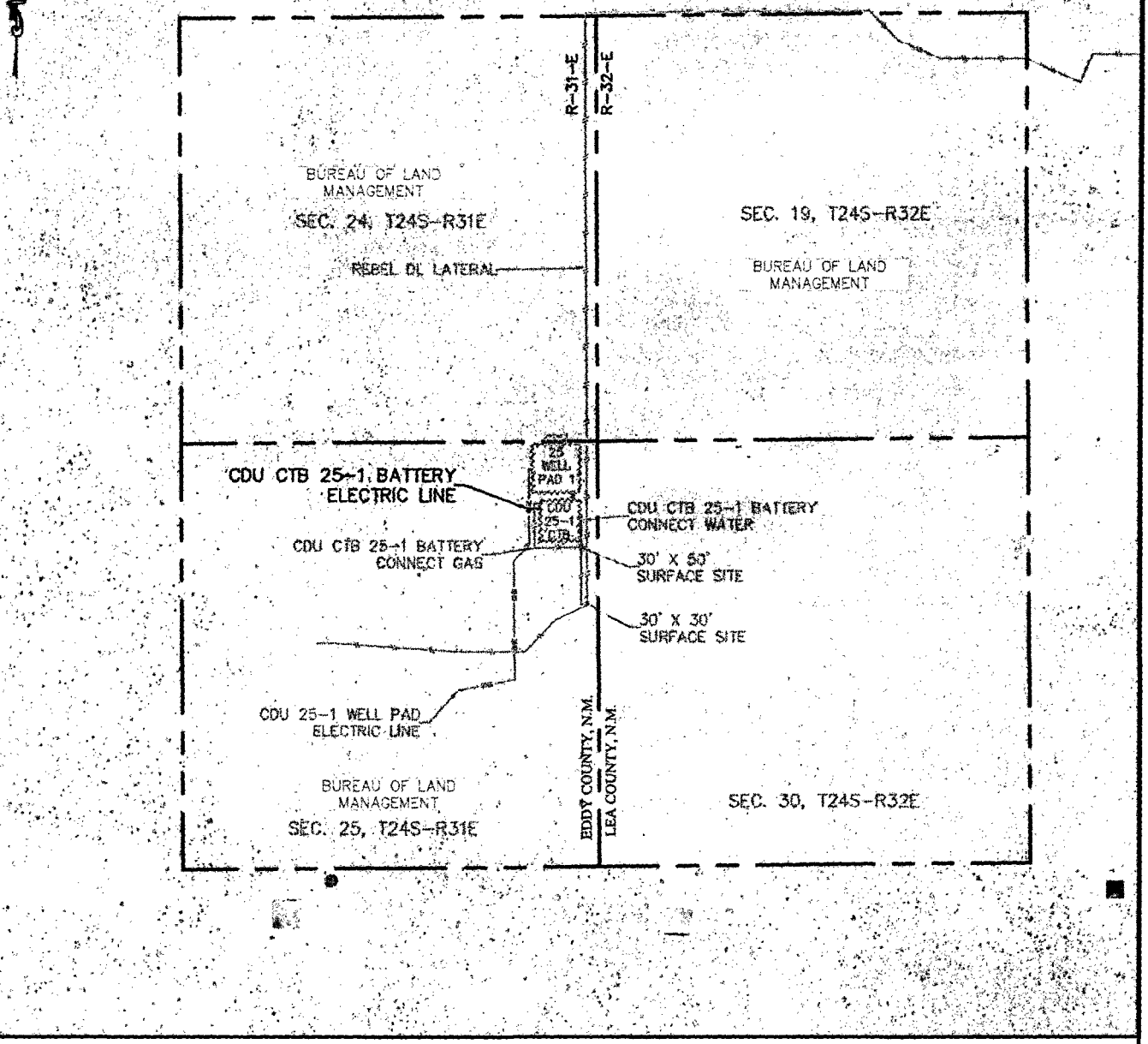


QUAD MAP

SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC		Drawn for: devon	LINE NUMBER: EL8038
DEVON ENERGY PRODUCTION CO., L.P.			WBS NUMBER: XX-124092.01
PROPOSED 30' EASEMENT			SCALE: 1" = 2000'
Drawn by: CHRIS MAAS	Date: 08/20/2017		REVISIONS:
			SHEET: 3 OF 4

EXHIBIT "A"
PAGE 4 of 4



AERIAL MAP

SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

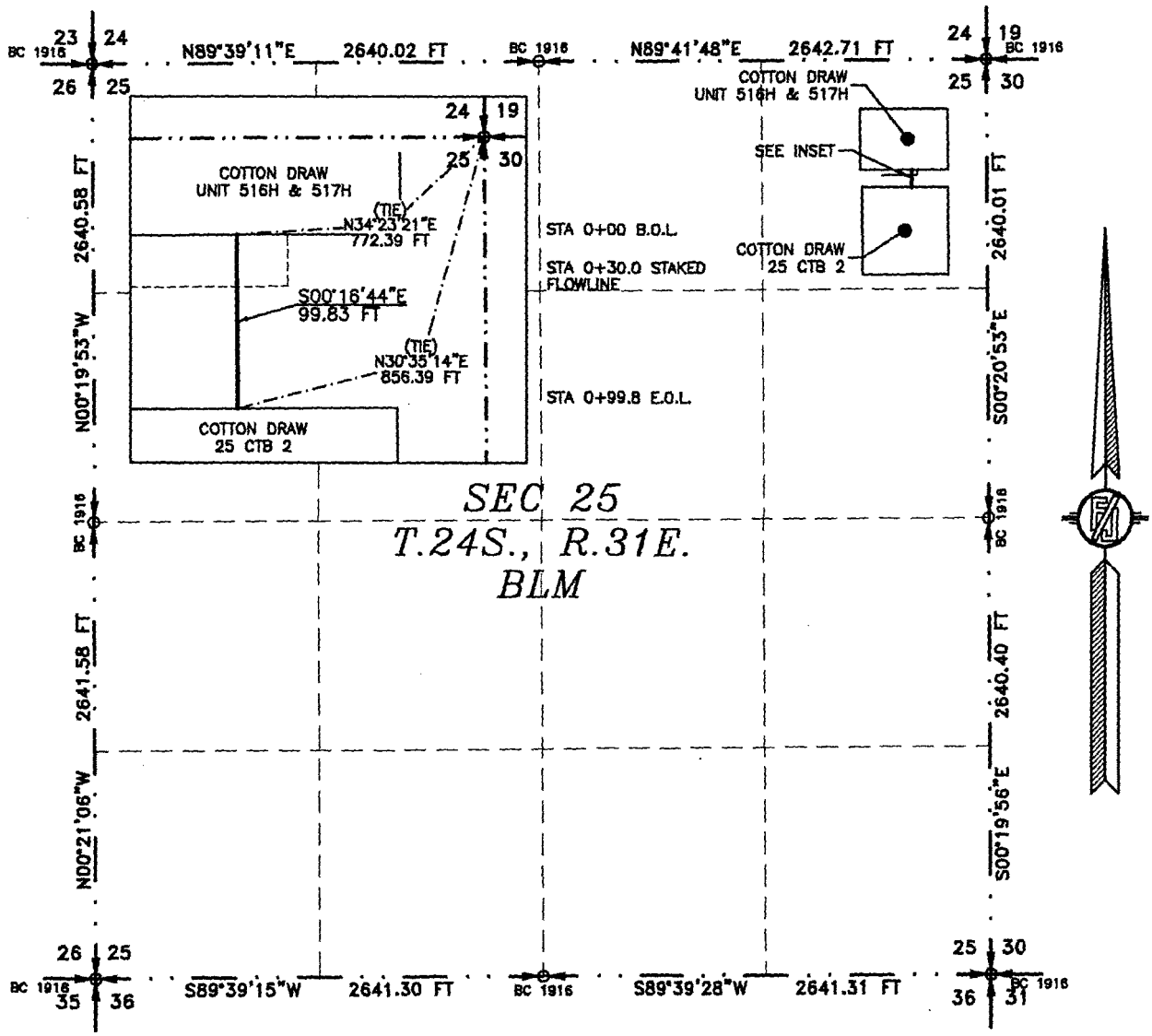
HORIZON ROW LLC		Drawn for:	LINE NUMBER: ELB038
DEVON ENERGY PRODUCTION CO., L.P.		devon	WBS NUMBER: XX-124092.01
PROPOSED 30' EASEMENT			SCALE: 1" = 2000'
Drawn by: CHRIS MAAS	Date: 08/20/2017		REVISIONS:
			SHEET: 4 OF 4

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



SEE NEXT SHEET (2-4) FOR DESCRIPTION

1000 0 1000

Scale: 1" = 1000'

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 27TH DAY OF JULY 2017

FILIMON F. JARAMILLO PLS. 12797

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

SHEET: 1-4

SURVEY NO. 5366

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 25, TOWNSHIP 24 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 NE/4 OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N34°23'21"E, A DISTANCE OF 772.39 FEET;
THENCE S00°16'44"E A DISTANCE OF 99.83 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N30°35'14"E, A DISTANCE OF 856.39 FEET;

SAID STRIP OF LAND BEING 99.83 FEET OR 6.05 RODS IN LENGTH, CONTAINING 0.069 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	99.83 L.F.	6.05 RODS	0.069 ACRES

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 21 DAY OF JULY 2017

FILIMON F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

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

FILIMON F. JARAMILLO, PLS (12797)

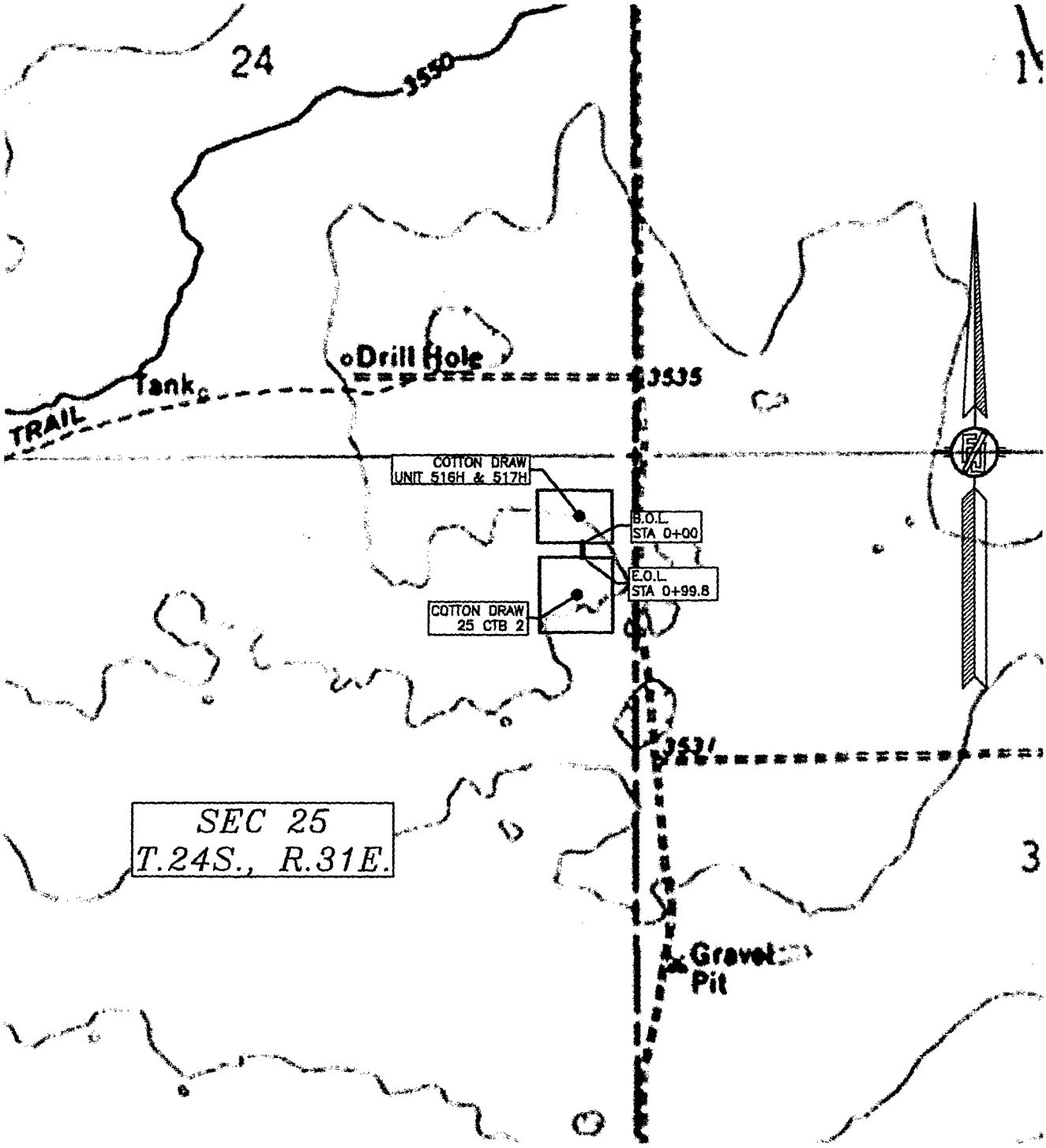
301 SOUTH CANAL
(575) 234-3341

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



SHEET: 3-4

SURVEY NO. 5366

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

FLOWLINE PLAT

TWO-4" POLY FLOWLINES AND ONE-6" POLY GAS LIFT LINE BURIED IN THE SAME DITCH FROM COTTON DRAW UNIT 516H & 517H TO COTTON DRAW 25 CTB 2

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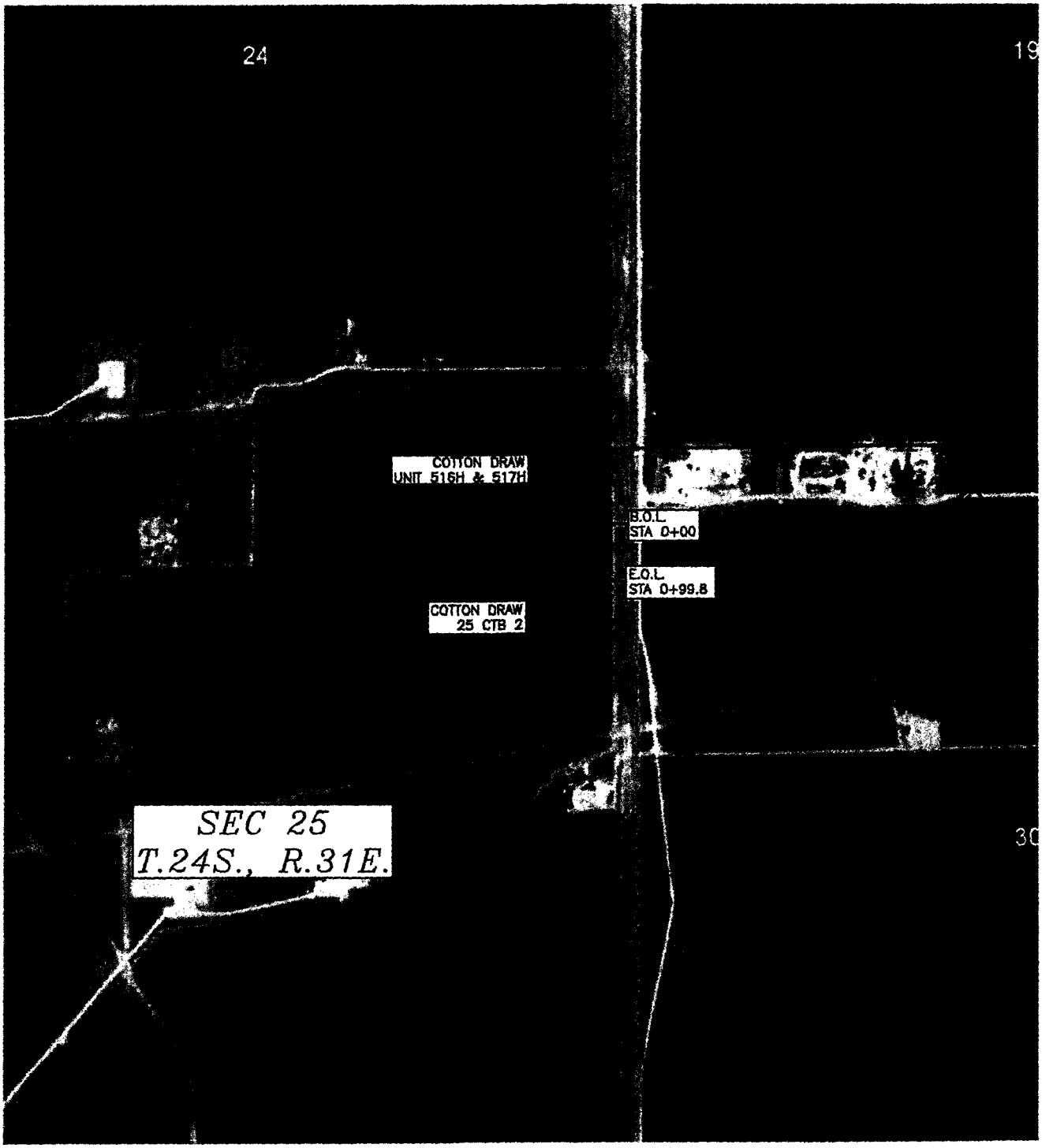

SHEET: 4-4 *SURVEY NO. 5366*

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

AFMSS

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

PWD Data Report
02/08/2018

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

02/08/2018

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: