

NATIONAL OIL CONSERVATION
ARTESIA DISTRICT

FEB 15 2018

Form 3160-3
(March 2012)

RECEIVED

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

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM89055
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY LP		7. If Unit or CA Agreement, Name and No. NMNM70928X
3a. Address 333 West Sheridan Avenue Oklahoma City OK	3b. Phone No. (include area code) (405)552-6571	8. Lease Name and Well No. COTTON DRAW UNIT 517H 300635
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface NENE / 485 FNL / 470 FEL / LAT 32.1942688 / LONG -103.7244911 At proposed prod. zone LOT 4 / 200 FSL / 330 FEL / LAT 32.1671358 / LONG -103.7240238		9. API Well No. 6137 30-015-44718
14. Distance in miles and direction from nearest town or post office*		10. Field and Pool, or Exploratory PURPLE SAGE / WOLFCAMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 200 feet	16. No. of acres in lease 160	11. Sec., T. R. M. or Blk. and Survey or Area SEC 25 / T24S / R31E / NMP
18. Distance from proposed location* to nearest well, drilling, completed, 200 feet applied for, on this lease, ft.	19. Proposed Depth 12361 feet / 22565 feet	12. County or Parish EDDY
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3541 feet	22. Approximate date work will start* 05/10/2018	13. State NM
23. Estimated duration 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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Linda Good / Ph: (405)552-6558	Date 08/29/2017
Title Regulatory Compliance Professional		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 02/08/2018
Title Supervisor Multiple Resources		

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
L 640/2mile lateral.
RUP 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.

Additional Operator Remarks

Location of Well

1. SHL: NENE / 485 FNL / 470 FEL / TWSP: 24S / RANGE: 31E / SECTION: 25 / LAT: 32.1942688 / LONG: -103.7244911 (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: 12405 feet, MD: 17450 feet)
PPP: NENE / 330 FNL / 603 FEL / TWSP: 24S / RANGE: 31E / SECTION: 25 / LAT: 32.1942688 / LONG: -103.7244911 (TVD: 12367 feet, MD: 12501 feet)
BHL: LOT 4 / 200 FSL / 330 FEL / TWSP: 24S / RANGE: 31E / SECTION: 36 / LAT: 32.1671358 / LONG: -103.7240238 (TVD: 12361 feet, MD: 22565 feet)

BLM Point of Contact

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: 5752345934

Email: pperez@blm.gov

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Review and Appeal Rights

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

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**PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Devon Energy Production Company, L.P.
LEASE NO.:	NMNM-89055
WELL NAME & NO.:	Cotton Draw Unit 517H
SURFACE HOLE FOOTAGE:	0485' FNL & 0470' 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.:	517H – COTTON DRAW UNIT
SURFACE HOLE FOOTAGE:	485'/N & 470'/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.

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

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.

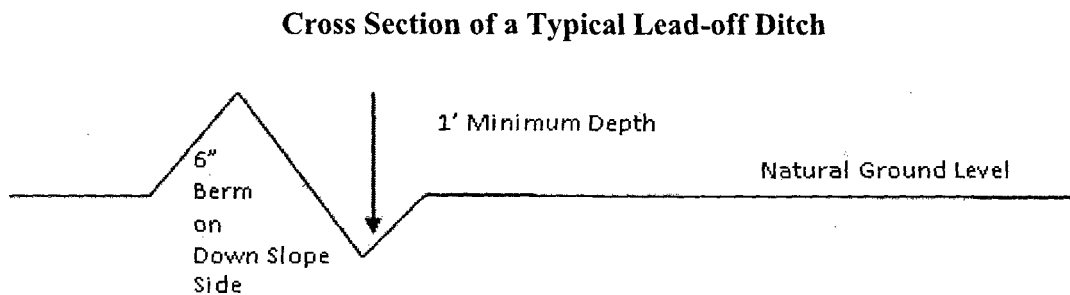
Turnouts

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 outloping and insloping, lead-off ditches, culvert installation, and low water crossings).

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



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

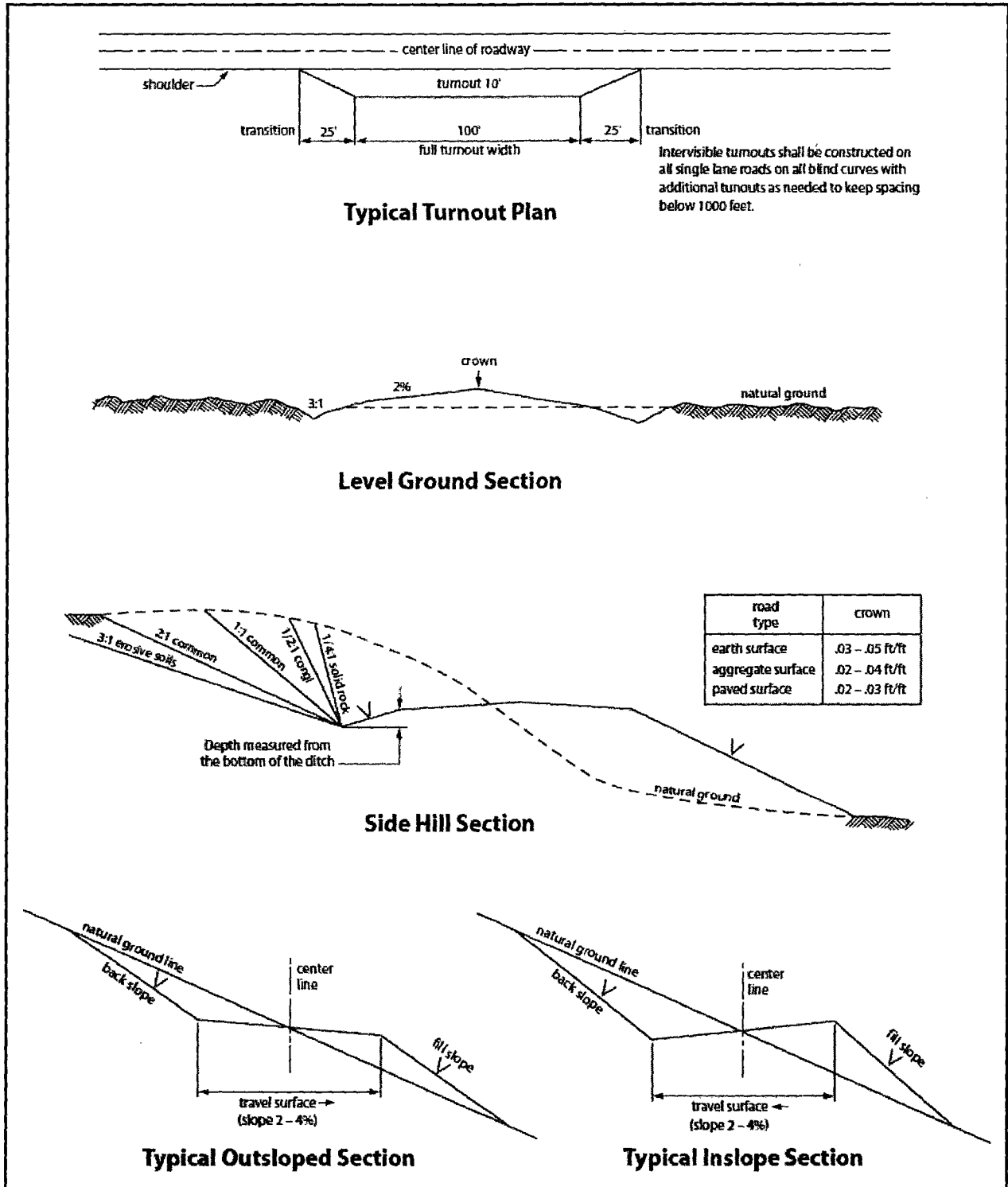


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

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

Painting Requirement

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

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 or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than 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 |
| ☒ 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.:	517H – COTTON DRAW UNIT
SURFACE HOLE FOOTAGE:	485'/N & 470'/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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
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 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

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

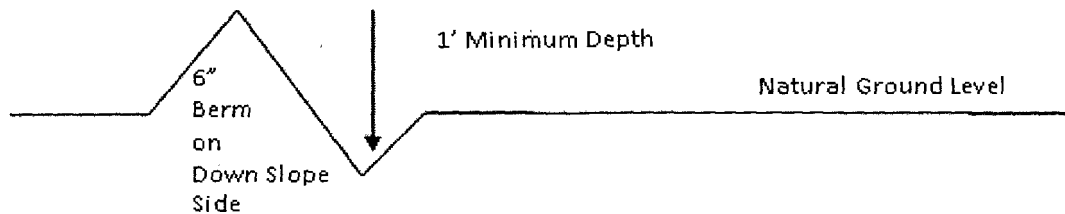
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

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:

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

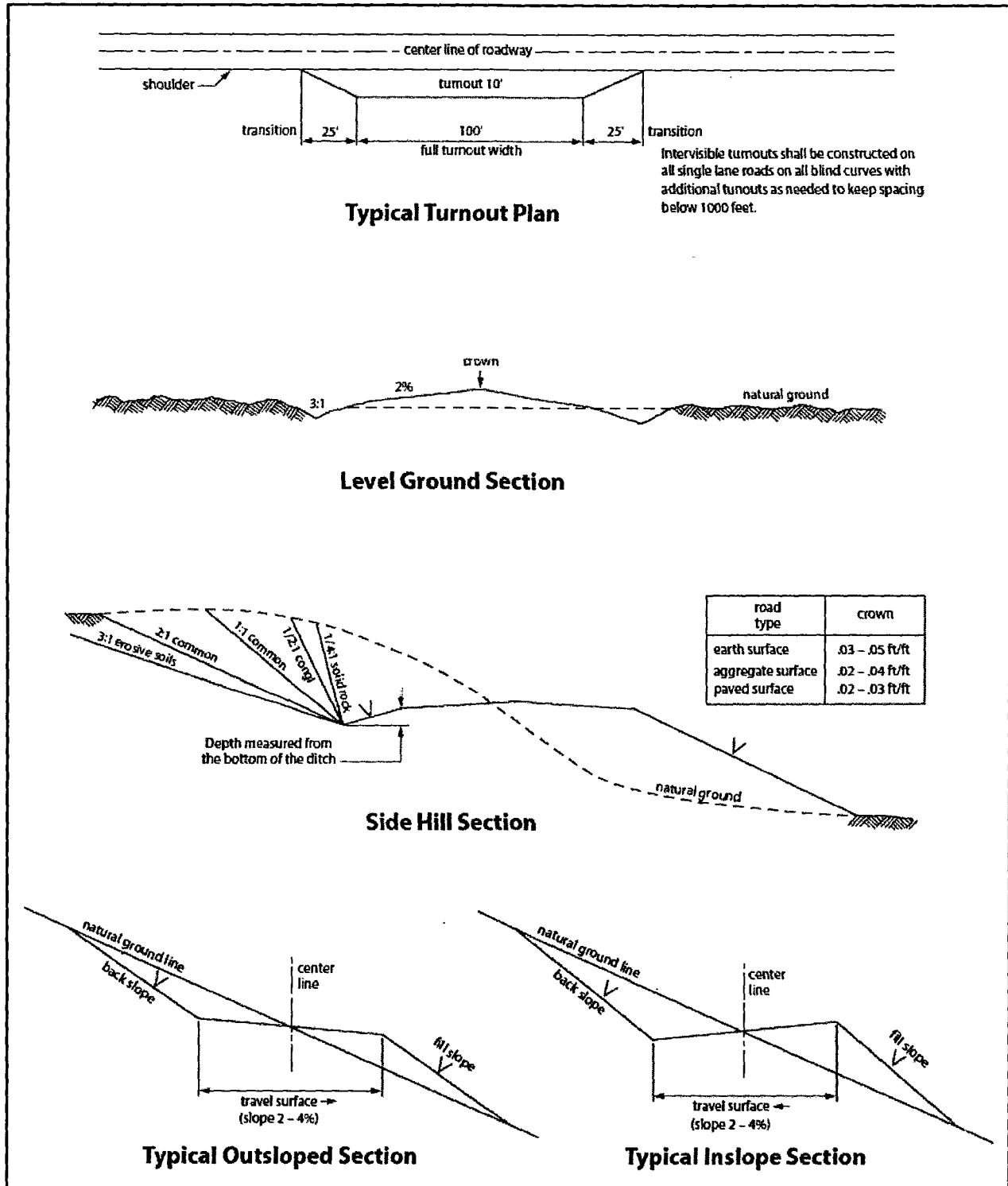


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

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

Painting Requirement

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

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 or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than 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 |
| ☒ 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



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: 08/29/2017

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



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

Application Data Report

02/08/2018

APD ID: 10400017580

Submission Date: 08/29/2017

Highlighted data
reflects the most
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400017580

Tie to previous NOS?

Submission Date: 08/29/2017

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

Master 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: 517H

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: 517H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name:

Number:

Well Class: HORIZONTAL

COTTON DRAW UNIT

514H/515H/516H/517H

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: 200 FT

Distance to lease line: 200 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: CDU_517H_C_102_signed_with_FTP_08-14-2017.pdf

Well work start Date: 05/10/2018

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 5335

	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	470	FEL	24S	31E	25	Aliquot NENE	32.19426 88	- 103.7244 911	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 89055	354 1	0	0
KOP Leg #1	50	FNL	656	FEL	24S	31E	25	Aliquot NENE	32.19426 88	- 103.7244 911	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 89055	- 833 1	119 02	118 72
PPP Leg #1	330	FNL	603	FEL	24S	31E	25	Aliquot NENE	32.19426 88	- 103.7244 911	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 89055	- 882 6	125 01	123 67



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

Drilling Plan Data Report

02/08/2018

APD ID: 10400017580

Submission Date: 08/29/2017

Highlighted data
reflects the most
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3541	0	0	ALLUVIUM	NONE	No
2	RUSTLER	2905	636	636	SALT	NONE	No
3	BASE OF SALT	-576	4117	4117	SALT	NONE	No
4	DELAWARE	-870	4411	4411	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4706	8247	8247	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 12361

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

Requesting Variance? YES

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

Testing Procedure: A multi-bowl 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_517H_5M_BOPE_Ck_20170828100117.pdf

BOP Diagram Attachment:

CDU_517H_5M_BOPE_Ck_20170828100222.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

Pressure Rating (PSI): 5M

Rating Depth: 12361

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

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Choke Diagram Attachment:

CDU_517H_5M_BOPE_Ck_20170828095934.pdf

BOP Diagram Attachment:

CDU_517H_5M_BOPE_Ck_20170828100000.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			725	J-55	40.5	STC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	8375	0	8371			8375	P-110	29.7	BUTT	1.125	1.25	BUOY	1.6	BUOY	1.6
3	INTERMEDIATE	8.75	7.625	NEW	NON API	N	8375	12600	8371	12410			4225	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	22565	0	12361			22565	P-110	20	OTHER - VAM SG	1.125	1.25	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_517H_SurfCsg_Ass_20170828100535.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_517H_Int_Csg_Ass_20170828100726.pdf

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

Inspection Document:

Spec Document:

CDU_517H_Flushmax_20170828101006.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_517H_Int_Csg_Ass_20170828101050.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

CDU_517H_VAMSG_20170828101203.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

CDU_517H_ProdCasing_Ass_20170828101247.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	854	3.27	9	2795	30	Tuned	Tuned Light
--------------	------	--	------	------	-----	------	---	------	----	-------	-------------

INTERMEDIATE	Lead		0	1160 0	854	3.27	9	2795	30	Tuned	Tuned Light
INTERMEDIATE	Tail		1160 0	1260 0	108	1.2	14.5	132	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		1210 0	2256 5	988	1.33	14.8	1315	25	C	0.125 lbs/sack Poly-E- Flake

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

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	8.33	9.1							
725	1260 0	OTHER : OIL BASED MUD/CUT BRINE	8.6	10							
1260 0	2256 5	OIL-BASED MUD	8.6	10							

Section 6 - Test, Logging, Coring

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

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

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

CBL,DS,MUDLOG

Coring operation description for the well:

N/A

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 7070

Anticipated Surface Pressure: 4340.89

Anticipated Bottom Hole Temperature(F): 165

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

CDU_517H_H2S_Plan_20170828102821.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

CDU_517H_Dir_Plan_20170828102946.pdf

CDU_517H_Dir_Plan_v1_20170828103006.pdf

CDU_517H_Anticollison_20170828103024.pdf

Other proposed operations facets description:

Drilling Plan

Multi-Bowl Wellhead & Verbiage

Closed Loop Design

Other proposed operations facets attachment:

CDU_517H_Drilling_Plan_20170828103203.pdf

CDU_517H_MB_Verb_20170828103224.pdf

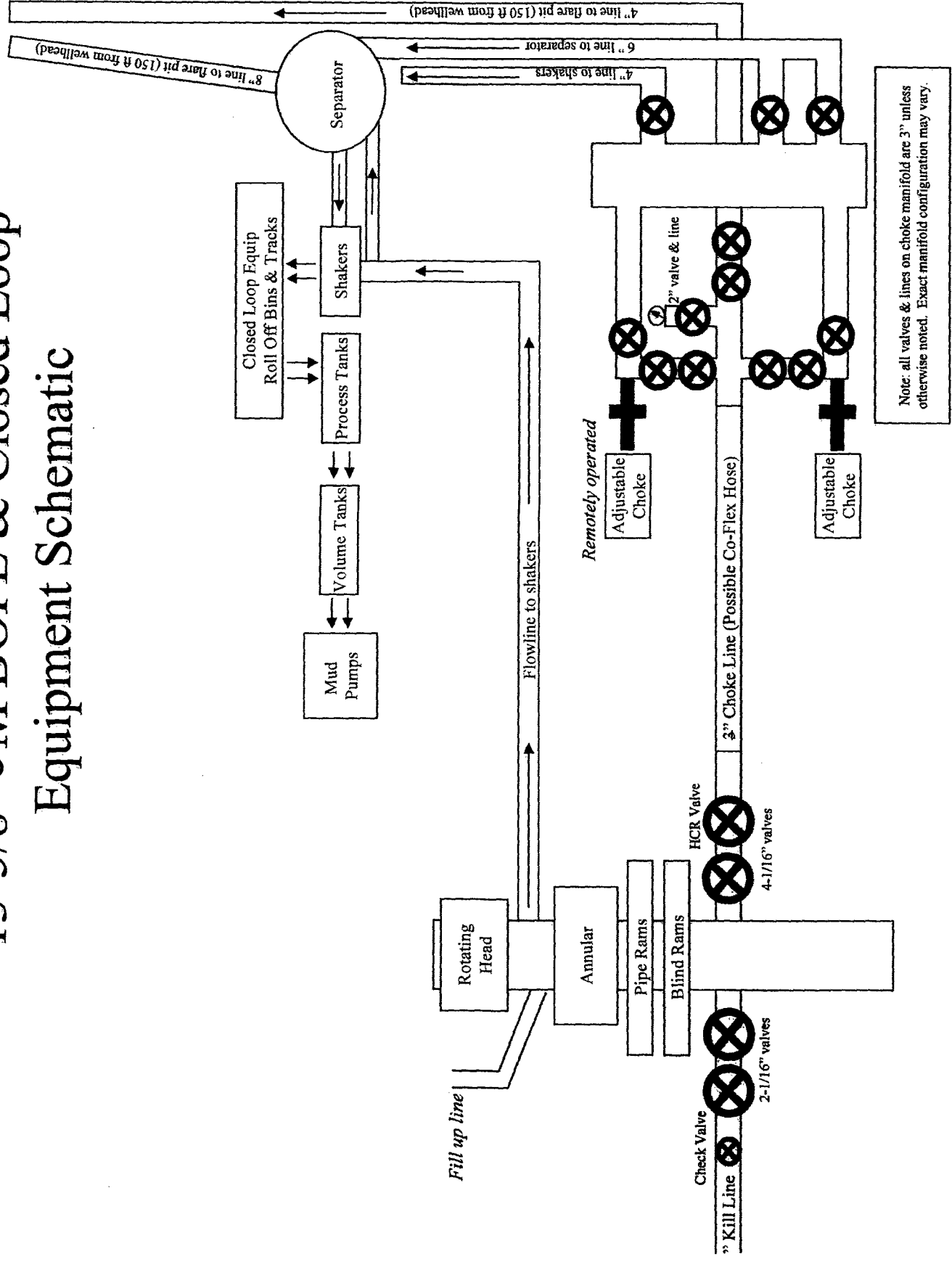
CDU_517H_MB_WellHd_20170828103225.pdf

CDU_517H_Clsd_Loop_20170828103238.pdf

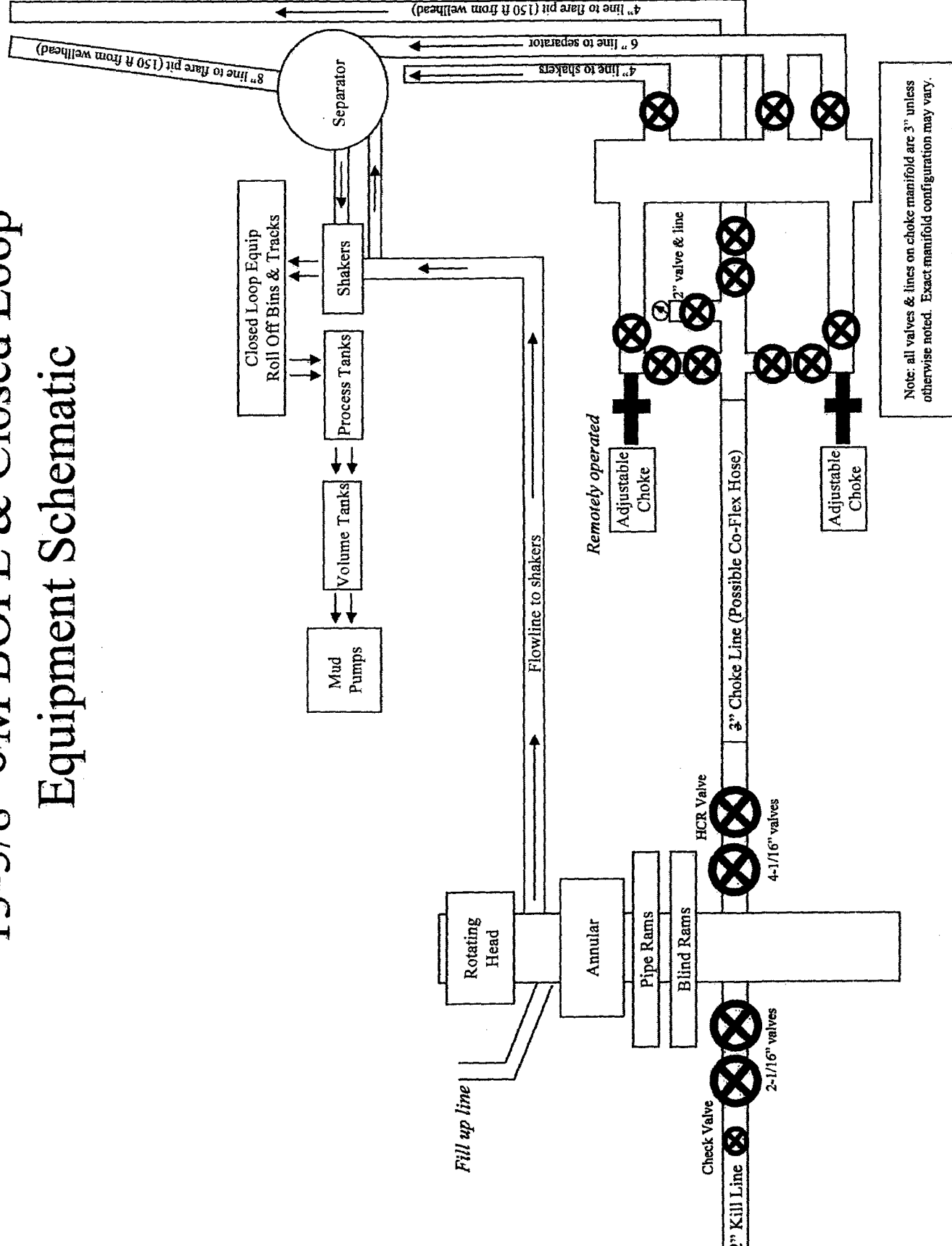
Other Variance attachment:

CDU_517H_Co_flex_20170828103253.pdf

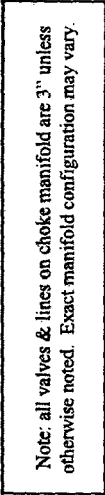
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



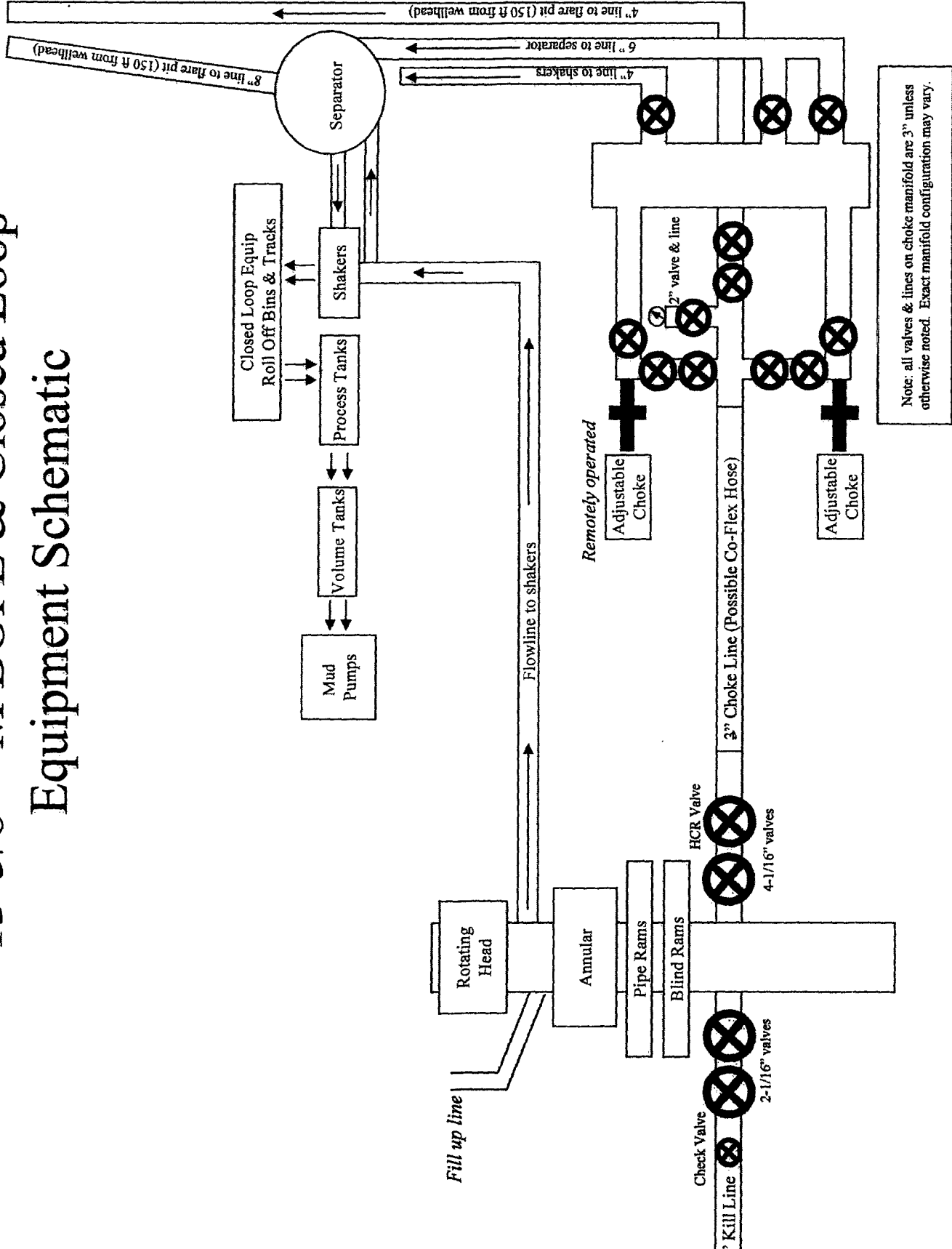
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Equipment Schematic

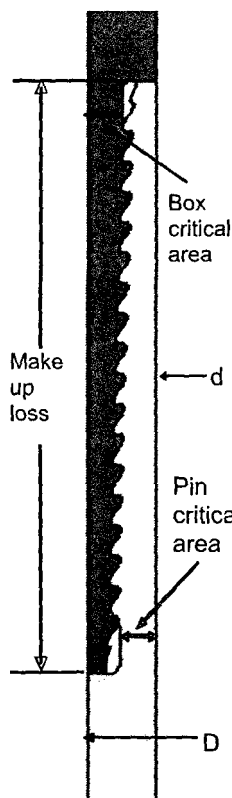


13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Metal One Corp. <i>Metal One</i>	FLUSHMAX-III Connection Data Sheet	Page	44-O
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		Rev.	N - 1

FLUSHMAX-III



Geometry

Imperial

S.I.

Pipe Body

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

Connection

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

Performance

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

Legal Notice

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

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

The products described in this Connection Data Sheet are not recommended for use in deep water offshore applications.

Issued on: 11 Sep. 2014



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

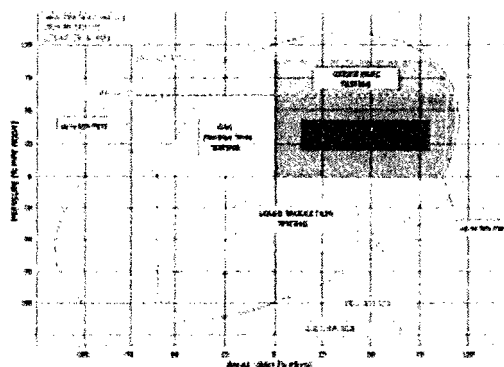
Tensile Yield Strength	634 klb
Compression Resistance	446 klb
Internal Yield Pressure	14360 psi
External pressure resistance	8463 psi
Max. bending with sealability	40 °/100 ft

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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dubai@vamfieldservice.com
nigeria@vamfieldservice.com
angola@vamfieldservice.com

china@vamfieldservice.com
baku@vamfieldservice.com
singapore@vamfieldservice.com
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Over 140 VAM® Specialists available worldwide 24/7 for Rig Site Assistance



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



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

Hydrogen Sulfide (H₂S) Contingency Plan

For

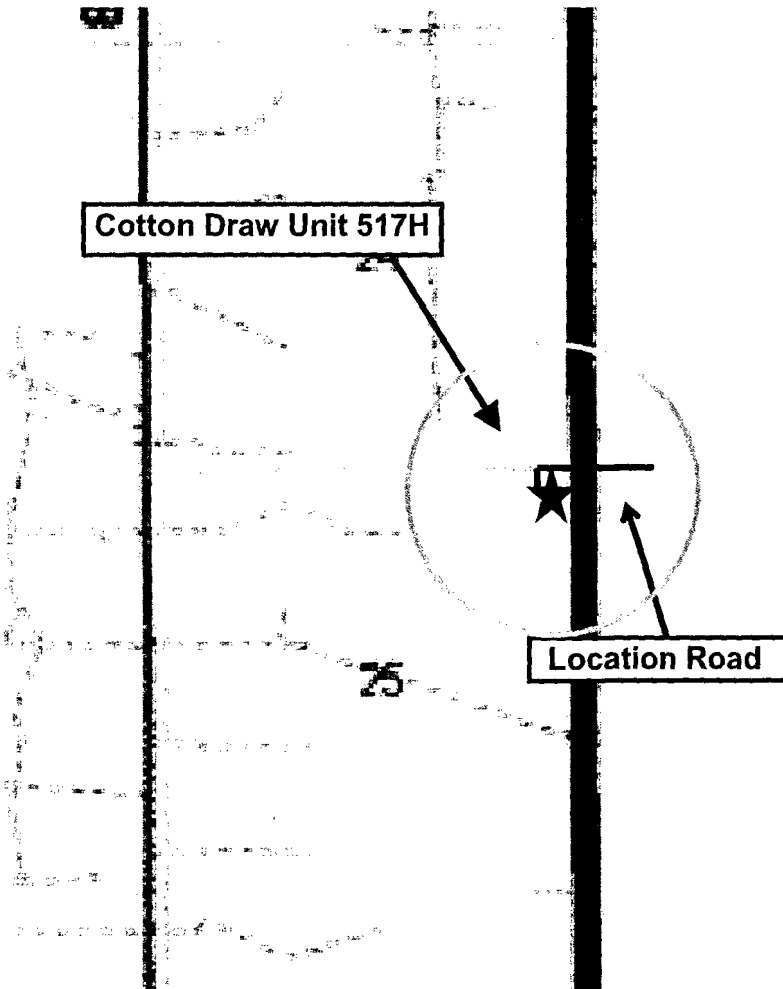
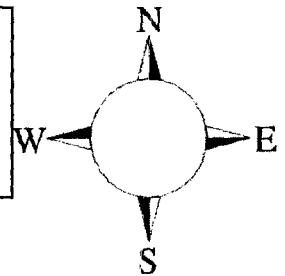
Cotton Draw Unit 517H

**Sec-25 T-24S R-31E
485' FNL & 470 FEL
LAT. = 32.1942688' N (NAD83)
LONG = 103.7244911 W**

Eddy County NM

Cotton Draw Unit 517H

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



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

Escape

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

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H₂S monitors and air packs in order to control the release.**
- **Use the “buddy system” to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
 - **Detection of H₂S, and**
 - **Measures for protection against the gas,**
 - **Equipment used for protection and emergency response.**

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H₂S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO₂	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

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

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H₂S) TRAINING

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

1. The hazards and characteristics of hydrogen sulfide (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H₂S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H₂S Drilling Operations Plan and Public Protection Plan.

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

II. HYDROGEN SULFIDE TRAINING

Note: All H₂S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H₂S.

1. Well Control Equipment

- A. Flare line
- B. Choke manifold – Remotely Operated
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit
- D. Auxiliary equipment may include if applicable: annular preventer and rotating head.
- E. Mud/Gas Separator

2. Protective equipment for essential personnel:

30-minute SCBA units located at briefing areas, as indicated on well site diagram, with 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. H₂S detection and monitoring equipment:

Portable H₂S monitors positioned on location for best coverage and response. These units have warning lights which activate when H₂S levels reach 10 ppm and audible sirens which activate at 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 H₂S circulated to surface. Proper mud weight, safe drilling practices and the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.

5. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H₂S trim.
- B. All elastomers used for packing and seals shall be H₂S trim.

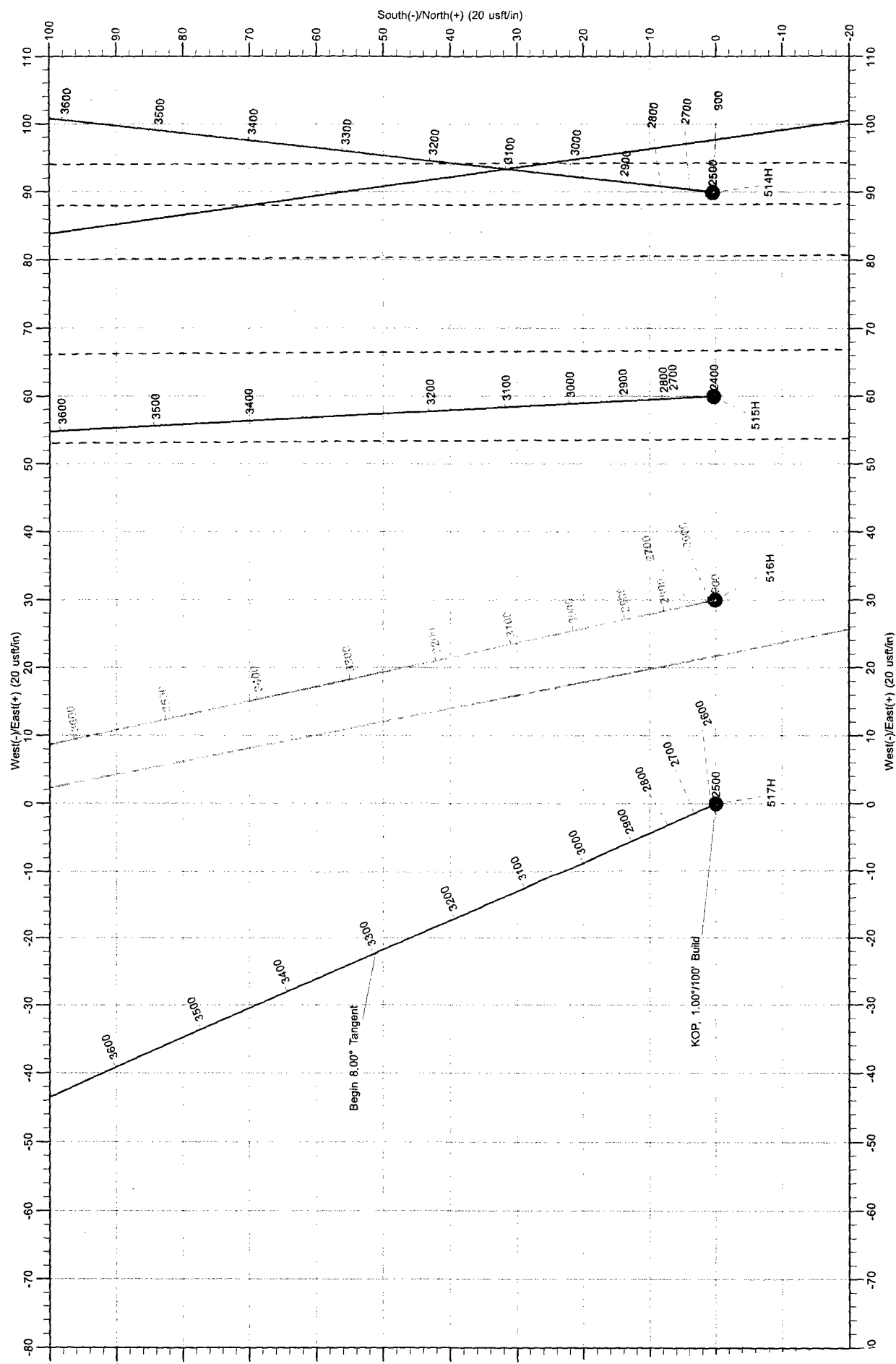
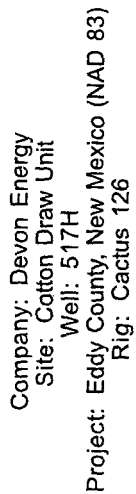
6. Communication:

- A. Company personnel have/use cellular telephones in the field.
- B. Land line (telephone) communications at Office

7. Well testing:

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



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.



Devon Energy

**Eddy County, New Mexico (NAD 83)
Cotton Draw Unit
517H**

Wellbore #1

Plan: Design #1

Standard Planning Report

22 August, 2017



MS Energy Services
Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	517H				
Well Position	+N/-S	434,942.57 usft	Northing:	434,942.57 usft	Latitude: 32° 11' 39.368 N
	+E/-W	729,673.83 usft	Easting:	729,673.83 usft	Longitude: 103° 43' 28.168 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	Ground Level: 3,541.40 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	22,564.68	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)	Bulld 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	
3,300.10	8.00	336.49	3,297.50	51.15	-22.25	1.00	1.00	0.00	336.49	
5,898.39	8.00	336.49	5,870.50	382.79	-166.49	0.00	0.00	0.00	0.00	
6,698.49	0.00	0.00	6,668.00	433.94	-188.74	1.00	-1.00	0.00	180.00	Vert - CDU 517H
11,902.93	0.00	0.00	11,872.44	433.94	-188.74	0.00	0.00	0.00	0.00	
12,807.86	90.49	169.00	12,445.38	-133.33	-78.47	10.00	10.00	0.00	169.00	
13,727.27	90.49	169.00	12,437.47	-1,035.82	96.95	0.00	0.00	0.00	0.00	
14,259.68	90.49	179.65	12,432.87	-1,564.83	149.53	2.00	0.00	2.00	89.95	
22,565.16	90.49	179.65	12,361.40	-9,869.85	200.48	0.00	0.00	0.00	0.00	PBHL - CDU 517H



MS Energy Services.
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Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
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
1,041.40	0.00	0.00	1,041.40	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	336.49	2,599.99	0.80	-0.35	-0.80	1.00	1.00	0.00
2,700.00	2.00	336.49	2,699.96	3.20	-1.39	-3.21	1.00	1.00	0.00
2,800.00	3.00	336.49	2,799.86	7.20	-3.13	-7.22	1.00	1.00	0.00
2,900.00	4.00	336.49	2,899.68	12.80	-5.57	-12.83	1.00	1.00	0.00
3,000.00	5.00	336.49	2,999.37	19.99	-8.70	-20.05	1.00	1.00	0.00
3,100.00	6.00	336.49	3,098.90	28.78	-12.52	-28.86	1.00	1.00	0.00
3,200.00	7.00	336.49	3,198.26	39.16	-17.03	-39.27	1.00	1.00	0.00
3,300.10	8.00	336.49	3,297.50	51.15	-22.25	-51.28	1.00	1.00	0.00
Begin 8.00° Tangent									
3,400.00	8.00	336.49	3,396.43	63.90	-27.79	-64.07	0.00	0.00	0.00
3,500.00	8.00	336.49	3,495.46	76.66	-33.34	-76.86	0.00	0.00	0.00
3,600.00	8.00	336.49	3,594.48	89.42	-38.89	-89.66	0.00	0.00	0.00



MS Energy Services Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
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MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
4,536.83	8.00	336.49	4,522.19	209.00	-90.90	-209.56	0.00	0.00	0.00
Bell Canyon									
4,600.00	8.00	336.49	4,584.75	217.07	-94.41	-217.64	0.00	0.00	0.00
4,700.00	8.00	336.49	4,683.78	229.83	-99.96	-230.44	0.00	0.00	0.00
4,800.00	8.00	336.49	4,782.80	242.59	-105.51	-243.24	0.00	0.00	0.00
4,900.00	8.00	336.49	4,881.83	255.36	-111.07	-256.03	0.00	0.00	0.00
5,000.00	8.00	336.49	4,980.85	268.12	-116.62	-268.83	0.00	0.00	0.00
5,100.00	8.00	336.49	5,079.88	280.89	-122.17	-281.63	0.00	0.00	0.00
5,200.00	8.00	336.49	5,178.91	293.65	-127.72	-294.43	0.00	0.00	0.00
5,300.00	8.00	336.49	5,277.93	306.41	-133.27	-307.23	0.00	0.00	0.00
5,400.00	8.00	336.49	5,376.96	319.18	-138.82	-320.02	0.00	0.00	0.00
5,439.61	8.00	336.49	5,416.18	324.23	-141.02	-325.09	0.00	0.00	0.00
Cherry Canyon									
5,500.00	8.00	336.49	5,475.99	331.94	-144.37	-332.82	0.00	0.00	0.00
5,600.00	8.00	336.49	5,575.01	344.71	-149.93	-345.62	0.00	0.00	0.00
5,700.00	8.00	336.49	5,674.04	357.47	-155.48	-358.42	0.00	0.00	0.00
5,800.00	8.00	336.49	5,773.07	370.23	-161.03	-371.21	0.00	0.00	0.00
5,898.39	8.00	336.49	5,870.50	382.79	-166.49	-383.81	0.00	0.00	0.00
Begin 1.00°/100' Drop									
5,900.00	7.98	336.49	5,872.09	383.00	-166.58	-384.01	1.00	-1.00	0.00
6,000.00	6.98	336.49	5,971.24	394.94	-171.78	-395.99	1.00	-1.00	0.00
6,100.00	5.98	336.49	6,070.60	405.30	-176.28	-406.37	1.00	-1.00	0.00
6,200.00	4.98	336.49	6,170.14	414.06	-180.09	-415.16	1.00	-1.00	0.00
6,300.00	3.98	336.49	6,269.83	421.24	-183.21	-422.35	1.00	-1.00	0.00
6,400.00	2.98	336.49	6,369.65	426.81	-185.64	-427.94	1.00	-1.00	0.00
6,474.52	2.24	336.49	6,444.09	429.92	-186.99	-431.06	1.00	-1.00	0.00
Rustler									
6,500.00	1.98	336.49	6,469.55	430.78	-187.37	-431.93	1.00	-1.00	0.00
6,600.00	0.98	336.49	6,569.52	433.16	-188.40	-434.31	1.00	-1.00	0.00
6,698.49	0.00	0.00	6,668.00	433.94	-188.74	-435.09	1.00	-1.00	0.00
Begin Vertical Hold									
6,700.00	0.00	0.00	6,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
6,760.61	0.00	0.00	6,730.12	433.94	-188.74	-435.09	0.00	0.00	0.00
Brushy Canyon									
6,800.00	0.00	0.00	6,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
6,900.00	0.00	0.00	6,869.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,000.00	0.00	0.00	6,969.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,100.00	0.00	0.00	7,069.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,200.00	0.00	0.00	7,169.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,300.00	0.00	0.00	7,269.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,400.00	0.00	0.00	7,369.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,500.00	0.00	0.00	7,469.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,600.00	0.00	0.00	7,569.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,700.00	0.00	0.00	7,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,800.00	0.00	0.00	7,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
7,900.00	0.00	0.00	7,869.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,000.00	0.00	0.00	7,969.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,079.61	0.00	0.00	8,049.12	433.94	-188.74	-435.09	0.00	0.00	0.00
Lower Brushy									
8,100.00	0.00	0.00	8,069.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,200.00	0.00	0.00	8,169.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,300.00	0.00	0.00	8,269.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,355.61	0.00	0.00	8,325.12	433.94	-188.74	-435.09	0.00	0.00	0.00



MS Energy Services Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
1BSLM									
8,400.00	0.00	0.00	8,369.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,500.00	0.00	0.00	8,469.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,600.00	0.00	0.00	8,569.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,700.00	0.00	0.00	8,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,800.00	0.00	0.00	8,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
8,900.00	0.00	0.00	8,869.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,000.00	0.00	0.00	8,969.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,100.00	0.00	0.00	9,069.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,200.00	0.00	0.00	9,169.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,300.00	0.00	0.00	9,269.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,400.00	0.00	0.00	9,369.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,405.61	0.00	0.00	9,375.12	433.94	-188.74	-435.09	0.00	0.00	0.00
1BSSS									
9,500.00	0.00	0.00	9,469.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,600.00	0.00	0.00	9,569.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,650.61	0.00	0.00	9,620.12	433.94	-188.74	-435.09	0.00	0.00	0.00
2BSLM									
9,700.00	0.00	0.00	9,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,800.00	0.00	0.00	9,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
9,900.00	0.00	0.00	9,869.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,000.00	0.00	0.00	9,969.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,010.61	0.00	0.00	9,980.12	433.94	-188.74	-435.09	0.00	0.00	0.00
2BSSS									
10,100.00	0.00	0.00	10,069.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,200.00	0.00	0.00	10,169.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,300.00	0.00	0.00	10,269.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,400.00	0.00	0.00	10,369.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,500.00	0.00	0.00	10,469.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,560.61	0.00	0.00	10,530.12	433.94	-188.74	-435.09	0.00	0.00	0.00
3BSLM									
10,600.00	0.00	0.00	10,569.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,700.00	0.00	0.00	10,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,800.00	0.00	0.00	10,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
10,900.00	0.00	0.00	10,869.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,000.00	0.00	0.00	10,969.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,100.00	0.00	0.00	11,069.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,200.00	0.00	0.00	11,169.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,288.61	0.00	0.00	11,258.12	433.94	-188.74	-435.09	0.00	0.00	0.00
3BSSS									
11,300.00	0.00	0.00	11,269.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,400.00	0.00	0.00	11,369.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,500.00	0.00	0.00	11,469.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,600.00	0.00	0.00	11,569.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,700.00	0.00	0.00	11,669.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,768.61	0.00	0.00	11,738.12	433.94	-188.74	-435.09	0.00	0.00	0.00
WFMP X									
11,800.00	0.00	0.00	11,769.51	433.94	-188.74	-435.09	0.00	0.00	0.00
11,850.61	0.00	0.00	11,820.12	433.94	-188.74	-435.09	0.00	0.00	0.00
WFMP Y									
11,885.61	0.00	0.00	11,855.12	433.94	-188.74	-435.09	0.00	0.00	0.00
WFMP 100									
11,902.93	0.00	0.00	11,872.44	433.94	-188.74	-435.09	0.00	0.00	0.00



MS Energy Services Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
Begin 10.00°/100' Build									
11,950.00	4.71	169.00	11,919.46	432.04	-188.37	-433.19	10.00	10.00	0.00
12,000.00	9.71	169.00	11,969.05	425.88	-187.17	-427.02	10.00	10.00	0.00
12,050.00	14.71	169.00	12,017.90	415.51	-185.15	-416.64	10.00	10.00	0.00
12,100.00	19.71	169.00	12,065.65	400.99	-182.33	-402.11	10.00	10.00	0.00
12,150.00	24.71	169.00	12,111.93	382.45	-178.73	-383.54	10.00	10.00	0.00
12,200.00	29.71	169.00	12,156.38	360.02	-174.37	-361.08	10.00	10.00	0.00
12,250.00	34.71	169.00	12,198.67	333.87	-169.28	-334.90	10.00	10.00	0.00
12,300.00	39.71	169.00	12,238.48	304.20	-163.52	-305.19	10.00	10.00	0.00
12,350.00	44.71	169.00	12,275.51	271.23	-157.11	-272.19	10.00	10.00	0.00
12,383.37	48.04	169.00	12,298.53	247.53	-152.50	-248.46	10.00	10.00	0.00
WFMP 200									
12,400.00	49.71	169.00	12,309.46	235.23	-150.11	-236.14	10.00	10.00	0.00
12,450.00	54.71	169.00	12,340.09	196.45	-142.57	-197.33	10.00	10.00	0.00
12,500.00	59.71	169.00	12,367.17	155.21	-134.56	-156.03	10.00	10.00	0.00
12,550.00	64.71	169.00	12,390.47	111.80	-126.12	-112.57	10.00	10.00	0.00
12,600.00	69.71	169.00	12,409.84	66.57	-117.33	-67.29	10.00	10.00	0.00
12,650.00	74.71	169.00	12,425.11	19.85	-108.25	-20.51	10.00	10.00	0.00
12,700.00	79.71	169.00	12,436.18	-28.00	-98.95	27.39	10.00	10.00	0.00
12,750.00	84.71	169.00	12,442.96	-76.61	-89.50	76.06	10.00	10.00	0.00
12,800.00	89.71	169.00	12,445.39	-125.62	-79.97	125.13	10.00	10.00	0.00
12,807.86	90.49	169.00	12,445.38	-133.33	-78.47	132.85	10.00	10.00	0.00
Begin 90.49° Lateral									
12,900.00	90.49	169.00	12,444.58	-223.78	-60.89	223.40	0.00	0.00	0.00
13,000.00	90.49	169.00	12,443.72	-321.94	-41.81	321.67	0.00	0.00	0.00
13,100.00	90.49	169.00	12,442.86	-420.10	-22.73	419.95	0.00	0.00	0.00
13,200.00	90.49	169.00	12,442.00	-518.26	-3.65	518.22	0.00	0.00	0.00
13,300.00	90.49	169.00	12,441.14	-616.41	15.43	616.50	0.00	0.00	0.00
13,400.00	90.49	169.00	12,440.28	-714.57	34.51	714.77	0.00	0.00	0.00
13,500.00	90.49	169.00	12,439.42	-812.73	53.59	813.05	0.00	0.00	0.00
13,600.00	90.49	169.00	12,438.56	-910.89	72.67	911.32	0.00	0.00	0.00
13,700.00	90.49	169.00	12,437.70	-1,009.05	91.75	1,009.59	0.00	0.00	0.00
13,727.27	90.49	169.00	12,437.47	-1,035.82	96.95	1,036.39	0.00	0.00	0.00
Begin 2.00°/100' Turn									
13,800.00	90.49	170.45	12,436.84	-1,107.38	109.92	1,108.03	2.00	0.00	2.00
13,900.00	90.49	172.45	12,435.98	-1,206.26	124.78	1,207.00	2.00	0.00	2.00
14,000.00	90.50	174.45	12,435.11	-1,305.60	136.18	1,306.41	2.00	0.00	2.00
14,100.00	90.49	176.45	12,434.25	-1,405.28	144.10	1,406.13	2.00	0.00	2.00
14,200.00	90.49	178.45	12,433.39	-1,505.17	148.54	1,506.05	2.00	0.00	2.00
14,259.68	90.49	179.65	12,432.87	-1,564.83	149.53	1,565.72	2.00	0.00	2.00
Hold 179.65° Azm									
14,300.00	90.49	179.65	12,432.52	-1,605.15	149.78	1,606.04	0.00	0.00	0.00
14,400.00	90.49	179.65	12,431.66	-1,705.15	150.39	1,706.04	0.00	0.00	0.00
14,500.00	90.49	179.65	12,430.80	-1,805.14	151.01	1,806.04	0.00	0.00	0.00
14,600.00	90.49	179.65	12,429.94	-1,905.14	151.62	1,906.03	0.00	0.00	0.00
14,700.00	90.49	179.65	12,429.08	-2,005.13	152.23	2,006.03	0.00	0.00	0.00
14,800.00	90.49	179.65	12,428.22	-2,105.13	152.85	2,106.02	0.00	0.00	0.00
14,900.00	90.49	179.65	12,427.36	-2,205.12	153.46	2,206.02	0.00	0.00	0.00
15,000.00	90.49	179.65	12,426.50	-2,305.12	154.07	2,306.02	0.00	0.00	0.00
15,100.00	90.49	179.65	12,425.64	-2,405.11	154.69	2,406.01	0.00	0.00	0.00
15,200.00	90.49	179.65	12,424.78	-2,505.10	155.30	2,506.01	0.00	0.00	0.00
15,300.00	90.49	179.65	12,423.92	-2,605.10	155.91	2,606.01	0.00	0.00	0.00
15,400.00	90.49	179.65	12,423.06	-2,705.09	156.53	2,706.00	0.00	0.00	0.00



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Design: Design #1

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North Reference: Grid
Survey Calculation Method: Minimum Curvature

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	90.49	179.65	12,422.20	-2,805.09	157.14	2,806.00	0.00	0.00	0.00
15,600.00	90.49	179.65	12,421.34	-2,905.08	157.75	2,906.00	0.00	0.00	0.00
15,700.00	90.49	179.65	12,420.48	-3,005.08	158.37	3,005.99	0.00	0.00	0.00
15,800.00	90.49	179.65	12,419.62	-3,105.07	158.98	3,105.99	0.00	0.00	0.00
15,900.00	90.49	179.65	12,418.76	-3,205.07	159.59	3,205.98	0.00	0.00	0.00
16,000.00	90.49	179.65	12,417.90	-3,305.06	160.21	3,305.98	0.00	0.00	0.00
16,100.00	90.49	179.65	12,417.03	-3,405.05	160.82	3,405.98	0.00	0.00	0.00
16,200.00	90.49	179.65	12,416.17	-3,505.05	161.43	3,505.97	0.00	0.00	0.00
16,300.00	90.49	179.65	12,415.31	-3,605.04	162.05	3,605.97	0.00	0.00	0.00
16,400.00	90.49	179.65	12,414.45	-3,705.04	162.66	3,705.97	0.00	0.00	0.00
16,500.00	90.49	179.65	12,413.59	-3,805.03	163.27	3,805.96	0.00	0.00	0.00
16,600.00	90.49	179.65	12,412.73	-3,905.03	163.89	3,905.96	0.00	0.00	0.00
16,700.00	90.49	179.65	12,411.87	-4,005.02	164.50	4,005.95	0.00	0.00	0.00
16,800.00	90.49	179.65	12,411.01	-4,105.02	165.11	4,105.95	0.00	0.00	0.00
16,900.00	90.49	179.65	12,410.15	-4,205.01	165.73	4,205.95	0.00	0.00	0.00
17,000.00	90.49	179.65	12,409.29	-4,305.00	166.34	4,305.94	0.00	0.00	0.00
17,100.00	90.49	179.65	12,408.43	-4,405.00	166.95	4,405.94	0.00	0.00	0.00
17,200.00	90.49	179.65	12,407.57	-4,504.99	167.57	4,505.94	0.00	0.00	0.00
17,300.00	90.49	179.65	12,406.71	-4,604.99	168.18	4,605.93	0.00	0.00	0.00
17,400.00	90.49	179.65	12,405.85	-4,704.98	168.80	4,705.93	0.00	0.00	0.00
17,500.00	90.49	179.65	12,404.99	-4,804.98	169.41	4,805.92	0.00	0.00	0.00
17,600.00	90.49	179.65	12,404.13	-4,904.97	170.02	4,905.92	0.00	0.00	0.00
17,700.00	90.49	179.65	12,403.27	-5,004.96	170.64	5,005.92	0.00	0.00	0.00
17,800.00	90.49	179.65	12,402.41	-5,104.96	171.25	5,105.91	0.00	0.00	0.00
17,900.00	90.49	179.65	12,401.55	-5,204.95	171.86	5,205.91	0.00	0.00	0.00
18,000.00	90.49	179.65	12,400.68	-5,304.95	172.48	5,305.91	0.00	0.00	0.00
18,100.00	90.49	179.65	12,399.82	-5,404.94	173.09	5,405.90	0.00	0.00	0.00
18,200.00	90.49	179.65	12,398.96	-5,504.94	173.70	5,505.90	0.00	0.00	0.00
18,300.00	90.49	179.65	12,398.10	-5,604.93	174.32	5,605.90	0.00	0.00	0.00
18,400.00	90.49	179.65	12,397.24	-5,704.93	174.93	5,705.89	0.00	0.00	0.00
18,500.00	90.49	179.65	12,396.38	-5,804.92	175.54	5,805.89	0.00	0.00	0.00
18,600.00	90.49	179.65	12,395.52	-5,904.91	176.16	5,905.88	0.00	0.00	0.00
18,700.00	90.49	179.65	12,394.66	-6,004.91	176.77	6,005.88	0.00	0.00	0.00
18,800.00	90.49	179.65	12,393.80	-6,104.90	177.38	6,105.88	0.00	0.00	0.00
18,900.00	90.49	179.65	12,392.94	-6,204.90	178.00	6,205.87	0.00	0.00	0.00
19,000.00	90.49	179.65	12,392.08	-6,304.89	178.61	6,305.87	0.00	0.00	0.00
19,100.00	90.49	179.65	12,391.22	-6,404.89	179.22	6,405.87	0.00	0.00	0.00
19,200.00	90.49	179.65	12,390.36	-6,504.88	179.84	6,505.86	0.00	0.00	0.00
19,300.00	90.49	179.65	12,389.50	-6,604.88	180.45	6,605.86	0.00	0.00	0.00
19,400.00	90.49	179.65	12,388.64	-6,704.87	181.06	6,705.85	0.00	0.00	0.00
19,500.00	90.49	179.65	12,387.78	-6,804.86	181.68	6,805.85	0.00	0.00	0.00
19,600.00	90.49	179.65	12,386.92	-6,904.86	182.29	6,905.85	0.00	0.00	0.00
19,700.00	90.49	179.65	12,386.06	-7,004.85	182.90	7,005.84	0.00	0.00	0.00
19,800.00	90.49	179.65	12,385.20	-7,104.85	183.52	7,105.84	0.00	0.00	0.00
19,900.00	90.49	179.65	12,384.33	-7,204.84	184.13	7,205.84	0.00	0.00	0.00
20,000.00	90.49	179.65	12,383.47	-7,304.84	184.74	7,305.83	0.00	0.00	0.00
20,100.00	90.49	179.65	12,382.61	-7,404.83	185.36	7,405.83	0.00	0.00	0.00
20,200.00	90.49	179.65	12,381.75	-7,504.83	185.97	7,505.83	0.00	0.00	0.00
20,300.00	90.49	179.65	12,380.89	-7,604.82	186.58	7,605.82	0.00	0.00	0.00
20,400.00	90.49	179.65	12,380.03	-7,704.81	187.20	7,705.82	0.00	0.00	0.00
20,500.00	90.49	179.65	12,379.17	-7,804.81	187.81	7,805.81	0.00	0.00	0.00
20,600.00	90.49	179.65	12,378.31	-7,904.80	188.43	7,905.81	0.00	0.00	0.00
20,700.00	90.49	179.65	12,377.45	-8,004.80	189.04	8,005.81	0.00	0.00	0.00
20,800.00	90.49	179.65	12,376.59	-8,104.79	189.65	8,105.80	0.00	0.00	0.00



MS Energy Services Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
20,900.00	90.49	179.65	12,375.73	-8,204.79	190.27	8,205.80	0.00	0.00	0.00
21,000.00	90.49	179.65	12,374.87	-8,304.78	190.88	8,305.80	0.00	0.00	0.00
21,100.00	90.49	179.65	12,374.01	-8,404.78	191.49	8,405.79	0.00	0.00	0.00
21,200.00	90.49	179.65	12,373.15	-8,504.77	192.11	8,505.79	0.00	0.00	0.00
21,300.00	90.49	179.65	12,372.29	-8,604.76	192.72	8,605.78	0.00	0.00	0.00
21,400.00	90.49	179.65	12,371.43	-8,704.76	193.33	8,705.78	0.00	0.00	0.00
21,500.00	90.49	179.65	12,370.57	-8,804.75	193.95	8,805.78	0.00	0.00	0.00
21,600.00	90.49	179.65	12,369.71	-8,904.75	194.56	8,905.77	0.00	0.00	0.00
21,700.00	90.49	179.65	12,368.85	-9,004.74	195.17	9,005.77	0.00	0.00	0.00
21,800.00	90.49	179.65	12,367.98	-9,104.74	195.79	9,105.77	0.00	0.00	0.00
21,900.00	90.49	179.65	12,367.12	-9,204.73	196.40	9,205.76	0.00	0.00	0.00
22,000.00	90.49	179.65	12,366.26	-9,304.72	197.01	9,305.76	0.00	0.00	0.00
22,100.00	90.49	179.65	12,365.40	-9,404.72	197.63	9,405.75	0.00	0.00	0.00
22,200.00	90.49	179.65	12,364.54	-9,504.71	198.24	9,505.75	0.00	0.00	0.00
22,300.00	90.49	179.65	12,363.68	-9,604.71	198.85	9,605.75	0.00	0.00	0.00
22,400.00	90.49	179.65	12,362.82	-9,704.70	199.47	9,705.74	0.00	0.00	0.00
22,500.00	90.49	179.65	12,361.96	-9,804.70	200.08	9,805.74	0.00	0.00	0.00
22,565.16	90.49	179.65	12,361.40	-9,869.85	200.48	9,870.89	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 517H - plan hits target center - Point	0.00	0.00	6,668.00	433.94	-188.74	435,376.51	729,485.09	32° 11' 43.672 N	103° 43' 30.336 W
PBHL - CDU 517H - plan hits target center - Point	0.00	0.00	12,361.40	-9,869.85	200.48	425,072.72	729,874.31	32° 10' 1.689 N	103° 43' 26.486 W
HL Crossing - CDU 51 - plan hits target center - Point	0.00	0.00	12,367.75	154.22	-134.37	435,096.79	729,539.46	32° 11' 40.901 N	103° 43' 29.722 W



MS Energy Services
Planning Report



Database: EDM 5000.14 Conroe Server
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Site: Cotton Draw Unit
Well: 517H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,041.40	1,041.40	Salado		-0.49	179.65
4,204.23	4,192.83	Base of Salt		-0.49	179.65
4,501.45	4,487.15	Delaware		-0.49	179.65
4,536.83	4,522.19	Bell Canyon		-0.49	179.65
5,439.61	5,416.18	Cherry Canyon		-0.49	179.65
6,474.52	6,444.09	Rustler		-0.49	179.65
6,760.61	6,730.12	Brushy Canyon		-0.49	179.65
8,079.61	8,049.12	Lower Brushy		-0.49	179.65
8,355.61	8,325.12	1BSLM		-0.49	179.65
9,405.61	9,375.12	1BSSS		-0.49	179.65
9,650.61	9,620.12	2BSLM		-0.49	179.65
10,010.61	9,980.12	2BSSS		-0.49	179.65
10,560.61	10,530.12	3BSLM		-0.49	179.65
11,288.61	11,258.12	3BSSS		-0.49	179.65
11,768.61	11,738.12	WFMP X		-0.49	179.65
11,850.61	11,820.12	WFMP Y		-0.49	179.65
11,885.61	11,855.12	WFMP 100		-0.49	179.65
12,383.37	12,298.53	WFMP 200		-0.49	179.65

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,500.00	2,500.00	0.00	0.00	KOP, 1.00°/100' Build
3,300.10	3,297.50	51.15	-22.25	Begin 8.00° Tangent
5,898.39	5,870.50	382.79	-166.49	Begin 1.00°/100' Drop
6,698.49	6,668.00	433.94	-188.74	Begin Vertical Hold
11,902.93	11,872.44	433.94	-188.74	Begin 10.00°/100' Build
12,807.86	12,445.38	-133.33	-78.47	Begin 90.49° Lateral
13,727.27	12,437.47	-1,035.82	96.95	Begin 2.00°/100' Turn
14,259.68	12,432.87	-1,564.83	149.53	Hold 179.65° Azm
22,565.16	12,361.40	-9,869.85	200.48	PBHL



Devon Energy

Eddy County, New Mexico (NAD 83)

Cotton Draw Unit

517H

Wellbore #1

Design #1

Anticollision Report

22 August, 2017



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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	22,564.68	Design #1 (Wellbore #1)	MWD	OWSG MWD - Standard

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
BTBN 25 FED						
#2 - Wellbore #1 - Surveys	2,577.35	2,558.13	1,777.55	1,759.79	100.064	CC
#2 - Wellbore #1 - Surveys	2,600.00	2,580.09	1,777.60	1,759.67	99.175	ES
#2 - Wellbore #1 - Surveys	10,011.53	10,006.95	2,043.37	1,972.18	28.705	SF
Cotton Draw						
#99 - Wellbore #1 - Surveys	17,880.08	10,750.00	2,543.82	2,435.33	23.447	CC
#99 - Wellbore #1 - Surveys	17,900.00	10,750.00	2,543.90	2,435.17	23.395	ES
#99 - Wellbore #1 - Surveys	18,300.00	10,750.00	2,578.25	2,465.40	22.846	SF
Cotton Draw Unit						
116H - Wellbore #1 - Surveys	8,374.01	14,732.00	3,471.76	3,423.28	71.609	CC
116H - Wellbore #1 - Surveys	8,400.00	14,732.00	3,471.86	3,423.27	71.463	ES
116H - Wellbore #1 - Surveys	18,600.00	18,600.00	4,049.85	3,913.75	29.755	SF
242H - Wellbore #1 - Surveys	22,565.16	17,847.00	2,502.11	2,276.29	11.080	CC, ES, SF
290H - Wellbore #1 - Surveys	18,622.86	11,363.96	1,826.00	1,744.77	22.479	CC
290H - Wellbore #1 - Surveys	21,500.00	21,500.00	1,854.94	1,687.48	11.077	ES, SF
291H - Wellbore #1 - Design #2	10,656.47	15,322.76	546.04	433.70	4.861	CC, ES, SF
292H - Wellbore #1 - Surveys	18,440.75	10,898.43	2,228.45	2,144.58	26.568	CC
292H - Wellbore #1 - Surveys	22,400.00	14,817.31	2,249.88	2,108.64	15.930	ES
292H - Wellbore #1 - Surveys	22,565.16	14,955.68	2,254.09	2,110.63	15.713	SF
293H - Wellbore #1 - Design #2	22,565.16	15,662.83	2,486.41	2,279.04	11.990	CC, ES, SF
294H - Wellbore #1 - Design #2	10,631.51	15,283.47	1,647.99	1,522.64	13.147	CC, ES
294H - Wellbore #1 - Design #2	10,700.00	15,283.47	1,649.41	1,523.82	13.133	SF
511H - Wellbore #1 - Surveys	20,500.00	20,500.00	2,983.00	2,746.86	12.632	ES, SF
511H - Wellbore #1 - Surveys	22,377.65	14,935.48	2,950.42	2,756.97	15.252	CC
512H - Wellbore #1 - Design #2	10,261.70	14,933.27	1,647.98	1,524.78	13.376	CC, ES
512H - Wellbore #1 - Design #2	10,300.00	14,933.27	1,648.43	1,525.07	13.362	SF
513H - Wellbore #1 - Design #2	10,289.82	15,046.81	280.03	202.05	3.591	CC, ES
513H - Wellbore #1 - Design #2	10,300.00	15,046.81	280.21	202.12	3.588	SF
514H - Wellbore #1 - Design #1	2,500.00	2,499.50	89.97	72.50	5.149	CC
514H - Wellbore #1 - Design #1	2,600.00	2,599.32	90.41	72.22	4.971	ES
514H - Wellbore #1 - Design #1	2,900.00	2,898.67	97.05	76.72	4.774	SF
515H - Wellbore #1 - Design #1	2,500.00	2,499.70	59.97	42.49	3.432	CC
515H - Wellbore #1 - Design #1	2,600.00	2,599.75	60.27	42.08	3.313	ES
515H - Wellbore #1 - Design #1	2,900.00	2,899.83	64.82	44.49	3.188	SF
516H - Wellbore #1 - Design #1	2,500.11	2,500.21	29.99	12.51	1.716	CC
516H - Wellbore #1 - Design #1	2,700.00	2,700.31	30.65	11.75	1.621	ES

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Summary

Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Cotton Draw Unit						
516H - Wellbore #1 - Design #1	11,500.00	11,501.93	126.00	43.29	1.523 SF	
King Tut Federal						
#1H - Wellbore #1 - Surveys	0.00	0.00	852.66			
#1H - Wellbore #1 - Surveys	8,100.00	7,979.93	1,050.99	994.37	18.562 SF	
Redhead 31 Federal						
#1H - Wellbore #1 - Surveys	18,509.83	10,873.99	2,243.68	2,147.90	23.426 CC	
#1H - Wellbore #1 - Surveys	19,500.00	19,500.00	2,258.33	2,082.97	12.879 ES, SF	
Windward Federal						
#1H - Wellbore #1 - Surveys	0.00	0.00	947.14			
#1H - Wellbore #1 - Surveys	2,909.10	2,914.16	951.50		47.764 ES	
#1H - Wellbore #1 - Surveys	10,100.00	10,015.54	1,108.51	1,038.51	15.836 SF	
#5H - Wellbore #1 - Surveys	2,729.87	2,734.29	1,013.67	994.77	53.623 CC	
#5H - Wellbore #1 - Surveys	2,800.00	2,798.93	1,013.93	994.55	52.319 ES	
#5H - Wellbore #1 - Surveys	22,565.16	18,982.66	3,270.01	3,096.06	18.799 SF	
#6H - Wellbore #1 - Design #1	2,500.00	2,502.10	1,066.20	1,055.62	100.712 CC	
#6H - Wellbore #1 - Design #1	2,700.00	2,702.14	1,066.71	1,055.26	93.172 ES	
#6H - Wellbore #1 - Design #1	22,565.16	19,220.87	3,426.73	3,243.38	18.689 SF	

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

Survey Program: 237-MWD

Offset Site Error: 0.00 usft

Offset Well Error: 0.00 usft

Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	175.24	-1,814.30	150.93	1,821.06				
100.00	100.00	61.72	61.72	0.13	0.11	175.24	-1,814.23	150.93	1,820.50	1,820.25	0.25	7,420.729	
200.00	200.00	168.88	168.88	0.49	0.30	175.24	-1,813.77	150.93	1,820.07	1,819.28	0.80	2,286.802	
300.00	300.00	274.26	274.25	0.85	0.56	175.24	-1,812.93	150.93	1,819.28	1,817.87	1.41	1,290.123	
400.00	400.00	376.54	376.53	1.21	0.93	175.24	-1,811.92	150.93	1,818.30	1,816.16	2.14	851.543	
500.00	500.00	478.82	478.80	1.57	1.29	175.24	-1,810.79	150.93	1,817.19	1,814.33	2.86	635.288	
600.00	600.00	581.09	581.07	1.93	1.66	175.23	-1,809.53	150.93	1,815.96	1,812.38	3.59	506.471	
700.00	700.00	685.28	685.25	2.29	2.03	175.23	-1,808.06	150.93	1,814.56	1,810.24	4.32	420.260	
800.00	800.00	789.67	789.62	2.64	2.41	175.22	-1,806.34	150.93	1,812.92	1,807.87	5.05	358.961	
900.00	900.00	894.05	893.98	3.00	2.78	175.22	-1,804.36	150.93	1,811.03	1,805.25	5.78	313.162	
1,000.00	1,000.00	998.74	998.65	3.36	3.16	175.21	-1,802.12	150.93	1,808.90	1,802.38	6.52	277.575	
1,100.00	1,100.00	1,104.08	1,103.96	3.72	3.54	175.21	-1,799.56	150.93	1,806.48	1,799.23	7.25	249.069	
1,200.00	1,200.00	1,209.42	1,209.25	4.08	3.92	175.20	-1,796.69	150.93	1,803.76	1,795.77	7.99	225.782	
1,300.00	1,300.00	1,311.52	1,311.32	4.44	4.28	175.19	-1,793.65	150.93	1,800.79	1,792.07	8.71	206.666	
1,400.00	1,400.00	1,408.74	1,408.50	4.79	4.63	175.18	-1,790.81	150.93	1,797.88	1,788.46	9.42	190.838	
1,500.00	1,500.00	1,505.97	1,505.69	5.15	4.98	175.18	-1,788.12	150.93	1,795.12	1,785.00	10.13	177.235	
1,600.00	1,600.00	1,600.08	1,599.77	5.51	5.32	175.17	-1,785.71	150.93	1,792.57	1,781.74	10.82	165.596	
1,700.00	1,700.00	1,691.52	1,691.18	5.87	5.65	175.16	-1,783.77	150.93	1,790.45	1,778.94	11.51	155.532	
1,800.00	1,800.00	1,782.96	1,782.61	6.23	5.98	175.16	-1,782.26	150.93	1,788.82	1,776.62	12.20	146.642	
1,900.00	1,900.00	1,882.55	1,882.19	6.59	6.34	175.16	-1,780.92	150.93	1,787.48	1,774.56	12.91	138.412	
2,000.00	2,000.00	1,984.12	1,983.76	6.95	6.70	175.15	-1,779.47	150.93	1,786.06	1,772.42	13.64	130.973	
2,100.00	2,100.00	2,085.70	2,085.32	7.30	7.06	175.15	-1,777.94	150.93	1,784.55	1,770.19	14.36	124.277	
2,200.00	2,200.00	2,187.27	2,186.88	7.66	7.43	175.14	-1,776.31	150.93	1,782.95	1,767.87	15.08	118.217	
2,300.00	2,300.00	2,288.84	2,288.43	8.02	7.79	175.14	-1,774.59	150.93	1,781.26	1,765.46	15.80	112.705	
2,400.00	2,400.00	2,386.19	2,385.77	8.38	8.14	175.13	-1,772.96	150.93	1,779.59	1,763.08	16.51	107.774	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
2,500.00	2,500.00	2,483.14	2,482.70	8.74	8.49	175.13	-1,771.50	150.93	1,778.10	1,760.88	17.22	103.267	
2,577.35	2,577.35	2,558.13	2,557.69	9.01	8.76	175.12	-1,770.49	150.93	1,777.55	1,759.79	17.76	100.064 CC	
2,600.00	2,599.99	2,580.09	2,579.65	9.10	8.84	175.12	-1,770.21	150.93	1,777.60	1,759.67	17.92	99.175 ES	
2,700.00	2,699.96	2,677.03	2,676.58	9.45	9.18	175.09	-1,769.09	150.93	1,778.92	1,760.30	18.63	95.494	
2,800.00	2,799.86	2,773.92	2,773.46	9.81	9.53	175.04	-1,768.13	150.93	1,782.08	1,762.74	19.33	92.176	
2,900.00	2,899.68	2,874.58	2,874.12	10.17	9.89	174.98	-1,767.22	150.93	1,786.96	1,766.91	20.05	89.118	
3,000.00	2,999.37	2,975.91	2,975.45	10.53	10.26	174.89	-1,766.22	150.93	1,793.42	1,772.65	20.77	86.337	
3,100.00	3,098.90	3,077.12	3,076.65	10.89	10.62	174.79	-1,765.12	150.93	1,801.45	1,779.96	21.49	83.816	
3,200.00	3,198.26	3,178.18	3,177.70	11.25	10.98	174.68	-1,763.94	150.93	1,811.05	1,788.83	22.21	81.531	
3,300.00	3,297.40	3,279.06	3,278.57	11.61	11.34	174.55	-1,762.68	150.93	1,822.21	1,799.28	22.93	79.460	
3,300.10	3,297.50	3,279.16	3,278.68	11.61	11.34	174.55	-1,762.68	150.93	1,822.22	1,799.29	22.93	79.458	
3,400.00	3,396.43	3,378.41	3,377.92	11.98	11.70	174.41	-1,761.38	150.93	1,834.16	1,810.51	23.65	77.564	
3,500.00	3,495.46	3,477.60	3,477.10	12.36	12.05	174.27	-1,760.08	150.93	1,846.12	1,821.76	24.36	75.781	
3,600.00	3,594.48	3,576.79	3,576.28	12.73	12.41	174.14	-1,758.78	150.93	1,858.09	1,833.01	25.08	74.097	
3,700.00	3,693.51	3,675.97	3,675.45	13.11	12.77	174.00	-1,757.48	150.93	1,870.07	1,844.27	25.79	72.504	
3,800.00	3,792.54	3,775.16	3,774.63	13.49	13.12	173.87	-1,756.18	150.93	1,882.05	1,855.54	26.51	70.996	
3,900.00	3,891.56	3,877.37	3,876.84	13.87	13.49	173.74	-1,754.78	150.93	1,893.99	1,866.75	27.24	69.534	
4,000.00	3,990.59	3,980.17	3,979.62	14.26	13.86	173.61	-1,753.17	150.93	1,905.74	1,877.77	27.97	68.136	
4,100.00	4,089.62	4,083.00	4,082.44	14.64	14.23	173.48	-1,751.36	150.93	1,917.32	1,888.62	28.70	66.801	
4,200.00	4,188.64	4,185.88	4,185.30	15.03	14.60	173.36	-1,749.36	150.93	1,928.72	1,899.29	29.43	65.525	
4,300.00	4,287.67	4,288.80	4,288.20	15.42	14.97	173.23	-1,747.17	150.93	1,939.95	1,909.78	30.17	64.304	
4,400.00	4,386.70	4,391.77	4,391.13	15.81	15.34	173.10	-1,744.78	150.93	1,950.99	1,920.09	30.90	63.133	
4,500.00	4,485.72	4,494.77	4,494.10	16.20	15.71	172.98	-1,742.19	150.93	1,961.86	1,930.22	31.64	62.010	
4,600.00	4,584.75	4,599.14	4,598.43	16.60	16.08	172.85	-1,739.33	150.93	1,972.52	1,940.14	32.38	60.922	
4,700.00	4,683.78	4,703.63	4,702.88	16.99	16.46	172.73	-1,736.20	150.93	1,982.93	1,949.81	33.12	59.873	
4,800.00	4,782.80	4,808.17	4,807.36	17.39	16.83	172.60	-1,732.80	150.93	1,993.09	1,959.23	33.86	58.861	
4,900.00	4,881.83	4,911.67	4,910.80	17.78	17.21	172.48	-1,729.17	150.93	2,003.02	1,968.42	34.60	57.893	
5,000.00	4,980.85	5,014.49	5,013.55	18.18	17.58	172.36	-1,725.39	150.93	2,012.79	1,977.45	35.33	56.963	
5,100.00	5,079.88	5,117.35	5,116.33	18.58	17.95	172.23	-1,721.43	150.93	2,022.39	1,986.32	36.07	56.066	
5,200.00	5,178.91	5,219.72	5,218.62	18.98	18.32	172.11	-1,717.33	150.93	2,031.85	1,995.05	36.81	55.204	
5,300.00	5,277.93	5,322.15	5,320.96	19.38	18.69	171.99	-1,713.07	150.93	2,041.18	2,003.63	37.54	54.371	
5,400.00	5,376.96	5,424.60	5,423.32	19.78	19.06	171.87	-1,708.67	150.93	2,050.37	2,012.09	38.28	53.566	
5,500.00	5,475.99	5,520.34	5,518.97	20.18	19.41	171.75	-1,704.58	150.93	2,059.59	2,020.60	38.99	52.824	
5,600.00	5,575.01	5,616.51	5,615.06	20.58	19.75	171.63	-1,700.63	150.93	2,068.99	2,029.29	39.70	52.112	
5,700.00	5,674.04	5,712.65	5,711.12	20.98	20.10	171.52	-1,696.84	150.93	2,078.55	2,038.14	40.42	51.428	
5,800.00	5,773.07	5,808.76	5,807.17	21.39	20.45	171.40	-1,693.20	150.93	2,088.28	2,047.15	41.13	50.773	
5,898.39	5,870.50	5,903.30	5,901.64	21.78	20.79	171.29	-1,689.77	150.93	2,098.02	2,056.19	41.83	50.154	
5,900.00	5,872.09	5,904.85	5,903.19	21.79	20.80	171.29	-1,689.72	150.93	2,098.18	2,056.34	41.84	50.144	
6,000.00	5,971.24	6,000.91	5,999.20	22.19	21.14	171.19	-1,686.39	150.93	2,107.38	2,064.82	42.55	49.522	
6,100.00	6,070.60	6,097.06	6,095.29	22.58	21.49	171.10	-1,683.22	150.93	2,115.06	2,071.80	43.27	48.886	
6,200.00	6,170.14	6,193.31	6,191.50	22.97	21.84	171.02	-1,680.21	150.93	2,121.24	2,077.26	43.97	48.238	
6,300.00	6,269.83	6,289.64	6,287.79	23.35	22.18	170.95	-1,677.36	150.93	2,125.89	2,081.21	44.68	47.578	
6,400.00	6,369.65	6,386.04	6,384.15	23.71	22.53	170.90	-1,674.67	150.93	2,129.02	2,083.64	45.39	46.908	
6,500.00	6,469.55	6,484.15	6,482.22	24.07	22.88	170.86	-1,672.08	150.93	2,130.62	2,084.52	46.10	46.220	
6,600.00	6,569.52	6,584.14	6,582.18	24.43	23.24	170.83	-1,669.47	150.93	2,130.54	2,083.73	46.81	45.512	
6,698.49	6,668.00	6,682.61	6,680.61	24.77	23.60	170.82	-1,666.89	150.93	2,128.82	2,081.30	47.51	44.803	
6,700.00	6,669.51	6,684.12	6,682.12	24.77	23.60	170.82	-1,666.85	150.93	2,128.78	2,081.25	47.53	44.792	
6,800.00	6,769.51	6,783.01	6,780.98	25.11	23.96	170.80	-1,664.27	150.93	2,126.21	2,077.98	48.23	44.083	
6,900.00	6,869.51	6,880.85	6,878.78	25.45	24.31	170.79	-1,661.81	150.93	2,123.72	2,074.79	48.94	43.399	
7,000.00	6,969.51	6,978.68	6,976.59	25.80	24.66	170.78	-1,659.45	150.93	2,121.34	2,071.70	49.64	42.736	
7,100.00	7,069.51	7,076.52	7,074.41	26.14	25.02	170.77	-1,657.19	150.93	2,119.06	2,068.72	50.34	42.094	
7,200.00	7,169.51	7,174.37	7,172.23	26.48	25.37	170.76	-1,655.02	150.93	2,116.88	2,065.83	51.04	41.471	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
7,300.00	7,269.51	7,270.24	7,268.08	26.82	25.71	170.76	-1,653.06	150.93	2,114.85	2,063.11	51.74	40.875	
7,400.00	7,369.51	7,366.47	7,364.29	27.17	26.06	170.75	-1,651.26	150.93	2,113.01	2,060.57	52.44	40.296	
7,500.00	7,469.51	7,462.70	7,460.51	27.51	26.40	170.74	-1,649.63	150.93	2,111.33	2,058.20	53.13	39.737	
7,600.00	7,569.51	7,558.95	7,556.74	27.85	26.75	170.73	-1,648.17	150.93	2,109.84	2,056.01	53.83	39.194	
7,700.00	7,669.51	7,660.21	7,658.00	28.20	27.11	170.73	-1,646.78	150.93	2,108.48	2,053.93	54.55	38.654	
7,800.00	7,769.51	7,770.18	7,767.95	28.54	27.51	170.72	-1,644.88	150.93	2,106.78	2,051.48	55.30	38.096	
7,900.00	7,869.51	7,880.12	7,877.87	28.89	27.90	170.71	-1,642.46	150.93	2,104.61	2,048.55	56.05	37.546	
8,000.00	7,969.51	7,990.04	7,987.75	29.24	28.30	170.70	-1,639.51	150.93	2,101.96	2,045.15	56.81	37.003	
8,100.00	8,069.51	8,099.93	8,097.58	29.58	28.69	170.68	-1,636.03	150.93	2,098.84	2,041.28	57.56	36.466	
8,200.00	8,169.51	8,204.76	8,202.35	29.93	29.07	170.66	-1,632.32	150.93	2,095.34	2,037.05	58.29	35.949	
8,300.00	8,269.51	8,308.45	8,305.97	30.27	29.45	170.65	-1,628.45	150.93	2,091.66	2,032.65	59.01	35.444	
8,400.00	8,369.51	8,412.13	8,409.56	30.62	29.82	170.63	-1,624.40	150.93	2,087.80	2,028.06	59.74	34.948	
8,500.00	8,469.51	8,515.79	8,513.14	30.97	30.20	170.61	-1,620.15	150.93	2,083.76	2,023.29	60.47	34.461	
8,600.00	8,569.51	8,619.44	8,616.69	31.32	30.57	170.59	-1,615.72	150.93	2,079.54	2,018.35	61.19	33.983	
8,700.00	8,669.51	8,710.82	8,708.00	31.66	30.90	170.57	-1,611.93	150.93	2,075.45	2,013.57	61.88	33.542	
8,800.00	8,769.51	8,802.52	8,799.63	32.01	31.23	170.56	-1,608.49	150.93	2,071.75	2,009.19	62.56	33.116	
8,900.00	8,869.51	8,894.24	8,891.30	32.36	31.56	170.54	-1,605.42	150.93	2,068.45	2,005.20	63.24	32.706	
9,000.00	8,969.51	8,985.99	8,983.00	32.71	31.89	170.53	-1,602.72	150.93	2,065.54	2,001.62	63.93	32.311	
9,100.00	9,069.51	9,077.75	9,074.74	33.06	32.22	170.52	-1,600.39	150.93	2,063.04	1,998.43	64.61	31.931	
9,200.00	9,169.51	9,173.43	9,170.39	33.40	32.57	170.51	-1,598.29	150.93	2,060.87	1,995.56	65.31	31.557	
9,300.00	9,269.51	9,271.65	9,268.59	33.75	32.92	170.50	-1,596.24	150.93	2,058.81	1,992.80	66.01	31.188	
9,400.00	9,369.51	9,369.87	9,366.79	34.10	33.27	170.49	-1,594.27	150.93	2,056.84	1,990.12	66.72	30.828	
9,500.00	9,469.51	9,468.09	9,465.00	34.45	33.63	170.48	-1,592.39	150.93	2,054.95	1,987.53	67.43	30.477	
9,600.00	9,569.51	9,566.32	9,563.21	34.80	33.98	170.48	-1,590.60	150.93	2,053.15	1,985.02	68.13	30.134	
9,700.00	9,669.51	9,670.16	9,667.03	35.15	34.35	170.47	-1,588.71	150.93	2,051.36	1,982.50	68.86	29.789	
9,800.00	9,769.51	9,778.29	9,775.14	35.50	34.74	170.46	-1,586.36	150.93	2,049.21	1,979.61	69.61	29.439	
9,900.00	9,869.51	9,886.40	9,883.21	35.85	35.13	170.44	-1,583.57	150.93	2,046.67	1,976.32	70.36	29.091	
10,000.00	9,969.51	9,994.49	9,991.25	36.20	35.52	170.43	-1,580.35	150.93	2,043.73	1,972.63	71.10	28.745	
10,011.53	9,981.04	10,006.95	10,003.70	36.24	35.56	170.43	-1,579.95	150.93	2,043.37	1,972.18	71.19	28.705 SF	
10,100.00	10,069.51	9,960.00	9,956.78	36.55	35.40	170.43	-1,581.43	150.93	2,045.00	1,973.79	71.21	28.719	
10,200.00	10,169.51	9,960.00	9,956.78	36.90	35.40	170.43	-1,581.43	150.93	2,050.87	1,979.54	71.33	28.752	
10,300.00	10,269.51	9,960.00	9,956.78	37.25	35.40	170.43	-1,581.43	150.93	2,061.59	1,990.25	71.34	28.900	
10,400.00	10,369.51	9,960.00	9,956.78	37.60	35.40	170.43	-1,581.43	150.93	2,077.07	2,005.84	71.23	29.160	
10,500.00	10,469.51	9,960.00	9,956.78	37.95	35.40	170.43	-1,581.43	150.93	2,097.21	2,026.18	71.02	29.528	
10,600.00	10,569.51	9,960.00	9,956.78	38.31	35.40	170.43	-1,581.43	150.93	2,121.87	2,051.15	70.72	30.002	
10,700.00	10,669.51	9,960.00	9,956.78	38.66	35.40	170.43	-1,581.43	150.93	2,150.91	2,080.57	70.34	30.577	
10,800.00	10,769.51	9,960.00	9,956.78	39.01	35.40	170.43	-1,581.43	150.93	2,184.14	2,114.25	69.90	31.249	
10,900.00	10,869.51	9,960.00	9,956.78	39.36	35.40	170.43	-1,581.43	150.93	2,221.38	2,151.99	69.39	32.012	
11,000.00	10,969.51	9,960.00	9,956.78	39.71	35.40	170.43	-1,581.43	150.93	2,262.43	2,193.59	68.84	32.863	
11,100.00	11,069.51	9,960.00	9,956.78	40.06	35.40	170.43	-1,581.43	150.93	2,307.09	2,238.83	68.27	33.795	
11,200.00	11,169.51	9,960.00	9,956.78	40.41	35.40	170.43	-1,581.43	150.93	2,355.15	2,287.48	67.67	34.804	
11,300.00	11,269.51	9,960.00	9,956.78	40.77	35.40	170.43	-1,581.43	150.93	2,406.41	2,339.35	67.06	35.883	
11,400.00	11,369.51	9,960.00	9,956.78	41.12	35.40	170.43	-1,581.43	150.93	2,460.67	2,394.21	66.45	37.028	
11,500.00	11,469.51	9,960.00	9,956.78	41.47	35.40	170.43	-1,581.43	150.93	2,517.73	2,451.87	65.85	38.232	
11,600.00	11,569.51	9,960.00	9,956.78	41.82	35.40	170.43	-1,581.43	150.93	2,577.40	2,512.14	65.27	39.490	
11,700.00	11,669.51	9,960.00	9,956.78	42.18	35.40	170.43	-1,581.43	150.93	2,639.52	2,574.82	64.70	40.796	
11,800.00	11,769.51	9,960.00	9,956.78	42.53	35.40	170.43	-1,581.43	150.93	2,703.91	2,639.75	64.16	42.145	
11,900.00	11,869.51	9,960.00	9,956.78	42.88	35.40	170.43	-1,581.43	150.93	2,770.42	2,706.77	63.64	43.531	
11,902.93	11,872.44	9,960.00	9,956.78	42.89	35.40	170.43	-1,581.43	150.93	2,772.39	2,708.77	63.63	43.572	
11,950.00	11,919.46	9,960.00	9,956.78	43.04	35.40	170.43	-1,581.43	150.93	2,802.97	2,739.60	63.37	44.230	
12,000.00	11,969.05	9,960.00	9,956.78	43.19	35.40	170.44	-1,581.43	150.93	2,832.67	2,769.60	63.07	44.914	
12,050.00	12,017.90	9,960.00	9,956.78	43.32	35.40	170.45	-1,581.43	150.93	2,859.36	2,796.62	62.74	45.575	

center distance or coverage point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
12,100.00	12,065.65	9,960.00	9,956.78	43.44	35.40	170.46	-1,581.43	150.93	2,882.94	2,820.56	62.39	46.211			
12,150.00	12,111.93	9,960.00	9,956.78	43.56	35.40	170.47	-1,581.43	150.93	2,903.31	2,841.30	62.01	46.821			
12,200.00	12,156.38	9,960.00	9,956.78	43.66	35.40	170.49	-1,581.43	150.93	2,920.37	2,858.76	61.61	47.401			
12,250.00	12,198.67	9,960.00	9,956.78	43.75	35.40	170.51	-1,581.43	150.93	2,934.05	2,872.86	61.19	47.950			
12,300.00	12,238.48	9,960.00	9,956.78	43.83	35.40	170.53	-1,581.43	150.93	2,944.30	2,883.55	60.75	48.466			
12,350.00	12,275.51	9,960.00	9,956.78	43.90	35.40	170.56	-1,581.43	150.93	2,951.09	2,890.79	60.29	48.946			
12,400.00	12,309.46	9,960.00	9,956.78	43.97	35.40	170.59	-1,581.43	150.93	2,954.36	2,894.54	59.82	49.387			
12,450.00	12,340.09	9,960.00	9,956.78	44.04	35.40	170.63	-1,581.43	150.93	2,954.13	2,894.79	59.34	49.786			
12,500.00	12,367.17	9,960.00	9,956.78	44.10	35.40	170.66	-1,581.43	150.93	2,950.38	2,891.54	58.84	50.140			
12,550.00	12,390.47	9,960.00	9,956.78	44.16	35.40	170.71	-1,581.43	150.93	2,943.14	2,884.80	58.34	50.446			
12,600.00	12,409.84	9,960.00	9,956.78	44.22	35.40	170.75	-1,581.43	150.93	2,932.42	2,874.58	57.84	50.699			
12,650.00	12,425.11	9,960.00	9,956.78	44.28	35.40	170.81	-1,581.43	150.93	2,918.29	2,860.95	57.34	50.896			
12,700.00	12,436.18	9,960.00	9,956.78	44.35	35.40	170.86	-1,581.43	150.93	2,900.78	2,843.94	56.84	51.035			
12,750.00	12,442.96	9,960.00	9,956.78	44.42	35.40	170.92	-1,581.43	150.93	2,879.99	2,823.64	56.35	51.110			
12,800.00	12,445.39	9,960.00	9,956.78	44.49	35.40	170.99	-1,581.43	150.93	2,855.98	2,800.11	55.87	51.119			
12,807.86	12,445.38	9,960.00	9,956.78	44.51	35.40	171.00	-1,581.43	150.93	2,851.93	2,796.13	55.80	51.112			
12,900.00	12,444.58	9,960.00	9,956.78	44.68	35.40	171.13	-1,581.43	150.93	2,805.01	2,750.08	54.93	51.068			
13,000.00	12,443.72	9,960.00	9,956.78	44.94	35.40	171.30	-1,581.43	150.93	2,756.68	2,702.67	54.00	51.047			
13,100.00	12,442.86	9,960.00	9,956.78	45.27	35.40	171.50	-1,581.43	150.93	2,711.17	2,658.06	53.11	51.048			
13,200.00	12,442.00	9,960.00	9,956.78	45.66	35.40	171.73	-1,581.43	150.93	2,668.64	2,616.37	52.27	51.059			
13,300.00	12,441.14	9,960.00	9,956.78	46.11	35.40	172.01	-1,581.43	150.93	2,629.22	2,577.73	51.48	51.068			
13,400.00	12,440.28	9,960.00	9,956.78	46.63	35.40	172.35	-1,581.43	150.93	2,593.06	2,542.28	50.78	51.062			
13,500.00	12,439.42	9,960.00	9,956.78	47.20	35.40	172.78	-1,581.43	150.93	2,560.30	2,510.12	50.18	51.024			
13,600.00	12,438.56	9,960.00	9,956.78	47.83	35.40	173.34	-1,581.43	150.93	2,531.07	2,481.38	49.69	50.939			
13,700.00	12,437.70	9,960.00	9,956.78	48.52	35.40	174.10	-1,581.43	150.93	2,505.50	2,456.17	49.33	50.792			
13,727.27	12,437.47	9,960.00	9,956.78	48.71	35.40	174.35	-1,581.43	150.93	2,499.17	2,449.91	49.26	50.739			
13,800.00	12,436.84	9,960.00	9,956.78	49.25	35.40	175.06	-1,581.43	150.93	2,483.67	2,434.55	49.11	50.570			
13,900.00	12,435.98	9,960.00	9,956.78	50.02	35.40	176.01	-1,581.43	150.93	2,465.65	2,416.60	49.05	50.266			
14,000.00	12,435.11	9,960.00	9,956.78	50.83	35.40	176.94	-1,581.43	150.93	2,451.54	2,402.39	49.15	49.876			
14,100.00	12,434.25	9,960.00	9,956.78	51.66	35.40	177.78	-1,581.43	150.93	2,441.44	2,392.02	49.42	49.402			
14,200.00	12,433.39	9,960.00	9,956.78	52.52	35.40	178.21	-1,581.43	150.93	2,435.40	2,385.55	49.85	48.850			
14,259.68	12,432.87	9,960.00	9,956.78	53.04	35.40	175.17	-1,581.43	150.93	2,433.75	2,383.56	50.19	48.489			
14,297.22	12,432.55	9,960.00	9,956.78	53.38	35.40	3.20	-1,581.43	150.93	2,433.46	2,383.03	50.43	48.251			
14,300.00	12,432.52	9,960.00	9,956.78	53.40	35.40	2.78	-1,581.43	150.93	2,433.46	2,383.01	50.45	48.234			
14,400.00	12,431.66	9,960.00	9,956.78	54.32	35.40	0.25	-1,581.43	150.93	2,435.63	2,384.43	51.20	47.568			
14,500.00	12,430.80	9,960.00	9,956.78	55.27	35.40	-0.02	-1,581.43	150.93	2,441.89	2,389.80	52.10	46.873			
14,600.00	12,429.94	9,960.00	9,956.78	56.25	35.40	-0.12	-1,581.43	150.93	2,452.22	2,399.11	53.11	46.170			
14,700.00	12,429.08	9,960.00	9,956.78	57.26	35.40	-0.18	-1,581.43	150.93	2,466.57	2,412.33	54.23	45.480			
14,800.00	12,428.22	9,960.00	9,956.78	58.31	35.40	-0.21	-1,581.43	150.93	2,484.86	2,429.42	55.44	44.819			
14,900.00	12,427.36	9,960.00	9,956.78	59.38	35.40	-0.23	-1,581.43	150.93	2,507.01	2,450.29	56.71	44.205			
15,000.00	12,426.50	9,960.00	9,956.78	60.47	35.40	-0.25	-1,581.43	150.93	2,532.91	2,474.88	58.03	43.649			
15,100.00	12,425.64	9,960.00	9,956.78	61.60	35.40	-0.26	-1,581.43	150.93	2,562.46	2,503.08	59.37	43.159			
15,200.00	12,424.78	9,960.00	9,956.78	62.74	35.40	-0.27	-1,581.43	150.93	2,595.52	2,534.80	60.72	42.742			
15,300.00	12,423.92	9,960.00	9,956.78	63.91	35.40	-0.28	-1,581.43	150.93	2,631.98	2,569.90	62.07	42.401			
15,400.00	12,423.06	9,960.00	9,956.78	65.10	35.40	-0.29	-1,581.43	150.93	2,671.68	2,608.27	63.40	42.137			
15,500.00	12,422.20	9,960.00	9,956.78	66.31	35.40	-0.29	-1,581.43	150.93	2,714.48	2,649.77	64.71	41.950			
15,600.00	12,421.34	9,960.00	9,956.78	67.54	35.40	-0.30	-1,581.43	150.93	2,760.25	2,694.27	65.98	41.837			
15,700.00	12,420.48	9,960.00	9,956.78	68.79	35.40	-0.30	-1,581.43	150.93	2,808.83	2,741.63	67.20	41.796			
15,800.00	12,419.62	9,960.00	9,956.78	70.06	35.40	-0.30	-1,581.43	150.93	2,860.08	2,791.70	68.38	41.823			
15,900.00	12,418.76	9,960.00	9,956.78	71.34	35.40	-0.31	-1,581.43	150.93	2,913.87	2,844.35	69.52	41.916			
16,000.00	12,417.90	9,960.00	9,956.78	72.63	35.40	-0.31	-1,581.43	150.93	2,970.05	2,899.45	70.60	42.070			
16,100.00	12,417.03	9,960.00	9,956.78	73.94	35.40	-0.31	-1,581.43	150.93	3,028.49	2,956.86	71.63	42.281			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)			
16,200.00	12,416.17	9,960.00	9,956.78	75.27	35.40	-0.31	-1,581.43	150.93	3,089.06	3,016.46	72.61	42.546	
16,300.00	12,415.31	9,960.00	9,956.78	76.80	35.40	-0.31	-1,581.43	150.93	3,151.64	3,078.11	73.53	42.861	
16,400.00	12,414.45	9,960.00	9,956.78	77.95	35.40	-0.32	-1,581.43	150.93	3,216.12	3,141.71	74.41	43.222	
16,500.00	12,413.59	9,960.00	9,956.78	79.31	35.40	-0.32	-1,581.43	150.93	3,282.37	3,207.13	75.24	43.626	
16,600.00	12,412.73	9,960.00	9,956.78	80.69	35.40	-0.32	-1,581.43	150.93	3,350.30	3,274.28	76.02	44.071	
16,700.00	12,411.87	9,960.00	9,956.78	82.07	35.40	-0.32	-1,581.43	150.93	3,419.81	3,343.05	76.76	44.553	
16,800.00	12,411.01	9,960.00	9,956.78	83.46	35.40	-0.32	-1,581.43	150.93	3,490.79	3,413.34	77.45	45.069	
16,900.00	12,410.15	9,960.00	9,956.78	84.87	35.40	-0.32	-1,581.43	150.93	3,563.17	3,485.06	78.11	45.617	
17,000.00	12,409.29	9,960.00	9,956.78	86.28	35.40	-0.32	-1,581.43	150.93	3,636.86	3,558.13	78.73	46.195	
17,100.00	12,408.43	9,960.00	9,956.78	87.70	35.40	-0.33	-1,581.43	150.93	3,711.78	3,632.47	79.31	46.800	
17,200.00	12,407.57	9,960.00	9,956.78	89.13	35.40	-0.33	-1,581.43	150.93	3,787.86	3,708.00	79.86	47.431	
17,300.00	12,406.71	9,960.00	9,956.78	90.56	35.40	-0.33	-1,581.43	150.93	3,865.03	3,784.65	80.38	48.085	
17,400.00	12,405.85	9,960.00	9,956.78	92.01	35.40	-0.33	-1,581.43	150.93	3,943.22	3,862.35	80.87	48.761	
17,500.00	12,404.99	9,960.00	9,956.78	93.46	35.40	-0.33	-1,581.43	150.93	4,022.38	3,941.05	81.33	49.457	
17,600.00	12,404.13	9,960.00	9,956.78	94.91	35.40	-0.33	-1,581.43	150.93	4,102.45	4,020.68	81.77	50.173	
17,700.00	12,403.27	9,960.00	9,956.78	96.38	35.40	-0.33	-1,581.43	150.93	4,183.38	4,101.20	82.18	50.906	
17,800.00	12,402.41	9,960.00	9,956.78	97.85	35.40	-0.33	-1,581.43	150.93	4,265.11	4,182.55	82.57	51.655	
17,900.00	12,401.55	9,960.00	9,956.78	99.32	35.40	-0.33	-1,581.43	150.93	4,347.62	4,264.68	82.94	52.419	
18,000.00	12,400.68	9,960.00	9,956.78	100.81	35.40	-0.33	-1,581.43	150.93	4,430.84	4,347.55	83.29	53.198	
18,100.00	12,399.82	9,960.00	9,956.78	102.29	35.40	-0.33	-1,581.43	150.93	4,514.74	4,431.12	83.62	53.990	
18,200.00	12,398.96	9,960.00	9,956.78	103.79	35.40	-0.33	-1,581.43	150.93	4,599.29	4,515.35	83.94	54.793	
18,300.00	12,398.10	9,960.00	9,956.78	105.28	35.40	-0.33	-1,581.43	150.93	4,684.44	4,600.20	84.24	55.609	
18,400.00	12,397.24	9,960.00	9,956.78	106.78	35.40	-0.33	-1,581.43	150.93	4,770.17	4,685.65	84.53	56.434	
18,500.00	12,396.38	9,960.00	9,956.78	108.29	35.40	-0.33	-1,581.43	150.93	4,856.45	4,771.65	84.80	57.270	
18,600.00	12,395.52	9,960.00	9,956.78	109.80	35.40	-0.33	-1,581.43	150.93	4,943.24	4,858.18	85.06	58.115	
18,700.00	12,394.66	9,960.00	9,956.78	111.32	35.40	-0.33	-1,581.43	150.93	5,030.53	4,945.22	85.31	58.968	
18,800.00	12,393.80	9,960.00	9,956.78	112.84	35.40	-0.34	-1,581.43	150.93	5,118.28	5,032.73	85.55	59.829	
18,900.00	12,392.94	9,960.00	9,956.78	114.36	35.40	-0.34	-1,581.43	150.93	5,206.47	5,120.69	85.78	60.698	
19,000.00	12,392.08	9,960.00	9,956.78	115.89	35.40	-0.34	-1,581.43	150.93	5,295.08	5,209.08	86.00	61.574	
19,100.00	12,391.22	9,960.00	9,956.78	117.42	35.40	-0.34	-1,581.43	150.93	5,384.09	5,297.88	86.21	62.455	
19,200.00	12,390.36	9,960.00	9,956.78	118.95	35.40	-0.34	-1,581.43	150.93	5,473.48	5,387.07	86.41	63.343	
19,300.00	12,389.50	9,960.00	9,956.78	120.49	35.40	-0.34	-1,581.43	150.93	5,563.23	5,476.63	86.61	64.237	
19,400.00	12,388.64	9,960.00	9,956.78	122.03	35.40	-0.34	-1,581.43	150.93	5,653.33	5,566.53	86.79	65.135	
19,500.00	12,387.78	9,960.00	9,956.78	123.57	35.40	-0.34	-1,581.43	150.93	5,743.75	5,656.77	86.98	66.038	
19,600.00	12,386.92	9,960.00	9,956.78	125.12	35.40	-0.34	-1,581.43	150.93	5,834.49	5,747.33	87.15	66.946	
19,700.00	12,386.06	9,960.00	9,956.78	126.66	35.40	-0.34	-1,581.43	150.93	5,925.52	5,838.20	87.32	67.857	
19,800.00	12,385.20	9,960.00	9,956.78	128.22	35.40	-0.34	-1,581.43	150.93	6,016.84	5,929.35	87.49	68.773	
19,900.00	12,384.33	9,960.00	9,956.78	129.77	35.40	-0.34	-1,581.43	150.93	6,108.43	6,020.78	87.65	69.692	
20,000.00	12,383.47	9,960.00	9,956.78	131.33	35.40	-0.34	-1,581.43	150.93	6,200.28	6,112.47	87.81	70.614	
20,100.00	12,382.61	9,960.00	9,956.78	132.89	35.40	-0.34	-1,581.43	150.93	6,292.38	6,204.42	87.96	71.538	
20,200.00	12,381.75	9,960.00	9,956.78	134.45	35.40	-0.34	-1,581.43	150.93	6,384.71	6,296.61	88.11	72.466	
20,300.00	12,380.89	9,960.00	9,956.78	136.01	35.40	-0.34	-1,581.43	150.93	6,477.28	6,389.03	88.25	73.396	
20,400.00	12,380.03	9,960.00	9,956.78	137.58	35.40	-0.34	-1,581.43	150.93	6,570.06	6,481.67	88.39	74.328	
20,500.00	12,379.17	9,960.00	9,956.78	139.15	35.40	-0.34	-1,581.43	150.93	6,663.05	6,574.52	88.53	75.262	
20,600.00	12,378.31	9,960.00	9,956.78	140.72	35.40	-0.34	-1,581.43	150.93	6,756.24	6,667.57	88.67	76.198	
20,700.00	12,377.45	9,960.00	9,956.78	142.29	35.40	-0.34	-1,581.43	150.93	6,849.62	6,760.82	88.80	77.136	
20,800.00	12,376.59	9,960.00	9,956.78	143.86	35.40	-0.34	-1,581.43	150.93	6,943.19	6,854.26	88.93	78.075	
20,900.00	12,375.73	9,960.00	9,956.78	145.44	35.40	-0.34	-1,581.43	150.93	7,036.93	6,947.88	89.06	79.015	
21,000.00	12,374.87	9,960.00	9,956.78	147.02	35.40	-0.34	-1,581.43	150.93	7,130.85	7,041.66	89.18	79.957	
21,100.00	12,374.01	9,960.00	9,956.78	148.59	35.40	-0.34	-1,581.43	150.93	7,224.93	7,135.62	89.31	80.899	
21,200.00	12,373.15	9,960.00	9,956.78	150.18	35.40	-0.34	-1,581.43	150.93	7,319.16	7,229.73	89.43	81.842	
21,300.00	12,372.29	9,960.00	9,956.78	151.76	35.40	-0.34	-1,581.43	150.93	7,413.55	7,324.00	89.55	82.786	

distance or coverage point. SF - min separation factor. ES - min ellipse separation



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
21,400.00	12,371.43	9,960.00	9,956.78	153.34	35.40	-0.34	-1,581.43	150.93	7,508.08	7,418.41	89.67	83.730			
21,500.00	12,370.57	9,960.00	9,956.78	154.93	35.40	-0.34	-1,581.43	150.93	7,602.75	7,512.96	89.79	84.675			
21,600.00	12,369.71	9,960.00	9,956.78	156.52	35.40	-0.34	-1,581.43	150.93	7,697.55	7,607.65	89.90	85.620			
21,700.00	12,368.85	9,960.00	9,956.78	158.11	35.40	-0.34	-1,581.43	150.93	7,792.49	7,702.47	90.02	86.565			
21,800.00	12,367.98	9,960.00	9,956.78	159.70	35.40	-0.34	-1,581.43	150.93	7,887.55	7,797.42	90.13	87.510			
21,900.00	12,367.12	9,960.00	9,956.78	161.29	35.40	-0.34	-1,581.43	150.93	7,982.73	7,892.49	90.25	88.455			
22,000.00	12,366.26	9,960.00	9,956.78	162.88	35.40	-0.34	-1,581.43	150.93	8,078.03	7,987.67	90.36	89.400			
22,100.00	12,365.40	9,960.00	9,956.78	164.47	35.40	-0.34	-1,581.43	150.93	8,173.44	8,082.97	90.47	90.344			
22,200.00	12,364.54	9,960.00	9,956.78	166.07	35.40	-0.34	-1,581.43	150.93	8,268.96	8,178.38	90.58	91.289			
22,300.00	12,363.68	9,960.00	9,956.78	167.67	35.40	-0.34	-1,581.43	150.93	8,364.58	8,273.89	90.69	92.232			
22,400.00	12,362.82	9,960.00	9,956.78	169.26	35.40	-0.34	-1,581.43	150.93	8,460.31	8,369.51	90.80	93.176			
22,500.00	12,361.96	9,960.00	9,956.78	170.86	35.40	-0.34	-1,581.43	150.93	8,556.13	8,465.22	90.91	94.118			
22,565.16	12,361.40	9,960.00	9,956.78	171.78	35.40	-0.34	-1,581.43	150.93	8,618.62	8,523.60	95.02	90.704			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-160.60	-5,135.45	-1,808.75	5,444.77				
100.00	100.00	42.30	42.30	0.13	0.04	-160.60	-5,135.56	-1,808.71	5,444.82	5,444.65	0.17	N/A	
200.00	200.00	121.18	121.18	0.49	0.29	-160.60	-5,136.14	-1,808.68	5,445.49	5,444.70	0.78	6,942.984	
300.00	300.00	235.38	235.38	0.85	0.69	-160.60	-5,136.88	-1,809.30	5,446.29	5,444.75	1.54	3,531.146	
400.00	400.00	348.18	348.16	1.21	1.09	-160.58	-5,136.88	-1,810.85	5,446.74	5,444.45	2.30	2,370.442	
500.00	500.00	403.08	403.06	1.57	1.28	-160.57	-5,137.08	-1,811.71	5,447.56	5,444.71	2.85	1,911.977	
600.00	600.00	469.08	469.05	1.93	1.51	-160.57	-5,137.83	-1,812.59	5,449.07	5,445.63	3.44	1,584.539	
700.00	700.00	555.61	555.56	2.29	1.82	-160.57	-5,139.47	-1,813.29	5,451.11	5,447.01	4.10	1,329.591	
800.00	800.00	658.48	658.40	2.64	2.18	-160.56	-5,141.08	-1,814.45	5,452.95	5,448.13	4.82	1,131.726	
900.00	900.00	736.66	736.57	3.00	2.45	-160.56	-5,142.68	-1,815.22	5,455.20	5,449.75	5.45	1,000.887	
1,000.00	1,000.00	901.65	901.52	3.36	3.03	-160.55	-5,145.58	-1,817.05	5,457.37	5,450.98	6.39	854.416	
1,100.00	1,100.00	984.72	984.57	3.72	3.32	-160.54	-5,146.45	-1,817.95	5,458.73	5,451.69	7.04	775.765	
1,200.00	1,200.00	1,107.38	1,107.22	4.08	3.75	-160.54	-5,147.67	-1,819.24	5,460.00	5,452.18	7.82	697.796	
1,300.00	1,300.00	1,194.72	1,194.55	4.44	4.05	-160.53	-5,148.57	-1,819.90	5,461.23	5,452.74	8.49	643.339	
1,400.00	1,400.00	1,305.21	1,305.04	4.79	4.44	-160.53	-5,149.92	-1,820.17	5,462.46	5,453.23	9.23	591.522	
1,500.00	1,500.00	1,425.33	1,425.15	5.15	4.86	-160.54	-5,151.11	-1,820.37	5,463.46	5,453.45	10.01	545.601	
1,600.00	1,600.00	1,529.52	1,529.33	5.51	5.23	-160.53	-5,151.44	-1,821.45	5,464.10	5,453.36	10.74	508.930	
1,700.00	1,700.00	1,632.33	1,632.14	5.87	5.59	-160.52	-5,151.80	-1,822.59	5,464.80	5,453.35	11.45	477.091	
1,800.00	1,800.00	1,755.22	1,755.02	6.23	6.02	-160.50	-5,151.91	-1,823.92	5,465.26	5,453.01	12.24	446.435	
1,900.00	1,900.00	1,835.41	1,835.21	6.59	6.30	-160.50	-5,152.05	-1,824.52	5,465.67	5,452.79	12.88	424.327	
2,000.00	2,000.00	1,937.09	1,936.88	6.95	6.65	-160.50	-5,152.52	-1,824.99	5,466.26	5,452.66	13.60	402.072	
2,100.00	2,100.00	2,033.82	2,033.62	7.30	6.99	-160.49	-5,152.91	-1,825.56	5,466.83	5,452.54	14.29	382.503	
2,200.00	2,200.00	2,137.30	2,137.09	7.66	7.35	-160.49	-5,153.32	-1,826.19	5,467.41	5,452.40	15.01	364.182	
2,300.00	2,300.00	2,241.52	2,241.31	8.02	7.72	-160.48	-5,153.44	-1,827.38	5,467.90	5,452.17	15.74	347.485	
2,400.00	2,400.00	2,337.85	2,337.62	8.38	8.06	-160.46	-5,153.41	-1,828.93	5,468.41	5,451.98	16.43	332.818	
2,500.00	2,500.00	2,434.02	2,433.78	8.74	8.39	-160.45	-5,153.44	-1,830.42	5,468.96	5,451.83	17.13	319.351	
2,600.00	2,599.99	2,521.96	2,521.71	9.10	8.70	-160.45	-5,153.88	-1,831.10	5,470.33	5,452.54	17.79	307.484	
2,700.00	2,699.96	2,623.88	2,623.63	9.45	9.06	-160.46	-5,154.60	-1,831.64	5,473.07	5,454.57	18.50	295.766	
2,800.00	2,799.86	2,722.92	2,722.67	9.81	9.41	-160.49	-5,155.01	-1,832.56	5,476.96	5,457.75	19.21	285.130	
2,900.00	2,899.68	2,797.30	2,797.05	10.17	9.67	-160.53	-5,155.76	-1,832.80	5,482.48	5,462.65	19.83	276.530	
3,000.00	2,999.37	2,893.60	2,893.33	10.53	10.00	-160.59	-5,157.16	-1,832.55	5,489.50	5,468.98	20.52	267.503	
3,100.00	3,098.90	2,977.34	2,977.06	10.89	10.30	-160.67	-5,158.57	-1,832.25	5,497.99	5,476.82	21.17	259.672	
3,200.00	3,198.26	3,085.33	3,085.03	11.25	10.67	-160.75	-5,160.22	-1,832.61	5,507.84	5,485.93	21.91	251.369	
3,300.00	3,297.40	3,196.65	3,196.35	11.61	11.06	-160.84	-5,161.42	-1,833.44	5,518.67	5,496.01	22.66	243.504	
3,300.10	3,297.50	3,196.73	3,196.43	11.61	11.06	-160.84	-5,161.42	-1,833.44	5,518.68	5,496.02	22.66	243.498	
3,400.00	3,396.43	3,312.13	3,311.82	11.98	11.47	-160.94	-5,162.81	-1,833.95	5,530.22	5,506.78	23.43	236.015	
3,500.00	3,495.46	3,484.11	3,483.79	12.36	12.07	-161.02	-5,162.38	-1,835.47	5,540.37	5,515.97	24.40	227.095	
3,600.00	3,594.48	3,571.74	3,571.42	12.73	12.37	-161.11	-5,162.07	-1,835.89	5,550.45	5,525.38	25.07	221.417	
3,700.00	3,693.51	3,690.42	3,690.08	13.11	12.79	-161.19	-5,161.01	-1,837.39	5,560.28	5,534.44	25.85	215.107	
3,800.00	3,792.54	3,783.34	3,782.98	13.49	13.11	-161.27	-5,159.98	-1,838.97	5,570.09	5,543.55	26.54	209.861	
3,900.00	3,891.56	3,877.30	3,876.93	13.87	13.44	-161.35	-5,159.29	-1,839.98	5,580.05	5,552.81	27.24	204.852	
4,000.00	3,990.59	4,000.00	4,095.04	14.26	13.87	-161.51	-5,158.37	-1,833.01	5,588.95	5,560.92	28.04	199.352	
4,100.00	4,089.62	4,179.46	4,178.81	14.64	14.49	-161.65	-5,157.61	-1,828.33	5,596.75	5,567.72	29.04	192.742	
4,200.00	4,188.64	4,239.98	4,239.21	15.03	14.70	-161.78	-5,157.71	-1,824.45	5,605.29	5,575.67	29.62	189.212	
4,300.00	4,287.67	4,310.00	4,309.08	15.42	14.82	-161.92	-5,158.22	-1,820.00	5,614.44	5,584.31	30.12	186.390	
4,400.00	4,386.70	4,366.03	4,365.03	15.81	14.83	-162.05	-5,158.90	-1,816.95	5,624.30	5,593.80	30.50	184.400	
4,500.00	4,485.72	4,430.00	4,428.92	16.20	14.83	-162.17	-5,159.96	-1,814.03	5,634.89	5,604.02	30.88	182.481	
4,600.00	4,584.75	4,663.95	4,662.48	16.60	14.89	-162.40	-5,162.08	-1,801.00	5,644.46	5,613.14	31.32	180.225	
4,700.00	4,683.78	4,714.00	4,712.43	16.99	14.91	-162.52	-5,162.18	-1,797.84	5,653.35	5,621.63	31.71	178.261	
4,800.00	4,782.80	4,781.72	4,780.06	17.39	14.94	-162.65	-5,162.55	-1,794.36	5,662.93	5,630.81	32.12	176.307	
4,900.00	4,881.83	4,862.11	4,860.41	17.78	14.98	-162.77	-5,163.14	-1,791.80	5,673.20	5,640.66	32.54	174.370	
5,000.00	4,980.85	4,960.75	4,959.03	18.18	15.03	-162.88	-5,163.49	-1,789.96	5,683.54	5,650.57	32.97	172.394	

center distance or coverage point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	Offset Wellbore Centre +E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,079.88	5,069.43	5,067.70	18.58	15.10	-162.98	-5,163.56	-1,788.81	5,693.87	5,660.46	33.42	170.389		
5,200.00	5,178.91	5,167.03	5,165.29	18.98	15.17	-163.08	-5,163.45	-1,787.89	5,704.08	5,670.21	33.87	168.431		
5,300.00	5,277.93	5,281.14	5,279.40	19.38	15.26	-163.18	-5,163.27	-1,786.77	5,714.25	5,679.91	34.34	166.412		
5,400.00	5,376.96	5,358.01	5,356.26	19.78	15.33	-163.28	-5,163.18	-1,785.95	5,724.46	5,689.68	34.78	164.572		
5,500.00	5,475.99	5,456.35	5,454.60	20.18	15.42	-163.38	-5,163.31	-1,784.95	5,734.93	5,699.67	35.26	162.659		
5,600.00	5,575.01	5,547.87	5,546.12	20.58	15.52	-163.47	-5,163.40	-1,784.16	5,745.43	5,709.70	35.73	160.799		
5,700.00	5,674.04	5,646.29	5,644.54	20.98	15.63	-163.57	-5,163.53	-1,783.52	5,756.04	5,719.82	36.22	158.925		
5,800.00	5,773.07	5,756.91	5,755.16	21.39	15.75	-163.67	-5,163.60	-1,782.69	5,766.57	5,729.84	36.73	156.999		
5,898.39	5,870.50	5,850.35	5,848.60	21.78	15.87	-163.76	-5,163.52	-1,782.21	5,776.87	5,739.65	37.22	155.207		
5,900.00	5,872.09	5,852.05	5,850.29	21.79	15.87	-163.76	-5,163.52	-1,782.20	5,777.04	5,739.82	37.23	155.176		
6,000.00	5,971.24	5,956.70	5,954.94	22.19	16.01	-163.85	-5,163.45	-1,781.53	5,786.82	5,749.08	37.75	153.307		
6,100.00	6,070.60	6,058.02	6,056.26	22.58	16.15	-163.93	-5,163.38	-1,780.63	5,795.21	5,756.95	38.26	151.457		
6,200.00	6,170.14	6,160.20	6,158.44	22.97	16.30	-163.99	-5,163.22	-1,779.98	5,802.26	5,763.47	38.78	149.606		
6,300.00	6,269.83	6,257.93	6,256.16	23.35	16.45	-164.05	-5,162.99	-1,779.27	5,807.87	5,768.57	39.30	147.787		
6,400.00	6,369.65	6,341.38	6,339.61	23.71	16.58	-164.09	-5,163.00	-1,778.79	5,812.41	5,772.62	39.79	146.074		
6,500.00	6,469.55	6,440.72	6,438.95	24.07	16.74	-164.12	-5,163.05	-1,778.27	5,815.67	5,775.35	40.31	144.266		
6,600.00	6,569.52	6,526.98	6,525.20	24.43	16.89	-164.15	-5,163.32	-1,777.69	5,817.78	5,776.97	40.81	142.560		
6,698.49	6,668.00	6,640.39	6,638.61	24.77	17.09	-164.16	-5,163.64	-1,776.86	5,818.51	5,777.15	41.35	140.698		
6,700.00	6,669.51	6,642.20	6,640.42	24.77	17.09	-164.16	-5,163.64	-1,776.85	5,818.51	5,777.14	41.36	140.669		
6,800.00	6,769.51	6,741.49	6,739.71	25.11	17.27	-164.17	-5,163.66	-1,776.25	5,818.36	5,776.47	41.89	138.894		
6,817.48	6,786.99	6,755.67	6,753.89	25.17	17.29	-164.17	-5,163.68	-1,776.19	5,818.36	5,776.38	41.98	138.609		
6,900.00	6,869.51	6,822.59	6,820.81	25.45	17.42	-164.17	-5,163.84	-1,775.95	5,818.47	5,776.08	42.39	137.276		
7,000.00	6,969.51	6,910.44	6,908.66	25.80	17.58	-164.18	-5,164.38	-1,775.41	5,818.89	5,775.99	42.90	135.647		
7,100.00	7,069.51	7,022.84	7,021.06	26.14	17.80	-164.19	-5,165.01	-1,774.63	5,819.24	5,775.77	43.47	133.878		
7,200.00	7,169.51	7,120.10	7,118.31	26.48	18.00	-164.19	-5,165.45	-1,773.98	5,819.49	5,775.48	44.01	132.232		
7,300.00	7,269.51	7,206.03	7,204.24	26.82	18.17	-164.20	-5,165.96	-1,773.48	5,819.91	5,775.38	44.53	130.695		
7,400.00	7,369.51	7,295.05	7,293.25	27.17	18.35	-164.20	-5,166.65	-1,773.30	5,820.59	5,775.53	45.06	129.177		
7,500.00	7,469.51	7,396.46	7,394.66	27.51	18.56	-164.21	-5,167.44	-1,773.14	5,821.30	5,775.68	45.62	127.607		
7,600.00	7,569.51	7,490.27	7,488.46	27.85	18.76	-164.21	-5,168.23	-1,773.00	5,822.07	5,775.90	46.17	126.112		
7,700.00	7,669.51	7,577.63	7,575.82	28.20	18.95	-164.21	-5,169.09	-1,772.85	5,822.97	5,776.27	46.70	124.685		
7,800.00	7,769.51	7,658.81	7,656.99	28.54	19.12	-164.22	-5,170.16	-1,772.75	5,824.20	5,776.98	47.22	123.329		
7,900.00	7,869.51	7,765.88	7,764.05	28.89	19.36	-164.23	-5,171.74	-1,772.27	5,825.50	5,777.68	47.82	121.829		
8,000.00	7,969.51	7,870.23	7,868.39	29.24	19.60	-164.24	-5,173.22	-1,771.66	5,826.70	5,778.30	48.41	120.367		
8,100.00	8,069.51	7,961.09	7,959.24	29.58	19.81	-164.24	-5,174.40	-1,771.38	5,827.88	5,778.92	48.97	119.016		
8,200.00	8,169.51	8,096.49	8,094.63	29.93	20.13	-164.25	-5,176.30	-1,771.38	5,829.34	5,779.70	49.64	117.435		
8,300.00	8,269.51	8,214.67	8,212.80	30.27	20.39	-164.24	-5,176.67	-1,772.04	5,829.78	5,779.51	50.26	115.986		
8,400.00	8,369.51	8,317.08	8,315.21	30.62	20.63	-164.24	-5,176.93	-1,772.45	5,830.13	5,779.28	50.85	114.647		
8,500.00	8,469.51	8,397.35	8,395.48	30.97	20.82	-164.24	-5,177.33	-1,772.62	5,830.67	5,779.27	51.39	113.453		
8,600.00	8,569.51	8,483.36	8,481.49	31.32	21.03	-164.24	-5,177.99	-1,772.91	5,831.49	5,779.54	51.95	112.249		
8,700.00	8,669.51	8,623.74	8,621.86	31.66	21.37	-164.23	-5,178.63	-1,773.60	5,832.06	5,779.41	52.65	110.767		
8,800.00	8,769.51	8,721.08	8,719.20	32.01	21.61	-164.22	-5,178.61	-1,774.40	5,832.27	5,779.03	53.24	109.548		
8,900.00	8,869.51	8,801.90	8,800.02	32.36	21.81	-164.22	-5,178.82	-1,775.03	5,832.72	5,778.94	53.79	108.441		
9,000.00	8,969.51	8,886.50	8,884.62	32.71	22.02	-164.21	-5,179.26	-1,775.95	5,833.51	5,779.16	54.35	107.338		
9,100.00	9,069.51	9,012.88	9,010.98	33.06	22.34	-164.20	-5,179.69	-1,777.69	5,834.23	5,779.21	55.02	106.034		
9,200.00	9,169.51	9,152.77	9,150.86	33.40	22.69	-164.18	-5,179.35	-1,779.30	5,834.30	5,778.57	55.74	104.678		
9,300.00	9,269.51	9,283.07	9,281.15	33.75	23.02	-164.17	-5,178.25	-1,780.36	5,833.69	5,777.26	56.43	103.385		
9,400.00	9,369.51	9,346.00	9,344.07	34.10	23.18	-164.16	-5,177.55	-1,781.17	5,833.07	5,776.13	56.94	102.446		
9,452.23	9,421.74	9,390.58	9,388.64	34.28	23.30	-164.15	-5,177.20	-1,781.85	5,832.91	5,775.67	57.24	101.906		
9,500.00	9,469.51	9,415.90	9,413.96	34.45	23.37	-164.15	-5,177.17	-1,782.13	5,833.00	5,775.53	57.47	101.497		
9,600.00	9,569.51	9,494.16	9,492.22	34.80	23.58	-164.14	-5,177.60	-1,782.63	5,833.68	5,775.65	58.03	100.531		
9,700.00	9,669.51	9,628.23	9,626.28	35.15	23.94	-164.14	-5,178.21	-1,783.17	5,834.26	5,775.51	58.75	99.306		
9,800.00	9,769.51	9,702.35	9,700.41	35.50	24.14	-164.14	-5,178.39	-1,783.60	5,834.64	5,775.34	59.30	98.393		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
9,900.00	9,869.51	9,814.96	9,813.01	35.85	24.45	-164.13	-5,178.89	-1,784.28	5,835.25	5,775.29	59.96	97.313		
10,000.00	9,969.51	9,882.36	9,880.41	36.20	24.64	-164.13	-5,179.30	-1,784.47	5,835.92	5,775.42	60.50	96.463		
10,100.00	10,069.51	10,055.32	10,053.36	36.55	25.11	-164.12	-5,179.58	-1,785.20	5,836.14	5,774.79	61.34	95.137		
10,141.86	10,111.37	10,080.24	10,078.28	36.70	25.18	-164.12	-5,179.52	-1,785.30	5,836.09	5,774.53	61.56	94.806		
10,200.00	10,169.51	10,124.00	10,122.04	36.90	25.30	-164.12	-5,179.52	-1,785.41	5,836.14	5,774.26	61.88	94.308		
10,300.00	10,269.51	10,215.06	10,213.10	37.25	25.56	-164.12	-5,179.77	-1,785.65	5,836.47	5,773.97	62.49	93.392		
10,400.00	10,369.51	10,305.26	10,303.30	37.60	25.82	-164.12	-5,180.10	-1,786.05	5,836.94	5,773.84	63.10	92.499		
10,500.00	10,469.51	10,389.63	10,387.67	37.95	26.06	-164.11	-5,180.56	-1,786.60	5,837.64	5,773.95	63.69	91.650		
10,600.00	10,569.51	10,473.81	10,471.84	38.31	26.30	-164.11	-5,181.19	-1,787.35	5,838.61	5,774.32	64.29	90.820		
10,700.00	10,669.51	10,590.96	10,588.98	38.66	26.64	-164.10	-5,182.10	-1,788.36	5,839.59	5,774.61	64.98	89.861		
10,800.00	10,769.51	10,689.64	10,687.66	39.01	26.93	-164.10	-5,182.68	-1,788.77	5,840.28	5,774.65	65.63	88.992		
10,900.00	10,869.51	10,750.00	10,748.02	39.36	27.11	-164.10	-5,183.12	-1,789.05	5,841.25	5,775.10	66.15	88.304		
11,000.00	10,969.51	10,750.00	10,748.02	39.71	27.11	-164.10	-5,183.12	-1,789.05	5,843.62	5,777.14	66.47	87.908		
11,100.00	11,069.51	10,750.00	10,748.02	40.06	27.11	-164.10	-5,183.12	-1,789.05	5,847.69	5,780.91	66.79	87.557		
11,200.00	11,169.51	10,750.00	10,748.02	40.41	27.11	-164.10	-5,183.12	-1,789.05	5,853.48	5,786.39	67.09	87.247		
11,300.00	11,269.51	10,750.00	10,748.02	40.77	27.11	-164.10	-5,183.12	-1,789.05	5,860.96	5,793.58	67.38	86.980		
11,400.00	11,369.51	10,750.00	10,748.02	41.12	27.11	-164.10	-5,183.12	-1,789.05	5,870.14	5,802.48	67.66	86.753		
11,500.00	11,469.51	10,750.00	10,748.02	41.47	27.11	-164.10	-5,183.12	-1,789.05	5,881.01	5,813.07	67.94	86.567		
11,600.00	11,569.51	10,750.00	10,748.02	41.82	27.11	-164.10	-5,183.12	-1,789.05	5,893.55	5,825.35	68.20	86.419		
11,700.00	11,669.51	10,750.00	10,748.02	42.18	27.11	-164.10	-5,183.12	-1,789.05	5,907.76	5,839.31	68.45	86.309		
11,800.00	11,769.51	10,750.00	10,748.02	42.53	27.11	-164.10	-5,183.12	-1,789.05	5,923.62	5,854.93	68.69	86.236		
11,900.00	11,869.51	10,750.00	10,748.02	42.88	27.11	-164.10	-5,183.12	-1,789.05	5,941.12	5,872.20	68.92	86.199		
11,902.93	11,872.44	10,750.00	10,748.02	42.89	27.11	-164.10	-5,183.12	-1,789.05	5,941.66	5,872.73	68.93	86.199		
11,950.00	11,919.46	10,750.00	10,748.02	43.04	27.11	-164.09	-5,183.12	-1,789.05	5,948.78	5,879.76	69.02	86.184		
12,000.00	11,969.05	10,750.00	10,748.02	43.19	27.11	-164.06	-5,183.12	-1,789.05	5,952.99	5,883.89	69.11	86.141		
12,050.00	12,017.90	10,750.00	10,748.02	43.32	27.11	-164.01	-5,183.12	-1,789.05	5,953.72	5,884.54	69.18	86.059		
12,100.00	12,065.65	10,750.00	10,748.02	43.44	27.11	-163.95	-5,183.12	-1,789.05	5,950.96	5,881.71	69.25	85.940		
12,150.00	12,111.93	10,750.00	10,748.02	43.56	27.11	-163.86	-5,183.12	-1,789.05	5,944.73	5,875.43	69.30	85.785		
12,200.00	12,156.38	10,750.00	10,748.02	43.66	27.11	-163.76	-5,183.12	-1,789.05	5,935.06	5,865.72	69.34	85.594		
12,250.00	12,198.67	10,750.00	10,748.02	43.75	27.11	-163.64	-5,183.12	-1,789.05	5,922.01	5,852.64	69.37	85.369		
12,300.00	12,238.48	10,750.00	10,748.02	43.83	27.11	-163.50	-5,183.12	-1,789.05	5,905.67	5,836.28	69.39	85.111		
12,350.00	12,275.51	10,750.00	10,748.02	43.90	27.11	-163.34	-5,183.12	-1,789.05	5,886.12	5,816.72	69.40	84.820		
12,400.00	12,309.46	10,750.00	10,748.02	43.97	27.11	-163.17	-5,183.12	-1,789.05	5,863.48	5,794.09	69.39	84.496		
12,450.00	12,340.09	10,750.00	10,748.02	44.04	27.11	-162.98	-5,183.12	-1,789.05	5,837.90	5,768.52	69.38	84.141		
12,500.00	12,367.17	10,750.00	10,748.02	44.10	27.11	-162.78	-5,183.12	-1,789.05	5,809.53	5,740.17	69.36	83.755		
12,550.00	12,390.47	10,750.00	10,748.02	44.16	27.11	-162.56	-5,183.12	-1,789.05	5,778.54	5,709.20	69.34	83.338		
12,600.00	12,409.84	10,750.00	10,748.02	44.22	27.11	-162.34	-5,183.12	-1,789.05	5,745.14	5,675.83	69.31	82.890		
12,650.00	12,425.11	10,750.00	10,748.02	44.28	27.11	-162.10	-5,183.12	-1,789.05	5,709.53	5,640.25	69.28	82.414		
12,700.00	12,436.18	10,750.00	10,748.02	44.35	27.11	-161.85	-5,183.12	-1,789.05	5,671.94	5,602.70	69.25	81.909		
12,750.00	12,442.96	10,750.00	10,748.02	44.42	27.11	-161.59	-5,183.12	-1,789.05	5,632.64	5,563.42	69.22	81.377		
12,800.00	12,445.39	10,750.00	10,748.02	44.49	27.11	-161.33	-5,183.12	-1,789.05	5,591.88	5,522.69	69.19	80.819		
12,807.86	12,445.38	10,750.00	10,748.02	44.51	27.11	-161.29	-5,183.12	-1,789.05	5,585.36	5,516.17	69.19	80.728		
12,900.00	12,444.58	10,750.00	10,748.02	44.68	27.11	-160.79	-5,183.12	-1,789.05	5,508.97	5,439.82	69.15	79.667		
13,000.00	12,443.72	10,750.00	10,748.02	44.94	27.11	-160.23	-5,183.12	-1,789.05	5,426.62	5,357.49	69.13	78.501		
13,100.00	12,442.86	10,750.00	10,748.02	45.27	27.11	-159.65	-5,183.12	-1,789.05	5,344.87	5,275.75	69.13	77.319		
13,200.00	12,442.00	10,750.00	10,748.02	45.66	27.11	-159.06	-5,183.12	-1,789.05	5,263.76	5,194.61	69.15	76.120		
13,300.00	12,441.14	10,750.00	10,748.02	46.11	27.11	-158.44	-5,183.12	-1,789.05	5,183.30	5,114.10	69.20	74.903		
13,400.00	12,440.28	10,750.00	10,748.02	46.63	27.11	-157.80	-5,183.12	-1,789.05	5,103.54	5,034.26	69.28	73.668		
13,500.00	12,439.42	10,750.00	10,748.02	47.20	27.11	-157.14	-5,183.12	-1,789.05	5,024.50	4,955.11	69.38	72.415		
13,600.00	12,438.56	10,750.00	10,748.02	47.83	27.11	-156.45	-5,183.12	-1,789.05	4,946.22	4,876.69	69.52	71.143		
13,700.00	12,437.70	10,750.00	10,748.02	48.52	27.11	-155.74	-5,183.12	-1,789.05	4,868.73	4,799.03	69.70	69.853		
13,727.27	12,437.47	10,750.00	10,748.02	48.71	27.11	-155.55	-5,183.12	-1,789.05	4,847.74	4,777.99	69.75	69.498		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,800.00	12,436.84	10,750.00	10,748.02	49.25	27.11	-155.02	-5,183.12	-1,789.05	4,791.57	4,721.67	69.91	68.542	
13,900.00	12,435.98	10,750.00	10,748.02	50.02	27.11	-154.30	-5,183.12	-1,789.05	4,713.46	4,643.33	70.13	67.210	
14,000.00	12,435.11	10,750.00	10,748.02	50.83	27.11	-153.60	-5,183.12	-1,789.05	4,634.37	4,564.00	70.37	65.860	
14,100.00	12,434.25	10,750.00	10,748.02	51.66	27.11	-152.90	-5,183.12	-1,789.05	4,554.34	4,483.73	70.61	64.498	
14,200.00	12,433.39	10,750.00	10,748.02	52.52	27.11	-152.22	-5,183.12	-1,789.05	4,473.43	4,402.57	70.86	63.128	
14,259.68	12,432.87	10,750.00	10,748.02	53.04	27.11	-151.82	-5,183.12	-1,789.05	4,424.75	4,353.73	71.01	62.308	
14,300.00	12,432.52	10,750.00	10,748.02	53.40	27.11	-151.55	-5,183.12	-1,789.05	4,391.81	4,320.70	71.12	61.754	
14,400.00	12,431.66	10,750.00	10,748.02	54.32	27.11	-150.85	-5,183.12	-1,789.05	4,310.69	4,239.29	71.40	60.376	
14,500.00	12,430.80	10,750.00	10,748.02	55.27	27.11	-150.13	-5,183.12	-1,789.05	4,230.37	4,158.66	71.71	58.992	
14,600.00	12,429.94	10,750.00	10,748.02	56.25	27.11	-149.37	-5,183.12	-1,789.05	4,150.90	4,078.84	72.06	57.603	
14,700.00	12,429.08	10,750.00	10,748.02	57.26	27.11	-148.58	-5,183.12	-1,789.05	4,072.34	3,999.89	72.45	56.210	
14,800.00	12,428.22	10,750.00	10,748.02	58.31	27.11	-147.75	-5,183.12	-1,789.05	3,994.74	3,921.86	72.88	54.815	
14,900.00	12,427.36	10,750.00	10,748.02	59.38	27.11	-146.88	-5,183.12	-1,789.05	3,918.16	3,844.81	73.35	53.419	
15,000.00	12,426.50	10,750.00	10,748.02	60.47	27.11	-145.97	-5,183.12	-1,789.05	3,842.65	3,768.78	73.87	52.022	
15,100.00	12,425.64	10,750.00	10,748.02	61.60	27.11	-145.02	-5,183.12	-1,789.05	3,768.28	3,693.85	74.43	50.628	
15,200.00	12,424.78	10,750.00	10,748.02	62.74	27.11	-144.02	-5,183.12	-1,789.05	3,695.12	3,620.07	75.05	49.238	
15,300.00	12,423.92	10,750.00	10,748.02	63.91	27.11	-142.97	-5,183.12	-1,789.05	3,623.24	3,547.53	75.71	47.854	
15,400.00	12,423.06	10,750.00	10,748.02	65.10	27.11	-141.86	-5,183.12	-1,789.05	3,552.73	3,476.29	76.44	46.479	
15,500.00	12,422.20	10,750.00	10,748.02	66.31	27.11	-140.70	-5,183.12	-1,789.05	3,483.65	3,406.44	77.22	45.115	
15,600.00	12,421.34	10,750.00	10,748.02	67.54	27.11	-139.48	-5,183.12	-1,789.05	3,416.11	3,338.06	78.06	43.765	
15,700.00	12,420.48	10,750.00	10,748.02	68.79	27.11	-138.20	-5,183.12	-1,789.05	3,350.19	3,271.24	78.95	42.432	
15,800.00	12,419.62	10,750.00	10,748.02	70.06	27.11	-136.85	-5,183.12	-1,789.05	3,286.00	3,206.08	79.91	41.119	
15,900.00	12,418.76	10,750.00	10,748.02	71.34	27.11	-135.43	-5,183.12	-1,789.05	3,223.63	3,142.69	80.94	39.829	
16,000.00	12,417.90	10,750.00	10,748.02	72.63	27.11	-133.93	-5,183.12	-1,789.05	3,163.19	3,081.17	82.02	38.567	
16,100.00	12,417.03	10,750.00	10,748.02	73.94	27.11	-132.36	-5,183.12	-1,789.05	3,104.79	3,021.63	83.16	37.334	
16,200.00	12,416.17	10,750.00	10,748.02	75.27	27.11	-130.71	-5,183.12	-1,789.05	3,048.56	2,964.19	84.37	36.135	
16,300.00	12,415.31	10,750.00	10,748.02	76.60	27.11	-128.97	-5,183.12	-1,789.05	2,994.61	2,908.98	85.63	34.972	
16,400.00	12,414.45	10,750.00	10,748.02	77.95	27.11	-127.14	-5,183.12	-1,789.05	2,943.07	2,856.13	86.95	33.849	
16,500.00	12,413.59	10,750.00	10,748.02	79.31	27.11	-125.22	-5,183.12	-1,789.05	2,894.08	2,805.76	88.32	32.770	
16,600.00	12,412.73	10,750.00	10,748.02	80.69	27.11	-123.20	-5,183.12	-1,789.05	2,847.75	2,758.01	89.73	31.736	
16,700.00	12,411.87	10,750.00	10,748.02	82.07	27.11	-121.09	-5,183.12	-1,789.05	2,804.22	2,713.03	91.19	30.752	
16,800.00	12,411.01	10,750.00	10,748.02	83.46	27.11	-118.89	-5,183.12	-1,789.05	2,763.62	2,670.95	92.68	29.819	
16,900.00	12,410.15	10,750.00	10,748.02	84.87	27.11	-116.58	-5,183.12	-1,789.05	2,726.10	2,631.90	94.20	28.940	
17,000.00	12,409.29	10,750.00	10,748.02	86.28	27.11	-114.18	-5,183.12	-1,789.05	2,691.76	2,596.03	95.74	28.117	
17,100.00	12,408.43	10,750.00	10,748.02	87.70	27.11	-111.69	-5,183.12	-1,789.05	2,660.75	2,563.46	97.28	27.351	
17,200.00	12,407.57	10,750.00	10,748.02	89.13	27.11	-109.12	-5,183.12	-1,789.05	2,633.16	2,534.34	98.83	26.644	
17,300.00	12,406.71	10,750.00	10,748.02	90.56	27.11	-106.46	-5,183.12	-1,789.05	2,609.13	2,508.76	100.36	25.997	
17,400.00	12,405.85	10,750.00	10,748.02	92.01	27.11	-103.72	-5,183.12	-1,789.05	2,588.73	2,486.85	101.88	25.411	
17,500.00	12,404.99	10,750.00	10,748.02	93.46	27.11	-100.93	-5,183.12	-1,789.05	2,572.06	2,468.71	103.36	24.885	
17,600.00	12,404.13	10,750.00	10,748.02	94.91	27.11	-98.08	-5,183.12	-1,789.05	2,559.20	2,454.41	104.79	24.422	
17,700.00	12,403.27	10,750.00	10,748.02	96.38	27.11	-95.19	-5,183.12	-1,789.05	2,550.19	2,444.02	106.17	24.019	
17,800.00	12,402.41	10,750.00	10,748.02	97.85	27.11	-92.28	-5,183.12	-1,789.05	2,545.08	2,437.59	107.49	23.677	
17,880.08	12,401.72	10,750.00	10,748.02	99.03	27.11	-89.94	-5,183.12	-1,789.05	2,543.82	2,435.33	108.49	23.447 CC	
17,900.00	12,401.55	10,750.00	10,748.02	99.32	27.11	-89.36	-5,183.12	-1,789.05	2,543.90	2,435.17	108.74	23.395 ES	
18,000.00	12,400.68	10,750.00	10,748.02	100.81	27.11	-86.45	-5,183.12	-1,789.05	2,546.65	2,436.75	109.90	23.173	
18,100.00	12,399.82	10,750.00	10,748.02	102.29	27.11	-83.55	-5,183.12	-1,789.05	2,553.31	2,442.34	110.98	23.008	
18,200.00	12,398.96	10,750.00	10,748.02	103.79	27.11	-80.69	-5,183.12	-1,789.05	2,563.86	2,451.90	111.96	22.899	
18,300.00	12,398.10	10,750.00	10,748.02	105.28	27.11	-77.87	-5,183.12	-1,789.05	2,578.25	2,465.40	112.85	22.846 SF	
18,400.00	12,397.24	10,750.00	10,748.02	106.78	27.11	-75.12	-5,183.12	-1,789.05	2,596.41	2,482.76	113.65	22.846	
18,500.00	12,396.38	10,750.00	10,748.02	108.29	27.11	-72.44	-5,183.12	-1,789.05	2,618.27	2,503.93	114.34	22.898	
18,600.00	12,395.52	10,750.00	10,748.02	109.80	27.11	-69.83	-5,183.12	-1,789.05	2,643.73	2,528.79	114.94	23.000	
18,700.00	12,394.66	10,750.00	10,748.02	111.32	27.11	-67.31	-5,183.12	-1,789.05	2,672.70	2,557.25	115.45	23.150	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,800.00	12,393.80	10,750.00	10,748.02	112.84	27.11	-64.88	-5,183.12	-1,789.05	2,705.05	2,589.18	115.87	23.346	
18,900.00	12,392.94	10,750.00	10,748.02	114.36	27.11	-62.55	-5,183.12	-1,789.05	2,740.67	2,624.47	116.20	23.586	
19,000.00	12,392.08	10,750.00	10,748.02	115.89	27.11	-60.31	-5,183.12	-1,789.05	2,779.43	2,662.99	116.44	23.869	
19,100.00	12,391.22	10,750.00	10,748.02	117.42	27.11	-58.17	-5,183.12	-1,789.05	2,821.21	2,704.59	116.62	24.192	
19,200.00	12,390.36	10,750.00	10,748.02	118.95	27.11	-56.13	-5,183.12	-1,789.05	2,865.87	2,749.15	116.72	24.554	
19,300.00	12,389.50	10,750.00	10,748.02	120.49	27.11	-54.18	-5,183.12	-1,789.05	2,913.28	2,796.52	116.76	24.952	
19,400.00	12,388.64	10,750.00	10,748.02	122.03	27.11	-52.32	-5,183.12	-1,789.05	2,963.31	2,846.57	116.74	25.384	
19,500.00	12,387.78	10,750.00	10,748.02	123.57	27.11	-50.55	-5,183.12	-1,789.05	3,015.82	2,899.16	116.66	25.850	
19,600.00	12,386.92	10,750.00	10,748.02	125.12	27.11	-48.87	-5,183.12	-1,789.05	3,070.69	2,954.15	116.55	26.348	
19,700.00	12,386.06	10,750.00	10,748.02	126.66	27.11	-47.27	-5,183.12	-1,789.05	3,127.80	3,011.42	116.38	26.875	
19,800.00	12,385.20	10,750.00	10,748.02	128.22	27.11	-45.75	-5,183.12	-1,789.05	3,187.02	3,070.84	116.19	27.430	
19,900.00	12,384.33	10,750.00	10,748.02	129.77	27.11	-44.30	-5,183.12	-1,789.05	3,248.25	3,132.28	115.96	28.011	
20,000.00	12,383.47	10,750.00	10,748.02	131.33	27.11	-42.93	-5,183.12	-1,789.05	3,311.36	3,195.65	115.71	28.618	
20,100.00	12,382.61	10,750.00	10,748.02	132.89	27.11	-41.63	-5,183.12	-1,789.05	3,376.25	3,260.82	115.43	29.249	
20,200.00	12,381.75	10,750.00	10,748.02	134.45	27.11	-40.39	-5,183.12	-1,789.05	3,442.83	3,327.69	115.14	29.902	
20,300.00	12,380.89	10,750.00	10,748.02	136.01	27.11	-39.21	-5,183.12	-1,789.05	3,510.99	3,396.16	114.83	30.576	
20,400.00	12,380.03	10,750.00	10,748.02	137.58	27.11	-38.09	-5,183.12	-1,789.05	3,580.65	3,466.14	114.51	31.270	
20,500.00	12,379.17	10,750.00	10,748.02	139.15	27.11	-37.02	-5,183.12	-1,789.05	3,651.71	3,537.54	114.18	31.983	
20,600.00	12,378.31	10,750.00	10,748.02	140.72	27.11	-36.00	-5,183.12	-1,789.05	3,724.11	3,610.27	113.84	32.714	
20,700.00	12,377.45	10,750.00	10,748.02	142.29	27.11	-35.03	-5,183.12	-1,789.05	3,797.76	3,684.26	113.50	33.462	
20,800.00	12,376.59	10,750.00	10,748.02	143.86	27.11	-34.11	-5,183.12	-1,789.05	3,872.59	3,759.44	113.15	34.225	
20,900.00	12,375.73	10,750.00	10,748.02	145.44	27.11	-33.23	-5,183.12	-1,789.05	3,948.54	3,835.73	112.80	35.003	
21,000.00	12,374.87	10,750.00	10,748.02	147.02	27.11	-32.39	-5,183.12	-1,789.05	4,025.53	3,913.07	112.46	35.795	
21,100.00	12,374.01	10,750.00	10,748.02	148.59	27.11	-31.58	-5,183.12	-1,789.05	4,103.52	3,991.41	112.12	36.601	
21,200.00	12,373.15	10,750.00	10,748.02	150.18	27.11	-30.81	-5,183.12	-1,789.05	4,182.45	4,070.68	111.77	37.419	
21,300.00	12,372.29	10,750.00	10,748.02	151.76	27.11	-30.08	-5,183.12	-1,789.05	4,262.26	4,150.82	111.44	38.248	
21,400.00	12,371.43	10,750.00	10,748.02	153.34	27.11	-29.38	-5,183.12	-1,789.05	4,342.91	4,231.80	111.10	39.089	
21,500.00	12,370.57	10,750.00	10,748.02	154.93	27.11	-28.70	-5,183.12	-1,789.05	4,424.35	4,313.57	110.78	39.939	
21,600.00	12,369.71	10,750.00	10,748.02	156.52	27.11	-28.06	-5,183.12	-1,789.05	4,506.53	4,396.08	110.45	40.800	
21,700.00	12,368.85	10,750.00	10,748.02	158.11	27.11	-27.44	-5,183.12	-1,789.05	4,589.42	4,479.28	110.14	41.670	
21,800.00	12,367.98	10,750.00	10,748.02	159.70	27.11	-26.85	-5,183.12	-1,789.05	4,672.98	4,563.16	109.83	42.548	
21,900.00	12,367.12	10,750.00	10,748.02	161.29	27.11	-26.28	-5,183.12	-1,789.05	4,757.18	4,647.65	109.53	43.434	
22,000.00	12,366.26	10,750.00	10,748.02	162.88	27.11	-25.73	-5,183.12	-1,789.05	4,841.98	4,732.75	109.23	44.328	
22,100.00	12,365.40	10,750.00	10,748.02	164.47	27.11	-25.20	-5,183.12	-1,789.05	4,927.35	4,818.40	108.94	45.229	
22,200.00	12,364.54	10,750.00	10,748.02	166.07	27.11	-24.70	-5,183.12	-1,789.05	5,013.25	4,904.59	108.66	46.136	
22,300.00	12,363.68	10,750.00	10,748.02	167.67	27.11	-24.21	-5,183.12	-1,789.05	5,099.68	4,991.29	108.39	47.050	
22,400.00	12,362.82	10,750.00	10,748.02	169.26	27.11	-23.74	-5,183.12	-1,789.05	5,186.59	5,078.47	108.12	47.970	
22,500.00	12,361.96	10,750.00	10,748.02	170.86	27.11	-23.29	-5,183.12	-1,789.05	5,273.96	5,166.10	107.86	48.895	
22,565.16	12,361.40	10,750.00	10,748.02	171.78	27.11	-23.00	-5,183.12	-1,789.05	5,331.13	5,221.24	109.89	48.514	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys													Offset Site Error: 0.00 usft
Survey Program: 77-VESSEI_GYRO_DROP, 7685-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	14,732.00	8,284.12	0.00	111.69	179.06	-3,029.61	49.94	8,876.68				
100.00	100.00	14,732.00	8,284.12	0.13	111.69	179.06	-3,029.61	49.94	8,782.75	8,730.29	52.46	167.416	
200.00	200.00	14,732.00	8,284.12	0.49	111.69	179.06	-3,029.61	49.94	8,688.96	8,636.55	52.40	165.806	
300.00	300.00	14,732.00	8,284.12	0.85	111.69	179.06	-3,029.61	49.94	8,595.31	8,542.95	52.36	164.164	
400.00	400.00	14,732.00	8,284.12	1.21	111.69	179.06	-3,029.61	49.94	8,501.80	8,449.48	52.32	162.490	
500.00	500.00	14,732.00	8,284.12	1.57	111.69	179.06	-3,029.61	49.94	8,408.44	8,356.14	52.30	160.785	
600.00	600.00	14,732.00	8,284.12	1.93	111.69	179.06	-3,029.61	49.94	8,315.24	8,262.96	52.28	159.052	
700.00	700.00	14,732.00	8,284.12	2.29	111.69	179.06	-3,029.61	49.94	8,222.19	8,169.92	52.27	157.294	
800.00	800.00	14,732.00	8,284.12	2.64	111.69	179.06	-3,029.61	49.94	8,129.31	8,077.04	52.27	155.512	
900.00	900.00	14,732.00	8,284.12	3.00	111.69	179.06	-3,029.61	49.94	8,036.61	7,984.32	52.28	153.710	
1,000.00	1,000.00	14,732.00	8,284.12	3.36	111.69	179.06	-3,029.61	49.94	7,944.08	7,891.77	52.30	151.891	
1,100.00	1,100.00	14,732.00	8,284.12	3.72	111.69	179.06	-3,029.61	49.94	7,851.73	7,799.40	52.32	150.057	
1,200.00	1,200.00	14,732.00	8,284.12	4.08	111.69	179.06	-3,029.61	49.94	7,759.57	7,707.22	52.35	148.212	
1,300.00	1,300.00	14,732.00	8,284.12	4.44	111.69	179.06	-3,029.61	49.94	7,667.61	7,615.22	52.39	146.357	
1,400.00	1,400.00	14,732.00	8,284.12	4.79	111.69	179.06	-3,029.61	49.94	7,575.85	7,523.42	52.43	144.495	
1,500.00	1,500.00	14,732.00	8,284.12	5.15	111.69	179.06	-3,029.61	49.94	7,484.30	7,431.83	52.47	142.629	
1,600.00	1,600.00	14,732.00	8,284.12	5.51	111.69	179.06	-3,029.61	49.94	7,392.98	7,340.46	52.52	140.759	
1,700.00	1,700.00	14,732.00	8,284.12	5.87	111.69	179.06	-3,029.61	49.94	7,301.88	7,249.30	52.57	138.889	
1,800.00	1,800.00	14,732.00	8,284.12	6.23	111.69	179.06	-3,029.61	49.94	7,211.01	7,158.38	52.63	137.019	
1,900.00	1,900.00	14,732.00	8,284.12	6.59	111.69	179.06	-3,029.61	49.94	7,120.39	7,067.71	52.68	135.151	
2,000.00	2,000.00	14,732.00	8,284.12	6.95	111.69	179.06	-3,029.61	49.94	7,030.03	6,977.28	52.74	133.286	
2,100.00	2,100.00	14,732.00	8,284.12	7.30	111.69	179.06	-3,029.61	49.94	6,939.93	6,887.12	52.80	131.426	
2,200.00	2,200.00	14,732.00	8,284.12	7.66	111.69	179.06	-3,029.61	49.94	6,850.10	6,797.23	52.87	129.572	
2,300.00	2,300.00	14,732.00	8,284.12	8.02	111.69	179.06	-3,029.61	49.94	6,760.56	6,707.63	52.93	127.725	
2,400.00	2,400.00	14,732.00	8,284.12	8.38	111.69	179.06	-3,029.61	49.94	6,671.32	6,618.32	52.99	125.886	
2,500.00	2,500.00	14,732.00	8,284.12	8.74	111.69	179.06	-3,029.61	49.94	6,582.38	6,529.32	53.06	124.055	
2,600.00	2,599.99	14,732.00	8,284.12	9.10	111.69	179.05	-3,029.61	49.94	6,494.15	6,441.03	53.12	122.250	
2,700.00	2,699.96	14,732.00	8,284.12	9.45	111.69	179.03	-3,029.61	49.94	6,407.06	6,353.88	53.18	120.479	
2,800.00	2,799.86	14,732.00	8,284.12	9.81	111.69	179.00	-3,029.61	49.94	6,321.17	6,267.93	53.24	118.735	
2,900.00	2,899.68	14,732.00	8,284.12	10.17	111.69	178.95	-3,029.61	49.94	6,236.57	6,183.27	53.29	117.020	
3,000.00	2,999.37	14,732.00	8,284.12	10.53	111.69	178.90	-3,029.61	49.94	6,153.33	6,099.98	53.35	115.337	
3,100.00	3,098.90	14,732.00	8,284.12	10.89	111.69	178.83	-3,029.61	49.94	6,071.55	6,018.14	53.41	113.688	
3,200.00	3,198.26	14,732.00	8,284.12	11.25	111.69	178.75	-3,029.61	49.94	5,991.29	5,937.83	53.46	112.074	
3,300.00	3,297.40	14,732.00	8,284.12	11.61	111.69	178.66	-3,029.61	49.94	5,912.66	5,859.15	53.51	110.497	
3,300.10	3,297.50	14,732.00	8,284.12	11.61	111.69	178.66	-3,029.61	49.94	5,912.58	5,859.07	53.51	110.496	
3,400.00	3,396.43	14,732.00	8,284.12	11.98	111.69	178.56	-3,029.61	49.94	5,835.20	5,781.64	53.56	108.944	
3,500.00	3,495.46	14,732.00	8,284.12	12.36	111.69	178.46	-3,029.61	49.94	5,758.44	5,704.82	53.61	107.407	
3,600.00	3,594.48	14,732.00	8,284.12	12.73	111.69	178.37	-3,029.61	49.94	5,682.40	5,628.73	53.66	105.891	
3,700.00	3,693.51	14,732.00	8,284.12	13.11	111.69	178.27	-3,029.61	49.94	5,607.11	5,553.40	53.71	104.400	
3,800.00	3,792.54	14,732.00	8,284.12	13.49	111.69	178.18	-3,029.61	49.94	5,532.61	5,478.86	53.75	102.933	
3,900.00	3,891.56	14,732.00	8,284.12	13.87	111.69	178.09	-3,029.61	49.94	5,458.92	5,405.13	53.79	101.493	
4,000.00	3,990.59	14,732.00	8,284.12	14.26	111.69	177.99	-3,029.61	49.94	5,386.08	5,332.26	53.82	100.079	
4,100.00	4,089.62	14,732.00	8,284.12	14.64	111.69	177.90	-3,029.61	49.94	5,314.12	5,260.28	53.84	98.694	
4,200.00	4,188.64	14,732.00	8,284.12	15.03	111.69	177.81	-3,029.61	49.94	5,243.08	5,189.22	53.86	97.339	
4,300.00	4,287.67	14,732.00	8,284.12	15.42	111.69	177.72	-3,029.61	49.94	5,173.00	5,119.13	53.88	96.014	
4,400.00	4,386.70	14,732.00	8,284.12	15.81	111.69	177.63	-3,029.61	49.94	5,103.92	5,050.04	53.88	94.721	
4,500.00	4,485.72	14,732.00	8,284.12	16.20	111.69	177.54	-3,029.61	49.94	5,035.88	4,982.00	53.88	93.462	
4,600.00	4,584.75	14,732.00	8,284.12	16.60	111.69	177.45	-3,029.61	49.94	4,968.91	4,915.04	53.87	92.238	
4,700.00	4,683.78	14,732.00	8,284.12	16.99	111.69	177.37	-3,029.61	49.94	4,903.08	4,849.22	53.85	91.049	
4,800.00	4,782.80	14,732.00	8,284.12	17.39	111.69	177.28	-3,029.61	49.94	4,838.41	4,784.59	53.82	89.898	
4,900.00	4,881.83	14,732.00	8,284.12	17.78	111.69	177.19	-3,029.61	49.94	4,774.96	4,721.18	53.78	88.785	
5,000.00	4,980.85	14,732.00	8,284.12	18.18	111.69	177.11	-3,029.61	49.94	4,712.78	4,659.05	53.73	87.712	



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,079.88	14,732.00	8,284.12	18.58	111.69	177.02	-3,029.61	49.94	4,651.92	4,598.25	53.67	86.681	
5,200.00	5,178.91	14,732.00	8,284.12	18.98	111.69	176.94	-3,029.61	49.94	4,592.43	4,538.84	53.59	85.693	
5,300.00	5,277.93	14,732.00	8,284.12	19.38	111.69	176.86	-3,029.61	49.94	4,534.36	4,480.86	53.50	84.749	
5,400.00	5,376.96	14,732.00	8,284.12	19.78	111.69	176.77	-3,029.61	49.94	4,477.78	4,424.37	53.40	83.850	
5,500.00	5,475.99	14,732.00	8,284.12	20.18	111.69	176.69	-3,029.61	49.94	4,422.73	4,369.44	53.29	82.999	
5,600.00	5,575.01	14,732.00	8,284.12	20.58	111.69	176.61	-3,029.61	49.94	4,369.28	4,316.12	53.16	82.196	
5,700.00	5,674.04	14,732.00	8,284.12	20.98	111.69	176.53	-3,029.61	49.94	4,317.48	4,264.47	53.01	81.443	
5,800.00	5,773.07	14,732.00	8,284.12	21.39	111.69	176.45	-3,029.61	49.94	4,267.40	4,214.54	52.85	80.741	
5,898.39	5,870.50	14,732.00	8,284.12	21.78	111.69	176.37	-3,029.61	49.94	4,219.85	4,167.17	52.68	80.101	
5,900.00	5,872.09	14,732.00	8,284.12	21.79	111.69	176.37	-3,029.61	49.94	4,219.09	4,166.41	52.68	80.091	
6,000.00	5,971.24	14,732.00	8,284.12	22.19	111.69	176.30	-3,029.61	49.94	4,171.86	4,119.37	52.49	79.479	
6,100.00	6,070.60	14,732.00	8,284.12	22.58	111.69	176.23	-3,029.61	49.94	4,125.04	4,072.75	52.29	78.893	
6,200.00	6,170.14	14,732.00	8,284.12	22.97	111.69	176.18	-3,029.61	49.94	4,078.65	4,026.58	52.07	78.334	
6,300.00	6,269.83	14,732.00	8,284.12	23.35	111.69	176.13	-3,029.61	49.94	4,032.72	3,980.89	51.83	77.805	
6,400.00	6,369.65	14,732.00	8,284.12	23.71	111.69	176.10	-3,029.61	49.94	3,987.29	3,935.71	51.58	77.303	
6,500.00	6,469.55	14,732.00	8,284.12	24.07	111.69	176.08	-3,029.61	49.94	3,942.39	3,891.07	51.31	76.829	
6,600.00	6,569.52	14,732.00	8,284.12	24.43	111.69	176.06	-3,029.61	49.94	3,898.03	3,847.00	51.03	76.383	
6,698.49	6,668.00	14,732.00	8,284.12	24.77	111.69	176.06	-3,029.61	49.94	3,854.93	3,804.19	50.74	75.970	
6,700.00	6,669.51	14,732.00	8,284.12	24.77	111.69	176.06	-3,029.61	49.94	3,854.27	3,803.53	50.74	75.962	
6,800.00	6,769.51	14,732.00	8,284.12	25.11	111.69	176.06	-3,029.61	49.94	3,811.91	3,761.47	50.43	75.584	
6,900.00	6,869.51	14,732.00	8,284.12	25.45	111.69	176.06	-3,029.61	49.94	3,771.71	3,721.59	50.12	75.254	
7,000.00	6,969.51	14,732.00	8,284.12	25.80	111.69	176.06	-3,029.61	49.94	3,733.77	3,683.97	49.80	74.971	
7,100.00	7,069.51	14,732.00	8,284.12	26.14	111.69	176.06	-3,029.61	49.94	3,698.14	3,648.65	49.49	74.731	
7,200.00	7,169.51	14,732.00	8,284.12	26.48	111.69	176.06	-3,029.61	49.94	3,664.89	3,615.72	49.17	74.529	
7,300.00	7,269.51	14,732.00	8,284.12	26.82	111.69	176.06	-3,029.61	49.94	3,634.09	3,585.22	48.87	74.358	
7,400.00	7,369.51	14,732.00	8,284.12	27.17	111.69	176.06	-3,029.61	49.94	3,605.80	3,557.21	48.59	74.210	
7,500.00	7,469.51	14,732.00	8,284.12	27.51	111.69	176.06	-3,029.61	49.94	3,580.09	3,531.76	48.33	74.076	
7,600.00	7,569.51	14,732.00	8,284.12	27.85	111.69	176.06	-3,029.61	49.94	3,556.99	3,508.89	48.10	73.944	
7,700.00	7,669.51	14,732.00	8,284.12	28.20	111.69	176.06	-3,029.61	49.94	3,536.58	3,488.66	47.82	73.814	
7,800.00	7,769.51	14,732.00	8,284.12	28.54	111.69	176.06	-3,029.61	49.94	3,518.89	3,471.10	47.79	73.634	
7,900.00	7,869.51	14,732.00	8,284.12	28.89	111.69	176.06	-3,029.61	49.94	3,503.97	3,456.25	47.72	73.429	
8,000.00	7,969.51	14,732.00	8,284.12	29.24	111.69	176.06	-3,029.61	49.94	3,491.85	3,444.13	47.72	73.173	
8,100.00	8,069.51	14,732.00	8,284.12	29.58	111.69	176.06	-3,029.61	49.94	3,482.56	3,434.75	47.80	72.854	
8,200.00	8,169.51	14,732.00	8,284.12	29.93	111.69	176.06	-3,029.61	49.94	3,476.12	3,428.15	47.97	72.464	
8,300.00	8,269.51	14,732.00	8,284.12	30.27	111.69	176.06	-3,029.61	49.94	3,472.55	3,424.32	48.23	72.000	
8,374.01	8,343.52	14,732.00	8,284.12	30.53	111.69	176.06	-3,029.61	49.94	3,471.76	3,423.28	48.48	71.609 CC	
8,400.00	8,369.51	14,732.00	8,284.12	30.62	111.69	176.06	-3,029.61	49.94	3,471.86	3,423.27	48.58	71.463 ES	
8,500.00	8,469.51	14,732.00	8,284.12	30.97	111.69	176.06	-3,029.61	49.94	3,474.05	3,425.02	49.03	70.858	
8,600.00	8,569.51	14,732.00	8,284.12	31.32	111.69	176.06	-3,029.61	49.94	3,479.11	3,429.55	49.56	70.197	
8,700.00	8,669.51	14,732.00	8,284.12	31.66	111.69	176.06	-3,029.61	49.94	3,487.03	3,436.85	50.18	69.493	
8,800.00	8,769.51	14,732.00	8,284.12	32.01	111.69	176.06	-3,029.61	49.94	3,497.80	3,446.93	50.87	68.762	
8,900.00	8,869.51	14,732.00	8,284.12	32.36	111.69	176.06	-3,029.61	49.94	3,511.38	3,459.76	51.62	68.020	
9,000.00	8,969.51	14,732.00	8,284.12	32.71	111.69	176.06	-3,029.61	49.94	3,527.74	3,475.31	52.43	67.284	
9,100.00	9,069.51	14,732.00	8,284.12	33.06	111.69	176.06	-3,029.61	49.94	3,546.85	3,493.57	53.28	66.567	
9,200.00	9,169.51	14,732.00	8,284.12	33.40	111.69	176.06	-3,029.61	49.94	3,568.67	3,514.50	54.17	65.881	
9,300.00	9,269.51	14,732.00	8,284.12	33.75	111.69	176.06	-3,029.61	49.94	3,593.13	3,538.05	55.08	65.238	
9,400.00	9,369.51	14,732.00	8,284.12	34.10	111.69	176.06	-3,029.61	49.94	3,620.19	3,564.19	56.00	64.643	
9,500.00	9,469.51	14,732.00	8,284.12	34.45	111.69	176.06	-3,029.61	49.94	3,649.79	3,592.85	56.94	64.103	
9,600.00	9,569.51	14,732.00	8,284.12	34.80	111.69	176.06	-3,029.61	49.94	3,681.87	3,624.00	57.87	63.622	
9,700.00	9,669.51	14,732.00	8,284.12	35.15	111.69	176.06	-3,029.61	49.94	3,716.36	3,657.56	58.80	63.202	
9,800.00	9,769.51	14,732.00	8,284.12	35.50	111.69	176.06	-3,029.61	49.94	3,753.21	3,693.48	59.72	62.842	
9,900.00	9,869.51	14,732.00	8,284.12	35.85	111.69	176.06	-3,029.61	49.94	3,792.33	3,731.69	60.63	62.544	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N-S (usft)	+E-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
10,000.00	9,969.51	14,732.00	8,284.12	36.20	111.69	176.06	-3,029.61	49.94	3,833.66	3,772.13	61.53	62.306		
10,100.00	10,069.51	14,732.00	8,284.12	36.55	111.69	176.06	-3,029.61	49.94	3,877.13	3,814.73	62.41	62.127		
10,200.00	10,169.51	14,732.00	8,284.12	36.90	111.69	176.06	-3,029.61	49.94	3,922.67	3,859.41	63.26	62.004		
10,300.00	10,269.51	14,732.00	8,284.12	37.25	111.69	176.06	-3,029.61	49.94	3,970.21	3,906.11	64.10	61.935		
10,400.00	10,369.51	14,732.00	8,284.12	37.60	111.69	176.06	-3,029.61	49.94	4,019.67	3,954.75	64.92	61.918		
10,500.00	10,469.51	14,732.00	8,284.12	37.95	111.69	176.06	-3,029.61	49.94	4,070.99	4,005.27	65.71	61.950		
10,600.00	10,569.51	14,732.00	8,284.12	38.31	111.69	176.06	-3,029.61	49.94	4,124.09	4,057.61	66.49	62.028		
10,700.00	10,669.51	14,732.00	8,284.12	38.66	111.69	176.06	-3,029.61	49.94	4,178.92	4,111.68	67.24	62.149		
10,800.00	10,769.51	14,732.00	8,284.12	39.01	111.69	176.06	-3,029.61	49.94	4,235.39	4,167.42	67.97	62.311		
10,900.00	10,869.51	14,732.00	8,284.12	39.36	111.69	176.06	-3,029.61	49.94	4,293.45	4,224.77	68.68	62.512		
11,000.00	10,969.51	14,732.00	8,284.12	39.71	111.69	176.06	-3,029.61	49.94	4,353.04	4,283.66	69.37	62.748		
11,100.00	11,069.51	14,732.00	8,284.12	40.06	111.69	176.06	-3,029.61	49.94	4,414.08	4,344.04	70.05	63.017		
11,200.00	11,169.51	14,732.00	8,284.12	40.41	111.69	176.06	-3,029.61	49.94	4,476.53	4,405.83	70.70	63.317		
11,300.00	11,269.51	14,732.00	8,284.12	40.77	111.69	176.06	-3,029.61	49.94	4,540.32	4,468.99	71.34	63.646		
11,400.00	11,369.51	14,732.00	8,284.12	41.12	111.69	176.06	-3,029.61	49.94	4,605.40	4,533.44	71.96	64.001		
11,500.00	11,469.51	14,732.00	8,284.12	41.47	111.69	176.06	-3,029.61	49.94	4,671.72	4,599.15	72.56	64.380		
11,600.00	11,569.51	14,732.00	8,284.12	41.82	111.69	176.06	-3,029.61	49.94	4,739.21	4,666.06	73.16	64.782		
11,700.00	11,669.51	14,732.00	8,284.12	42.18	111.69	176.06	-3,029.61	49.94	4,807.84	4,734.11	73.73	65.205		
11,800.00	11,769.51	14,732.00	8,284.12	42.53	111.69	176.06	-3,029.61	49.94	4,877.55	4,803.25	74.30	65.646		
11,900.00	11,869.51	14,732.00	8,284.12	42.88	111.69	176.06	-3,029.61	49.94	4,948.30	4,873.45	74.86	66.105		
11,902.93	11,872.44	14,732.00	8,284.12	42.89	111.69	176.06	-3,029.61	49.94	4,950.39	4,875.52	74.87	66.119		
11,950.00	11,919.46	14,732.00	8,284.12	43.04	111.69	176.06	-3,029.61	49.94	4,982.68	4,907.56	75.12	66.326		
12,000.00	11,969.05	14,732.00	8,284.12	43.19	111.69	176.07	-3,029.61	49.94	5,014.09	4,938.70	75.39	66.512		
12,050.00	12,017.90	14,732.00	8,284.12	43.32	111.69	176.10	-3,029.61	49.94	5,042.34	4,966.69	75.65	66.655		
12,100.00	12,065.65	14,732.00	8,284.12	43.44	111.69	176.13	-3,029.61	49.94	5,067.27	4,991.36	75.91	66.756		
12,150.00	12,111.93	14,732.00	8,284.12	43.56	111.69	176.17	-3,029.61	49.94	5,088.74	5,012.58	76.16	66.815		
12,200.00	12,156.38	14,732.00	8,284.12	43.66	111.69	176.21	-3,029.61	49.94	5,106.64	5,030.23	76.41	66.835		
12,250.00	12,198.67	14,732.00	8,284.12	43.75	111.69	176.27	-3,029.61	49.94	5,120.86	5,044.22	76.64	66.816		
12,300.00	12,238.48	14,732.00	8,284.12	43.83	111.69	176.34	-3,029.61	49.94	5,131.33	5,054.46	76.86	66.758		
12,350.00	12,275.51	14,732.00	8,284.12	43.90	111.69	176.41	-3,029.61	49.94	5,137.99	5,060.91	77.07	66.663		
12,400.00	12,309.46	14,732.00	8,284.12	43.97	111.69	176.49	-3,029.61	49.94	5,140.80	5,063.53	77.27	66.531		
12,450.00	12,340.09	14,732.00	8,284.12	44.04	111.69	176.59	-3,029.61	49.94	5,139.76	5,062.31	77.45	66.363		
12,500.00	12,367.17	14,732.00	8,284.12	44.10	111.69	176.68	-3,029.61	49.94	5,134.86	5,057.25	77.61	66.159		
12,550.00	12,390.47	14,732.00	8,284.12	44.16	111.69	176.79	-3,029.61	49.94	5,126.14	5,048.37	77.76	65.920		
12,600.00	12,409.84	14,732.00	8,284.12	44.22	111.69	176.91	-3,029.61	49.94	5,113.63	5,035.73	77.90	65.646		
12,650.00	12,425.11	14,732.00	8,284.12	44.28	111.69	177.03	-3,029.61	49.94	5,097.41	5,019.39	78.02	65.339		
12,700.00	12,436.18	14,732.00	8,284.12	44.35	111.69	177.16	-3,029.61	49.94	5,077.56	4,999.44	78.12	64.998		
12,750.00	12,442.96	14,732.00	8,284.12	44.42	111.69	177.30	-3,029.61	49.94	5,054.20	4,976.00	78.21	64.624		
12,800.00	12,445.39	14,732.00	8,284.12	44.49	111.69	177.44	-3,029.61	49.94	5,027.46	4,949.18	78.28	64.220		
12,807.86	12,445.38	14,732.00	8,284.12	44.51	111.69	177.46	-3,029.61	49.94	5,022.96	4,944.66	78.30	64.151		
12,900.00	12,444.58	14,732.00	8,284.12	44.68	111.69	177.74	-3,029.61	49.94	4,970.28	4,891.86	78.42	63.379		
13,000.00	12,443.72	14,732.00	8,284.12	44.94	111.69	178.06	-3,029.61	49.94	4,914.42	4,835.85	78.57	62.546		
13,100.00	12,442.86	14,732.00	8,284.12	45.27	111.69	178.40	-3,029.61	49.94	4,859.98	4,781.24	78.74	61.719		
13,200.00	12,442.00	14,732.00	8,284.12	45.66	111.69	178.78	-3,029.61	49.94	4,807.01	4,728.07	78.94	60.896		
13,300.00	12,441.14	14,732.00	8,284.12	46.11	111.69	179.18	-3,029.61	49.94	4,755.54	4,676.39	79.15	60.079		
13,400.00	12,440.28	14,732.00	8,284.12	46.63	111.69	179.62	-3,029.61	49.94	4,705.64	4,626.24	79.40	59.267		
13,500.00	12,439.42	14,732.00	8,284.12	47.20	111.69	-179.91	-3,029.61	49.94	4,657.35	4,577.69	79.67	58.459		
13,600.00	12,438.56	14,732.00	8,284.12	47.83	111.69	-179.39	-3,029.61	49.94	4,610.73	4,530.76	79.97	57.657		
13,700.00	12,437.70	14,732.00	8,284.12	48.52	111.69	-178.81	-3,029.61	49.94	4,565.82	4,485.52	80.30	56.861		
13,727.27	12,437.47	14,732.00	8,284.12	48.71	111.69	-178.65	-3,029.61	49.94	4,553.88	4,473.48	80.39	56.645		
13,800.00	12,436.84	14,732.00	8,284.12	49.25	111.69	-178.21	-3,029.61	49.94	4,522.59	4,441.93	80.66	56.071		
13,900.00	12,435.98	14,732.00	8,284.12	50.02	111.69	-177.65	-3,029.61	49.94	4,480.89	4,399.85	81.04	55.291		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
14,000.00	12,435.11	14,732.00	8,284.12	50.83	111.69	-177.14	-3,029.61	49.94	4,440.81	4,359.36	81.45	54.522		
14,100.00	12,434.25	14,732.00	8,284.12	51.66	111.69	-176.68	-3,029.61	49.94	4,402.43	4,320.55	81.88	53.768		
14,200.00	12,433.39	14,732.00	8,284.12	52.52	111.69	-176.30	-3,029.61	49.94	4,365.85	4,283.52	82.33	53.030		
14,259.68	12,432.87	14,732.00	8,284.12	53.04	111.69	-176.11	-3,029.61	49.94	4,344.91	4,262.31	82.61	52.599		
14,300.00	12,432.52	14,732.00	8,284.12	53.40	111.69	-175.99	-3,029.61	49.94	4,331.16	4,248.37	82.80	52.310		
14,400.00	12,431.66	14,732.00	8,284.12	54.32	111.69	-175.66	-3,029.61	49.94	4,298.51	4,215.21	83.30	51.605		
14,500.00	12,430.80	14,732.00	8,284.12	55.27	111.69	-175.28	-3,029.61	49.94	4,267.95	4,184.13	83.82	50.916		
14,600.00	12,429.94	14,732.00	8,284.12	56.25	111.69	-174.83	-3,029.61	49.94	4,239.53	4,155.15	84.38	50.243		
14,700.00	12,429.08	14,732.00	8,284.12	57.26	111.69	-174.30	-3,029.61	49.94	4,213.29	4,128.33	84.96	49.590		
14,800.00	12,428.22	14,732.00	8,284.12	58.31	111.69	-173.65	-3,029.61	49.94	4,189.28	4,103.70	85.57	48.957		
14,900.00	12,427.36	14,732.00	8,284.12	59.38	111.69	-172.84	-3,029.61	49.94	4,167.52	4,081.32	86.20	48.346		
15,000.00	12,426.50	14,732.00	8,284.12	60.47	111.69	-171.82	-3,029.61	49.94	4,148.07	4,061.21	86.85	47.760		
15,100.00	12,425.64	14,732.00	8,284.12	61.60	111.69	-170.48	-3,029.61	49.94	4,130.94	4,043.42	87.52	47.199		
15,200.00	12,424.78	14,732.00	8,284.12	62.74	111.69	-168.64	-3,029.61	49.94	4,116.17	4,027.97	88.20	46.667		
15,300.00	12,423.92	14,732.00	8,284.12	63.91	111.69	-165.98	-3,029.61	49.94	4,103.79	4,014.89	88.90	46.164		
15,400.00	12,423.06	14,732.00	8,284.12	65.10	111.69	-161.82	-3,029.61	49.94	4,093.81	4,004.22	89.59	45.693		
15,500.00	12,422.20	14,732.00	8,284.12	66.31	111.69	-154.48	-3,029.61	49.94	4,086.26	3,995.96	90.30	45.253		
15,600.00	12,421.34	14,732.00	8,284.12	67.54	111.69	-139.11	-3,029.61	49.94	4,081.14	3,990.14	91.00	44.848		
15,700.00	12,420.48	14,732.00	8,284.12	68.79	111.69	-102.75	-3,029.61	49.94	4,078.47	3,986.77	91.70	44.478		
15,800.00	12,419.62	14,676.78	8,283.85	70.06	110.79	-79.50	-3,084.83	49.77	4,077.88	3,985.98	91.90	44.375		
15,845.37	12,419.23	14,645.60	8,283.67	70.64	110.28	-72.56	-3,116.01	49.68	4,077.77	3,985.84	91.94	44.355		
15,900.00	12,418.76	14,616.31	8,283.33	71.34	109.80	-61.48	-3,145.30	49.60	4,077.94	3,985.89	92.05	44.299		
16,000.00	12,417.90	14,558.22	8,282.14	72.63	108.84	-47.44	-3,203.38	49.48	4,079.13	3,986.89	92.24	44.224		
16,100.00	12,417.03	14,410.12	8,278.62	73.94	106.42	-64.41	-3,351.43	48.86	4,080.90	3,989.27	91.64	44.534		
16,200.00	12,416.17	14,321.65	8,277.70	75.27	104.97	-60.32	-3,439.87	47.09	4,081.20	3,989.62	91.57	44.568		
16,300.00	12,415.31	14,079.71	8,277.23	76.60	101.01	-123.68	-3,681.78	46.89	4,081.03	3,990.90	90.13	45.281		
16,400.00	12,414.45	14,004.00	8,278.30	77.95	99.76	-114.49	-3,757.48	47.53	4,078.71	3,988.52	90.19	45.222		
16,500.00	12,413.59	13,939.87	8,278.74	79.31	98.71	-98.17	-3,821.60	47.91	4,077.12	3,986.75	90.37	45.115		
16,600.00	12,412.73	13,854.27	8,278.87	80.69	97.31	-91.08	-3,907.21	48.14	4,076.11	3,985.75	90.36	45.110		
16,700.00	12,411.87	13,693.93	8,279.97	82.07	94.68	-118.25	-4,067.54	48.15	4,074.64	3,984.97	89.68	45.437		
16,800.00	12,411.01	13,576.56	8,281.99	83.46	92.76	-124.28	-4,184.89	47.94	4,072.10	3,982.71	89.39	45.554		
16,900.00	12,410.15	13,480.60	8,283.96	84.87	91.19	-122.73	-4,280.83	47.74	4,069.21	3,979.90	89.31	45.564		
17,000.00	12,409.29	13,403.92	8,285.18	86.28	89.94	-113.90	-4,357.51	47.86	4,066.77	3,977.36	89.41	45.486		
17,100.00	12,408.43	13,343.00	8,285.80	87.70	88.94	-96.45	-4,418.42	48.16	4,064.99	3,975.34	89.65	45.341		
17,195.55	12,407.61	13,295.10	8,285.76	89.06	88.15	-73.94	-4,466.31	48.66	4,064.33	3,974.34	89.99	45.167		
17,200.00	12,407.57	13,293.21	8,285.74	89.13	88.12	-72.80	-4,468.21	48.69	4,064.33	3,974.33	90.00	45.158		
17,300.00	12,406.71	13,267.37	8,285.47	90.56	87.70	-47.03	-4,494.04	49.09	4,065.09	3,974.53	90.56	44.887		
17,400.00	12,405.85	13,023.97	8,283.81	92.01	83.72	-105.54	-4,737.39	52.23	4,064.44	3,975.26	89.18	45.575		
17,500.00	12,404.99	12,919.55	8,284.83	93.46	82.01	-107.39	-4,841.81	51.80	4,062.63	3,973.57	89.06	45.618		
17,600.00	12,404.13	12,849.20	8,285.33	94.91	80.87	-93.47	-4,912.15	51.68	4,061.13	3,971.88	89.25	45.504		
17,683.54	12,403.41	12,807.06	8,285.18	96.14	80.18	-73.91	-4,954.30	51.93	4,060.71	3,971.15	89.56	45.342		
17,700.00	12,403.27	12,798.75	8,285.10	96.38	80.04	-70.35	-4,962.61	52.02	4,060.72	3,971.11	89.62	45.312		
17,800.00	12,402.41	12,626.86	8,284.36	97.85	77.24	-104.09	-5,134.48	53.60	4,060.46	3,971.56	88.90	45.675		
17,900.00	12,401.55	12,494.00	8,286.03	99.32	75.07	-118.02	-5,267.33	54.65	4,058.28	3,969.75	88.54	45.838		
18,000.00	12,400.68	12,450.94	8,286.42	100.81	74.37	-92.65	-5,310.39	55.05	4,056.56	3,967.57	88.99	45.582		
18,065.95	12,400.12	12,424.59	8,286.32	101.79	73.94	-73.78	-5,336.73	55.40	4,056.24	3,966.93	89.31	45.416		
18,100.00	12,399.82	12,396.00	8,285.91	102.29	73.47	-71.32	-5,365.31	55.87	4,056.40	3,967.06	89.34	45.403		
18,200.00	12,398.96	12,296.23	8,284.42	103.79	71.85	-71.06	-5,465.06	57.46	4,057.01	3,967.71	89.29	45.434		
18,300.00	12,398.10	12,084.47	8,286.14	105.28	68.40	-122.41	-5,676.76	61.18	4,054.78	3,966.53	88.25	45.949		
18,400.00	12,397.24	12,046.90	8,286.50	106.78	67.79	-94.75	-5,714.32	61.96	4,052.93	3,964.16	88.77	45.655		
18,500.00	12,396.38	11,908.97	8,286.68	108.29	65.54	-113.21	-5,852.21	65.29	4,052.07	3,963.68	88.40	45.839		
18,600.00	12,395.52	18,600.00	8,288.72	109.80	173.92	-129.84	-5,995.15	68.01	4,049.85	3,913.75	136.11	29.755 SF		

to center distance or coverd point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 116H - Wellbore #1 - Surveys														Offset Site Error:	0.00 usft
Survey Program: 77-VESS1_GYRO_DROP.7685-MWD														Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/W (usft)							
18,700.00	12,394.66	11,665.36	8,291.56	111.32	61.60	-129.81	-6,095.71	67.84	4,046.19	3,958.22	87.97	45.996			
18,800.00	12,393.80	11,590.92	8,292.89	112.84	60.40	-120.56	-6,170.14	66.92	4,043.55	3,955.35	88.19	45.848			
18,900.00	12,392.94	11,523.46	8,293.88	114.36	59.32	-106.31	-6,237.59	66.24	4,041.34	3,952.85	88.48	45.673			
19,000.00	12,392.08	11,479.79	8,293.94	115.89	58.62	-78.15	-6,281.25	65.97	4,040.38	3,951.40	88.98	45.406			
19,011.88	12,391.98	11,474.61	8,293.90	116.07	58.53	-74.94	-6,286.44	65.94	4,040.36	3,951.32	89.04	45.376			
19,100.00	12,391.22	11,452.00	8,293.65	117.42	58.17	-49.79	-6,309.05	65.87	4,040.89	3,951.28	89.61	45.095			
19,200.00	12,390.36	11,397.85	8,292.31	118.95	57.30	-38.82	-6,363.17	65.80	4,042.74	3,952.74	90.00	44.918			
19,300.00	12,389.50	11,358.00	8,290.61	120.49	56.66	-29.59	-6,402.99	65.83	4,046.15	3,955.64	90.51	44.704			
19,400.00	12,388.64	11,282.98	8,286.64	122.03	55.46	-26.94	-6,477.91	65.70	4,050.61	3,959.88	90.73	44.645			
19,500.00	12,387.78	10,970.82	8,276.47	123.57	50.50	-82.83	-6,789.82	62.12	4,053.70	3,964.68	89.02	45.537			
19,600.00	12,386.92	10,841.03	8,276.61	125.12	48.43	-97.11	-6,919.59	64.15	4,052.66	3,963.84	88.81	45.630			
19,700.00	12,386.06	10,564.65	8,284.77	126.66	44.04	-149.62	-7,195.73	71.02	4,047.94	3,960.57	87.36	46.335			
19,800.00	12,385.20	10,472.87	8,288.99	128.22	42.60	-148.88	-7,287.37	73.33	4,042.43	3,954.91	87.52	46.191			
19,900.00	12,384.33	10,415.00	8,291.48	129.77	41.69	-142.02	-7,345.18	74.56	4,037.38	3,949.41	87.97	45.897			
20,000.00	12,383.47	10,360.71	8,293.25	131.33	40.84	-130.80	-7,399.43	75.16	4,033.43	3,944.98	88.45	45.601			
20,100.00	12,382.61	10,316.98	8,293.95	132.89	40.16	-109.15	-7,443.15	74.98	4,030.96	3,941.94	89.02	45.283			
20,200.00	12,381.75	10,227.00	8,294.83	134.45	38.77	-104.23	-7,533.13	74.34	4,029.17	3,939.95	89.22	45.161			
20,300.00	12,380.89	10,158.33	8,295.14	136.01	37.71	-88.46	-7,601.80	74.27	4,027.92	3,938.33	89.59	44.958			
20,400.00	12,380.03	10,013.46	8,295.76	137.58	35.49	-110.42	-7,746.67	74.78	4,026.66	3,937.28	89.39	45.047			
20,500.00	12,379.17	9,944.00	8,296.15	139.15	34.43	-95.75	-7,816.12	75.52	4,025.20	3,935.42	89.78	44.834			
20,600.00	12,378.31	9,871.31	8,296.04	140.72	33.33	-81.85	-7,888.80	76.71	4,024.46	3,934.30	90.15	44.640			
20,666.23	12,377.74	9,823.01	8,295.72	141.76	32.60	-73.04	-7,937.10	77.55	4,024.30	3,933.90	90.40	44.515			
20,700.00	12,377.45	9,799.19	8,295.48	142.29	32.25	-68.44	-7,960.91	77.96	4,024.34	3,933.80	90.54	44.449			
20,800.00	12,376.59	9,512.70	8,298.60	143.86	28.02	-142.94	-8,247.31	82.04	4,022.55	3,933.13	89.42	44.985			
20,900.00	12,375.73	9,473.00	8,300.06	145.44	27.45	-127.26	-8,286.98	82.21	4,018.57	3,928.47	90.10	44.603			
21,000.00	12,374.87	9,416.52	8,301.40	147.02	26.65	-109.61	-8,343.44	82.39	4,015.73	3,925.06	90.66	44.293			
21,100.00	12,374.01	9,378.00	8,301.39	148.59	26.11	-78.17	-8,381.96	82.51	4,014.76	3,923.42	91.34	43.954			
21,111.05	12,373.91	9,378.00	8,301.39	148.77	26.11	-72.75	-8,381.96	82.51	4,014.75	3,923.31	91.44	43.905			
21,200.00	12,373.15	9,329.80	8,300.71	150.18	25.44	-55.74	-8,430.15	82.55	4,015.23	3,923.27	91.96	43.665			
21,300.00	12,372.29	9,267.96	8,299.23	151.76	24.59	-44.40	-8,491.98	82.25	4,016.76	3,924.28	92.49	43.431			
21,400.00	12,371.43	9,209.00	8,297.47	153.34	23.79	-35.91	-8,550.91	81.94	4,019.05	3,926.01	93.04	43.197			
21,500.00	12,370.57	9,142.17	8,294.85	154.93	22.91	-30.95	-8,617.68	81.77	4,022.23	3,928.67	93.56	42.991			
21,600.00	12,369.71	8,866.04	8,286.85	156.52	19.48	-84.34	-8,893.66	82.71	4,025.02	3,931.97	93.05	43.256			
21,700.00	12,368.85	8,763.62	8,286.79	158.11	18.33	-85.59	-8,996.08	82.85	4,024.23	3,930.73	93.50	43.040			
21,799.88	12,367.99	8,689.00	8,286.44	159.69	17.54	-73.17	-9,070.69	83.62	4,023.85	3,929.75	94.10	42.761			
21,800.00	12,367.98	8,689.00	8,286.44	159.70	17.54	-73.12	-9,070.69	83.62	4,023.85	3,929.75	94.10	42.760			
21,900.00	12,367.12	8,658.00	8,286.03	161.29	17.23	-47.42	-9,101.68	84.24	4,024.58	3,929.69	94.90	42.410			
22,000.00	12,366.26	8,627.00	8,284.95	162.88	16.93	-32.97	-9,132.64	85.39	4,027.14	3,931.47	95.68	42.091			
22,100.00	12,365.40	8,627.00	8,284.95	164.47	16.93	-22.42	-9,132.64	85.39	4,031.81	3,935.27	96.55	41.761			
22,200.00	12,364.54	8,596.00	8,282.60	166.07	16.63	-18.07	-9,163.51	86.93	4,038.52	3,941.24	97.29	41.511			
22,300.00	12,363.68	8,596.00	8,282.60	167.67	16.63	-14.23	-9,163.51	86.93	4,047.36	3,949.26	98.10	41.259			
22,400.00	12,362.82	8,578.22	8,280.54	169.26	16.47	-12.02	-9,181.14	87.94	4,058.34	3,959.52	98.83	41.066			
22,500.00	12,361.96	8,564.00	8,278.52	170.86	16.34	-10.34	-9,195.19	88.88	4,071.46	3,971.93	99.54	40.905			
22,565.16	12,361.40	8,564.00	8,278.52	171.78	16.34	-9.39	-9,195.19	88.88	4,081.18	3,981.95	99.23	41.129			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 242H - Wellbore #1 - Surveys												Offset Site Error:	0.00 usft
Survey Program: 165-MVDD												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
13,400.00	12,440.28	17,847.00	10,409.33	46.63	134.25	-171.41	-10,373.85	-1,424.26	9,954.50	9,868.39	86.12	115.593	
13,500.00	12,439.42	17,847.00	10,409.33	47.20	134.25	-171.21	-10,373.85	-1,424.26	9,861.96	9,775.65	86.31	114.266	
13,600.00	12,438.56	17,847.00	10,409.33	47.83	134.25	-171.01	-10,373.85	-1,424.26	9,769.56	9,683.05	86.51	112.924	
13,700.00	12,437.70	17,847.00	10,409.33	48.52	134.25	-170.80	-10,373.85	-1,424.26	9,677.31	9,590.57	86.74	111.565	
13,727.27	12,437.47	17,847.00	10,409.33	48.71	134.25	-170.75	-10,373.85	-1,424.26	9,652.19	9,565.38	86.81	111.192	
13,800.00	12,436.84	17,847.00	10,409.33	49.25	134.25	-170.60	-10,373.85	-1,424.26	9,584.91	9,497.93	86.98	110.195	
13,900.00	12,435.98	17,847.00	10,409.33	50.02	134.25	-170.41	-10,373.85	-1,424.26	9,491.59	9,404.38	87.22	108.830	
14,000.00	12,435.11	17,847.00	10,409.33	50.83	134.25	-170.24	-10,373.85	-1,424.26	9,397.39	9,309.95	87.44	107.476	
14,100.00	12,434.25	17,847.00	10,409.33	51.66	134.25	-170.08	-10,373.85	-1,424.26	9,302.40	9,214.75	87.64	106.138	
14,200.00	12,433.39	17,847.00	10,409.33	52.52	134.25	-169.94	-10,373.85	-1,424.26	9,206.70	9,118.87	87.83	104.820	
14,259.68	12,432.87	17,847.00	10,409.33	53.04	134.25	-169.87	-10,373.85	-1,424.26	9,149.31	9,061.37	87.94	104.045	
14,300.00	12,432.52	17,847.00	10,409.33	53.40	134.25	-169.82	-10,373.85	-1,424.26	9,110.46	9,022.46	88.00	103.524	
14,400.00	12,431.66	17,847.00	10,409.33	54.32	134.25	-169.70	-10,373.85	-1,424.26	9,014.18	8,926.01	88.18	102.230	
14,500.00	12,430.80	17,847.00	10,409.33	55.27	134.25	-169.58	-10,373.85	-1,424.26	8,917.99	8,829.63	88.36	100.931	
14,600.00	12,429.94	17,847.00	10,409.33	56.25	134.25	-169.46	-10,373.85	-1,424.26	8,821.88	8,733.33	88.55	99.628	
14,700.00	12,429.08	17,847.00	10,409.33	57.26	134.25	-169.33	-10,373.85	-1,424.26	8,725.86	8,637.11	88.75	98.320	
14,800.00	12,428.22	17,847.00	10,409.33	58.31	134.25	-169.20	-10,373.85	-1,424.26	8,629.92	8,540.96	88.96	97.008	
14,900.00	12,427.36	17,847.00	10,409.33	59.38	134.25	-169.07	-10,373.85	-1,424.26	8,534.08	8,444.90	89.18	95.691	
15,000.00	12,426.50	17,847.00	10,409.33	60.47	134.25	-168.93	-10,373.85	-1,424.26	8,438.34	8,348.92	89.42	94.370	
15,100.00	12,425.64	17,847.00	10,409.33	61.60	134.25	-168.79	-10,373.85	-1,424.26	8,342.70	8,253.03	89.66	93.045	
15,200.00	12,424.78	17,847.00	10,409.33	62.74	134.25	-168.65	-10,373.85	-1,424.26	8,247.16	8,157.24	89.92	91.716	
15,300.00	12,423.92	17,847.00	10,409.33	63.91	134.25	-168.50	-10,373.85	-1,424.26	8,151.72	8,061.53	90.19	90.382	
15,400.00	12,423.06	17,847.00	10,409.33	65.10	134.25	-168.35	-10,373.85	-1,424.26	8,056.40	7,965.93	90.48	89.044	
15,500.00	12,422.20	17,847.00	10,409.33	66.31	134.25	-168.20	-10,373.85	-1,424.26	7,961.19	7,870.42	90.77	87.703	
15,600.00	12,421.34	17,847.00	10,409.33	67.54	134.25	-168.04	-10,373.85	-1,424.26	7,866.11	7,775.02	91.09	86.357	
15,700.00	12,420.48	17,847.00	10,409.33	68.79	134.25	-167.88	-10,373.85	-1,424.26	7,771.14	7,679.73	91.42	85.008	
15,800.00	12,419.62	17,847.00	10,409.33	70.06	134.25	-167.71	-10,373.85	-1,424.26	7,676.30	7,584.54	91.76	83.656	
15,900.00	12,418.76	17,847.00	10,409.33	71.34	134.25	-167.54	-10,373.85	-1,424.26	7,581.60	7,489.48	92.12	82.299	
16,000.00	12,417.90	17,847.00	10,409.33	72.63	134.25	-167.37	-10,373.85	-1,424.26	7,487.03	7,394.53	92.50	80.940	
16,100.00	12,417.03	17,847.00	10,409.33	73.94	134.25	-167.19	-10,373.85	-1,424.26	7,392.61	7,299.71	92.90	79.577	
16,200.00	12,416.17	17,847.00	10,409.33	75.27	134.25	-167.00	-10,373.85	-1,424.26	7,298.33	7,205.02	93.31	78.212	
16,300.00	12,415.31	17,847.00	10,409.33	76.60	134.25	-166.81	-10,373.85	-1,424.26	7,204.21	7,110.46	93.75	76.844	
16,400.00	12,414.45	17,847.00	10,409.33	77.95	134.25	-166.61	-10,373.85	-1,424.26	7,110.25	7,016.04	94.21	75.473	
16,500.00	12,413.59	17,847.00	10,409.33	79.31	134.25	-166.41	-10,373.85	-1,424.26	7,016.46	6,921.77	94.69	74.100	
16,600.00	12,412.73	17,847.00	10,409.33	80.69	134.25	-166.21	-10,373.85	-1,424.26	6,922.84	6,827.65	95.19	72.725	
16,700.00	12,411.87	17,847.00	10,409.33	82.07	134.25	-166.00	-10,373.85	-1,424.26	6,829.40	6,733.68	95.72	71.348	
16,800.00	12,411.01	17,847.00	10,409.33	83.46	134.25	-165.77	-10,373.85	-1,424.26	6,736.15	6,639.88	96.27	69.970	
16,900.00	12,410.15	17,847.00	10,409.33	84.87	134.25	-165.55	-10,373.85	-1,424.26	6,643.10	6,546.25	96.85	68.591	
17,000.00	12,409.29	17,847.00	10,409.33	86.28	134.25	-165.31	-10,373.85	-1,424.26	6,550.25	6,452.79	97.46	67.211	
17,100.00	12,408.43	17,847.00	10,409.33	87.70	134.25	-165.07	-10,373.85	-1,424.26	6,457.61	6,359.52	98.09	65.831	
17,200.00	12,407.57	17,847.00	10,409.33	89.13	134.25	-164.82	-10,373.85	-1,424.26	6,365.20	6,266.44	98.78	64.451	
17,300.00	12,406.71	17,847.00	10,409.33	90.56	134.25	-164.57	-10,373.85	-1,424.26	6,273.02	6,173.56	99.46	63.072	
17,400.00	12,405.85	17,847.00	10,409.33	92.01	134.25	-164.30	-10,373.85	-1,424.26	6,181.08	6,080.89	100.19	61.694	
17,500.00	12,404.99	17,847.00	10,409.33	93.46	134.25	-164.03	-10,373.85	-1,424.26	6,089.40	5,988.44	100.96	60.317	
17,600.00	12,404.13	17,847.00	10,409.33	94.91	134.25	-163.75	-10,373.85	-1,424.26	5,997.98	5,896.22	101.76	58.942	
17,700.00	12,403.27	17,847.00	10,409.33	96.38	134.25	-163.46	-10,373.85	-1,424.26	5,906.84	5,804.24	102.60	57.570	
17,800.00	12,402.41	17,847.00	10,409.33	97.85	134.25	-163.15	-10,373.85	-1,424.26	5,816.00	5,712.51	103.48	56.201	
17,900.00	12,401.55	17,847.00	10,409.33	99.32	134.25	-162.84	-10,373.85	-1,424.26	5,725.45	5,621.05	104.41	54.836	
18,000.00	12,400.68	17,847.00	10,409.33	100.81	134.25	-162.52	-10,373.85	-1,424.26	5,635.23	5,529.85	105.38	53.476	
18,100.00	12,399.82	17,847.00	10,409.33	102.29	134.25	-162.18	-10,373.85	-1,424.26	5,545.35	5,438.95	106.39	52.121	
18,200.00	12,398.96	17,847.00	10,409.33	103.79	134.25	-161.83	-10,373.85	-1,424.26	5,455.81	5,348.35	107.46	50.772	
18,300.00	12,398.10	17,847.00	10,409.33	105.28	134.25	-161.47	-10,373.85	-1,424.26	5,366.64	5,258.07	108.57	49.429	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
18,400.00	12,397.24	17,847.00	10,409.33	106.78	134.25	-161.09	-10,373.85	-1,424.26	5,277.87	5,168.13	109.74	48.094			
18,500.00	12,396.38	17,847.00	10,409.33	108.29	134.25	-160.70	-10,373.85	-1,424.26	5,189.50	5,078.53	110.96	46.768			
18,600.00	12,395.52	17,847.00	10,409.33	109.80	134.25	-160.30	-10,373.85	-1,424.26	5,101.56	4,989.31	112.25	45.450			
18,700.00	12,394.66	17,847.00	10,409.33	111.32	134.25	-159.87	-10,373.85	-1,424.26	5,014.07	4,900.48	113.59	44.143			
18,800.00	12,393.80	17,847.00	10,409.33	112.84	134.25	-159.43	-10,373.85	-1,424.26	4,927.06	4,812.07	114.99	42.847			
18,900.00	12,392.94	17,847.00	10,409.33	114.36	134.25	-158.98	-10,373.85	-1,424.26	4,840.55	4,724.08	116.47	41.562			
19,000.00	12,392.08	17,847.00	10,409.33	115.89	134.25	-158.50	-10,373.85	-1,424.26	4,754.57	4,636.56	118.01	40.291			
19,100.00	12,391.22	17,847.00	10,409.33	117.42	134.25	-158.00	-10,373.85	-1,424.26	4,669.15	4,549.53	119.62	39.033			
19,200.00	12,390.36	17,847.00	10,409.33	118.95	134.25	-157.48	-10,373.85	-1,424.26	4,584.32	4,463.01	121.31	37.791			
19,300.00	12,389.50	17,847.00	10,409.33	120.49	134.25	-156.94	-10,373.85	-1,424.26	4,500.11	4,377.03	123.08	36.564			
19,400.00	12,388.64	17,847.00	10,409.33	122.03	134.25	-156.37	-10,373.85	-1,424.26	4,416.56	4,291.63	124.92	35.354			
19,500.00	12,387.78	17,847.00	10,409.33	123.57	134.25	-155.77	-10,373.85	-1,424.26	4,333.70	4,206.85	126.86	34.163			
19,600.00	12,386.92	17,847.00	10,409.33	125.12	134.25	-155.15	-10,373.85	-1,424.26	4,251.59	4,122.71	128.88	32.990			
19,700.00	12,386.06	17,847.00	10,409.33	126.66	134.25	-154.50	-10,373.85	-1,424.26	4,170.25	4,039.27	130.99	31.837			
19,800.00	12,385.20	17,847.00	10,409.33	128.22	134.25	-153.81	-10,373.85	-1,424.26	4,089.74	3,956.55	133.19	30.706			
19,900.00	12,384.33	17,847.00	10,409.33	129.77	134.25	-153.09	-10,373.85	-1,424.26	4,010.11	3,874.62	135.49	29.597			
20,000.00	12,383.47	17,847.00	10,409.33	131.33	134.25	-152.33	-10,373.85	-1,424.26	3,931.41	3,793.52	137.89	28.511			
20,100.00	12,382.61	17,847.00	10,409.33	132.89	134.25	-151.54	-10,373.85	-1,424.26	3,853.70	3,713.31	140.39	27.449			
20,200.00	12,381.75	17,847.00	10,409.33	134.45	134.25	-150.70	-10,373.85	-1,424.26	3,777.04	3,634.04	143.00	26.413			
20,300.00	12,380.89	17,847.00	10,409.33	136.01	134.25	-149.81	-10,373.85	-1,424.26	3,701.49	3,555.78	145.71	25.403			
20,400.00	12,380.03	17,847.00	10,409.33	137.58	134.25	-148.88	-10,373.85	-1,424.26	3,627.13	3,478.60	148.53	24.420			
20,500.00	12,379.17	17,847.00	10,409.33	139.15	134.25	-147.89	-10,373.85	-1,424.26	3,554.02	3,402.56	151.46	23.465			
20,600.00	12,378.31	17,847.00	10,409.33	140.72	134.25	-146.85	-10,373.85	-1,424.26	3,482.25	3,327.76	154.50	22.540			
20,700.00	12,377.45	17,847.00	10,409.33	142.29	134.25	-145.75	-10,373.85	-1,424.26	3,411.90	3,254.26	157.64	21.644			
20,800.00	12,376.59	17,847.00	10,409.33	143.86	134.25	-144.58	-10,373.85	-1,424.26	3,343.07	3,182.17	160.89	20.778			
20,900.00	12,375.73	17,847.00	10,409.33	145.44	134.25	-143.34	-10,373.85	-1,424.26	3,275.84	3,111.59	164.25	19.944			
21,000.00	12,374.87	17,847.00	10,409.33	147.02	134.25	-142.02	-10,373.85	-1,424.26	3,210.31	3,042.61	167.71	19.142			
21,100.00	12,374.01	17,847.00	10,409.33	148.59	134.25	-140.63	-10,373.85	-1,424.26	3,146.60	2,975.34	171.26	18.373			
21,200.00	12,373.15	17,847.00	10,409.33	150.18	134.25	-139.15	-10,373.85	-1,424.26	3,084.82	2,909.92	174.90	17.637			
21,300.00	12,372.29	17,847.00	10,409.33	151.76	134.25	-137.57	-10,373.85	-1,424.26	3,025.09	2,846.46	178.63	16.935			
21,400.00	12,371.43	17,847.00	10,409.33	153.34	134.25	-135.90	-10,373.85	-1,424.26	2,967.52	2,785.10	182.42	16.268			
21,500.00	12,370.57	17,847.00	10,409.33	154.93	134.25	-134.12	-10,373.85	-1,424.26	2,912.24	2,725.97	186.27	15.635			
21,600.00	12,369.71	17,847.00	10,409.33	156.52	134.25	-132.22	-10,373.85	-1,424.26	2,859.40	2,669.24	190.16	15.037			
21,700.00	12,368.85	17,847.00	10,409.33	158.11	134.25	-130.21	-10,373.85	-1,424.26	2,809.12	2,615.05	194.08	14.474			
21,800.00	12,367.98	17,847.00	10,409.33	159.70	134.25	-128.07	-10,373.85	-1,424.26	2,761.56	2,563.56	198.00	13.947			
21,900.00	12,367.12	17,847.00	10,409.33	161.29	134.25	-125.81	-10,373.85	-1,424.26	2,716.84	2,514.93	201.90	13.456			
22,000.00	12,366.26	17,847.00	10,409.33	162.88	134.25	-123.40	-10,373.85	-1,424.26	2,675.11	2,469.34	205.77	13.001			
22,100.00	12,365.40	17,847.00	10,409.33	164.47	134.25	-120.86	-10,373.85	-1,424.26	2,636.52	2,426.95	209.56	12.581			
22,200.00	12,364.54	17,847.00	10,409.33	166.07	134.25	-118.18	-10,373.85	-1,424.26	2,601.20	2,387.94	213.26	12.197			
22,300.00	12,363.68	17,847.00	10,409.33	167.67	134.25	-115.35	-10,373.85	-1,424.26	2,569.29	2,352.46	216.83	11.849			
22,400.00	12,362.82	17,847.00	10,409.33	169.26	134.25	-112.40	-10,373.85	-1,424.26	2,540.91	2,320.67	220.24	11.537			
22,500.00	12,361.96	17,847.00	10,409.33	170.86	134.25	-109.31	-10,373.85	-1,424.26	2,516.20	2,292.73	223.46	11.260			
22,565.16	12,361.40	17,847.00	10,409.33	171.78	134.25	-107.23	-10,373.85	-1,424.26	2,502.11	2,276.29	225.82	11.080 CC, ES, SF			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-175.54	-4,997.14	-389.91	5,012.39				
100.00	100.00	58.02	58.02	0.13	0.09	-175.54	-4,997.24	-389.89	5,012.45	5,012.23	0.23	N/A	
200.00	200.00	135.80	135.80	0.49	0.21	-175.54	-4,997.68	-389.79	5,013.00	5,012.30	0.70	7,113.528	
300.00	300.00	215.93	215.92	0.85	0.36	-175.54	-4,998.49	-389.61	5,014.00	5,012.79	1.21	4,143.420	
400.00	400.00	316.52	316.50	1.21	0.72	-175.55	-4,999.72	-389.05	5,015.17	5,013.24	1.93	2,599.977	
500.00	500.00	417.19	417.17	1.57	1.08	-175.56	-5,000.96	-388.47	5,016.36	5,013.71	2.65	1,894.183	
600.00	600.00	523.79	523.76	1.93	1.47	-175.56	-5,002.10	-388.11	5,017.39	5,014.00	3.39	1,480.527	
700.00	700.00	625.14	625.10	2.29	1.83	-175.57	-5,003.14	-387.78	5,018.39	5,014.28	4.11	1,220.798	
800.00	800.00	738.36	738.31	2.64	2.24	-175.57	-5,004.14	-387.38	5,019.25	5,014.37	4.88	1,029.563	
900.00	900.00	845.48	845.43	3.00	2.62	-175.58	-5,004.88	-386.95	5,019.90	5,014.28	5.62	893.743	
1,000.00	1,000.00	952.61	952.56	3.36	3.00	-175.59	-5,005.46	-386.44	5,020.41	5,014.05	6.36	789.576	
1,100.00	1,100.00	1,059.52	1,059.47	3.72	3.38	-175.59	-5,005.90	-385.91	5,020.78	5,013.68	7.10	707.386	
1,200.00	1,200.00	1,166.43	1,166.37	4.08	3.76	-175.60	-5,006.19	-385.40	5,021.01	5,013.17	7.84	640.692	
1,300.00	1,300.00	1,265.40	1,265.35	4.44	4.12	-175.60	-5,006.41	-385.01	5,021.20	5,012.65	8.55	587.398	
1,400.00	1,400.00	1,367.10	1,367.05	4.79	4.48	-175.61	-5,006.61	-384.69	5,021.38	5,012.11	9.27	541.751	
1,500.00	1,500.00	1,471.25	1,471.20	5.15	4.85	-175.61	-5,006.76	-384.28	5,021.49	5,011.49	10.00	502.282	
1,600.00	1,600.00	1,569.30	1,569.25	5.51	5.20	-175.62	-5,006.85	-383.82	5,021.54	5,010.84	10.70	469.136	
1,700.00	1,700.00	1,661.56	1,661.50	5.87	5.52	-175.62	-5,007.04	-383.56	5,021.73	5,010.34	11.39	440.916	
1,800.00	1,800.00	1,759.40	1,759.34	6.23	5.87	-175.62	-5,007.36	-383.47	5,022.04	5,009.95	12.10	415.212	
1,900.00	1,900.00	1,863.97	1,863.91	6.59	6.24	-175.63	-5,007.66	-383.09	5,022.30	5,009.47	12.83	391.589	
2,000.00	2,000.00	1,963.15	1,963.08	6.95	6.60	-175.63	-5,007.90	-382.52	5,022.50	5,008.96	13.54	371.020	
2,100.00	2,100.00	2,059.25	2,059.19	7.30	6.94	-175.64	-5,008.18	-382.21	5,022.77	5,008.53	14.24	352.776	
2,200.00	2,200.00	2,157.67	2,157.61	7.66	7.29	-175.64	-5,008.51	-382.13	5,023.10	5,008.15	14.95	336.083	
2,300.00	2,300.00	2,257.29	2,257.22	8.02	7.64	-175.64	-5,008.86	-382.13	5,023.44	5,007.78	15.66	320.823	
2,400.00	2,400.00	2,364.32	2,364.25	8.38	8.02	-175.64	-5,009.17	-382.15	5,023.74	5,007.34	16.40	306.415	
2,500.00	2,500.00	2,473.79	2,473.73	8.74	8.41	-175.64	-5,009.30	-382.03	5,023.85	5,006.71	17.14	293.094	
2,600.00	2,599.99	2,561.58	2,561.52	9.10	8.72	-175.65	-5,009.44	-381.83	5,024.76	5,006.95	17.81	282.111	
2,700.00	2,699.96	2,649.49	2,649.42	9.45	9.03	-175.66	-5,009.80	-381.54	5,027.45	5,008.97	18.48	272.025	
2,800.00	2,799.86	2,744.87	2,744.80	9.81	9.38	-175.69	-5,010.37	-381.05	5,031.87	5,012.69	19.18	262.346	
2,900.00	2,899.68	2,841.50	2,841.42	10.17	9.72	-175.73	-5,011.03	-380.28	5,037.89	5,018.00	19.88	253.367	
3,000.00	2,999.37	2,941.60	2,941.52	10.53	10.08	-175.79	-5,011.75	-379.39	5,045.48	5,024.88	20.60	244.927	
3,100.00	3,098.90	3,041.99	3,041.91	10.89	10.44	-175.85	-5,012.43	-378.72	5,054.60	5,033.28	21.32	237.111	
3,200.00	3,198.26	3,147.32	3,147.23	11.25	10.82	-175.91	-5,013.08	-378.08	5,065.19	5,043.14	22.05	229.682	
3,300.00	3,297.40	3,252.64	3,252.55	11.61	11.20	-175.99	-5,013.60	-377.33	5,077.20	5,054.41	22.79	222.792	
3,300.10	3,297.50	3,252.75	3,252.66	11.61	11.20	-175.99	-5,013.60	-377.33	5,077.22	5,054.43	22.79	222.785	
3,400.00	3,396.43	3,358.82	3,358.73	11.98	11.57	-176.07	-5,013.99	-376.58	5,089.86	5,066.33	23.53	216.336	
3,500.00	3,495.46	3,459.88	3,459.78	12.36	11.94	-176.15	-5,014.23	-375.90	5,102.41	5,078.16	24.25	210.420	
3,600.00	3,594.48	3,553.04	3,552.94	12.73	12.27	-176.23	-5,014.51	-375.32	5,115.03	5,090.09	24.94	205.071	
3,700.00	3,693.51	3,645.86	3,645.75	13.11	12.60	-176.31	-5,014.89	-374.81	5,127.78	5,102.14	25.64	200.019	
3,800.00	3,792.54	3,738.09	3,737.99	13.49	12.93	-176.38	-5,015.37	-374.44	5,140.66	5,114.33	26.33	195.246	
3,900.00	3,891.56	3,833.34	3,833.24	13.87	13.27	-176.46	-5,015.98	-374.20	5,153.67	5,126.63	27.03	190.640	
4,000.00	3,990.59	3,935.77	3,935.66	14.26	13.64	-176.53	-5,016.64	-373.71	5,166.67	5,138.90	27.76	186.087	
4,100.00	4,089.62	4,034.38	4,034.27	14.64	13.99	-176.61	-5,017.23	-372.90	5,179.62	5,151.14	28.48	181.848	
4,200.00	4,188.64	4,128.16	4,128.04	15.03	14.33	-176.69	-5,017.88	-371.97	5,192.66	5,163.48	29.18	177.923	
4,300.00	4,287.67	4,221.31	4,221.18	15.42	14.66	-176.77	-5,018.62	-370.93	5,205.81	5,175.93	29.88	174.196	
4,400.00	4,386.70	4,313.75	4,313.61	15.81	14.99	-176.85	-5,019.46	-369.96	5,219.09	5,188.51	30.58	170.655	
4,500.00	4,485.72	4,406.30	4,406.15	16.20	15.32	-176.93	-5,020.41	-369.10	5,232.50	5,201.22	31.28	167.272	
4,600.00	4,584.75	4,499.88	4,499.73	16.60	15.66	-177.01	-5,021.47	-368.36	5,246.04	5,214.05	31.98	164.019	
4,700.00	4,683.78	4,602.34	4,602.17	16.99	16.03	-177.08	-5,022.64	-367.64	5,259.59	5,226.87	32.72	160.742	
4,800.00	4,782.80	4,704.84	4,704.66	17.39	16.40	-177.16	-5,023.74	-366.98	5,273.08	5,239.62	33.46	157.604	
4,900.00	4,881.83	4,807.37	4,807.19	17.78	16.76	-177.23	-5,024.77	-366.17	5,286.51	5,252.32	34.20	154.597	
5,000.00	4,980.85	4,912.02	4,911.83	18.18	17.14	-177.31	-5,025.75	-365.13	5,299.88	5,264.94	34.94	151.679	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,100.00	5,079.88	5,020.03	5,019.83	18.58	17.53	-177.39	-5,026.60	-364.01	5,313.10	5,277.40	35.70	148.826		
5,200.00	5,178.91	5,181.25	5,181.03	18.98	18.10	-177.48	-5,026.98	-362.03	5,325.86	5,289.21	36.65	145.320		
5,300.00	5,277.93	5,394.43	5,394.13	19.38	18.83	-177.59	-5,023.86	-357.40	5,336.87	5,299.10	37.77	141.317		
5,400.00	5,376.96	5,701.57	5,700.70	19.78	19.88	-177.78	-5,009.98	-345.28	5,344.57	5,305.40	39.16	136.470		
5,500.00	5,475.99	5,850.27	5,848.76	20.18	20.39	-177.94	-4,999.73	-336.16	5,349.96	5,309.93	40.03	133.640		
5,600.00	5,575.01	5,936.09	5,934.17	20.58	20.68	-178.06	-4,993.67	-330.42	5,355.25	5,314.54	40.71	131.559		
5,700.00	5,674.04	6,024.83	6,022.51	20.98	20.99	-178.19	-4,987.61	-324.56	5,360.81	5,319.42	41.39	129.523		
5,800.00	5,773.07	6,131.75	6,128.93	21.39	21.36	-178.33	-4,980.32	-317.25	5,366.39	5,324.26	42.13	127.372		
5,898.39	5,870.50	6,237.93	6,234.57	21.78	21.73	-178.47	-4,972.94	-309.52	5,371.77	5,328.91	42.87	125.311		
5,900.00	5,872.09	6,239.70	6,236.33	21.79	21.73	-178.47	-4,972.81	-309.39	5,371.86	5,328.98	42.88	125.277		
6,000.00	5,971.24	6,349.61	6,345.62	22.19	22.12	-178.62	-4,964.98	-300.73	5,376.36	5,332.72	43.63	123.213		
6,100.00	6,070.60	6,456.90	6,452.24	22.58	22.50	-178.77	-4,957.15	-291.64	5,379.12	5,334.74	44.38	121.205		
6,200.00	6,170.14	6,562.68	6,557.31	22.97	22.88	-178.91	-4,949.32	-282.22	5,380.20	5,335.08	45.12	119.242		
6,300.00	6,269.83	6,643.87	6,637.94	23.35	23.17	-179.02	-4,943.35	-274.86	5,379.78	5,334.00	45.78	117.519		
6,400.00	6,369.65	6,720.34	6,713.93	23.71	23.45	-179.12	-4,938.06	-268.14	5,378.22	5,331.80	46.42	115.866		
6,500.00	6,469.55	6,797.88	6,791.02	24.07	23.72	-179.21	-4,933.01	-261.55	5,375.51	5,328.46	47.06	114.234		
6,600.00	6,569.52	6,877.40	6,870.14	24.43	24.01	-179.29	-4,928.13	-255.13	5,371.61	5,323.91	47.70	112.612		
6,698.49	6,668.00	6,955.80	6,948.17	24.77	24.29	-179.35	-4,923.61	-249.16	5,366.59	5,318.26	48.33	111.040		
6,700.00	6,669.51	6,957.00	6,949.37	24.77	24.30	-179.35	-4,923.54	-249.07	5,366.50	5,318.16	48.34	111.016		
6,800.00	6,769.51	7,044.02	7,036.03	25.11	24.61	-179.42	-4,918.78	-242.83	5,360.94	5,311.94	49.00	109.400		
6,900.00	6,869.51	7,131.49	7,123.19	25.45	24.93	-179.48	-4,914.18	-236.93	5,355.61	5,305.94	49.67	107.828		
7,000.00	6,969.51	7,280.14	7,271.16	25.80	25.47	-179.61	-4,906.01	-225.42	5,350.08	5,299.54	50.55	105.844		
7,100.00	7,069.51	7,405.42	7,395.48	26.14	25.81	-179.75	-4,898.04	-212.16	5,343.60	5,292.36	51.23	104.298		
7,200.00	7,169.51	7,506.31	7,495.53	26.48	26.01	-179.87	-4,891.48	-201.01	5,337.02	5,285.24	51.77	103.082		
7,300.00	7,269.51	7,571.07	7,559.78	26.82	26.01	-179.94	-4,887.49	-193.96	5,330.78	5,278.65	52.13	102.252		
7,400.00	7,369.51	7,639.63	7,627.84	27.17	26.02	-179.98	-4,883.66	-186.68	5,325.17	5,272.66	52.50	101.423		
7,500.00	7,469.51	7,709.95	7,697.68	27.51	26.04	-179.90	-4,880.13	-179.22	5,320.12	5,267.25	52.88	100.615		
7,600.00	7,569.51	7,783.63	7,770.90	27.85	26.06	-179.82	-4,876.80	-171.73	5,315.61	5,262.36	53.25	99.825		
7,700.00	7,669.51	7,848.40	7,835.33	28.20	26.08	-179.75	-4,874.22	-165.57	5,311.65	5,258.03	53.62	99.057		
7,800.00	7,769.51	7,915.92	7,902.54	28.54	26.10	-179.68	-4,872.02	-159.49	5,308.40	5,254.41	53.99	98.313		
7,900.00	7,869.51	8,011.12	7,997.36	28.89	26.13	-179.60	-4,869.20	-151.54	5,305.49	5,251.11	54.38	97.566		
8,000.00	7,969.51	8,162.24	8,147.92	29.24	26.19	-179.47	-4,864.28	-139.48	5,302.36	5,247.58	54.79	96.781		
8,100.00	8,069.51	8,251.53	8,236.83	29.58	26.23	-179.39	-4,860.65	-132.17	5,298.39	5,243.21	55.18	96.020		
8,200.00	8,169.51	8,312.83	8,297.92	29.93	26.26	-179.34	-4,858.60	-127.44	5,295.13	5,239.56	55.56	95.301		
8,300.00	8,269.51	8,377.95	8,362.85	30.27	26.29	-179.29	-4,856.87	-122.79	5,292.55	5,236.61	55.95	94.601		
8,400.00	8,369.51	8,441.30	8,426.05	30.62	26.33	-179.24	-4,855.62	-118.69	5,290.65	5,234.32	56.33	93.924		
8,500.00	8,469.51	8,500.00	8,484.65	30.97	26.36	-179.20	-4,854.86	-115.26	5,289.46	5,232.75	56.71	93.277		
8,600.00	8,569.51	8,568.64	8,553.20	31.32	26.39	-179.17	-4,854.45	-111.77	5,288.95	5,231.86	57.09	92.638		
8,625.75	8,595.26	8,585.32	8,569.86	31.41	26.40	-179.16	-4,854.42	-111.01	5,288.93	5,231.74	57.19	92.479		
8,700.00	8,669.51	8,650.41	8,634.90	31.66	26.44	-179.13	-4,854.48	-108.41	5,289.03	5,231.54	57.49	92.001		
8,800.00	8,769.51	8,730.11	8,714.56	32.01	26.49	-179.10	-4,854.64	-105.90	5,289.31	5,231.43	57.89	91.376		
8,900.00	8,869.51	8,800.00	8,784.42	32.36	26.53	-179.08	-4,855.30	-104.00	5,290.25	5,231.98	58.27	90.783		
9,000.00	8,969.51	8,866.35	8,850.75	32.71	26.57	-179.06	-4,856.32	-102.38	5,291.79	5,233.13	58.66	90.211		
9,100.00	9,069.51	8,964.23	8,948.58	33.06	26.64	-179.04	-4,858.12	-100.32	5,293.65	5,234.57	59.08	89.600		
9,200.00	9,169.51	9,095.89	9,080.21	33.40	26.74	-179.02	-4,860.12	-98.35	5,295.21	5,235.67	59.54	88.932		
9,300.00	9,269.51	9,194.56	9,178.88	33.75	26.81	-179.01	-4,861.29	-97.39	5,296.42	5,236.45	59.97	88.312		
9,400.00	9,369.51	9,292.79	9,277.09	34.10	26.90	-179.00	-4,862.51	-96.53	5,297.67	5,237.26	60.41	87.696		
9,500.00	9,469.51	9,369.87	9,354.16	34.45	26.96	-179.00	-4,863.62	-96.00	5,299.14	5,238.31	60.82	87.123		
9,600.00	9,569.51	9,450.23	9,434.50	34.80	27.04	-178.99	-4,865.15	-95.57	5,301.04	5,239.79	61.24	86.557		
9,700.00	9,669.51	9,535.76	9,520.02	35.15	27.12	-178.99	-4,867.04	-95.52	5,303.25	5,241.58	61.67	85.991		
9,800.00	9,769.51	9,630.42	9,614.64	35.50	27.21	-179.00	-4,869.35	-95.75	5,305.69	5,243.57	62.12	85.415		
9,900.00	9,869.51	9,758.14	9,742.33	35.85	27.34	-179.00	-4,872.23	-95.77	5,307.96	5,245.35	62.61	84.776		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
10,000.00	9,969.51	9,828.20	9,812.37	36.20	27.37	179.00	-4,873.81	-95.68	5,310.20	5,247.21	62.99	84.300		
10,100.00	10,069.51	9,902.00	9,886.15	36.55	27.41	178.99	-4,875.82	-95.54	5,312.92	5,249.55	63.37	83.838		
10,200.00	10,169.51	9,902.00	9,886.15	36.90	27.41	178.99	-4,875.82	-95.54	5,316.84	5,253.17	63.67	83.507		
10,300.00	10,269.51	9,953.10	9,937.20	37.25	27.41	178.99	-4,878.05	-95.51	5,321.66	5,257.67	63.99	83.159		
10,400.00	10,369.51	9,997.00	9,980.99	37.60	27.41	179.00	-4,881.11	-95.63	5,328.25	5,263.94	64.31	82.853		
10,500.00	10,469.51	9,997.00	9,980.99	37.95	27.41	179.00	-4,881.11	-95.63	5,336.00	5,271.42	64.58	82.627		
10,600.00	10,569.51	9,997.00	9,980.99	38.31	27.41	179.00	-4,881.11	-95.63	5,345.61	5,280.77	64.84	82.449		
10,700.00	10,669.51	10,021.15	10,005.01	38.66	27.41	179.00	-4,883.54	-95.69	5,356.56	5,291.45	65.11	82.272		
10,800.00	10,769.51	10,044.00	10,027.65	39.01	27.41	179.00	-4,886.67	-95.66	5,369.44	5,304.07	65.37	82.137		
10,900.00	10,869.51	10,044.00	10,027.65	39.36	27.41	179.00	-4,886.67	-95.66	5,383.69	5,318.10	65.59	82.076		
11,000.00	10,969.51	10,044.00	10,027.65	39.71	27.41	179.00	-4,886.67	-95.66	5,399.76	5,333.96	65.80	82.059		
11,100.00	11,069.51	10,044.00	10,027.65	40.06	27.41	179.00	-4,886.67	-95.66	5,417.63	5,351.63	66.00	82.084		
11,200.00	11,169.51	10,092.00	10,074.72	40.41	27.42	179.00	-4,895.99	-95.53	5,436.95	5,370.67	66.28	82.034		
11,300.00	11,269.51	10,092.00	10,074.72	40.77	27.42	179.00	-4,895.99	-95.53	5,457.50	5,391.04	66.46	82.121		
11,400.00	11,369.51	10,092.00	10,074.72	41.12	27.42	179.00	-4,895.99	-95.53	5,479.80	5,413.17	66.63	82.248		
11,500.00	11,469.51	10,092.00	10,074.72	41.47	27.42	179.00	-4,895.99	-95.53	5,503.82	5,437.04	66.78	82.412		
11,600.00	11,569.51	10,113.36	10,095.41	41.82	27.42	179.00	-4,901.29	-95.68	5,529.20	5,462.21	66.98	82.548		
11,700.00	11,669.51	10,139.00	10,120.02	42.18	27.42	179.01	-4,908.45	-96.39	5,556.30	5,489.12	67.18	82.703		
11,800.00	11,769.51	10,139.00	10,120.02	42.53	27.42	179.01	-4,908.45	-96.39	5,584.56	5,517.24	67.32	82.956		
11,900.00	11,869.51	10,139.00	10,120.02	42.88	27.42	179.01	-4,908.45	-96.39	5,614.46	5,547.01	67.45	83.243		
11,902.93	11,872.44	10,139.00	10,120.02	42.89	27.42	179.01	-4,908.45	-96.39	5,615.36	5,547.91	67.45	83.252		
11,950.00	11,919.46	10,139.00	10,120.02	43.04	27.42	179.01	-4,908.45	-96.39	5,628.19	5,560.70	67.50	83.386		
12,000.00	11,969.05	10,160.00	10,139.97	43.19	27.42	179.04	-4,914.93	-97.29	5,637.87	5,570.29	67.58	83.424		
12,050.00	12,017.90	10,166.40	10,146.02	43.32	27.42	179.06	-4,917.00	-97.60	5,643.83	5,576.21	67.62	83.464		
12,100.00	12,065.65	10,187.00	10,165.37	43.44	27.42	179.10	-4,923.99	-98.68	5,646.03	5,578.34	67.69	83.412		
12,150.00	12,111.93	10,187.00	10,165.37	43.56	27.42	179.14	-4,923.99	-98.68	5,644.07	5,576.38	67.69	83.381		
12,200.00	12,156.38	10,187.00	10,165.37	43.66	27.42	179.18	-4,923.99	-98.68	5,638.27	5,570.59	67.68	83.308		
12,250.00	12,198.67	10,187.00	10,165.37	43.75	27.42	179.23	-4,923.99	-98.68	5,628.65	5,560.99	67.66	83.194		
12,300.00	12,238.48	10,187.00	10,165.37	43.83	27.42	179.29	-4,923.99	-98.68	5,615.27	5,547.64	67.62	83.039		
12,350.00	12,275.51	10,187.00	10,165.37	43.90	27.42	179.36	-4,923.99	-98.68	5,598.20	5,530.63	67.58	82.844		
12,400.00	12,309.46	10,210.49	10,187.21	43.97	27.42	179.44	-4,932.52	-99.94	5,577.18	5,509.59	67.59	82.516		
12,450.00	12,340.09	10,234.00	10,208.85	44.04	27.42	179.54	-4,941.65	-101.07	5,553.06	5,485.46	67.59	82.153		
12,500.00	12,367.17	10,234.00	10,208.85	44.10	27.42	179.62	-4,941.65	-101.07	5,525.26	5,457.74	67.52	81.831		
12,550.00	12,390.47	10,234.00	10,208.85	44.16	27.42	179.72	-4,941.65	-101.07	5,494.30	5,426.86	67.44	81.472		
12,600.00	12,409.84	10,234.00	10,208.85	44.22	27.42	179.81	-4,941.65	-101.07	5,460.38	5,393.03	67.35	81.073		
12,650.00	12,425.11	10,234.00	10,208.85	44.28	27.42	179.92	-4,941.65	-101.07	5,423.69	5,356.43	67.26	80.638		
12,700.00	12,436.18	10,234.00	10,208.85	44.35	27.42	-179.98	-4,941.65	-101.07	5,384.47	5,317.30	67.17	80.165		
12,750.00	12,442.96	10,234.00	10,208.85	44.42	27.42	-179.86	-4,941.65	-101.07	5,342.95	5,275.88	67.08	79.655		
12,800.00	12,445.39	10,234.00	10,208.85	44.49	27.42	-179.75	-4,941.65	-101.07	5,299.41	5,232.43	66.99	79.110		
12,807.86	12,445.38	10,234.00	10,208.85	44.51	27.42	-179.73	-4,941.65	-101.07	5,292.40	5,225.43	66.98	79.019		
12,900.00	12,444.58	10,234.00	10,208.85	44.68	27.42	-179.51	-4,941.65	-101.07	5,210.14	5,143.32	66.81	77.980		
13,000.00	12,443.72	10,234.00	10,208.85	44.94	27.42	-179.27	-4,941.65	-101.07	5,121.24	5,054.60	66.64	76.853		
13,100.00	12,442.86	10,258.73	10,231.30	45.27	27.43	-179.00	-4,951.98	-102.15	5,032.25	4,965.70	66.55	75.611		
13,200.00	12,442.00	10,283.00	10,252.96	45.66	27.43	-178.72	-4,962.88	-103.09	4,944.28	4,877.81	66.47	74.378		
13,300.00	12,441.14	10,283.00	10,252.96	46.11	27.43	-178.44	-4,962.88	-103.09	4,856.28	4,789.97	66.30	73.243		
13,400.00	12,440.28	10,283.00	10,252.96	46.63	27.43	-178.14	-4,962.88	-103.09	4,768.75	4,702.61	66.13	72.107		
13,500.00	12,439.42	10,283.00	10,252.96	47.20	27.43	-177.84	-4,962.88	-103.09	4,681.71	4,615.75	65.97	70.971		
13,600.00	12,438.56	10,283.00	10,252.96	47.83	27.43	-177.52	-4,962.88	-103.09	4,595.21	4,529.41	65.80	69.836		
13,700.00	12,437.70	10,283.00	10,252.96	48.52	27.43	-177.18	-4,962.88	-103.09	4,509.26	4,443.63	65.64	68.700		
13,727.27	12,437.47	10,283.00	10,252.96	48.71	27.43	-177.08	-4,962.88	-103.09	4,485.93	4,420.34	65.59	68.390		
13,800.00	12,436.84	10,283.00	10,252.96	49.25	27.43	-176.84	-4,962.88	-103.09	4,423.72	4,358.24	65.48	67.563		
13,900.00	12,435.98	10,303.63	10,271.06	50.02	27.44	-176.53	-4,972.75	-103.85	4,337.77	4,272.36	65.41	66.320		

2000' Minimum center to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
14,000.00	12,435.11	10,310.15	10,276.71	50.83	27.44	-176.25	-4,975.98	-104.09	4,251.96	4,186.69	65.27	65.148			
14,100.00	12,434.25	10,330.00	10,293.73	51.66	27.45	-176.02	-4,986.17	-104.82	4,166.35	4,101.16	65.18	63.918			
14,200.00	12,433.39	10,330.00	10,293.73	52.52	27.45	-175.84	-4,986.17	-104.82	4,080.64	4,015.64	64.99	62.787			
14,259.68	12,432.87	10,330.00	10,293.73	53.04	27.45	-175.75	-4,986.17	-104.82	4,029.65	3,964.78	64.87	62.117			
14,300.00	12,432.52	10,330.00	10,293.73	53.40	27.45	-175.69	-4,986.17	-104.82	3,995.31	3,930.52	64.79	61.666			
14,400.00	12,431.66	10,330.00	10,293.73	54.32	27.45	-175.55	-4,986.17	-104.82	3,910.62	3,846.04	64.58	60.551			
14,500.00	12,430.80	10,354.85	10,314.70	55.27	27.46	-175.40	-4,999.47	-105.75	3,826.31	3,761.80	64.51	59.311			
14,600.00	12,429.94	10,377.00	10,333.13	56.25	27.47	-175.25	-5,011.73	-106.60	3,742.78	3,678.35	64.43	58.090			
14,700.00	12,429.08	10,377.00	10,333.13	57.26	27.47	-175.08	-5,011.73	-106.60	3,659.76	3,595.53	64.23	56.980			
14,800.00	12,428.22	10,377.00	10,333.13	58.31	27.47	-174.90	-5,011.73	-106.60	3,577.61	3,513.58	64.03	55.875			
14,900.00	12,427.36	10,396.53	10,349.10	59.38	27.48	-174.71	-5,022.94	-107.47	3,496.06	3,432.11	63.94	54.674			
15,000.00	12,426.50	10,424.00	10,371.00	60.47	27.49	-174.50	-5,039.45	-109.00	3,415.71	3,351.80	63.91	53.443			
15,100.00	12,425.64	10,424.00	10,371.00	61.60	27.49	-174.28	-5,039.45	-109.00	3,335.73	3,272.00	63.73	52.343			
15,200.00	12,424.78	10,424.00	10,371.00	62.74	27.49	-174.05	-5,039.45	-109.00	3,256.85	3,193.30	63.55	51.248			
15,300.00	12,423.92	10,424.00	10,371.00	63.91	27.49	-173.79	-5,039.45	-109.00	3,179.16	3,115.78	63.38	50.159			
15,400.00	12,423.06	10,446.53	10,388.42	65.10	27.51	-173.52	-5,053.65	-110.43	3,102.26	3,038.90	63.36	48.963			
15,500.00	12,422.20	10,473.00	10,408.22	66.31	27.53	-173.22	-5,071.14	-112.16	3,026.87	2,963.49	63.38	47.761			
15,600.00	12,421.34	10,473.00	10,408.22	67.54	27.53	-172.90	-5,071.14	-112.16	2,952.23	2,888.98	63.25	46.676			
15,700.00	12,420.48	10,473.00	10,408.22	68.79	27.53	-172.54	-5,071.14	-112.16	2,879.13	2,815.99	63.14	45.598			
15,800.00	12,419.62	10,500.37	10,428.03	70.06	27.55	-172.17	-5,089.94	-113.95	2,807.15	2,743.93	63.22	44.403			
15,900.00	12,418.76	10,520.00	10,441.88	71.34	27.57	-171.76	-5,103.79	-115.21	2,736.59	2,673.31	63.27	43.249			
16,000.00	12,417.90	10,520.00	10,441.88	72.63	27.57	-171.29	-5,103.79	-115.21	2,667.61	2,604.37	63.25	42.178			
16,100.00	12,417.03	10,567.00	10,473.69	73.94	27.63	-170.85	-5,138.24	-118.29	2,600.07	2,536.55	63.51	40.939			
16,200.00	12,416.17	10,567.00	10,473.69	75.27	27.63	-170.28	-5,138.24	-118.29	2,533.92	2,470.37	63.55	39.871			
16,300.00	12,415.31	10,567.00	10,473.69	76.60	27.63	-169.64	-5,138.24	-118.29	2,470.06	2,406.42	63.64	38.813			
16,400.00	12,414.45	10,584.69	10,484.88	77.95	27.65	-168.97	-5,151.88	-119.48	2,408.08	2,344.22	63.86	37.708			
16,500.00	12,413.59	10,599.00	10,493.34	79.31	27.68	-168.20	-5,163.39	-120.44	2,348.64	2,284.52	64.12	36.631			
16,600.00	12,412.73	10,599.00	10,493.34	80.69	27.68	-167.27	-5,163.39	-120.44	2,291.62	2,227.25	64.37	35.603			
16,700.00	12,411.87	10,599.00	10,493.34	82.07	27.68	-166.18	-5,163.39	-120.44	2,237.62	2,172.94	64.68	34.593			
16,800.00	12,411.01	10,631.00	10,510.12	83.46	27.74	-165.16	-5,190.53	-122.55	2,185.99	2,120.82	65.17	33.541			
16,900.00	12,410.15	10,631.00	10,510.12	84.87	27.74	-163.70	-5,190.53	-122.55	2,137.43	2,071.79	65.63	32.568			
17,000.00	12,409.29	10,631.00	10,510.12	86.28	27.74	-161.93	-5,190.53	-122.55	2,092.52	2,026.35	66.17	31.624			
17,100.00	12,408.43	10,662.00	10,523.51	87.70	27.81	-160.29	-5,218.42	-124.42	2,050.45	1,983.62	66.84	30.679			
17,200.00	12,407.57	10,662.00	10,523.51	89.13	27.81	-157.74	-5,218.42	-124.42	2,012.17	1,944.65	67.53	29.799			
17,300.00	12,406.71	10,694.00	10,535.11	90.56	27.89	-155.42	-5,248.19	-126.06	1,977.05	1,908.74	68.31	28.942			
17,400.00	12,405.85	10,726.00	10,545.02	92.01	27.98	-152.68	-5,278.58	-127.54	1,945.66	1,876.52	69.14	28.140			
17,500.00	12,404.99	10,739.25	10,548.64	93.46	28.02	-148.54	-5,291.30	-128.17	1,917.66	1,847.63	70.04	27.381			
17,600.00	12,404.13	10,758.00	10,553.33	94.91	28.08	-143.52	-5,309.44	-129.05	1,893.44	1,822.45	70.98	26.674			
17,700.00	12,403.27	10,790.00	10,559.87	96.38	28.19	-138.11	-5,340.72	-130.53	1,873.11	1,801.14	71.96	26.029			
17,800.00	12,402.41	10,790.00	10,559.87	97.85	28.19	-128.00	-5,340.72	-130.53	1,857.05	1,784.02	73.03	25.430			
17,900.00	12,401.55	10,821.00	10,563.57	99.32	28.31	-118.73	-5,371.45	-131.92	1,845.38	1,771.31	74.07	24.915			
18,000.00	12,400.68	10,842.16	10,564.86	100.81	28.40	-106.01	-5,392.56	-132.88	1,838.08	1,762.93	75.15	24.459			
18,100.00	12,399.82	10,900.92	10,567.37	102.29	28.66	-98.54	-5,451.21	-135.10	1,833.73	1,757.58	76.16	24.078			
18,200.00	12,398.96	10,972.19	10,568.58	103.79	29.02	-93.24	-5,522.47	-135.99	1,831.44	1,754.31	77.13	23.745			
18,300.00	12,398.10	11,071.25	10,569.71	105.28	29.60	-93.05	-5,621.52	-136.92	1,829.73	1,751.68	78.05	23.442			
18,400.00	12,397.24	11,164.09	10,570.34	106.78	30.21	-91.73	-5,714.35	-136.47	1,828.24	1,749.24	79.00	23.142			
18,500.00	12,396.38	11,259.13	10,570.39	108.29	30.90	-90.82	-5,809.39	-135.43	1,827.25	1,747.29	79.96	22.851			
18,600.00	12,395.52	11,351.38	10,570.92	109.80	31.63	-89.40	-5,901.63	-135.87	1,826.06	1,745.08	80.98	22.549			
18,622.86	12,395.32	11,363.96	10,570.87	110.15	31.74	-87.51	-5,914.21	-135.94	1,826.00	1,744.77	81.23	22.479 CC			
18,700.00	12,394.66	11,406.39	10,570.13	111.32	32.09	-81.22	-5,956.63	-135.89	1,826.73	1,744.66	82.07	22.259			
18,800.00	12,393.80	11,487.64	10,567.20	112.84	32.81	-77.89	-6,037.83	-135.30	1,829.37	1,746.26	83.11	22.011			
18,900.00	12,392.94	11,600.67	10,563.29	114.36	33.87	-80.21	-6,150.79	-135.74	1,832.12	1,747.96	84.16	21.770			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,000.00	12,392.08	11,733.25	10,561.00	115.89	35.20	-86.11	-6,283.30	-138.99	1,833.53	1,748.24	85.28	21.500	
19,097.63	12,391.24	11,839.02	10,561.29	117.38	36.31	-87.60	-6,388.97	-143.57	1,833.24	1,746.77	86.47	21.201	
19,100.00	12,391.22	11,840.69	10,561.29	117.42	36.33	-87.47	-6,390.63	-143.65	1,833.24	1,746.74	86.50	21.194	
19,200.00	12,390.36	11,912.70	10,560.87	118.95	37.11	-82.63	-6,462.53	-147.74	1,834.08	1,746.34	87.74	20.904	
19,300.00	12,389.50	11,994.00	10,559.20	120.49	38.02	-79.56	-6,543.72	-151.57	1,836.20	1,747.21	88.98	20.635	
19,400.00	12,388.64	12,129.54	10,556.82	122.03	39.60	-85.63	-6,679.18	-155.27	1,837.64	1,747.38	90.26	20.359	
19,500.00	12,387.78	12,227.78	10,555.60	123.57	40.79	-85.35	-6,777.42	-155.46	1,838.16	1,746.67	91.49	20.091	
19,600.00	12,386.92	12,331.93	10,553.25	125.12	42.09	-86.01	-6,881.48	-152.41	1,839.13	1,746.46	92.67	19.845	
19,700.00	12,386.06	12,468.17	10,551.74	126.66	43.83	-92.21	-7,017.58	-146.46	1,838.71	1,744.88	93.83	19.597	
19,800.00	12,385.20	12,548.10	10,551.34	128.22	44.88	-88.71	-7,097.46	-143.54	1,837.80	1,742.76	95.05	19.336	
19,900.00	12,384.33	12,670.67	10,550.97	129.77	46.51	-92.67	-7,219.99	-140.38	1,836.92	1,740.63	96.29	19.076	
20,000.00	12,383.47	12,744.88	10,550.77	131.33	47.51	-88.11	-7,294.17	-138.76	1,836.06	1,738.50	97.56	18.820	
20,013.03	12,383.36	12,755.00	10,550.66	131.53	47.64	-87.60	-7,304.29	-138.52	1,836.05	1,738.33	97.73	18.788	
20,100.00	12,382.61	12,825.73	10,549.47	132.89	48.61	-84.71	-7,374.99	-136.70	1,836.45	1,737.63	98.82	18.583	
20,200.00	12,381.75	12,936.59	10,547.21	134.45	50.14	-86.59	-7,485.79	-133.75	1,837.27	1,737.17	100.10	18.354	
20,300.00	12,380.89	13,022.21	10,545.52	136.01	51.34	-83.98	-7,571.34	-130.78	1,837.89	1,736.52	101.37	18.131	
20,400.00	12,380.03	13,119.16	10,542.79	137.58	52.72	-83.33	-7,668.14	-126.33	1,839.14	1,736.53	102.61	17.923	
20,500.00	12,379.17	13,220.71	10,540.12	139.15	54.17	-83.53	-7,769.59	-122.56	1,840.35	1,736.46	103.89	17.714	
20,600.00	12,378.31	13,362.32	10,537.77	140.72	56.22	-91.17	-7,911.06	-116.88	1,840.65	1,735.46	105.19	17.498	
20,700.00	12,377.45	13,458.43	10,538.09	142.29	57.62	-90.44	-8,007.10	-113.15	1,838.96	1,732.46	106.50	17.267	
20,737.45	12,377.13	13,479.83	10,537.91	142.88	57.93	-87.39	-8,028.49	-112.46	1,838.80	1,731.81	106.99	17.187	
20,800.00	12,376.59	13,515.89	10,537.20	143.86	58.46	-82.38	-8,064.52	-111.48	1,839.25	1,731.45	107.80	17.062	
20,900.00	12,375.73	13,604.55	10,534.66	145.44	59.76	-80.23	-8,153.13	-109.68	1,841.00	1,731.87	109.13	16.870	
21,000.00	12,374.87	13,714.11	10,531.32	147.02	61.39	-81.93	-8,262.60	-106.77	1,842.83	1,732.35	110.49	16.679	
21,100.00	12,374.01	13,793.25	10,528.55	148.59	62.57	-77.95	-8,341.65	-104.23	1,845.01	1,733.22	111.79	16.504	
21,200.00	12,373.15	13,871.01	10,525.21	150.18	63.73	-73.86	-8,419.32	-103.09	1,848.27	1,735.15	113.12	16.339	
21,300.00	12,372.29	14,009.18	10,520.21	151.76	65.79	-80.96	-8,557.38	-105.25	1,851.43	1,736.73	114.70	16.142	
21,400.00	12,371.43	14,106.16	10,518.22	153.34	67.24	-80.50	-8,654.29	-108.37	1,853.22	1,737.00	116.22	15.946	
21,500.00	12,370.57	14,200.00	10,516.29	154.93	178.38	-85.77	-8,781.90	-115.03	1,854.94	1,687.48	167.46	11.077 ES, SF	
21,600.00	12,369.71	14,408.38	10,520.14	156.52	71.79	-99.16	-8,956.04	-123.43	1,852.39	1,732.60	119.79	15.464	
21,700.00	12,368.85	14,503.73	10,523.29	158.11	73.24	-98.23	-9,051.29	-126.47	1,848.94	1,727.55	121.39	15.231	
21,800.00	12,367.98	14,582.23	10,525.27	159.70	74.44	-94.42	-9,129.75	-127.84	1,846.07	1,723.15	122.92	15.019	
21,893.73	12,367.18	14,637.32	10,525.58	161.19	75.29	-87.60	-9,184.83	-128.61	1,845.09	1,720.80	124.28	14.846	
21,900.00	12,367.12	14,641.00	10,525.56	161.29	75.35	-87.14	-9,188.51	-128.66	1,845.09	1,720.72	124.37	14.835	
22,000.00	12,366.26	14,697.08	10,524.58	162.88	76.21	-79.57	-9,244.58	-129.64	1,846.40	1,720.62	125.78	14.679	
22,100.00	12,365.40	14,753.18	10,522.33	164.47	77.07	-72.44	-9,300.60	-131.35	1,850.14	1,722.98	127.16	14.550	
22,200.00	12,364.54	14,859.92	10,517.26	166.07	78.70	-73.73	-9,407.10	-136.32	1,854.92	1,726.08	128.84	14.397	
22,300.00	12,363.68	15,002.04	10,512.47	167.67	80.89	-80.75	-9,548.95	-143.61	1,858.49	1,727.74	130.75	14.214	
22,400.00	12,362.82	15,110.31	10,510.66	169.26	82.56	-82.21	-9,657.08	-148.67	1,860.24	1,727.76	132.48	14.041	
22,500.00	12,361.96	15,191.00	10,509.40	170.86	83.80	-79.25	-9,737.65	-152.98	1,862.17	1,728.07	134.10	13.886	
22,565.16	12,361.40	15,191.00	10,509.40	171.78	83.80	-69.49	-9,737.65	-152.98	1,865.18	1,730.84	134.34	13.884	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-163.58	-4,572.59	-1,347.70	4,767.14					
100.00	100.00	87.29	87.29	0.13	0.22	-163.58	-4,572.51	-1,347.66	4,766.99	4,766.64	0.35	N/A		
200.00	200.00	175.24	175.24	0.49	0.53	-163.58	-4,572.22	-1,347.58	4,766.67	4,765.64	1.02	4,661.085		
205.09	205.09	178.49	178.49	0.51	0.54	-163.58	-4,572.21	-1,347.58	4,766.67	4,765.61	1.05	4,530.545		
300.00	300.00	243.56	243.56	0.85	0.77	-163.57	-4,572.36	-1,347.94	4,767.00	4,765.38	1.62	2,946.965		
400.00	400.00	336.32	336.31	1.21	1.09	-163.57	-4,572.89	-1,348.33	4,767.68	4,765.38	2.30	2,077.014		
500.00	500.00	417.00	416.99	1.57	1.37	-163.57	-4,573.61	-1,348.83	4,768.69	4,765.75	2.94	1,624.208		
600.00	600.00	526.44	526.42	1.93	1.75	-163.57	-4,574.75	-1,349.31	4,769.82	4,766.14	3.68	1,296.144		
700.00	700.00	632.96	632.94	2.29	2.13	-163.57	-4,575.74	-1,349.38	4,770.73	4,766.32	4.42	1,080.551		
800.00	800.00	732.74	732.72	2.64	2.49	-163.57	-4,576.53	-1,349.52	4,771.53	4,766.40	5.13	930.517		
900.00	900.00	873.43	873.40	3.00	2.98	-163.57	-4,577.24	-1,349.91	4,772.14	4,766.17	5.98	798.162		
1,000.00	1,000.00	973.43	973.40	3.36	3.32	-163.57	-4,577.24	-1,349.91	4,772.14	4,765.47	6.68	714.529		
1,100.00	1,100.00	1,073.43	1,073.40	3.72	3.66	-163.57	-4,577.24	-1,349.91	4,772.14	4,764.76	7.38	646.495		
1,200.00	1,200.00	1,173.43	1,173.40	4.08	4.01	-163.57	-4,577.24	-1,349.91	4,772.14	4,764.06	8.09	590.109		
1,300.00	1,300.00	1,273.43	1,273.40	4.44	4.36	-163.57	-4,577.24	-1,349.91	4,772.14	4,763.35	8.79	542.653		
1,400.00	1,400.00	1,373.43	1,373.40	4.79	4.71	-163.57	-4,577.24	-1,349.91	4,772.14	4,762.64	9.50	502.184		
1,500.00	1,500.00	1,473.43	1,473.40	5.15	5.06	-163.57	-4,577.24	-1,349.91	4,772.14	4,761.93	10.21	467.279		
1,600.00	1,600.00	1,573.36	1,573.33	5.51	5.41	-163.57	-4,577.37	-1,349.46	4,772.15	4,761.22	10.92	436.993		
1,700.00	1,700.00	1,673.22	1,673.17	5.87	5.76	-163.60	-4,577.98	-1,347.40	4,772.15	4,760.52	11.63	410.485		
1,800.00	1,800.00	1,772.98	1,772.85	6.23	6.10	-163.65	-4,579.08	-1,343.68	4,772.16	4,759.82	12.33	386.996		
1,900.00	1,900.00	1,872.57	1,872.28	6.59	6.45	-163.71	-4,580.68	-1,338.30	4,772.17	4,759.13	13.04	365.997		
2,000.00	2,000.00	1,971.94	1,971.38	6.95	6.80	-163.80	-4,582.75	-1,331.28	4,772.21	4,758.46	13.75	347.108		
2,100.00	2,100.00	2,071.02	2,070.05	7.30	7.16	-163.91	-4,585.31	-1,322.65	4,772.26	4,757.80	14.46	330.010		
2,200.00	2,200.00	2,169.79	2,168.24	7.66	7.51	-164.04	-4,588.34	-1,312.41	4,772.35	4,757.17	15.18	314.459		
2,300.00	2,300.00	2,269.12	2,266.90	8.02	7.88	-164.18	-4,591.61	-1,301.37	4,772.47	4,756.57	15.90	300.172		
2,400.00	2,400.00	2,368.45	2,365.55	8.38	8.25	-164.31	-4,594.88	-1,290.33	4,772.62	4,756.00	16.62	287.076		
2,500.00	2,500.00	2,467.77	2,464.21	8.74	8.62	-164.45	-4,598.15	-1,279.28	4,772.80	4,755.45	17.35	275.029		
2,600.00	2,599.99	2,567.03	2,562.79	9.10	8.99	-164.60	-4,601.42	-1,268.25	4,773.69	4,755.60	18.08	263.969		
2,700.00	2,699.96	2,666.12	2,661.22	9.45	9.36	-164.75	-4,604.68	-1,257.23	4,775.96	4,757.15	18.82	253.826		
2,800.00	2,799.86	2,765.03	2,759.46	9.81	9.74	-164.93	-4,607.93	-1,246.23	4,779.64	4,760.09	19.55	244.496		
2,900.00	2,899.68	2,863.71	2,857.48	10.17	10.12	-165.11	-4,611.18	-1,235.26	4,784.73	4,764.44	20.28	235.896		
3,000.00	2,999.37	2,962.14	2,955.24	10.53	10.49	-165.30	-4,614.42	-1,224.31	4,791.23	4,770.21	21.02	227.953		
3,100.00	3,098.90	3,060.30	3,052.73	10.89	10.87	-165.51	-4,617.66	-1,213.40	4,799.15	4,777.40	21.75	220.604		
3,200.00	3,198.26	3,158.14	3,149.92	11.25	11.25	-165.73	-4,620.88	-1,202.52	4,808.52	4,786.02	22.49	213.790		
3,300.00	3,297.40	3,255.64	3,246.76	11.61	11.63	-165.96	-4,624.09	-1,191.68	4,819.32	4,796.09	23.23	207.463		
3,300.10	3,297.50	3,255.74	3,246.86	11.61	11.63	-165.96	-4,624.09	-1,191.67	4,819.33	4,796.10	23.23	207.457		
3,400.00	3,396.43	3,352.96	3,343.42	11.98	12.01	-166.19	-4,627.29	-1,180.86	4,830.89	4,806.92	23.97	201.546		
3,500.00	3,495.46	3,450.28	3,440.09	12.36	12.39	-166.42	-4,630.49	-1,170.04	4,842.54	4,817.83	24.71	195.970		
3,600.00	3,594.48	3,547.60	3,536.75	12.73	12.77	-166.66	-4,633.70	-1,159.22	4,854.27	4,828.82	25.45	190.707		
3,700.00	3,693.51	3,644.92	3,633.42	13.11	13.15	-166.89	-4,636.90	-1,148.39	4,866.09	4,839.89	26.20	185.733		
3,800.00	3,792.54	3,742.24	3,730.08	13.49	13.53	-167.12	-4,640.11	-1,137.57	4,877.98	4,851.03	26.95	181.025		
3,900.00	3,891.56	3,839.56	3,826.75	13.87	13.91	-167.35	-4,643.31	-1,126.75	4,889.95	4,862.26	27.69	176.565		
4,000.00	3,990.59	3,936.89	3,923.41	14.26	14.29	-167.57	-4,646.51	-1,115.93	4,902.00	4,873.56	28.44	172.334		
4,100.00	4,089.62	4,034.21	4,020.08	14.64	14.68	-167.80	-4,649.72	-1,105.11	4,914.13	4,884.93	29.20	168.316		
4,200.00	4,188.64	4,131.53	4,116.74	15.03	15.06	-168.03	-4,652.92	-1,094.29	4,926.34	4,896.39	29.95	164.496		
4,300.00	4,287.67	4,228.85	4,213.40	15.42	15.44	-168.25	-4,656.12	-1,083.47	4,938.62	4,907.92	30.70	160.861		
4,400.00	4,386.70	4,326.17	4,310.07	15.81	15.83	-168.47	-4,659.33	-1,072.65	4,950.98	4,919.52	31.46	157.399		
4,500.00	4,485.72	4,423.49	4,406.73	16.20	16.21	-168.69	-4,662.53	-1,061.83	4,963.41	4,931.20	32.21	154.097		
4,600.00	4,584.75	4,520.81	4,503.40	16.60	16.60	-168.92	-4,665.74	-1,051.00	4,975.92	4,942.96	32.97	150.945		
4,700.00	4,683.78	4,618.13	4,600.06	16.99	16.98	-169.14	-4,668.94	-1,040.18	4,988.51	4,954.79	33.72	147.934		
4,800.00	4,782.80	4,715.45	4,696.73	17.39	17.37	-169.35	-4,672.14	-1,029.36	5,001.17	4,966.69	34.48	145.055		
4,900.00	4,881.83	4,812.77	4,793.39	17.78	17.76	-169.57	-4,675.35	-1,018.54	5,013.90	4,978.66	35.23	142.300		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,000.00	4,980.85	4,910.10	4,890.06	18.18	18.14	-169.79	-4,678.55	-1,007.72	5,026.70	4,990.71	35.99	139.662		
5,100.00	5,079.88	5,007.42	4,986.72	18.58	18.53	-170.00	-4,681.76	-996.90	5,039.58	5,002.83	36.75	137.132		
5,200.00	5,178.91	5,104.74	5,083.39	18.98	18.92	-170.22	-4,684.96	-986.08	5,052.53	5,015.02	37.51	134.706		
5,300.00	5,277.93	5,202.06	5,180.05	19.38	19.30	-170.43	-4,688.16	-975.26	5,065.55	5,027.29	38.27	132.377		
5,400.00	5,376.96	5,300.62	5,276.71	19.78	19.70	-170.64	-4,691.37	-964.44	5,078.64	5,039.61	39.03	130.122		
5,500.00	5,475.99	5,403.30	5,373.38	20.18	20.11	-170.85	-4,694.57	-953.61	5,091.80	5,051.99	39.81	127.903		
5,600.00	5,575.01	5,502.76	5,479.38	20.58	20.51	-110.90	151.46	-656.03	5,079.94	5,026.56	53.37	95.175		
5,700.00	5,674.04	5,602.76	5,579.38	20.98	20.91	-112.37	151.46	-656.03	4,981.44	4,927.85	53.58	92.969		
5,800.00	5,773.07	5,702.76	5,679.38	21.39	21.32	-113.84	151.46	-656.03	4,883.00	4,829.20	53.79	90.773		
5,898.39	5,870.50	5,800.76	5,777.38	21.78	21.71	-115.29	151.46	-656.03	4,786.21	4,732.20	54.01	88.624		
5,900.00	5,872.09	5,802.76	5,779.38	21.79	21.72	-115.32	151.46	-656.03	4,784.62	4,730.61	54.01	88.589		
6,000.00	5,971.24	5,900.76	5,877.38	22.19	22.12	-116.69	151.46	-656.03	4,686.19	4,631.96	54.23	86.411		
6,100.00	6,070.60	5,999.76	5,976.38	22.58	22.51	-117.88	151.46	-656.03	4,587.60	4,533.14	54.46	84.236		
6,200.00	6,170.14	6,100.76	6,076.38	22.97	22.90	-118.89	151.46	-656.03	4,488.87	4,434.18	54.70	82.066		
6,300.00	6,269.83	6,200.76	6,176.38	23.35	23.28	-119.71	151.46	-656.03	4,390.03	4,335.09	54.94	79.902		
6,400.00	6,369.65	6,300.76	6,276.38	23.71	23.64	-120.34	151.46	-656.03	4,291.09	4,235.90	55.19	77.744		
6,500.00	6,469.55	6,400.76	6,376.38	24.07	24.00	-120.80	151.46	-656.03	4,192.08	4,136.63	55.46	75.594		
6,600.00	6,569.52	6,500.76	6,476.38	24.43	24.36	-121.06	151.46	-656.03	4,093.03	4,037.31	55.72	73.452		
6,698.49	6,668.00	6,600.76	6,576.38	24.77	24.70	-121.15	151.46	-656.03	3,995.47	3,939.47	56.00	71.350		
6,700.00	6,669.51	6,601.76	6,577.38	24.77	24.70	-121.15	151.46	-656.03	3,993.97	3,937.97	56.00	71.317		
6,800.00	6,769.51	6,700.76	6,676.38	25.11	25.04	-121.15	151.46	-656.03	3,894.93	3,838.64	56.29	69.194		
6,900.00	6,869.51	6,800.76	6,776.38	25.45	25.38	-121.15	151.46	-656.03	3,795.95	3,739.36	56.59	67.083		
7,000.00	6,969.51	6,900.76	6,876.38	25.80	25.73	-121.15	151.46	-656.03	3,697.01	3,640.13	56.89	64.985		
7,100.00	7,069.51	7,000.76	6,976.38	26.14	26.07	-121.15	151.46	-656.03	3,598.14	3,540.94	57.20	62.901		
7,200.00	7,169.51	7,100.76	7,076.38	26.48	26.41	-121.15	151.46	-656.03	3,499.33	3,441.81	57.53	60.829		
7,300.00	7,269.51	7,200.76	7,176.38	26.82	26.75	-121.15	151.46	-656.03	3,400.59	3,342.73	57.86	58.771		
7,400.00	7,369.51	7,300.76	7,276.38	27.17	27.10	-121.15	151.46	-656.03	3,301.93	3,243.72	58.21	56.726		
7,500.00	7,469.51	7,400.76	7,376.38	27.51	27.44	-121.15	151.46	-656.03	3,203.35	3,144.78	58.57	54.695		
7,600.00	7,569.51	7,500.76	7,476.38	27.85	27.78	-121.15	151.46	-656.03	3,104.86	3,045.92	58.94	52.678		
7,700.00	7,669.51	7,600.76	7,576.38	28.20	28.13	-121.15	151.46	-656.03	3,006.47	2,947.14	59.33	50.675		
7,800.00	7,769.51	7,700.76	7,676.38	28.54	28.47	-121.15	151.46	-656.03	2,908.19	2,848.46	59.73	48.686		
7,900.00	7,869.51	7,800.76	7,776.38	28.89	28.82	-121.15	151.46	-656.03	2,810.03	2,749.87	60.16	46.711		
8,000.00	7,969.51	7,900.76	7,876.38	29.24	29.17	-121.15	151.46	-656.03	2,712.01	2,651.40	60.60	44.751		
8,100.00	8,069.51	8,000.76	7,976.38	29.58	29.51	-121.15	151.46	-656.03	2,614.13	2,553.06	61.07	42.805		
8,200.00	8,169.51	8,100.76	8,076.38	29.93	29.86	-121.15	151.46	-656.03	2,516.42	2,454.86	61.56	40.875		
8,300.00	8,269.51	8,200.76	8,176.38	30.27	30.20	-121.15	151.46	-656.03	2,418.90	2,356.82	62.09	38.959		
8,400.00	8,369.51	8,300.76	8,276.38	30.62	30.55	-121.15	151.46	-656.03	2,321.60	2,258.95	62.65	37.059		
8,500.00	8,469.51	8,400.76	8,376.38	30.97	30.90	-121.15	151.46	-656.03	2,224.53	2,161.28	63.24	35.175		
8,600.00	8,569.51	8,500.76	8,476.38	31.32	31.25	-121.15	151.46	-656.03	2,127.73	2,063.84	63.88	33.307		
8,700.00	8,669.51	8,600.76	8,576.38	31.66	31.59	-121.15	151.46	-656.03	2,031.24	1,966.66	64.57	31.456		
8,800.00	8,769.51	8,700.76	8,676.38	32.01	31.94	-121.15	151.46	-656.03	1,935.11	1,869.78	65.33	29.622		
8,900.00	8,869.51	8,800.76	8,776.38	32.36	32.29	-121.15	151.46	-656.03	1,839.39	1,773.24	66.15	27.807		
9,000.00	8,969.51	8,900.76	8,876.38	32.71	32.64	-121.15	151.46	-656.03	1,744.15	1,677.09	67.05	26.011		
9,100.00	9,069.51	9,000.76	8,976.38	33.06	32.99	-121.15	151.46	-656.03	1,649.47	1,581.41	68.06	24.236		
9,200.00	9,169.51	9,100.76	9,076.38	33.40	33.33	-121.15	151.46	-656.03	1,555.46	1,486.28	69.18	22.484		
9,300.00	9,269.51	9,200.76	9,176.38	33.75	33.68	-121.15	151.46	-656.03	1,462.25	1,391.80	70.44	20.757		
9,400.00	9,369.51	9,300.76	9,276.38	34.10	34.03	-121.15	151.46	-656.03	1,369.99	1,298.11	71.88	19.059		
9,500.00	9,469.51	9,400.76	9,376.38	34.45	34.38	-121.15	151.46	-656.03	1,278.90	1,205.37	73.53	17.394		
9,600.00	9,569.51	9,500.76	9,476.38	34.80	34.73	-121.15	151.46	-656.03	1,189.24	1,113.81	75.43	15.767		
9,700.00	9,669.51	9,600.76	9,576.38	35.15	35.08	-121.15	151.46	-656.03	1,101.36	1,023.72	77.64	14.186		
9,800.00	9,769.51	9,700.76	9,676.38	35.50	35.43	-121.15	151.46	-656.03	1,015.72	935.50	80.22	12.662		
9,900.00	9,869.51	9,800.76	9,776.38	35.85	35.78	-121.15	151.46	-656.03	932.95	849.71	83.25	11.207		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,000.00	9,969.51	15,322.76	10,599.38	36.20	87.76	-121.15	151.46	-656.03	853.88	767.09	86.79	9.839	
10,100.00	10,069.51	15,322.76	10,599.38	36.55	87.76	-121.15	151.46	-656.03	779.62	688.74	90.89	8.578	
10,200.00	10,169.51	15,322.76	10,599.38	36.90	87.76	-121.15	151.46	-656.03	711.70	616.19	95.51	7.451	
10,300.00	10,269.51	15,322.76	10,599.38	37.25	87.76	-121.15	151.46	-656.03	652.09	551.60	100.49	6.489	
10,400.00	10,369.51	15,322.76	10,599.38	37.60	87.76	-121.15	151.46	-656.03	603.27	497.86	105.41	5.723	
10,500.00	10,469.51	15,322.76	10,599.38	37.95	87.76	-121.15	151.46	-656.03	568.01	458.48	109.53	5.186	
10,600.00	10,569.51	15,322.76	10,599.38	38.31	87.76	-121.15	151.46	-656.03	548.95	436.98	111.97	4.903	
10,656.47	10,625.98	15,322.76	10,599.38	38.50	87.76	-121.15	151.46	-656.03	546.04	433.70	112.33	4.861	CC, ES, SF
10,700.00	10,669.51	15,322.76	10,599.38	38.66	87.76	-121.15	151.46	-656.03	547.77	435.70	112.07	4.888	
10,800.00	10,769.51	15,322.76	10,599.38	39.01	87.76	-121.15	151.46	-656.03	564.59	454.76	109.82	5.141	
10,900.00	10,869.51	15,322.76	10,599.38	39.36	87.76	-121.15	151.46	-656.03	597.88	491.99	105.90	5.646	
11,000.00	10,969.51	15,322.76	10,599.38	39.71	87.76	-121.15	151.46	-656.03	645.11	543.90	101.21	6.374	
11,100.00	11,069.51	15,322.76	10,599.38	40.06	87.76	-121.15	151.46	-656.03	703.47	606.94	95.53	7.287	
11,200.00	11,169.51	15,322.76	10,599.38	40.41	87.76	-121.15	151.46	-656.03	770.44	678.15	92.29	8.348	
11,300.00	11,269.51	15,322.76	10,599.38	40.77	87.76	-121.15	151.46	-656.03	843.97	755.31	88.66	9.519	
11,400.00	11,369.51	15,322.76	10,599.38	41.12	87.76	-121.15	151.46	-656.03	922.48	836.83	85.67	10.769	
11,500.00	11,469.51	15,322.76	10,599.38	41.47	87.76	-121.15	151.46	-656.03	1,004.84	921.60	83.24	12.072	
11,600.00	11,569.51	15,322.76	10,599.38	41.82	87.76	-121.15	151.46	-656.03	1,090.14	1,008.84	81.30	13.409	
11,700.00	11,669.51	15,322.76	10,599.38	42.18	87.76	-121.15	151.46	-656.03	1,177.76	1,097.99	79.77	14.765	
11,800.00	11,769.51	15,322.76	10,599.38	42.53	87.76	-121.15	151.46	-656.03	1,267.21	1,188.64	78.57	16.129	
11,900.00	11,869.51	15,322.76	10,599.38	42.88	87.76	-121.15	151.46	-656.03	1,358.13	1,280.50	77.63	17.494	
11,902.93	11,872.44	15,322.76	10,599.38	42.89	87.76	-121.15	151.46	-656.03	1,360.82	1,283.21	77.61	17.534	
11,950.00	11,919.46	15,322.76	10,599.38	43.04	87.76	-120.96	151.46	-656.03	1,403.75	1,326.50	77.26	18.170	
12,000.00	11,969.05	15,322.76	10,599.38	43.19	87.76	-120.34	151.46	-656.03	1,448.78	1,371.84	76.94	18.830	
12,050.00	12,017.90	15,322.76	10,599.38	43.32	87.76	-119.28	151.46	-656.03	1,492.95	1,416.26	76.69	19.468	
12,100.00	12,065.65	15,322.76	10,599.38	43.44	87.76	-117.78	151.46	-656.03	1,536.00	1,459.52	76.48	20.083	
12,150.00	12,111.93	15,322.76	10,599.38	43.56	87.76	-115.82	151.46	-656.03	1,577.72	1,501.39	76.33	20.670	
12,200.00	12,156.38	15,322.76	10,599.38	43.66	87.76	-113.41	151.46	-656.03	1,617.90	1,541.69	76.22	21.228	
12,250.00	12,198.67	15,322.76	10,599.38	43.75	87.76	-110.54	151.46	-656.03	1,656.37	1,580.22	76.15	21.752	
12,300.00	12,238.48	15,322.76	10,599.38	43.83	87.76	-107.23	151.46	-656.03	1,692.94	1,616.83	76.12	22.241	
12,350.00	12,275.51	15,322.76	10,599.38	43.90	87.76	-103.50	151.46	-656.03	1,727.48	1,651.36	76.12	22.693	
12,400.00	12,309.46	15,322.76	10,599.38	43.97	87.76	-99.40	151.46	-656.03	1,759.85	1,683.68	76.17	23.104	
12,450.00	12,340.09	15,322.76	10,599.38	44.04	87.76	-95.01	151.46	-656.03	1,789.93	1,713.67	76.26	23.473	
12,500.00	12,367.17	15,322.76	10,599.38	44.10	87.76	-90.41	151.46	-656.03	1,817.60	1,741.22	76.38	23.797	
12,550.00	12,390.47	15,301.58	10,599.16	44.16	87.44	-88.00	130.28	-656.03	1,842.65	1,766.30	76.35	24.134	
12,600.00	12,409.84	15,256.55	10,598.69	44.22	86.78	-88.01	85.26	-656.03	1,864.18	1,788.05	76.13	24.486	
12,650.00	12,425.11	15,210.00	10,598.20	44.28	86.08	-88.03	38.70	-656.03	1,881.90	1,805.97	75.93	24.786	
12,700.00	12,436.18	15,162.27	10,597.70	44.35	85.38	-88.05	-9.02	-656.03	1,895.68	1,819.94	75.74	25.029	
12,750.00	12,442.96	15,113.73	10,597.19	44.42	84.66	-88.07	-57.56	-656.03	1,905.43	1,829.86	75.57	25.214	
12,800.00	12,445.39	15,064.75	10,596.68	44.49	83.94	-88.10	-106.54	-656.03	1,911.10	1,835.67	75.43	25.337	
12,807.86	12,445.38	15,057.04	10,596.60	44.51	83.82	-88.11	-114.25	-656.03	1,911.62	1,836.21	75.41	25.351	
12,900.00	12,444.58	14,966.59	10,595.65	44.68	82.50	-88.16	-204.69	-656.03	1,917.15	1,841.96	75.19	25.499	
13,000.00	12,443.72	14,868.43	10,594.62	44.94	81.06	-88.22	-302.85	-656.03	1,923.32	1,848.34	74.98	25.653	
13,100.00	12,442.86	14,770.26	10,593.59	45.27	79.63	-88.27	-401.01	-656.03	1,929.65	1,854.86	74.79	25.800	
13,200.00	12,442.00	14,672.10	10,592.57	45.66	78.21	-88.32	-499.17	-656.03	1,936.16	1,861.52	74.64	25.941	
13,300.00	12,441.14	14,573.94	10,591.54	46.11	76.80	-88.37	-597.32	-656.03	1,942.82	1,868.68	74.51	26.075	
13,400.00	12,440.28	14,475.77	10,590.51	46.63	75.39	-88.42	-695.48	-656.03	1,949.66	1,875.25	74.41	26.202	
13,500.00	12,439.42	14,377.61	10,589.48	47.20	74.00	-88.46	-793.64	-656.03	1,956.65	1,882.31	74.34	26.321	
13,600.00	12,438.56	14,279.45	10,588.45	47.83	72.61	-88.50	-891.80	-656.03	1,963.81	1,889.51	74.30	26.432	
13,700.00	12,437.70	14,181.29	10,587.43	48.52	71.23	-88.54	-989.95	-656.03	1,971.12	1,896.84	74.28	26.536	
13,727.27	12,437.47	14,154.52	10,587.15	48.71	70.86	-88.55	-1,016.72	-656.03	1,973.15	1,898.86	74.28	26.563	
13,800.00	12,436.84	14,082.96	10,586.40	49.25	69.87	-88.57	-1,088.28	-656.03	1,978.24	1,903.97	74.27	26.635	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 291H - Wellbore #1 - Design #2													Offset Site Error:	0.00 usft
Survey Program: 28-MWD, 700-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
13,900.00	12,435.98	13,984.07	10,585.36	50.02	68.50	-88.60	-1,187.16	-656.03	1,984.20	1,909.99	74.22	26.735		
14,000.00	12,435.11	13,884.73	10,584.32	50.83	67.15	-88.62	-1,286.50	-656.03	1,988.88	1,914.77	74.11	26.837		
14,100.00	12,434.25	13,785.05	10,583.28	51.66	65.80	-88.63	-1,386.17	-656.03	1,992.21	1,918.26	73.95	26.940		
14,200.00	12,433.39	13,685.15	10,582.23	52.52	64.46	-88.64	-1,486.06	-656.03	1,994.17	1,920.42	73.74	27.042		
14,259.68	12,432.87	13,625.49	10,581.61	53.04	63.67	-88.64	-1,545.72	-656.03	1,994.67	1,921.07	73.60	27.103		
14,300.00	12,432.52	13,585.16	10,581.18	53.40	63.13	-88.64	-1,586.05	-656.03	1,994.84	1,921.34	73.49	27.143		
14,400.00	12,431.66	13,485.16	10,580.14	54.32	61.82	-88.64	-1,686.04	-656.03	1,995.25	1,922.00	73.26	27.236		
14,500.00	12,430.80	13,385.17	10,579.09	55.27	60.53	-88.64	-1,786.03	-656.03	1,995.67	1,922.62	73.05	27.318		
14,600.00	12,429.94	13,285.17	10,578.04	56.25	59.26	-88.64	-1,886.02	-656.03	1,996.09	1,923.21	72.88	27.389		
14,700.00	12,429.08	13,185.17	10,577.00	57.26	58.00	-88.65	-1,986.02	-656.03	1,996.51	1,923.78	72.73	27.450		
14,800.00	12,428.22	13,085.17	10,575.95	58.31	56.77	-88.65	-2,086.01	-656.03	1,996.93	1,924.31	72.62	27.500		
14,900.00	12,427.36	12,985.17	10,574.90	59.38	55.55	-88.65	-2,186.00	-656.03	1,997.35	1,924.82	72.53	27.539		
15,000.00	12,426.50	12,885.18	10,573.85	60.47	54.36	-88.65	-2,285.99	-656.03	1,997.77	1,925.30	72.47	27.567		
15,100.00	12,425.64	12,785.18	10,572.81	61.60	53.20	-88.65	-2,385.99	-656.03	1,998.19	1,925.75	72.44	27.583		
15,200.00	12,424.78	12,685.18	10,571.76	62.74	52.06	-88.65	-2,485.98	-656.03	1,998.61	1,926.16	72.44	27.588		
15,300.00	12,423.92	12,585.18	10,570.71	63.91	50.95	-88.65	-2,585.97	-656.03	1,999.03	1,926.55	72.48	27.581		
15,400.00	12,423.06	12,485.18	10,569.67	65.10	49.86	-88.65	-2,685.96	-656.03	1,999.45	1,926.90	72.54	27.562		
15,500.00	12,422.20	12,385.19	10,568.62	66.31	48.82	-88.65	-2,785.95	-656.03	1,999.87	1,927.23	72.64	27.531		
15,600.00	12,421.34	12,285.19	10,567.57	67.54	47.80	-88.65	-2,885.95	-656.03	2,000.29	1,927.52	72.77	27.488		
15,700.00	12,420.48	12,185.19	10,566.52	68.79	46.82	-88.65	-2,985.94	-656.03	2,000.71	1,927.77	72.93	27.432		
15,800.00	12,419.62	12,085.19	10,565.48	70.06	45.88	-88.65	-3,085.93	-656.03	2,001.13	1,928.00	73.13	27.363		
15,900.00	12,418.76	11,985.19	10,564.43	71.34	44.98	-88.66	-3,185.92	-656.03	2,001.55	1,928.18	73.37	27.282		
16,000.00	12,417.90	11,885.20	10,563.38	72.63	44.12	-88.66	-3,285.92	-656.03	2,001.97	1,928.33	73.64	27.187		
16,100.00	12,417.03	11,785.20	10,562.34	73.94	43.31	-88.66	-3,385.91	-656.03	2,002.39	1,928.44	73.94	27.080		
16,200.00	12,416.17	11,685.20	10,561.29	75.27	42.54	-88.66	-3,485.90	-656.03	2,002.81	1,928.52	74.29	26.959		
16,300.00	12,415.31	11,585.20	10,560.24	76.60	41.83	-88.66	-3,585.89	-656.03	2,003.23	1,928.55	74.68	26.824		
16,400.00	12,414.45	11,485.20	10,559.19	77.95	41.17	-88.66	-3,685.89	-656.03	2,003.65	1,928.54	75.11	26.677		
16,500.00	12,413.59	11,385.21	10,558.15	79.31	40.57	-88.66	-3,785.88	-656.03	2,004.07	1,928.49	75.58	26.516		
16,600.00	12,412.73	11,285.21	10,557.10	80.69	40.03	-88.66	-3,885.87	-656.03	2,004.49	1,928.40	76.09	26.342		
16,700.00	12,411.87	11,185.21	10,556.05	82.07	39.55	-88.66	-3,985.86	-656.03	2,004.91	1,928.26	76.65	26.155		
16,800.00	12,411.01	11,085.21	10,555.01	83.46	39.15	-88.66	-4,085.86	-656.03	2,005.34	1,928.08	77.26	25.956		
16,900.00	12,410.15	10,985.21	10,553.96	84.87	38.84	-88.66	-4,185.85	-656.03	2,005.76	1,927.85	77.91	25.745		
17,000.00	12,409.29	10,885.22	10,552.91	86.28	38.65	-88.67	-4,285.84	-656.03	2,006.18	1,927.57	78.60	25.523		
17,100.00	12,408.43	10,850.00	10,552.42	87.70	38.60	-84.18	-4,321.05	-656.03	2,007.76	1,928.23	79.53	25.245		
17,200.00	12,407.57	10,825.00	10,550.94	89.13	38.58	-79.07	-4,346.01	-656.03	2,013.11	1,932.61	80.50	25.007		
17,300.00	12,406.71	10,800.00	10,548.15	90.56	38.56	-74.14	-4,370.85	-656.03	2,022.43	1,940.95	81.48	24.822		
17,400.00	12,405.85	10,775.00	10,544.07	92.01	38.55	-69.43	-4,395.51	-656.03	2,035.68	1,953.23	82.45	24.689		
17,500.00	12,404.99	10,763.82	10,541.82	93.46	38.54	-64.23	-4,406.46	-656.03	2,052.59	1,969.09	83.50	24.581		
17,600.00	12,404.13	10,750.00	10,538.70	94.91	38.54	-59.58	-4,419.92	-656.03	2,073.38	1,988.85	84.53	24.527		
17,700.00	12,403.27	10,725.00	10,532.06	96.38	38.53	-55.84	-4,444.02	-656.03	2,097.76	2,012.30	85.47	24.545		
17,800.00	12,402.41	10,700.00	10,524.17	97.85	38.52	-52.39	-4,467.74	-656.03	2,125.79	2,039.43	86.36	24.614		
17,900.00	12,401.55	10,687.78	10,519.86	99.32	38.51	-48.76	-4,479.18	-656.03	2,157.19	2,069.87	87.32	24.704		
18,000.00	12,400.68	10,675.00	10,515.05	100.81	38.51	-45.51	-4,491.02	-656.03	2,192.01	2,103.78	88.23	24.843		
18,100.00	12,399.82	10,650.00	10,504.72	102.29	38.50	-42.93	-4,513.78	-656.03	2,230.00	2,140.99	89.01	25.052		
18,200.00	12,398.96	10,636.04	10,498.44	103.79	38.49	-40.29	-4,526.25	-656.03	2,271.10	2,181.27	89.83	25.283		
18,300.00	12,398.10	10,625.00	10,493.22	105.28	38.48	-37.84	-4,535.97	-656.03	2,315.19	2,224.58	90.61	25.551		
18,400.00	12,397.24	10,600.00	10,480.57	106.78	38.47	-35.91	-4,557.53	-656.03	2,362.07	2,270.83	91.25	25.886		
18,500.00	12,396.38	10,589.44	10,474.89	108.29	38.46	-33.88	-4,566.43	-656.03	2,411.64	2,319.70	91.93	26.232		
18,600.00	12,395.52	10,575.00	10,466.80	109.80	38.45	-32.10	-4,578.40	-656.03	2,463.78	2,371.24	92.54	26.623		
18,700.00	12,394.66	10,561.26	10,458.78	111.32	38.43	-30.47	-4,589.55	-656.03	2,518.36	2,425.25	93.11	27.047		
18,800.00	12,393.80	10,550.00	10,451.97	112.84	38.42	-28.95	-4,598.52	-656.03	2,575.24	2,481.59	93.65	27.499		
18,900.00	12,392.94	10,535.31	10,442.77	114.36	38.41	-27.61	-4,609.97	-656.03	2,634.30	2,540.18	94.12	27.989		

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
19,000.00	12,392.08	10,525.00	10,436.10	115.89	38.40	-26.32	-4,617.84	-656.03	2,695.42	2,600.84	94.57	28.501		
19,100.00	12,391.22	10,511.47	10,427.10	117.42	38.38	-25.18	-4,627.94	-656.03	2,758.47	2,663.50	94.97	29.045		
19,200.00	12,390.36	10,500.00	10,419.25	118.95	38.37	-24.10	-4,636.30	-656.03	2,823.37	2,728.03	95.34	29.613		
19,300.00	12,389.50	10,489.60	10,411.95	120.49	38.35	-23.10	-4,643.71	-656.03	2,889.99	2,794.31	95.68	30.203		
19,400.00	12,388.64	10,475.00	10,401.45	122.03	38.34	-22.20	-4,653.85	-656.03	2,958.26	2,862.28	95.98	30.821		
19,500.00	12,387.78	10,475.00	10,401.45	123.57	38.34	-21.28	-4,653.85	-656.03	3,028.06	2,931.77	96.30	31.446		
19,600.00	12,386.92	10,450.00	10,382.76	125.12	38.30	-20.57	-4,670.44	-656.03	3,099.38	3,002.87	96.51	32.115		
19,700.00	12,386.06	10,450.00	10,382.76	126.66	38.30	-19.77	-4,670.44	-656.03	3,171.85	3,075.08	96.77	32.778		
19,800.00	12,385.20	10,450.00	10,382.76	128.22	38.30	-19.03	-4,670.44	-656.03	3,245.78	3,148.78	97.00	33.462		
19,900.00	12,384.33	10,425.00	10,363.22	129.77	38.26	-18.45	-4,686.04	-656.03	3,320.89	3,223.73	97.16	34.179		
20,000.00	12,383.47	10,425.00	10,363.22	131.33	38.26	-17.80	-4,686.04	-656.03	3,397.01	3,299.66	97.35	34.894		
20,100.00	12,382.61	10,425.00	10,363.22	132.89	38.26	-17.20	-4,686.04	-656.03	3,474.33	3,376.81	97.52	35.626		
20,200.00	12,381.75	10,411.45	10,352.30	134.45	38.23	-16.68	-4,694.06	-656.03	3,552.58	3,454.92	97.66	36.377		
20,300.00	12,380.89	10,400.00	10,342.89	136.01	38.21	-16.18	-4,700.59	-656.03	3,631.84	3,534.05	97.79	37.140		
20,400.00	12,380.03	10,400.00	10,342.89	137.58	38.21	-15.68	-4,700.59	-656.03	3,711.96	3,614.05	97.91	37.910		
20,500.00	12,379.17	10,400.00	10,342.89	139.15	38.21	-15.21	-4,700.59	-656.03	3,793.03	3,695.00	98.03	38.694		
20,600.00	12,378.31	10,375.00	10,321.83	140.72	38.16	-14.82	-4,714.06	-656.03	3,874.84	3,776.72	98.12	39.491		
20,700.00	12,377.45	10,375.00	10,321.83	142.29	38.16	-14.40	-4,714.06	-656.03	3,957.28	3,859.06	98.21	40.292		
20,800.00	12,376.59	10,375.00	10,321.83	143.86	38.16	-14.00	-4,714.06	-656.03	4,040.51	3,942.21	98.30	41.104		
20,900.00	12,375.73	10,375.00	10,321.83	145.44	38.16	-13.63	-4,714.06	-656.03	4,124.48	4,026.10	98.38	41.926		
21,000.00	12,374.87	10,362.60	10,311.13	147.02	38.13	-13.29	-4,720.32	-656.03	4,208.98	4,110.53	98.45	42.753		
21,100.00	12,374.01	10,350.00	10,300.10	148.59	38.10	-12.97	-4,726.40	-656.03	4,294.20	4,195.69	98.52	43.589		
21,200.00	12,373.15	10,350.00	10,300.10	150.18	38.10	-12.65	-4,726.40	-656.03	4,379.88	4,281.30	98.58	44.431		
21,300.00	12,372.29	10,350.00	10,300.10	151.76	38.10	-12.34	-4,726.40	-656.03	4,466.15	4,367.52	98.63	45.281		
21,400.00	12,371.43	10,350.00	10,300.10	153.34	38.10	-12.05	-4,726.40	-656.03	4,552.98	4,454.30	98.68	46.138		
21,500.00	12,370.57	10,338.83	10,290.18	154.93	38.08	-11.79	-4,731.55	-656.03	4,640.20	4,541.47	98.74	46.996		
21,600.00	12,369.71	10,325.00	10,277.75	156.52	38.05	-11.54	-4,737.59	-656.03	4,728.04	4,629.25	98.79	47.859		
21,700.00	12,368.85	10,325.00	10,277.75	158.11	38.05	-11.28	-4,737.59	-656.03	4,816.14	4,717.31	98.83	48.730		
21,800.00	12,367.98	10,325.00	10,277.75	159.70	38.05	-11.04	-4,737.59	-656.03	4,904.70	4,805.83	98.87	49.606		
21,900.00	12,367.12	10,325.00	10,277.75	161.29	38.05	-10.80	-4,737.59	-656.03	4,993.69	4,894.78	98.91	50.487		
22,000.00	12,366.26	10,325.00	10,277.75	162.88	38.05	-10.58	-4,737.59	-656.03	5,083.10	4,984.15	98.95	51.372		
22,100.00	12,365.40	10,325.00	10,277.75	164.47	38.05	-10.37	-4,737.59	-656.03	5,172.88	5,073.90	98.98	52.261		
22,200.00	12,364.54	10,311.83	10,265.74	166.07	38.01	-10.17	-4,743.02	-656.03	5,262.85	5,163.81	99.03	53.143		
22,300.00	12,363.68	10,300.00	10,254.84	167.67	37.98	-9.98	-4,747.60	-656.03	5,353.32	5,254.24	99.08	54.031		
22,400.00	12,362.82	10,300.00	10,254.84	169.26	37.98	-9.79	-4,747.60	-656.03	5,443.98	5,344.86	99.11	54.927		
22,500.00	12,361.96	10,300.00	10,254.84	170.86	37.98	-9.61	-4,747.60	-656.03	5,534.95	5,435.81	99.15	55.827		
22,565.16	12,361.40	10,300.00	10,254.84	171.78	37.98	-9.49	-4,747.60	-656.03	5,594.40	5,492.52	101.87	54.915		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-174.97	-4,997.42	-439.91	5,016.81					
100.00	100.00	72.88	72.88	0.13	0.11	-174.97	-4,997.42	-439.93	5,016.75	5,016.50	0.25	N/A		
200.00	200.00	171.91	171.91	0.49	0.27	-174.97	-4,997.44	-440.02	5,016.77	5,016.01	0.76	6,597.134		
300.00	300.00	280.54	280.54	0.85	0.58	-174.97	-4,997.41	-440.07	5,016.75	5,015.32	1.43	3,505.770		
341.25	341.25	314.85	314.85	1.00	0.70	-174.97	-4,997.40	-440.03	5,016.74	5,015.04	1.70	2,958.846		
400.00	400.00	373.03	373.03	1.21	0.90	-174.97	-4,997.42	-439.96	5,016.75	5,014.64	2.11	2,380.165		
500.00	500.00	480.89	480.89	1.57	1.28	-174.97	-4,997.34	-440.16	5,016.69	5,013.85	2.85	1,763.272		
600.00	600.00	577.46	577.45	1.93	1.62	-174.96	-4,997.17	-440.40	5,016.54	5,013.00	3.55	1,414.823		
700.00	700.00	675.17	675.16	2.29	1.97	-174.96	-4,997.09	-440.53	5,016.47	5,012.22	4.25	1,179.988		
720.58	720.58	694.17	694.17	2.36	2.03	-174.96	-4,997.08	-440.55	5,016.46	5,012.07	4.39	1,142.073		
800.00	800.00	774.47	774.47	2.64	2.31	-174.96	-4,997.09	-440.61	5,016.48	5,011.52	4.96	1,011.829		
900.00	900.00	881.59	881.59	3.00	2.69	-174.97	-4,997.03	-440.21	5,016.39	5,010.70	5.69	881.970		
1,000.00	1,000.00	982.51	982.50	3.36	3.03	-174.97	-4,996.91	-439.56	5,016.22	5,009.82	6.39	784.410		
1,100.00	1,100.00	1,083.17	1,083.16	3.72	3.38	-174.98	-4,996.78	-439.01	5,016.04	5,008.94	7.10	706.351		
1,200.00	1,200.00	1,190.50	1,190.49	4.08	3.76	-174.98	-4,996.54	-438.53	5,015.77	5,007.94	7.84	640.049		
1,300.00	1,300.00	1,295.85	1,295.84	4.44	4.13	-174.99	-4,996.14	-438.17	5,015.37	5,006.80	8.57	585.530		
1,400.00	1,400.00	1,396.48	1,396.47	4.79	4.49	-174.99	-4,995.70	-438.07	5,014.92	5,005.64	9.28	540.416		
1,500.00	1,500.00	1,493.84	1,493.83	5.15	4.83	-174.99	-4,995.24	-438.22	5,014.47	5,004.49	9.98	502.345		
1,600.00	1,600.00	1,586.28	1,586.26	5.51	5.16	-174.98	-4,994.92	-438.44	5,014.14	5,003.48	10.67	470.076		
1,700.00	1,700.00	1,679.97	1,679.96	5.87	5.48	-174.98	-4,994.73	-438.71	5,013.96	5,002.61	11.35	441.621		
1,800.00	1,800.00	1,776.08	1,776.07	6.23	5.82	-174.98	-4,994.63	-438.87	5,013.87	5,001.83	12.04	416.264		
1,863.50	1,863.50	1,837.11	1,837.09	6.46	6.03	-174.98	-4,994.61	-438.90	5,013.86	5,001.37	12.48	401.624		
1,900.00	1,900.00	1,870.67	1,870.66	6.59	6.14	-174.98	-4,994.62	-438.90	5,013.87	5,001.14	12.73	393.857		
2,000.00	2,000.00	1,962.64	1,962.62	6.95	6.46	-174.98	-4,994.74	-438.96	5,014.01	5,000.60	13.40	374.050		
2,100.00	2,100.00	2,059.20	2,059.19	7.30	6.79	-174.98	-4,995.01	-439.07	5,014.29	5,000.20	14.10	355.732		
2,200.00	2,200.00	2,166.50	2,166.48	7.66	7.16	-174.98	-4,995.24	-439.08	5,014.51	4,999.68	14.83	338.234		
2,300.00	2,300.00	2,266.38	2,266.36	8.02	7.51	-174.98	-4,995.36	-438.96	5,014.62	4,999.08	15.53	322.892		
2,400.00	2,400.00	2,359.66	2,359.65	8.38	7.83	-174.98	-4,995.56	-438.93	5,014.83	4,998.61	16.21	309.313		
2,500.00	2,500.00	2,452.09	2,452.07	8.74	8.16	-174.98	-4,995.88	-438.98	5,015.18	4,998.28	16.89	296.881		
2,600.00	2,599.99	2,543.63	2,543.61	9.10	8.47	-174.98	-4,996.34	-439.07	5,016.46	4,998.89	17.57	285.515		
2,700.00	2,699.96	2,643.16	2,643.14	9.45	8.82	-175.00	-4,996.98	-439.18	5,019.40	5,001.13	18.27	274.661		
2,800.00	2,799.86	2,753.87	2,753.85	9.81	9.21	-175.02	-4,997.52	-439.33	5,023.74	5,004.72	19.02	264.126		
2,900.00	2,899.68	2,851.12	2,851.10	10.17	9.55	-175.05	-4,997.88	-439.49	5,029.48	5,009.76	19.72	255.057		
3,000.00	2,999.37	2,942.51	2,942.49	10.53	9.87	-175.09	-4,998.34	-439.69	5,036.90	5,016.50	20.40	246.935		
3,100.00	3,098.90	3,045.27	3,045.24	10.89	10.23	-175.14	-4,998.95	-439.91	5,045.94	5,024.83	21.12	238.952		
3,200.00	3,198.26	3,154.83	3,154.80	11.25	10.62	-175.20	-4,999.43	-439.92	5,056.34	5,034.48	21.86	231.295		
3,300.00	3,297.40	3,267.31	3,267.28	11.61	11.01	-175.27	-4,999.68	-439.79	5,068.04	5,045.43	22.61	224.123		
3,300.10	3,297.50	3,267.42	3,267.40	11.61	11.01	-175.27	-4,999.68	-439.79	5,068.06	5,045.44	22.61	224.116		
3,400.00	3,396.43	3,380.13	3,380.10	11.98	11.41	-175.35	-4,999.62	-439.66	5,080.25	5,056.88	23.37	217.420		
3,500.00	3,495.46	3,467.44	3,467.41	12.36	11.71	-175.42	-4,999.61	-439.58	5,092.50	5,068.46	24.03	211.912		
3,600.00	3,594.48	3,559.77	3,559.74	12.73	12.03	-175.50	-4,999.71	-439.52	5,104.88	5,080.17	24.72	206.550		
3,700.00	3,693.51	3,656.82	3,656.80	13.11	12.37	-175.57	-4,999.88	-439.63	5,117.36	5,091.94	25.42	201.323		
3,800.00	3,792.54	3,753.13	3,753.11	13.49	12.71	-175.64	-5,000.06	-440.00	5,129.88	5,103.76	26.12	196.392		
3,900.00	3,891.56	3,845.80	3,845.77	13.87	13.04	-175.71	-5,000.32	-440.47	5,142.50	5,115.69	26.81	191.809		
4,000.00	3,990.59	3,938.55	3,938.52	14.26	13.36	-175.77	-5,000.69	-440.95	5,155.25	5,127.75	27.50	187.454		
4,100.00	4,089.62	4,032.14	4,032.11	14.64	13.69	-175.84	-5,001.18	-441.33	5,168.12	5,139.92	28.20	183.285		
4,200.00	4,188.64	4,125.73	4,125.70	15.03	14.02	-175.91	-5,001.78	-441.50	5,181.10	5,152.20	28.89	179.317		
4,300.00	4,287.67	4,219.77	4,219.73	15.42	14.36	-175.98	-5,002.49	-441.56	5,194.18	5,164.59	29.59	175.523		
4,400.00	4,386.70	4,313.02	4,312.98	15.81	14.69	-176.05	-5,003.28	-441.55	5,207.37	5,177.08	30.29	171.922		
4,500.00	4,485.72	4,404.24	4,404.19	16.20	15.01	-176.13	-5,004.17	-441.65	5,220.70	5,189.72	30.98	168.523		
4,600.00	4,584.75	4,496.02	4,495.86	16.60	16.03	-176.13	-5,003.15	-447.27	5,233.94	5,201.55	32.39	161.612		
4,700.00	4,683.78	4,915.28	4,914.51	16.99	16.79	-176.06	-4,993.43	-460.08	5,241.97	5,208.47	33.51	156.438		

Offset to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance			Minimum Separation			Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,800.00	4,782.80	5,009.71	5,008.62	17.39	17.12	-176.06	-4,988.43	-466.19	5,249.50	5,215.29	34.21	153.452		
4,900.00	4,881.83	5,133.15	5,131.62	17.78	17.55	-176.03	-4,981.81	-474.20	5,257.00	5,221.99	35.01	150.157		
5,000.00	4,980.85	5,267.98	5,265.84	18.18	18.03	-175.99	-4,973.47	-483.86	5,263.65	5,227.80	35.85	146.823		
5,100.00	5,079.88	5,342.74	5,340.26	18.58	18.29	-176.00	-4,968.84	-489.31	5,270.36	5,233.87	36.49	144.427		
5,200.00	5,178.91	5,417.46	5,414.67	18.98	18.56	-176.01	-4,964.58	-494.60	5,277.53	5,240.40	37.13	142.129		
5,300.00	5,277.93	5,505.14	5,502.01	19.38	18.87	-176.01	-4,959.94	-500.73	5,285.09	5,247.27	37.82	139.750		
5,400.00	5,376.96	5,597.72	5,594.23	19.78	19.20	-176.00	-4,955.14	-507.46	5,292.80	5,254.28	38.52	137.398		
5,500.00	5,475.99	5,687.85	5,683.98	20.18	19.52	-175.99	-4,950.59	-514.27	5,300.66	5,261.44	39.22	135.157		
5,600.00	5,575.01	5,776.76	5,772.51	20.58	19.84	-175.99	-4,946.27	-521.26	5,308.71	5,268.80	39.91	133.011		
5,700.00	5,674.04	5,868.65	5,863.99	20.98	20.17	-175.97	-4,941.95	-528.75	5,316.95	5,276.34	40.62	130.904		
5,800.00	5,773.07	5,963.11	5,958.02	21.39	20.51	-175.95	-4,937.61	-536.60	5,325.30	5,283.97	41.33	128.840		
5,898.39	5,870.50	6,048.88	6,043.40	21.78	20.82	-175.94	-4,933.76	-543.80	5,333.65	5,291.64	42.01	126.956		
5,900.00	5,872.09	6,050.17	6,044.69	21.79	20.83	-175.94	-4,933.71	-543.91	5,333.79	5,291.77	42.02	126.927		
6,000.00	5,971.24	6,130.27	6,124.46	22.19	21.12	-175.93	-4,930.40	-550.44	5,341.81	5,299.13	42.69	125.141		
6,100.00	6,070.60	6,212.26	6,206.14	22.58	21.41	-175.92	-4,927.34	-556.88	5,348.66	5,305.30	43.35	123.372		
6,200.00	6,170.14	6,305.38	6,298.92	22.97	21.75	-175.89	-4,924.07	-564.07	5,354.18	5,310.12	44.06	121.520		
6,300.00	6,269.83	6,399.87	6,393.07	23.35	22.10	-175.84	-4,920.87	-571.34	5,358.27	5,313.51	44.77	119.688		
6,400.00	6,369.65	6,506.02	6,498.84	23.71	22.48	-175.78	-4,917.25	-579.52	5,360.81	5,315.29	45.52	117.772		
6,500.00	6,469.55	6,603.29	6,595.77	24.07	22.84	-175.72	-4,913.84	-587.06	5,361.72	5,315.49	46.23	115.973		
6,600.00	6,569.52	6,680.15	6,672.34	24.43	23.12	-175.67	-4,911.36	-593.13	5,361.38	5,314.51	46.87	114.394		
6,698.49	6,668.00	6,755.78	6,747.69	24.77	23.40	-175.61	-4,909.24	-599.22	5,359.97	5,312.48	47.49	112.868		
6,700.00	6,669.51	6,756.94	6,748.85	24.77	23.40	-175.61	-4,909.21	-599.31	5,359.94	5,312.44	47.50	112.844		
6,800.00	6,769.51	6,836.47	6,828.10	25.11	23.69	-175.54	-4,907.30	-605.73	5,358.16	5,310.03	48.14	111.308		
6,900.00	6,869.51	6,916.62	6,907.99	25.45	23.98	-175.47	-4,905.69	-611.97	5,356.77	5,307.99	48.78	109.815		
7,000.00	6,969.51	7,013.69	7,004.77	25.80	24.34	-175.39	-4,904.04	-619.33	5,355.67	5,306.18	49.49	108.224		
7,100.00	7,069.51	7,130.62	7,121.31	26.14	24.77	-175.29	-4,901.76	-628.50	5,354.36	5,304.09	50.27	106.510		
7,200.00	7,169.51	7,221.89	7,212.27	26.48	25.10	-175.21	-4,899.86	-635.86	5,352.95	5,301.99	50.96	105.047		
7,300.00	7,269.51	7,308.09	7,298.17	26.82	25.42	-175.13	-4,898.27	-642.80	5,351.79	5,300.16	51.62	103.667		
7,400.00	7,369.51	7,387.75	7,377.57	27.17	25.71	-175.06	-4,897.04	-649.14	5,350.93	5,298.66	52.27	102.378		
7,500.00	7,469.51	7,463.63	7,453.23	27.51	25.99	-175.00	-4,896.22	-654.87	5,350.51	5,297.62	52.89	101.159		
7,541.64	7,511.15	7,495.24	7,484.75	27.65	26.11	-174.98	-4,895.99	-657.16	5,350.47	5,297.32	53.15	100.662		
7,600.00	7,569.51	7,541.61	7,531.01	27.85	26.28	-174.94	-4,895.76	-660.42	5,350.55	5,297.02	53.53	99.963		
7,700.00	7,669.51	7,635.84	7,625.02	28.20	26.62	-174.87	-4,895.45	-666.89	5,350.83	5,296.61	54.22	98.684		
7,800.00	7,769.51	7,730.09	7,719.06	28.54	26.96	-174.81	-4,895.26	-673.20	5,351.22	5,296.30	54.92	97.439		
7,900.00	7,869.51	7,816.30	7,805.08	28.89	27.28	-174.75	-4,895.25	-678.78	5,351.81	5,296.23	55.58	96.285		
8,000.00	7,969.51	7,903.24	7,891.86	29.24	27.59	-174.69	-4,895.48	-684.20	5,352.64	5,296.40	56.25	95.159		
8,100.00	8,069.51	8,093.14	8,081.42	29.58	28.29	-174.57	-4,894.75	-695.34	5,352.85	5,295.53	57.32	93.385		
8,200.00	8,169.51	8,235.30	8,223.36	29.93	28.80	-174.49	-4,892.42	-702.98	5,351.72	5,293.52	58.20	91.956		
8,300.00	8,269.51	8,337.41	8,325.32	30.27	29.17	-174.43	-4,890.23	-708.03	5,350.06	5,291.14	58.92	90.797		
8,400.00	8,369.51	8,414.56	8,402.36	30.62	29.45	-174.39	-4,888.84	-711.76	5,348.74	5,289.19	59.55	89.813		
8,500.00	8,469.51	8,491.73	8,479.45	30.97	29.73	-174.35	-4,887.79	-715.42	5,347.85	5,287.67	60.18	88.859		
8,600.00	8,569.51	8,568.99	8,556.63	31.32	30.01	-174.31	-4,887.10	-718.75	5,347.38	5,286.57	60.81	87.933		
8,659.41	8,628.92	8,614.92	8,602.52	31.52	30.18	-174.29	-4,886.86	-720.50	5,347.31	5,286.12	61.18	87.396		
8,700.00	8,669.51	8,646.30	8,633.89	31.66	30.29	-174.28	-4,886.78	-721.59	5,347.34	5,285.90	61.44	87.035		
8,800.00	8,769.51	8,714.82	8,702.37	32.01	30.53	-174.26	-4,886.87	-723.61	5,347.78	5,285.76	62.03	86.218		
8,900.00	8,869.51	8,779.22	8,766.76	32.36	30.76	-174.25	-4,887.46	-724.83	5,348.88	5,286.29	62.59	85.454		
9,000.00	8,969.51	8,860.00	8,847.52	32.71	31.04	-174.24	-4,888.90	-725.41	5,350.68	5,287.46	63.22	84.633		
9,100.00	9,069.51	8,991.52	8,979.02	33.06	31.49	-174.25	-4,891.21	-725.14	5,352.48	5,288.45	64.03	83.589		
9,200.00	9,169.51	9,133.59	9,121.09	33.40	31.96	-174.26	-4,892.34	-724.30	5,353.18	5,288.30	64.88	82.510		
9,300.00	9,269.51	9,258.65	9,246.14	33.75	32.38	-174.26	-4,892.62	-723.77	5,353.36	5,287.70	65.66	81.532		
9,316.55	9,286.07	9,279.35	9,266.84	33.81	32.45	-174.26	-4,892.60	-723.71	5,353.34	5,287.55	65.79	81.372		
9,400.00	9,369.51	9,317.38	9,304.87	34.10	32.58	-174.27	-4,892.92	-723.61	5,353.78	5,287.58	66.20	80.870		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
9,500.00	9,469.51	9,384.71	9,372.20	34.45	32.81	-174.27	-4,893.62	-723.51	5,354.80	5,288.02	66.77	80.193	
9,600.00	9,569.51	9,457.31	9,444.79	34.80	33.06	-174.27	-4,894.81	-723.49	5,356.41	5,289.05	67.37	79.513	
9,700.00	9,669.51	9,540.78	9,528.24	35.15	33.35	-174.27	-4,896.46	-723.61	5,358.40	5,290.40	68.00	78.800	
9,800.00	9,769.51	9,626.18	9,613.63	35.50	33.64	-174.27	-4,898.41	-723.90	5,360.70	5,292.06	68.64	78.096	
9,900.00	9,869.51	9,712.00	9,699.42	35.85	33.93	-174.27	-4,900.44	-724.23	5,363.11	5,293.82	69.29	77.404	
10,000.00	9,969.51	9,712.00	9,699.42	36.20	33.93	-174.27	-4,900.44	-724.23	5,366.72	5,297.13	69.58	77.126	
10,100.00	10,069.51	9,759.00	9,746.34	36.55	34.09	-174.28	-4,902.73	-723.14	5,371.56	5,301.50	70.06	76.671	
10,200.00	10,169.51	9,759.00	9,746.34	36.90	34.09	-174.28	-4,902.73	-723.14	5,378.01	5,307.68	70.33	76.467	
10,300.00	10,269.51	9,759.00	9,746.34	37.25	34.09	-174.28	-4,902.73	-723.14	5,386.31	5,315.73	70.59	76.310	
10,400.00	10,369.51	9,807.00	9,793.83	37.60	34.24	-174.33	-4,907.85	-718.69	5,396.04	5,325.01	71.03	75.966	
10,500.00	10,469.51	9,807.00	9,793.83	37.95	34.24	-174.33	-4,907.85	-718.69	5,407.13	5,335.87	71.26	75.878	
10,600.00	10,569.51	9,807.00	9,793.83	38.31	34.24	-174.33	-4,907.85	-718.69	5,420.05	5,348.58	71.47	75.833	
10,700.00	10,669.51	9,807.00	9,793.83	38.66	34.24	-174.33	-4,907.85	-718.69	5,434.78	5,363.11	71.67	75.831	
10,800.00	10,769.51	9,854.00	9,839.26	39.01	34.38	-174.43	-4,916.19	-710.13	5,450.93	5,378.86	72.07	75.634	
10,900.00	10,869.51	9,854.00	9,839.26	39.36	34.38	-174.43	-4,916.19	-710.13	5,468.40	5,396.16	72.24	75.695	
11,000.00	10,969.51	9,854.00	9,839.26	39.71	34.38	-174.43	-4,916.19	-710.13	5,487.64	5,415.24	72.40	75.796	
11,100.00	11,069.51	9,854.00	9,839.26	40.06	34.38	-174.43	-4,916.19	-710.13	5,508.63	5,436.08	72.54	75.935	
11,200.00	11,169.51	9,878.44	9,862.26	40.41	34.45	-174.50	-4,921.83	-704.11	5,530.86	5,458.06	72.79	75.979	
11,300.00	11,269.51	9,902.00	9,883.99	40.77	34.51	-174.58	-4,928.07	-697.49	5,554.92	5,481.89	73.03	76.061	
11,400.00	11,369.51	9,902.00	9,883.99	41.12	34.51	-174.58	-4,928.07	-697.49	5,580.23	5,507.09	73.14	76.292	
11,500.00	11,469.51	9,902.00	9,883.99	41.47	34.51	-174.58	-4,928.07	-697.49	5,607.21	5,533.97	73.24	76.558	
11,600.00	11,569.51	9,902.00	9,883.99	41.82	34.51	-174.58	-4,928.07	-697.49	5,635.84	5,562.51	73.33	76.858	
11,700.00	11,669.51	9,949.00	9,926.15	42.18	34.63	-174.75	-4,942.80	-682.89	5,665.82	5,592.17	73.65	76.926	
11,800.00	11,769.51	9,949.00	9,926.15	42.53	34.63	-174.75	-4,942.80	-682.89	5,696.92	5,623.20	73.72	77.273	
11,900.00	11,869.51	9,949.00	9,926.15	42.88	34.63	-174.75	-4,942.80	-682.89	5,729.60	5,655.81	73.79	77.651	
11,902.93	11,872.44	9,949.00	9,926.15	42.89	34.63	-174.75	-4,942.80	-682.89	5,730.58	5,656.79	73.79	77.662	
11,950.00	11,919.46	9,949.00	9,926.15	43.04	34.63	-174.74	-4,942.80	-682.89	5,744.76	5,670.96	73.80	77.840	
12,000.00	11,969.05	9,949.00	9,926.15	43.19	34.63	-174.72	-4,942.80	-682.89	5,756.29	5,682.49	73.80	78.001	
12,050.00	12,017.90	9,949.00	9,926.15	43.32	34.63	-174.69	-4,942.80	-682.89	5,764.11	5,690.33	73.78	78.122	
12,100.00	12,065.65	9,949.00	9,926.15	43.44	34.63	-174.65	-4,942.80	-682.89	5,768.18	5,694.43	73.76	78.205	
12,150.00	12,111.93	9,949.00	9,926.15	43.56	34.63	-174.59	-4,942.80	-682.89	5,768.48	5,694.77	73.72	78.250	
12,200.00	12,156.38	9,949.00	9,926.15	43.66	34.63	-174.52	-4,942.80	-682.89	5,765.01	5,691.34	73.67	78.256	
12,250.00	12,198.67	9,972.66	9,946.77	43.75	34.68	-174.53	-4,951.54	-675.24	5,757.12	5,683.38	73.74	78.072	
12,300.00	12,238.48	9,997.00	9,967.42	43.83	34.74	-174.53	-4,961.71	-667.37	5,746.49	5,672.68	73.81	77.858	
12,350.00	12,275.51	9,997.00	9,967.42	43.90	34.74	-174.43	-4,961.71	-667.37	5,731.50	5,657.78	73.72	77.742	
12,400.00	12,309.46	9,997.00	9,967.42	43.97	34.74	-174.32	-4,961.71	-667.37	5,712.96	5,639.33	73.63	77.589	
12,450.00	12,340.09	9,997.00	9,967.42	44.04	34.74	-174.19	-4,961.71	-667.37	5,690.96	5,617.43	73.53	77.398	
12,500.00	12,367.17	9,997.00	9,967.42	44.10	34.74	-174.06	-4,961.71	-667.37	5,665.64	5,592.22	73.42	77.169	
12,550.00	12,390.47	9,997.00	9,967.42	44.16	34.74	-173.91	-4,961.71	-667.37	5,637.14	5,563.84	73.30	76.901	
12,600.00	12,409.84	9,997.00	9,967.42	44.22	34.74	-173.76	-4,961.71	-667.37	5,605.64	5,532.46	73.19	76.595	
12,650.00	12,425.11	9,997.00	9,967.42	44.28	34.74	-173.60	-4,961.71	-667.37	5,571.33	5,498.26	73.07	76.251	
12,700.00	12,436.18	9,997.00	9,967.42	44.35	34.74	-173.43	-4,961.71	-667.37	5,534.41	5,461.46	72.95	75.869	
12,750.00	12,442.96	9,997.00	9,967.42	44.42	34.74	-173.25	-4,961.71	-667.37	5,495.12	5,422.29	72.83	75.449	
12,800.00	12,445.39	9,997.00	9,967.42	44.49	34.74	-173.07	-4,961.71	-667.37	5,453.71	5,380.99	72.72	74.992	
12,807.86	12,445.38	9,997.00	9,967.42	44.51	34.74	-173.05	-4,961.71	-667.37	5,447.03	5,374.32	72.71	74.915	
12,900.00	12,444.58	9,997.00	9,967.42	44.68	34.74	-172.71	-4,961.71	-667.37	5,368.61	5,296.10	72.52	74.033	
13,000.00	12,443.72	9,997.00	9,967.42	44.94	34.74	-172.32	-4,961.71	-667.37	5,284.01	5,211.71	72.31	73.075	
13,100.00	12,442.86	9,997.00	9,967.42	45.27	34.74	-171.92	-4,961.71	-667.37	5,199.96	5,127.85	72.11	72.116	
13,200.00	12,442.00	10,021.58	9,987.66	45.66	34.80	-171.63	-4,973.15	-659.40	5,115.76	5,043.69	72.07	70.985	
13,300.00	12,441.14	10,044.00	10,005.51	46.11	34.85	-171.31	-4,984.59	-652.11	5,032.98	4,960.96	72.03	69.877	
13,400.00	12,440.28	10,044.00	10,005.51	46.63	34.85	-170.87	-4,984.59	-652.11	4,950.22	4,878.38	71.84	68.902	
13,500.00	12,439.42	10,044.00	10,005.51	47.20	34.85	-170.40	-4,984.59	-652.11	4,868.11	4,796.44	71.67	67.923	

Distance to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,600.00	12,438.56	10,044.00	10,005.51	47.83	34.85	-169.91	-4,984.59	-652.11	4,786.67	4,715.17	71.51	66.941	
13,700.00	12,437.70	10,044.00	10,005.51	48.52	34.85	-169.40	-4,984.59	-652.11	4,705.96	4,634.60	71.35	65.954	
13,727.27	12,437.47	10,044.00	10,005.51	48.71	34.85	-169.26	-4,984.59	-652.11	4,684.07	4,612.76	71.31	65.684	
13,800.00	12,436.84	10,044.00	10,005.51	49.25	34.85	-168.88	-4,984.59	-652.11	4,625.70	4,554.49	71.21	64.962	
13,900.00	12,435.98	10,044.00	10,005.51	50.02	34.85	-168.38	-4,984.59	-652.11	4,545.20	4,474.14	71.06	63.967	
14,000.00	12,435.11	10,044.00	10,005.51	50.83	34.85	-167.91	-4,984.59	-652.11	4,464.49	4,393.60	70.90	62.971	
14,100.00	12,434.25	10,068.54	10,024.27	51.66	34.90	-167.63	-4,998.10	-643.87	4,383.01	4,312.11	70.90	61.821	
14,200.00	12,433.39	10,092.00	10,041.31	52.52	34.95	-167.40	-5,011.90	-635.54	4,302.14	4,231.26	70.88	60.698	
14,259.68	12,432.87	10,092.00	10,041.31	53.04	34.95	-167.17	-5,011.90	-635.54	4,253.54	4,182.78	70.76	60.109	
14,300.00	12,432.52	10,092.00	10,041.31	53.40	34.95	-167.02	-5,011.90	-635.54	4,220.78	4,150.10	70.68	59.713	
14,400.00	12,431.66	10,092.00	10,041.31	54.32	34.95	-166.63	-5,011.90	-635.54	4,140.12	4,069.63	70.49	58.733	
14,500.00	12,430.80	10,092.00	10,041.31	55.27	34.95	-166.22	-5,011.90	-635.54	4,060.32	3,990.02	70.30	57.755	
14,600.00	12,429.94	10,092.00	10,041.31	56.25	34.95	-165.78	-5,011.90	-635.54	3,981.43	3,911.31	70.12	56.781	
14,700.00	12,429.08	10,092.00	10,041.31	57.26	34.95	-165.32	-5,011.90	-635.54	3,903.50	3,833.56	69.94	55.809	
14,800.00	12,428.22	10,114.59	10,056.84	58.31	34.99	-165.05	-5,025.96	-627.11	3,826.03	3,756.11	69.92	54.717	
14,900.00	12,427.36	10,139.00	10,072.62	59.38	35.04	-164.79	-5,041.95	-617.56	3,750.10	3,680.18	69.92	53.636	
15,000.00	12,426.50	10,139.00	10,072.62	60.47	35.04	-164.25	-5,041.95	-617.56	3,674.63	3,604.85	69.77	52.667	
15,100.00	12,425.64	10,139.00	10,072.62	61.60	35.04	-163.68	-5,041.95	-617.56	3,600.34	3,530.71	69.64	51.701	
15,200.00	12,424.78	10,139.00	10,072.62	62.74	35.04	-163.06	-5,041.95	-617.56	3,527.33	3,457.81	69.52	50.739	
15,300.00	12,423.92	10,139.00	10,072.62	63.91	35.04	-162.39	-5,041.95	-617.56	3,455.67	3,386.26	69.42	49.780	
15,400.00	12,423.06	10,165.75	10,088.72	65.10	35.09	-162.05	-5,060.33	-606.67	3,384.70	3,315.22	69.48	48.715	
15,500.00	12,422.20	10,187.00	10,100.65	66.31	35.14	-161.61	-5,075.49	-597.78	3,315.47	3,245.95	69.52	47.692	
15,600.00	12,421.34	10,187.00	10,100.65	67.54	35.14	-160.81	-5,075.49	-597.78	3,247.34	3,177.87	69.48	46.740	
15,700.00	12,420.48	10,187.00	10,100.65	68.79	35.14	-159.94	-5,075.49	-597.78	3,180.91	3,111.45	69.46	45.794	
15,800.00	12,419.62	10,210.58	10,113.04	70.06	35.19	-159.41	-5,092.82	-587.69	3,115.74	3,046.18	69.56	44.889	
15,900.00	12,418.76	10,234.00	10,124.53	71.34	35.25	-158.85	-5,110.50	-577.49	3,052.37	2,982.69	69.68	43.805	
16,000.00	12,417.90	10,234.00	10,124.53	72.63	35.25	-157.78	-5,110.50	-577.49	2,990.47	2,920.72	69.75	42.874	
16,100.00	12,417.03	10,234.00	10,124.53	73.94	35.25	-156.59	-5,110.50	-577.49	2,930.68	2,860.82	69.86	41.953	
16,200.00	12,416.17	10,282.00	10,145.61	75.27	35.38	-156.41	-5,147.93	-556.09	2,872.32	2,802.23	70.09	40.981	
16,300.00	12,415.31	10,282.00	10,145.61	76.60	35.38	-155.04	-5,147.93	-556.09	2,815.79	2,745.53	70.26	40.077	
16,400.00	12,414.45	10,299.57	10,152.43	77.95	35.43	-154.00	-5,161.94	-547.99	2,761.45	2,690.96	70.49	39.178	
16,500.00	12,413.59	10,324.00	10,160.93	79.31	35.50	-153.06	-5,181.55	-536.16	2,709.29	2,638.56	70.73	38.305	
16,600.00	12,412.73	10,324.00	10,160.93	80.69	35.50	-151.26	-5,181.55	-536.16	2,659.32	2,588.30	71.02	37.443	
16,700.00	12,411.87	10,355.00	10,170.15	82.07	35.60	-150.30	-5,207.00	-521.05	2,611.97	2,540.66	71.32	36.626	
16,800.00	12,411.01	10,355.00	10,170.15	83.46	35.60	-148.09	-5,207.00	-521.05	2,566.91	2,495.21	71.70	35.801	
16,900.00	12,410.15	10,369.50	10,173.93	84.87	35.65	-146.16	-5,219.25	-514.28	2,524.76	2,452.66	72.10	35.017	
17,000.00	12,409.29	10,387.00	10,178.11	86.28	35.71	-144.10	-5,234.35	-506.49	2,485.45	2,412.91	72.54	34.265	
17,100.00	12,408.43	10,406.28	10,182.38	87.70	35.78	-141.83	-5,251.30	-498.35	2,448.94	2,375.93	73.01	33.541	
17,200.00	12,407.57	10,439.71	10,189.38	89.13	35.90	-139.94	-5,281.20	-485.16	2,415.05	2,341.56	73.49	32.860	
17,300.00	12,406.71	10,467.66	10,194.95	90.56	36.01	-137.50	-5,306.56	-474.79	2,383.57	2,309.54	74.03	32.196	
17,400.00	12,405.85	10,482.00	10,197.58	92.01	36.07	-133.91	-5,319.74	-469.80	2,355.06	2,280.40	74.66	31.544	
17,500.00	12,404.99	10,514.00	10,202.94	93.46	36.20	-130.88	-5,349.69	-459.90	2,329.42	2,254.13	75.28	30.942	
17,600.00	12,404.13	10,545.00	10,207.55	94.91	36.32	-127.32	-5,379.37	-452.25	2,306.93	2,230.96	75.98	30.364	
17,700.00	12,403.27	10,577.00	10,211.84	96.38	36.46	-123.31	-5,410.56	-446.59	2,287.53	2,210.79	76.74	29.809	
17,800.00	12,402.41	10,596.17	10,214.25	97.85	36.53	-117.79	-5,429.44	-444.38	2,271.01	2,193.43	77.58	29.274	
17,900.00	12,401.55	10,640.00	10,219.35	99.32	36.71	-113.58	-5,472.91	-442.07	2,257.46	2,178.98	78.48	28.764	
18,000.00	12,400.68	10,672.00	10,222.59	100.81	36.85	-108.03	-5,504.73	-441.18	2,246.39	2,166.97	79.43	28.282	
18,100.00	12,399.82	10,703.00	10,224.97	102.29	36.98	-102.03	-5,535.63	-440.37	2,238.14	2,157.75	80.39	27.839	
18,200.00	12,398.96	10,735.00	10,226.47	103.79	37.13	-95.83	-5,567.59	-439.87	2,232.96	2,151.57	81.39	27.436	
18,300.00	12,398.10	10,803.04	10,227.66	105.28	37.45	-92.86	-5,635.61	-439.37	2,230.36	2,147.94	82.41	27.064	
18,400.00	12,397.24	10,861.00	10,228.25	106.78	37.74	-88.94	-5,693.57	-438.82	2,228.79	2,145.35	83.44	26.711	
18,440.75	12,396.89	10,898.43	10,228.28	107.40	37.96	-88.63	-5,731.00	-438.61	2,228.45	2,144.58	83.88	26.568 CC	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,500.00	12,396.38	10,927.15	10,227.91	108.29	38.12	-85.79	-5,759.71	-438.69	2,228.86	2,144.36	84.50	26.376		
18,600.00	12,395.52	10,989.50	10,226.09	109.80	38.49	-82.33	-5,822.04	-439.54	2,231.26	2,145.67	85.59	26.070		
18,700.00	12,394.66	11,072.55	10,223.14	111.32	39.02	-80.82	-5,905.00	-441.58	2,234.70	2,147.98	86.72	25.768		
18,800.00	12,393.80	11,175.80	10,218.97	112.84	39.74	-81.16	-6,008.11	-444.89	2,238.83	2,150.90	87.93	25.462		
18,900.00	12,392.94	11,329.78	10,216.35	114.36	40.91	-86.09	-6,161.95	-450.92	2,240.69	2,151.37	89.33	25.084		
19,000.00	12,392.08	11,447.61	10,215.42	115.89	41.89	-87.72	-6,279.74	-453.80	2,241.47	2,150.81	90.66	24.724		
19,100.00	12,391.22	11,544.07	10,214.42	117.42	42.75	-87.41	-6,376.19	-454.79	2,242.10	2,150.16	91.94	24.387		
19,200.00	12,390.36	11,650.70	10,213.34	118.95	43.75	-88.01	-6,482.81	-454.61	2,242.35	2,149.12	93.23	24.051		
19,300.00	12,389.50	11,732.84	10,212.12	120.49	44.56	-86.40	-6,564.94	-454.74	2,243.16	2,148.66	94.50	23.737		
19,400.00	12,388.64	11,844.56	10,210.33	122.03	45.70	-87.46	-6,676.65	-454.98	2,244.11	2,148.25	95.86	23.409		
19,500.00	12,387.78	11,952.25	10,209.04	123.57	46.84	-88.15	-6,784.32	-453.98	2,244.33	2,147.12	97.21	23.087		
19,600.00	12,386.92	12,039.73	10,207.71	125.12	47.80	-87.02	-6,871.79	-453.13	2,244.86	2,146.34	98.53	22.784		
19,700.00	12,386.06	12,124.09	10,206.13	126.66	48.75	-85.62	-6,956.13	-453.10	2,246.01	2,146.14	99.86	22.491		
19,800.00	12,385.20	12,262.19	10,203.44	128.22	50.34	-89.04	-7,094.20	-454.28	2,247.77	2,146.36	101.41	22.164		
19,900.00	12,384.33	12,377.59	10,203.59	129.77	51.71	-90.43	-7,209.60	-453.79	2,246.81	2,143.92	102.89	21.836		
20,000.00	12,383.47	12,475.54	10,203.67	131.33	52.89	-90.24	-7,307.55	-453.50	2,246.00	2,141.66	104.34	21.526		
20,100.00	12,382.61	12,572.96	10,204.00	132.89	54.10	-90.01	-7,404.96	-454.40	2,245.29	2,139.46	105.83	21.216		
20,200.00	12,381.75	12,692.14	10,204.51	134.45	55.60	-91.73	-7,524.14	-454.45	2,244.25	2,136.85	107.40	20.897		
20,300.00	12,380.89	12,805.50	10,205.21	136.01	57.06	-92.93	-7,637.45	-451.53	2,242.25	2,133.38	108.87	20.596		
20,400.00	12,380.03	12,898.05	10,205.84	137.58	58.28	-92.26	-7,729.98	-449.39	2,240.29	2,129.99	110.30	20.311		
20,500.00	12,379.17	12,977.07	10,206.20	139.15	59.32	-90.38	-7,808.99	-448.25	2,238.83	2,127.11	111.72	20.040		
20,547.93	12,378.76	13,006.25	10,206.03	139.90	59.71	-88.69	-7,838.16	-447.92	2,238.63	2,126.26	112.37	19.922		
20,600.00	12,378.31	13,049.00	10,205.33	140.72	60.28	-87.85	-7,880.91	-447.45	2,238.91	2,125.80	113.11	19.794		
20,700.00	12,377.45	13,112.76	10,203.66	142.29	61.15	-84.60	-7,944.64	-446.94	2,240.39	2,125.93	114.47	19.572		
20,800.00	12,376.59	13,197.40	10,200.88	143.86	62.29	-83.23	-8,029.23	-446.79	2,242.83	2,126.91	115.92	19.349		
20,900.00	12,375.73	13,284.27	10,197.81	145.44	63.48	-82.08	-8,116.05	-447.53	2,245.82	2,128.41	117.40	19.129		
21,000.00	12,374.87	13,405.30	10,193.49	147.02	65.15	-83.96	-8,236.98	-449.43	2,249.12	2,130.02	119.10	18.885		
21,100.00	12,374.01	13,585.45	10,192.32	148.59	67.66	-91.10	-8,417.12	-449.61	2,248.65	2,127.62	121.03	18.579		
21,200.00	12,373.15	13,678.62	10,192.50	150.18	68.98	-90.49	-8,510.28	-448.88	2,247.59	2,125.01	122.58	18.336		
21,300.00	12,372.29	13,772.05	10,192.64	151.76	70.31	-89.91	-8,603.71	-449.03	2,246.85	2,122.69	124.16	18.096		
21,400.00	12,371.43	13,879.51	10,192.88	153.34	71.85	-90.57	-8,711.17	-449.80	2,246.20	2,120.36	125.84	17.850		
21,500.00	12,370.57	13,998.74	10,193.89	154.93	73.57	-92.28	-8,830.39	-450.27	2,244.85	2,117.28	127.57	17.597		
21,600.00	12,369.71	14,077.56	10,194.17	156.52	74.72	-90.40	-8,909.20	-449.39	2,243.54	2,114.46	129.08	17.381		
21,673.32	12,369.07	14,131.88	10,193.82	157.68	75.51	-88.71	-8,963.52	-448.57	2,243.21	2,113.06	130.16	17.235		
21,700.00	12,368.85	14,151.17	10,193.52	158.11	75.79	-88.05	-8,982.79	-448.15	2,243.26	2,112.72	130.54	17.185		
21,800.00	12,367.98	14,227.10	10,191.60	159.70	76.92	-85.89	-9,058.67	-445.87	2,244.17	2,112.22	131.95	17.008		
21,900.00	12,367.12	14,306.26	10,188.73	161.29	78.09	-84.02	-9,137.73	-443.19	2,246.02	2,112.68	133.34	16.844		
22,000.00	12,366.26	14,418.64	10,183.84	162.88	79.76	-85.08	-9,249.95	-439.89	2,248.79	2,113.92	134.87	16.674		
22,100.00	12,365.40	14,570.07	10,181.77	164.47	82.03	-89.69	-9,401.33	-436.75	2,248.58	2,111.94	136.63	16.457		
22,200.00	12,364.54	14,662.43	10,181.12	166.07	83.41	-89.00	-9,493.68	-435.62	2,248.25	2,110.05	138.20	16.268		
22,217.19	12,364.39	14,675.98	10,181.00	166.34	83.61	-88.67	-9,507.23	-435.46	2,248.24	2,109.78	138.46	16.237		
22,300.00	12,363.68	14,740.84	10,180.16	167.67	84.59	-87.05	-9,572.08	-435.05	2,248.57	2,108.85	139.72	16.094		
22,400.00	12,362.82	14,817.31	10,178.59	169.26	85.74	-84.94	-9,648.54	-435.02	2,249.88	2,108.64	141.24	15.930 ES		
22,500.00	12,361.96	14,898.09	10,176.08	170.86	86.96	-83.23	-9,729.27	-435.02	2,252.20	2,109.44	142.76	15.776		
22,565.16	12,361.40	14,955.68	10,173.94	171.78	87.83	-82.56	-9,786.83	-435.02	2,254.09	2,110.63	143.45	15.713 SF		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-163.23	-4,572.89	-1,377.63	4,775.98					
100.00	100.00	100.00	92.99	0.13	0.27	-163.23	-4,572.62	-1,377.52	4,775.65	4,775.25	0.40	N/A		
167.42	167.42	139.64	139.63	0.38	0.40	-163.23	-4,572.39	-1,377.62	4,775.42	4,774.64	0.78	6,119.195		
200.00	200.00	159.99	159.99	0.49	0.47	-163.23	-4,572.39	-1,377.72	4,775.46	4,774.49	0.97	4,937.676		
300.00	300.00	261.38	261.38	0.85	0.83	-163.23	-4,572.43	-1,378.02	4,775.58	4,773.90	1.68	2,845.045		
400.00	400.00	369.66	369.65	1.21	1.21	-163.22	-4,572.53	-1,378.48	4,775.80	4,773.38	2.42	1,976.550		
489.69	489.69	461.89	461.89	1.53	1.53	-163.23	-4,572.51	-1,378.12	4,775.68	4,772.62	3.06	1,562.173		
500.00	500.00	467.27	467.27	1.57	1.54	-163.23	-4,572.53	-1,378.06	4,775.68	4,772.57	3.11	1,534.314		
600.00	600.00	533.82	533.80	1.93	1.77	-163.24	-4,573.21	-1,377.28	4,776.26	4,772.56	3.70	1,290.598		
700.00	700.00	650.75	650.71	2.29	2.18	-163.26	-4,574.54	-1,375.53	4,776.92	4,772.45	4.47	1,069.308		
800.00	800.00	734.38	734.33	2.64	2.48	-163.28	-4,575.43	-1,374.51	4,777.58	4,772.46	5.12	933.079		
900.00	900.00	856.55	856.49	3.00	2.91	-163.30	-4,576.70	-1,373.19	4,778.29	4,772.38	5.91	808.733		
1,000.00	1,000.00	972.26	972.20	3.36	3.31	-163.30	-4,576.80	-1,373.08	4,778.33	4,771.66	6.67	716.392		
1,100.00	1,100.00	1,072.26	1,072.20	3.72	3.66	-163.30	-4,576.80	-1,373.08	4,778.33	4,770.96	7.38	647.683		
1,200.00	1,200.00	1,172.26	1,172.20	4.08	4.01	-163.30	-4,576.80	-1,373.08	4,778.33	4,770.25	8.09	590.878		
1,300.00	1,300.00	1,272.26	1,272.20	4.44	4.36	-163.30	-4,576.80	-1,373.08	4,778.33	4,769.54	8.80	543.157		
1,400.00	1,400.00	1,372.26	1,372.20	4.79	4.71	-163.30	-4,576.80	-1,373.08	4,778.33	4,768.83	9.51	502.516		
1,500.00	1,500.00	1,472.26	1,472.20	5.15	5.07	-163.30	-4,576.80	-1,373.08	4,778.33	4,768.11	10.22	467.499		
1,600.00	1,600.00	1,572.26	1,572.20	5.51	5.42	-163.30	-4,576.80	-1,373.08	4,778.33	4,767.40	10.93	437.019		
1,700.00	1,700.00	1,672.26	1,672.20	5.87	5.78	-163.30	-4,576.80	-1,373.08	4,778.33	4,766.69	11.65	410.253		
1,800.00	1,800.00	1,772.26	1,772.20	6.23	6.13	-163.30	-4,576.80	-1,373.08	4,778.33	4,765.97	12.36	386.563		
1,900.00	1,900.00	1,872.26	1,872.20	6.59	6.49	-163.30	-4,576.80	-1,373.08	4,778.33	4,765.26	13.08	365.450		
2,000.00	2,000.00	1,972.26	1,972.20	6.95	6.84	-163.30	-4,576.80	-1,373.08	4,778.33	4,764.55	13.79	346.516		
2,100.00	2,100.00	2,072.26	2,072.20	7.30	7.20	-163.30	-4,576.80	-1,373.08	4,778.33	4,763.83	14.50	329.442		
2,200.00	2,200.00	2,172.26	2,172.20	7.66	7.56	-163.30	-4,576.80	-1,373.08	4,778.33	4,763.12	15.22	313.967		
2,300.00	2,300.00	2,272.26	2,272.20	8.02	7.91	-163.30	-4,576.80	-1,373.08	4,778.33	4,762.40	15.93	299.877		
2,400.00	2,400.00	2,372.26	2,372.20	8.38	8.27	-163.30	-4,576.80	-1,373.08	4,778.33	4,761.69	16.65	286.995		
2,500.00	2,500.00	2,472.26	2,472.20	8.74	8.63	-163.30	-4,576.80	-1,373.08	4,778.33	4,760.97	17.36	275.172		
2,600.00	2,599.99	2,572.26	2,572.19	9.10	8.98	-163.31	-4,576.80	-1,373.08	4,779.00	4,760.92	18.08	264.330		
2,700.00	2,699.96	2,672.22	2,672.16	9.45	9.34	-163.33	-4,576.80	-1,373.08	4,781.00	4,762.21	18.79	254.391		
2,800.00	2,799.86	2,772.12	2,772.06	9.81	9.70	-163.36	-4,576.80	-1,373.08	4,784.33	4,764.83	19.51	245.248		
2,900.00	2,899.68	2,871.94	2,871.88	10.17	10.05	-163.41	-4,576.80	-1,373.08	4,789.00	4,768.78	20.22	236.815		
3,000.00	2,999.37	2,971.63	2,971.57	10.53	10.41	-163.47	-4,576.80	-1,373.08	4,795.01	4,774.07	20.94	229.021		
3,100.00	3,098.90	3,054.48	3,054.42	10.89	10.70	-163.54	-4,576.83	-1,373.34	4,802.47	4,780.88	21.59	222.463		
3,200.00	3,198.26	3,130.56	3,130.49	11.25	10.97	-163.61	-4,576.93	-1,374.56	4,811.74	4,789.53	22.21	216.637		
3,300.00	3,297.40	3,206.52	3,206.42	11.61	11.23	-163.69	-4,577.13	-1,376.78	4,822.82	4,799.99	22.83	211.232		
3,300.10	3,297.50	3,206.60	3,206.49	11.61	11.23	-163.69	-4,577.13	-1,376.79	4,822.83	4,800.00	22.83	211.227		
3,400.00	3,396.43	3,282.42	3,282.24	11.98	11.49	-163.76	-4,577.41	-1,380.01	4,835.05	4,811.59	23.45	206.152		
3,500.00	3,495.46	3,358.30	3,358.01	12.36	11.75	-163.82	-4,577.78	-1,384.23	4,847.76	4,823.68	24.08	201.344		
3,600.00	3,594.48	3,434.15	3,433.67	12.73	12.02	-163.86	-4,578.24	-1,389.45	4,860.94	4,836.24	24.70	196.785		
3,700.00	3,693.51	3,509.94	3,509.20	13.11	12.28	-163.90	-4,578.78	-1,395.66	4,874.60	4,849.28	25.33	192.460		
3,800.00	3,792.54	3,585.63	3,584.55	13.49	12.55	-163.92	-4,579.41	-1,402.86	4,888.74	4,862.78	25.96	188.350		
3,900.00	3,891.56	3,661.22	3,659.69	13.87	12.81	-163.94	-4,580.13	-1,411.04	4,903.34	4,876.76	26.58	184.442		
4,000.00	3,990.59	3,754.24	3,752.06	14.26	13.15	-163.92	-4,581.08	-1,421.98	4,918.29	4,891.01	27.28	180.272		
4,100.00	4,089.62	3,853.09	3,850.22	14.64	13.50	-163.90	-4,582.10	-1,433.64	4,933.25	4,905.24	28.01	176.149		
4,200.00	4,188.64	3,951.95	3,948.38	15.03	13.86	-163.87	-4,583.12	-1,445.30	4,948.21	4,919.48	28.73	172.215		
4,300.00	4,287.67	4,050.80	4,046.53	15.42	14.22	-163.85	-4,584.14	-1,456.96	4,963.17	4,933.71	29.46	168.457		
4,400.00	4,386.70	4,149.65	4,144.69	15.81	14.58	-163.83	-4,585.16	-1,468.62	4,978.14	4,947.94	30.20	164.866		
4,500.00	4,485.72	4,248.51	4,242.85	16.20	14.95	-163.80	-4,586.18	-1,480.28	4,993.10	4,962.17	30.93	161.431		
4,600.00	4,584.75	4,347.36	4,341.01	16.60	15.31	-163.78	-4,587.20	-1,491.94	5,008.07	4,976.40	31.67	158.144		
4,700.00	4,683.78	4,446.21	4,439.17	16.99	15.68	-163.76	-4,588.22	-1,503.60	5,023.03	4,990.62	32.41	154.996		
4,800.00	4,782.80	4,545.06	4,537.32	17.39	16.05	-163.73	-4,589.24	-1,515.26	5,038.00	5,004.85	33.15	151.978		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
4,900.00	4,881.83	4,643.92	4,635.48	17.78	16.42	-163.71	-4,590.26	-1,526.92	5,052.96	5,019.07	33.89	149.084		
5,000.00	4,980.85	4,742.77	4,733.64	18.18	16.79	-163.69	-4,591.28	-1,538.58	5,067.93	5,033.29	34.64	146.307		
5,100.00	5,079.88	4,841.62	4,831.80	18.58	17.17	-163.67	-4,592.30	-1,550.24	5,082.90	5,047.52	35.39	143.640		
5,200.00	5,178.91	4,940.48	4,929.95	18.98	17.54	-163.64	-4,593.32	-1,561.90	5,097.87	5,061.74	36.14	141.076		
5,300.00	5,277.93	5,039.33	5,028.11	19.38	17.92	-163.62	-4,594.34	-1,573.56	5,112.84	5,075.96	36.89	138.611		
5,400.00	5,376.96	5,138.18	5,126.27	19.78	18.29	-163.60	-4,595.36	-1,585.22	5,127.81	5,090.17	37.64	136.240		
5,500.00	5,475.99	5,237.04	5,224.43	20.18	18.67	-163.58	-4,596.38	-1,596.88	5,142.79	5,104.39	38.39	133.956		
5,600.00	5,575.01	5,335.89	5,322.58	20.58	19.05	-163.56	-4,597.40	-1,608.54	5,157.76	5,118.61	39.15	131.756		
5,700.00	5,674.04	5,434.74	5,420.74	20.98	19.43	-163.53	-4,598.42	-1,620.20	5,172.73	5,132.83	39.90	129.636		
5,800.00	5,773.07	5,533.60	5,518.90	21.39	19.81	-163.51	-4,599.44	-1,631.86	5,187.71	5,147.05	40.66	127.590		
5,898.39	5,870.50	5,630.85	5,615.47	21.78	20.19	-163.49	-4,600.45	-1,643.33	5,202.44	5,161.03	41.40	125.648		
5,900.00	5,872.09	5,632.45	5,617.06	21.79	20.19	-163.49	-4,600.46	-1,643.52	5,202.68	5,161.26	41.42	125.616		
6,000.00	5,971.24	5,731.39	5,715.30	22.19	20.57	-163.46	-4,601.49	-1,655.19	5,216.98	5,174.80	42.17	123.700		
6,100.00	6,070.60	5,830.47	5,813.69	22.58	20.96	-163.42	-4,602.51	-1,666.88	5,229.96	5,187.03	42.93	121.827		
6,200.00	6,170.14	5,929.67	5,912.19	22.97	21.34	-163.37	-4,603.53	-1,678.58	5,241.63	5,197.95	43.68	119.996		
6,300.00	6,269.83	6,028.96	6,010.78	23.35	21.73	-163.31	-4,604.56	-1,690.29	5,251.99	5,207.55	44.43	118.206		
6,400.00	6,369.65	6,128.30	6,109.42	23.71	22.12	-163.23	-4,605.58	-1,702.01	5,261.02	5,215.85	45.18	116.455		
6,500.00	6,469.55	6,227.66	6,208.08	24.07	22.50	-163.14	-4,606.61	-1,713.73	5,268.75	5,222.83	45.92	114.742		
6,600.00	6,569.52	6,327.02	6,306.74	24.43	22.89	-163.04	-4,607.63	-1,725.45	5,275.16	5,228.51	46.66	113.066		
6,698.49	6,668.00	6,424.84	6,403.88	24.77	23.27	-162.93	-4,608.64	-1,736.99	5,280.20	5,232.82	47.38	111.448		
6,700.00	6,669.51	6,426.34	6,405.37	24.77	23.28	-162.93	-4,608.66	-1,737.16	5,280.27	5,232.88	47.39	111.423		
6,800.00	6,769.51	6,525.64	6,503.97	25.11	23.67	-162.81	-4,609.68	-1,748.88	5,284.76	5,236.64	48.12	109.822		
6,900.00	6,869.51	6,624.94	6,602.57	25.45	24.06	-162.69	-4,610.71	-1,760.59	5,289.27	5,240.41	48.85	108.268		
7,000.00	6,969.51	6,724.23	6,701.16	25.80	24.45	-162.58	-4,611.73	-1,772.30	5,293.80	5,244.21	49.59	106.758		
7,100.00	7,069.51	6,823.53	6,799.76	26.14	24.84	-162.46	-4,612.76	-1,784.01	5,298.35	5,248.03	50.32	105.293		
7,200.00	7,169.51	6,922.83	6,898.96	26.48	25.23	-162.34	-4,613.78	-1,795.73	5,302.93	5,251.88	51.05	103.868		
7,300.00	7,269.51	7,022.12	6,996.96	26.82	25.62	-162.22	-4,614.81	-1,807.44	5,307.53	5,255.74	51.79	102.484		
7,400.00	7,369.51	7,121.42	7,095.56	27.17	26.01	-162.11	-4,615.83	-1,819.15	5,312.16	5,259.63	52.52	101.138		
7,500.00	7,469.51	7,220.72	7,194.15	27.51	26.40	-161.99	-4,616.86	-1,830.86	5,316.80	5,263.54	53.26	99.829		
7,600.00	7,569.51	7,320.01	7,292.75	27.85	26.80	-161.87	-4,617.88	-1,842.58	5,321.47	5,267.47	53.99	98.555		
7,700.00	7,669.51	7,419.31	7,391.35	28.20	27.19	-161.76	-4,618.90	-1,854.29	5,326.16	5,271.43	54.73	97.315		
7,800.00	7,769.51	7,518.61	7,489.95	28.54	27.58	-161.64	-4,619.93	-1,866.00	5,330.87	5,275.40	55.47	96.108		
7,900.00	7,869.51	7,617.90	7,588.55	28.89	27.97	-161.52	-4,620.95	-1,877.71	5,335.60	5,279.40	56.20	94.933		
8,000.00	7,969.51	7,717.20	7,687.14	29.24	28.37	-161.41	-4,621.98	-1,889.42	5,340.36	5,283.42	56.94	93.787		
8,100.00	8,069.51	7,868.79	7,837.85	29.58	28.96	-161.25	-4,623.40	-1,905.64	5,344.71	5,286.82	57.90	92.312		
8,200.00	8,169.51	8,029.00	7,997.64	29.93	29.57	-161.12	-4,624.52	-1,918.48	5,347.97	5,289.10	58.87	90.842		
8,300.00	8,269.51	8,189.82	8,158.13	30.27	30.15	-161.04	-4,625.26	-1,926.88	5,350.10	5,290.28	59.82	89.433		
8,400.00	8,369.51	8,350.98	8,319.23	30.62	30.72	-161.00	-4,625.60	-1,930.80	5,351.09	5,290.34	60.75	88.084		
8,500.00	8,469.51	8,473.45	8,441.71	30.97	31.13	-161.00	-4,625.63	-1,931.10	5,351.17	5,289.65	61.52	86.981		
8,600.00	8,569.51	8,573.45	8,541.71	31.32	31.47	-161.00	-4,625.63	-1,931.10	5,351.17	5,288.96	62.21	86.017		
8,700.00	8,669.51	8,673.45	8,641.71	31.66	31.80	-161.00	-4,625.63	-1,931.10	5,351.17	5,288.27	62.90	85.074		
8,800.00	8,769.51	8,773.45	8,741.71	32.01	32.14	-161.00	-4,625.63	-1,931.10	5,351.17	5,287.58	63.59	84.151		
8,900.00	8,869.51	8,873.45	8,841.71	32.36	32.48	-161.00	-4,625.63	-1,931.10	5,351.17	5,286.89	64.28	83.246		
9,000.00	8,969.51	8,973.45	8,941.71	32.71	32.81	-161.00	-4,625.63	-1,931.10	5,351.17	5,286.20	64.97	82.360		
9,100.00	9,069.51	9,073.45	9,041.71	33.06	33.15	-161.00	-4,625.63	-1,931.10	5,351.17	5,285.50	65.66	81.492		
9,200.00	9,169.51	9,173.45	9,141.71	33.40	33.49	-161.00	-4,625.63	-1,931.10	5,351.17	5,284.81	66.36	80.642		
9,300.00	9,269.51	9,273.45	9,241.71	33.75	33.83	-161.00	-4,625.63	-1,931.10	5,351.17	5,284.12	67.05	79.808		
9,400.00	9,369.51	9,373.45	9,341.71	34.10	34.17	-161.00	-4,625.63	-1,931.10	5,351.17	5,283.43	67.74	78.991		
9,500.00	9,469.51	9,473.45	9,441.71	34.45	34.51	-161.00	-4,625.63	-1,931.10	5,351.17	5,282.73	68.44	78.190		
9,600.00	9,569.51	9,573.45	9,541.71	34.80	34.85	-161.00	-4,625.63	-1,931.10	5,351.17	5,282.04	69.13	77.405		
9,700.00	9,669.51	9,673.45	9,641.71	35.15	35.19	-161.00	-4,625.63	-1,931.10	5,351.17	5,281.34	69.83	76.634		
9,800.00	9,769.51	9,773.45	9,741.71	35.50	35.53	-161.00	-4,625.63	-1,931.10	5,351.17	5,280.65	70.52	75.879		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
9,900.00	9,869.51	9,873.45	9,841.71	35.85	35.87	-161.00	-4,625.63	-1,931.10	5,351.17	5,279.95	71.22	75.138			
10,000.00	9,969.51	9,973.45	9,941.71	36.20	36.21	-161.00	-4,625.63	-1,931.10	5,351.17	5,279.25	71.91	74.410			
10,007.45	9,976.96	9,980.90	9,949.16	36.23	36.23	-161.00	-4,625.63	-1,931.10	5,351.17	5,279.20	71.97	74.357			
10,100.00	10,069.51	10,026.74	9,995.00	36.55	36.39	-161.00	-4,625.63	-1,931.10	5,351.37	5,278.93	72.45	73.868			
10,200.00	10,169.51	10,050.00	10,018.25	36.90	36.47	-161.00	-4,626.14	-1,931.06	5,353.07	5,280.21	72.86	73.472			
10,300.00	10,269.51	10,050.00	10,018.25	37.25	36.47	-161.00	-4,626.14	-1,931.06	5,356.31	5,283.13	73.17	73.201			
10,400.00	10,369.51	10,050.00	10,018.25	37.60	36.47	-161.00	-4,626.14	-1,931.06	5,361.41	5,287.94	73.47	72.975			
10,500.00	10,469.51	10,050.00	10,018.25	37.95	36.47	-161.00	-4,626.14	-1,931.06	5,368.37	5,294.62	73.75	72.795			
10,600.00	10,569.51	10,100.00	10,068.02	38.31	36.63	-161.02	-4,630.75	-1,930.66	5,376.78	5,302.56	74.21	72.449			
10,700.00	10,669.51	10,100.00	10,068.02	38.66	36.63	-161.02	-4,630.75	-1,930.66	5,386.51	5,312.04	74.47	72.335			
10,800.00	10,769.51	10,100.00	10,068.02	39.01	36.63	-161.02	-4,630.75	-1,930.66	5,398.07	5,323.37	74.70	72.263			
10,900.00	10,869.51	10,100.00	10,068.02	39.36	36.63	-161.02	-4,630.75	-1,930.66	5,411.46	5,336.55	74.92	72.233			
11,000.00	10,969.51	10,100.00	10,068.02	39.71	36.63	-161.02	-4,630.75	-1,930.66	5,426.66	5,351.55	75.12	72.243			
11,100.00	11,069.51	10,126.27	10,093.93	40.06	36.71	-161.04	-4,635.07	-1,930.28	5,442.99	5,367.56	75.43	72.162			
11,200.00	11,169.51	10,150.00	10,117.11	40.41	36.79	-161.06	-4,640.09	-1,929.85	5,461.41	5,385.69	75.72	72.130			
11,300.00	11,269.51	10,150.00	10,117.11	40.77	36.79	-161.06	-4,640.09	-1,929.85	5,481.05	5,405.17	75.88	72.236			
11,400.00	11,369.51	10,150.00	10,117.11	41.12	36.79	-161.06	-4,640.09	-1,929.85	5,502.44	5,426.42	76.02	72.380			
11,500.00	11,469.51	10,150.00	10,117.11	41.47	36.79	-161.06	-4,640.09	-1,929.85	5,525.55	5,449.40	76.15	72.559			
11,600.00	11,569.51	10,150.00	10,117.11	41.82	36.79	-161.06	-4,640.09	-1,929.85	5,550.38	5,474.11	76.27	72.773			
11,700.00	11,669.51	10,200.00	10,165.08	42.18	36.95	-161.12	-4,654.07	-1,928.64	5,576.33	5,499.68	76.65	72.752			
11,800.00	11,769.51	10,200.00	10,165.08	42.53	36.95	-161.12	-4,654.07	-1,928.64	5,603.64	5,526.90	76.75	73.014			
11,900.00	11,869.51	10,200.00	10,165.08	42.88	36.95	-161.12	-4,654.07	-1,928.64	5,632.60	5,555.76	76.83	73.308			
11,902.93	11,872.44	10,200.00	10,165.08	42.89	36.95	-161.12	-4,654.07	-1,928.64	5,633.47	5,556.63	76.84	73.317			
11,950.00	11,919.46	10,200.00	10,165.08	43.04	36.95	-161.11	-4,654.07	-1,928.64	5,646.07	5,569.21	76.86	73.458			
12,000.00	11,969.05	10,200.00	10,165.08	43.19	36.95	-161.08	-4,654.07	-1,928.64	5,656.27	5,579.40	76.87	73.585			
12,050.00	12,017.90	10,200.00	10,165.08	43.32	36.95	-161.02	-4,654.07	-1,928.64	5,663.13	5,586.27	76.86	73.678			
12,100.00	12,065.65	10,200.00	10,165.08	43.44	36.95	-160.94	-4,654.07	-1,928.64	5,666.61	5,589.77	76.85	73.740			
12,150.00	12,111.93	10,200.00	10,165.08	43.56	36.95	-160.84	-4,654.07	-1,928.64	5,666.69	5,589.88	76.82	73.768			
12,200.00	12,156.38	10,224.87	10,188.38	43.66	37.02	-160.76	-4,662.71	-1,927.89	5,662.77	5,585.85	76.93	73.614			
12,250.00	12,198.67	10,250.00	10,211.48	43.75	37.10	-160.65	-4,672.57	-1,927.03	5,656.26	5,579.23	77.03	73.434			
12,300.00	12,238.48	10,250.00	10,211.48	43.83	37.10	-160.49	-4,672.57	-1,927.03	5,645.79	5,568.82	76.97	73.354			
12,350.00	12,275.51	10,250.00	10,211.48	43.90	37.10	-160.30	-4,672.57	-1,927.03	5,632.05	5,555.15	76.90	73.241			
12,400.00	12,309.46	10,250.00	10,211.48	43.97	37.10	-160.10	-4,672.57	-1,927.03	5,615.12	5,538.30	76.82	73.095			
12,450.00	12,340.09	10,250.00	10,211.48	44.04	37.10	-159.87	-4,672.57	-1,927.03	5,595.09	5,518.36	76.74	72.914			
12,500.00	12,367.17	10,250.00	10,211.48	44.10	37.10	-159.63	-4,672.57	-1,927.03	5,572.10	5,495.45	76.65	72.699			
12,550.00	12,390.47	10,250.00	10,211.48	44.16	37.10	-159.37	-4,672.57	-1,927.03	5,546.27	5,469.71	76.55	72.449			
12,600.00	12,409.84	10,250.00	10,211.48	44.22	37.10	-159.10	-4,672.57	-1,927.03	5,517.76	5,441.30	76.46	72.163			
12,650.00	12,425.11	10,250.00	10,211.48	44.28	37.10	-158.81	-4,672.57	-1,927.03	5,486.76	5,410.39	76.37	71.843			
12,700.00	12,436.18	10,250.00	10,211.48	44.35	37.10	-158.52	-4,672.57	-1,927.03	5,453.46	5,377.18	76.28	71.488			
12,750.00	12,442.96	10,250.00	10,211.48	44.42	37.10	-158.21	-4,672.57	-1,927.03	5,418.07	5,341.87	76.20	71.099			
12,800.00	12,445.39	10,250.00	10,211.48	44.49	37.10	-157.89	-4,672.57	-1,927.03	5,380.82	5,304.69	76.13	70.676			
12,807.86	12,445.38	10,250.00	10,211.48	44.51	37.10	-157.84	-4,672.57	-1,927.03	5,374.82	5,298.69	76.12	70.605			
12,900.00	12,444.58	10,272.57	10,231.80	44.68	37.16	-157.30	-4,682.35	-1,926.18	5,303.99	5,227.83	76.16	69.644			
13,000.00	12,443.72	10,276.99	10,235.73	44.94	37.17	-156.64	-4,684.37	-1,926.01	5,228.22	5,152.13	76.09	68.712			
13,100.00	12,442.86	10,300.00	10,255.89	45.27	37.24	-156.01	-4,695.41	-1,925.05	5,153.56	5,077.39	76.17	67.661			
13,200.00	12,442.00	10,300.00	10,255.89	45.66	37.24	-155.30	-4,695.41	-1,925.05	5,079.24	5,003.12	76.12	66.726			
13,300.00	12,441.14	10,300.00	10,255.89	46.11	37.24	-154.56	-4,695.41	-1,925.05	5,005.82	4,929.72	76.10	65.776			
13,400.00	12,440.28	10,300.00	10,255.89	46.63	37.24	-153.79	-4,695.41	-1,925.05	4,933.34	4,857.22	76.12	64.812			
13,500.00	12,439.42	10,300.00	10,255.89	47.20	37.24	-153.00	-4,695.41	-1,925.05	4,861.83	4,785.66	76.17	63.832			
13,600.00	12,438.56	10,300.00	10,255.89	47.83	37.24	-152.17	-4,695.41	-1,925.05	4,791.34	4,715.09	76.25	62.838			
13,700.00	12,437.70	10,300.00	10,255.89	48.52	37.24	-151.32	-4,695.41	-1,925.05	4,721.91	4,645.54	76.37	61.827			
13,727.27	12,437.47	10,300.00	10,255.89	48.71	37.24	-151.08	-4,695.41	-1,925.05	4,703.17	4,626.76	76.41	61.549			

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
13,800.00	12,436.84	10,300.00	10,255.89	49.25	37.24	-150.44	-4,695.41	-1,925.05	4,653.08	4,576.55	76.53	60.800		
13,900.00	12,435.98	10,324.59	10,276.88	50.02	37.31	-149.67	-4,708.18	-1,923.94	4,582.92	4,506.04	76.88	59.612		
14,000.00	12,435.11	10,350.00	10,297.90	50.83	37.37	-148.93	-4,722.39	-1,922.71	4,512.55	4,435.30	77.25	58.418		
14,100.00	12,434.25	10,350.00	10,297.90	51.66	37.37	-148.07	-4,722.39	-1,922.71	4,440.82	4,363.38	77.45	57.341		
14,200.00	12,433.39	10,350.00	10,297.90	52.52	37.37	-147.23	-4,722.39	-1,922.71	4,368.40	4,290.75	77.65	56.257		
14,259.68	12,432.87	10,350.00	10,297.90	53.04	37.37	-146.72	-4,722.39	-1,922.71	4,324.87	4,247.10	77.77	55.608		
14,300.00	12,432.52	10,350.00	10,297.90	53.40	37.37	-146.38	-4,722.39	-1,922.71	4,295.47	4,217.61	77.86	55.169		
14,400.00	12,431.66	10,350.00	10,297.90	54.32	37.37	-145.51	-4,722.39	-1,922.71	4,223.34	4,145.24	78.10	54.078		
14,500.00	12,430.80	10,350.00	10,297.90	55.27	37.37	-144.59	-4,722.39	-1,922.71	4,152.36	4,073.99	78.37	52.984		
14,600.00	12,429.94	10,374.66	10,317.62	56.25	37.44	-143.80	-4,737.15	-1,921.43	4,082.04	4,003.18	78.86	51.766		
14,700.00	12,429.08	10,400.00	10,337.12	57.26	37.50	-142.98	-4,753.26	-1,920.03	4,013.38	3,933.99	79.39	50.556		
14,800.00	12,428.22	10,400.00	10,337.12	58.31	37.50	-141.95	-4,753.26	-1,920.03	3,945.45	3,865.67	79.78	49.453		
14,900.00	12,427.36	10,400.00	10,337.12	59.38	37.50	-140.86	-4,753.26	-1,920.03	3,878.92	3,798.70	80.22	48.352		
15,000.00	12,426.50	10,400.00	10,337.12	60.47	37.50	-139.73	-4,753.26	-1,920.03	3,813.84	3,733.13	80.71	47.254		
15,100.00	12,425.64	10,400.00	10,337.12	61.60	37.50	-138.54	-4,753.26	-1,920.03	3,750.31	3,669.06	81.24	46.161		
15,200.00	12,424.78	10,450.00	10,373.19	62.74	37.62	-137.76	-4,787.73	-1,917.04	3,687.91	3,605.75	82.16	44.886		
15,300.00	12,423.92	10,450.00	10,373.19	63.91	37.62	-136.48	-4,787.73	-1,917.04	3,626.74	3,543.94	82.80	43.803		
15,400.00	12,423.06	10,450.00	10,373.19	65.10	37.62	-135.13	-4,787.73	-1,917.04	3,567.32	3,483.84	83.48	42.731		
15,500.00	12,422.20	10,450.00	10,373.19	66.31	37.62	-133.71	-4,787.73	-1,917.04	3,509.75	3,425.53	84.22	41.672		
15,600.00	12,421.34	10,476.01	10,390.60	67.54	37.68	-132.53	-4,806.98	-1,915.37	3,453.52	3,368.34	85.18	40.545		
15,700.00	12,420.48	10,500.00	10,405.78	68.79	37.74	-131.30	-4,825.48	-1,913.76	3,399.32	3,313.15	86.16	39.452		
15,800.00	12,419.62	10,500.00	10,405.78	70.06	37.74	-129.69	-4,825.48	-1,913.76	3,346.70	3,259.64	87.06	38.440		
15,900.00	12,418.76	10,500.00	10,405.78	71.34	37.74	-128.01	-4,825.48	-1,913.76	3,296.28	3,208.27	88.01	37.453		
16,000.00	12,417.90	10,529.87	10,423.46	72.63	37.81	-126.70	-4,849.46	-1,911.68	3,247.39	3,158.22	89.18	36.415		
16,100.00	12,417.03	10,550.00	10,434.58	73.94	37.85	-125.20	-4,866.18	-1,910.23	3,200.75	3,110.42	90.33	35.433		
16,200.00	12,416.17	10,550.00	10,434.58	75.27	37.85	-123.31	-4,866.18	-1,910.23	3,156.23	3,064.79	91.43	34.520		
16,300.00	12,415.31	10,576.23	10,448.09	76.60	37.91	-121.80	-4,888.58	-1,908.29	3,113.70	3,020.99	92.70	33.588		
16,400.00	12,414.45	10,600.00	10,459.34	77.95	37.97	-120.20	-4,909.43	-1,906.48	3,073.51	2,979.51	93.99	32.699		
16,500.00	12,413.59	10,600.00	10,459.34	79.31	37.97	-118.08	-4,909.43	-1,906.48	3,035.59	2,940.37	95.22	31.879		
16,600.00	12,412.73	10,627.91	10,471.31	80.69	38.04	-116.46	-4,934.54	-1,904.30	2,999.87	2,903.28	96.60	31.056		
16,700.00	12,411.87	10,650.00	10,479.82	82.07	38.10	-114.68	-4,954.85	-1,902.54	2,966.65	2,868.68	97.97	30.281		
16,800.00	12,411.01	10,650.00	10,479.82	83.46	38.10	-112.34	-4,954.85	-1,902.54	2,936.03	2,836.74	99.29	29.570		
16,900.00	12,410.15	10,700.00	10,495.84	84.87	38.24	-111.11	-5,002.02	-1,898.45	2,907.74	2,806.95	100.79	28.850		
17,000.00	12,409.29	10,700.00	10,495.84	86.28	38.24	-108.65	-5,002.02	-1,898.45	2,881.81	2,779.66	102.15	28.210		
17,100.00	12,408.43	10,724.97	10,502.12	87.70	38.31	-106.75	-5,026.10	-1,896.36	2,858.64	2,755.05	103.59	27.595		
17,200.00	12,407.57	10,750.00	10,507.25	89.13	38.39	-104.82	-5,050.50	-1,894.24	2,838.13	2,733.10	105.03	27.023		
17,300.00	12,406.71	10,750.00	10,507.25	90.56	38.39	-102.19	-5,050.50	-1,894.24	2,820.49	2,714.09	106.41	26.506		
17,400.00	12,405.85	10,800.00	10,513.93	92.01	38.56	-100.86	-5,099.85	-1,889.96	2,805.23	2,697.36	107.87	26.006		
17,500.00	12,404.99	10,800.00	10,513.93	93.46	38.56	-98.15	-5,099.85	-1,889.96	2,792.78	2,683.55	109.23	25.567		
17,600.00	12,404.13	10,847.19	10,515.87	94.91	38.73	-96.71	-5,146.80	-1,885.88	2,783.26	2,672.63	110.63	25.158		
17,700.00	12,403.27	10,875.57	10,515.74	96.38	38.84	-94.73	-5,175.07	-1,883.43	2,776.09	2,664.11	111.99	24.789		
17,800.00	12,402.41	10,975.24	10,515.31	97.85	39.27	-94.73	-5,274.37	-1,874.81	2,769.85	2,656.41	113.43	24.418		
17,900.00	12,401.55	11,074.92	10,514.88	99.32	39.77	-94.73	-5,373.68	-1,866.20	2,763.61	2,648.68	114.93	24.046		
18,000.00	12,400.68	11,174.59	10,514.44	100.81	40.33	-94.73	-5,472.98	-1,857.58	2,757.39	2,640.91	116.47	23.674		
18,100.00	12,399.82	11,274.27	10,514.01	102.29	40.96	-94.73	-5,572.28	-1,848.97	2,751.17	2,633.11	118.06	23.302		
18,200.00	12,398.96	11,373.95	10,513.58	103.79	41.64	-94.73	-5,671.58	-1,840.35	2,744.96	2,625.26	119.70	22.932		
18,300.00	12,398.10	11,473.62	10,513.14	105.28	42.38	-94.73	-5,770.88	-1,831.74	2,738.76	2,617.39	121.37	22.565		
18,400.00	12,397.24	11,573.30	10,512.71	106.78	43.17	-94.73	-5,870.19	-1,823.12	2,732.57	2,609.49	123.09	22.200		
18,500.00	12,396.38	11,672.97	10,512.28	108.29	44.01	-94.73	-5,969.49	-1,814.50	2,726.40	2,601.56	124.84	21.840		
18,600.00	12,395.52	11,772.65	10,511.84	109.80	44.90	-94.73	-6,068.79	-1,805.89	2,720.23	2,593.60	126.62	21.483		
18,700.00	12,394.66	11,872.33	10,511.41	111.32	45.83	-94.73	-6,168.09	-1,797.27	2,714.07	2,585.83	128.44	21.131		
18,800.00	12,393.80	11,972.00	10,510.98	112.84	46.81	-94.72	-6,267.39	-1,788.66	2,707.92	2,577.63	130.28	20.785		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
18,900.00	12,392.94	12,071.68	10,510.54	114.36	47.82	-94.72	-6,366.70	-1,780.04	2,701.78	2,569.62	132.16	20.444			
19,000.00	12,392.08	12,171.35	10,510.11	115.89	48.87	-94.72	-6,466.00	-1,771.42	2,695.65	2,561.60	134.05	20.109			
19,100.00	12,391.22	12,271.03	10,509.68	117.42	49.96	-94.72	-6,565.30	-1,762.81	2,689.53	2,553.56	135.97	19.780			
19,200.00	12,390.36	12,370.71	10,509.24	118.95	51.08	-94.72	-6,664.60	-1,754.19	2,683.42	2,545.50	137.92	19.457			
19,300.00	12,389.50	12,470.38	10,508.81	120.49	52.22	-94.72	-6,763.90	-1,745.58	2,677.32	2,537.44	139.88	19.140			
19,400.00	12,388.64	12,570.06	10,508.38	122.03	53.40	-94.72	-6,863.21	-1,736.96	2,671.23	2,529.38	141.86	18.830			
19,500.00	12,387.78	12,669.73	10,507.94	123.57	54.60	-94.72	-6,962.51	-1,728.34	2,665.16	2,521.30	143.85	18.527			
19,600.00	12,386.92	12,769.41	10,507.51	125.12	55.83	-94.72	-7,061.81	-1,719.73	2,659.09	2,513.22	145.86	18.230			
19,700.00	12,386.06	12,869.08	10,507.08	126.66	57.08	-94.72	-7,161.11	-1,711.11	2,653.03	2,505.14	147.89	17.940			
19,800.00	12,385.20	12,968.76	10,506.65	128.22	58.35	-94.72	-7,260.41	-1,702.50	2,646.98	2,497.06	149.92	17.656			
19,900.00	12,384.33	13,068.44	10,506.21	129.77	59.64	-94.71	-7,359.72	-1,693.88	2,640.95	2,488.98	151.97	17.378			
20,000.00	12,383.47	13,168.11	10,505.78	131.33	60.95	-94.71	-7,459.02	-1,685.26	2,634.92	2,480.90	154.03	17.107			
20,100.00	12,382.61	13,267.79	10,505.35	132.89	62.28	-94.71	-7,558.32	-1,676.65	2,628.91	2,472.82	156.09	16.842			
20,200.00	12,381.75	13,367.46	10,504.91	134.45	63.63	-94.71	-7,657.62	-1,668.03	2,622.90	2,464.74	158.16	16.584			
20,300.00	12,380.89	13,467.14	10,504.48	136.01	64.99	-94.71	-7,756.92	-1,659.42	2,616.91	2,456.67	160.24	16.331			
20,400.00	12,380.03	13,566.82	10,504.05	137.58	66.37	-94.71	-7,856.23	-1,650.80	2,610.93	2,448.60	162.33	16.084			
20,500.00	12,379.17	13,666.49	10,503.61	139.15	67.76	-94.71	-7,955.53	-1,642.18	2,604.96	2,440.54	164.42	15.844			
20,600.00	12,378.31	13,766.17	10,503.18	140.72	69.16	-94.71	-8,054.83	-1,633.57	2,599.00	2,432.49	166.51	15.608			
20,700.00	12,377.45	13,865.84	10,502.75	142.29	70.57	-94.71	-8,154.13	-1,624.95	2,593.05	2,424.44	168.61	15.379			
20,800.00	12,376.59	13,965.52	10,502.31	143.86	72.00	-94.71	-8,253.43	-1,616.34	2,587.12	2,416.41	170.71	15.155			
20,900.00	12,375.73	14,065.20	10,501.88	145.44	73.44	-94.70	-8,352.73	-1,607.72	2,581.19	2,408.38	172.81	14.936			
21,000.00	12,374.87	14,164.87	10,501.45	147.02	74.89	-94.70	-8,452.04	-1,599.11	2,575.28	2,400.36	174.92	14.723			
21,100.00	12,374.01	14,264.55	10,501.01	148.59	76.34	-94.70	-8,551.34	-1,590.49	2,569.37	2,392.35	177.02	14.514			
21,200.00	12,373.15	14,364.22	10,500.58	150.18	77.81	-94.70	-8,650.64	-1,581.87	2,563.48	2,384.36	179.13	14.311			
21,300.00	12,372.29	14,463.90	10,500.15	151.76	79.28	-94.70	-8,749.94	-1,573.26	2,557.60	2,376.37	181.23	14.112			
21,400.00	12,371.43	14,563.58	10,499.71	153.34	80.77	-94.70	-8,849.24	-1,564.64	2,551.74	2,368.40	183.34	13.918			
21,500.00	12,370.57	14,663.25	10,499.28	154.93	82.26	-94.70	-8,948.55	-1,556.03	2,545.88	2,360.44	185.44	13.729			
21,600.00	12,369.71	14,762.93	10,498.85	156.52	83.75	-94.70	-9,047.85	-1,547.41	2,540.04	2,352.49	187.54	13.544			
21,700.00	12,368.85	14,862.60	10,498.41	158.11	85.26	-94.70	-9,147.15	-1,538.79	2,534.21	2,344.56	189.65	13.363			
21,800.00	12,367.98	14,962.28	10,497.98	159.70	86.77	-94.69	-9,246.45	-1,530.18	2,528.39	2,336.65	191.74	13.186			
21,900.00	12,367.12	15,061.96	10,497.55	161.29	88.29	-94.69	-9,345.75	-1,521.56	2,522.58	2,328.74	193.84	13.014			
22,000.00	12,366.26	15,161.63	10,497.11	162.88	89.81	-94.69	-9,445.06	-1,512.95	2,516.79	2,320.86	195.93	12.845			
22,100.00	12,365.40	15,261.31	10,496.68	164.47	91.34	-94.69	-9,544.36	-1,504.33	2,511.01	2,312.98	198.02	12.681			
22,200.00	12,364.54	15,360.98	10,496.25	166.07	92.87	-94.69	-9,643.66	-1,495.71	2,505.24	2,305.13	200.11	12.519			
22,300.00	12,363.68	15,460.66	10,495.81	167.67	94.41	-94.69	-9,742.96	-1,487.10	2,499.48	2,297.29	202.19	12.362			
22,400.00	12,362.82	15,560.33	10,495.38	169.26	95.95	-94.68	-9,842.26	-1,478.49	2,493.74	2,289.51	204.24	12.210			
22,500.00	12,361.96	15,660.00	10,494.95	170.86	97.50	-93.37	-9,941.56	-1,469.88	2,488.03	2,282.63	206.31	12.070			
22,565.16	12,361.40	15,662.83	10,494.98	171.78	97.54	-92.56	-9,944.52	-1,471.69	2,486.41	2,279.04	207.37	11.990 CC, ES, SF			



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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	Offset	Semi Major Axis		Distance		Minimum Separation		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-162.89	-4,573.00	-1,407.70	4,784.85					
100.00	100.00	60.49	60.49	0.13	0.12	-162.89	-4,573.05	-1,407.69	4,784.82	4,784.56	0.26	N/A		
200.00	200.00	175.48	175.48	0.49	0.52	-162.89	-4,573.37	-1,407.67	4,785.11	4,784.09	1.02	4,711.152		
208.55	208.55	180.26	180.25	0.52	0.54	-162.89	-4,573.37	-1,407.67	4,785.10	4,784.04	1.06	4,501.682		
300.00	300.00	235.99	235.99	0.85	0.74	-162.89	-4,573.58	-1,407.73	4,785.46	4,783.87	1.59	3,015.880		
400.00	400.00	351.30	351.29	1.21	1.14	-162.90	-4,574.40	-1,407.34	4,786.04	4,783.68	2.35	2,034.867		
500.00	500.00	448.55	448.54	1.57	1.49	-162.91	-4,575.18	-1,406.67	4,786.60	4,783.54	3.06	1,566.279		
600.00	600.00	539.80	539.78	1.93	1.81	-162.92	-4,575.98	-1,405.57	4,787.09	4,783.35	3.74	1,280.220		
700.00	700.00	629.29	629.26	2.29	2.13	-162.94	-4,577.19	-1,404.52	4,788.02	4,783.61	4.42	1,083.941		
800.00	800.00	717.15	717.09	2.64	2.45	-162.96	-4,578.21	-1,403.22	4,788.74	4,783.65	5.09	940.868		
900.00	900.00	800.04	799.89	3.00	2.75	-162.97	-4,579.73	-1,402.42	4,790.18	4,784.44	5.75	833.796		
1,000.00	1,000.00	971.79	971.70	3.36	3.35	-162.99	-4,581.37	-1,401.57	4,790.97	4,784.26	6.71	714.328		
1,100.00	1,100.00	1,071.79	1,071.70	3.72	3.69	-162.99	-4,581.37	-1,401.57	4,790.97	4,783.56	7.40	647.258		
1,200.00	1,200.00	1,171.79	1,171.70	4.08	4.02	-162.99	-4,581.37	-1,401.57	4,790.97	4,782.86	8.10	591.445		
1,300.00	1,300.00	1,271.79	1,271.70	4.44	4.37	-162.99	-4,581.37	-1,401.57	4,790.97	4,782.16	8.80	544.310		
1,400.00	1,400.00	1,371.79	1,371.70	4.79	4.71	-162.99	-4,581.37	-1,401.57	4,790.97	4,781.46	9.51	504.011		
1,500.00	1,500.00	1,471.79	1,471.70	5.15	5.06	-162.99	-4,581.37	-1,401.57	4,790.97	4,780.75	10.21	469.183		
1,600.00	1,600.00	1,571.79	1,571.70	5.51	5.41	-162.99	-4,581.37	-1,401.57	4,790.97	4,780.05	10.92	438.798		
1,700.00	1,700.00	1,671.79	1,671.70	5.87	5.76	-162.99	-4,581.37	-1,401.57	4,790.97	4,779.34	11.63	412.066		
1,800.00	1,800.00	1,771.79	1,771.70	6.23	6.11	-162.99	-4,581.37	-1,401.57	4,790.97	4,778.63	12.34	388.372		
1,900.00	1,900.00	1,871.79	1,871.70	6.59	6.46	-162.99	-4,581.37	-1,401.57	4,790.97	4,777.92	13.05	367.232		
2,000.00	2,000.00	1,971.79	1,971.70	6.95	6.81	-162.99	-4,581.37	-1,401.57	4,790.97	4,777.21	13.76	348.256		
2,100.00	2,100.00	2,043.51	2,043.42	7.30	7.06	-162.99	-4,581.46	-1,401.71	4,791.18	4,776.81	14.37	333.505		
2,200.00	2,200.00	2,100.00	2,099.91	7.66	7.26	-162.98	-4,581.86	-1,402.30	4,792.18	4,777.26	14.92	321.191		
2,300.00	2,300.00	2,164.68	2,164.57	8.02	7.48	-162.97	-4,582.69	-1,403.53	4,794.00	4,778.50	15.50	309.312		
2,400.00	2,400.00	2,225.22	2,225.07	8.38	7.69	-162.96	-4,583.84	-1,405.24	4,796.65	4,780.58	16.06	298.619		
2,500.00	2,500.00	2,285.71	2,285.50	8.74	7.90	-162.94	-4,585.35	-1,407.48	4,800.12	4,783.49	16.63	288.714		
2,600.00	2,599.99	2,346.12	2,345.82	9.10	8.11	-162.92	-4,587.21	-1,410.24	4,805.07	4,787.88	17.19	279.568		
2,700.00	2,699.96	2,400.00	2,399.59	9.45	8.29	-162.91	-4,589.17	-1,413.14	4,812.17	4,794.44	17.72	271.507		
2,800.00	2,799.86	2,466.58	2,465.98	9.81	8.53	-162.91	-4,591.99	-1,417.31	4,821.39	4,803.09	18.31	263.376		
2,900.00	2,899.68	2,526.55	2,525.72	10.17	8.74	-162.92	-4,594.89	-1,421.62	4,832.75	4,813.89	18.86	256.200		
3,000.00	2,999.37	2,600.00	2,598.82	10.53	9.00	-162.92	-4,598.92	-1,427.59	4,846.26	4,826.79	19.47	248.908		
3,100.00	3,098.90	2,676.08	2,674.48	10.89	9.27	-162.94	-4,603.37	-1,434.19	4,861.57	4,841.48	20.09	242.011		
3,200.00	3,198.26	2,774.67	2,772.53	11.25	9.63	-162.95	-4,609.13	-1,442.73	4,878.24	4,857.44	20.79	234.603		
3,300.00	3,297.40	2,873.03	2,870.35	11.61	9.98	-162.97	-4,614.88	-1,451.25	4,896.20	4,874.70	21.50	227.721		
3,300.10	3,297.50	2,873.13	2,870.45	11.61	9.98	-162.97	-4,614.89	-1,451.26	4,896.22	4,874.72	21.50	227.714		
3,400.00	3,396.43	2,971.25	2,968.03	11.98	10.34	-163.00	-4,620.62	-1,459.77	4,914.81	4,892.60	22.21	221.285		
3,500.00	3,495.46	3,069.46	3,065.71	12.36	10.70	-163.03	-4,626.36	-1,468.28	4,933.42	4,910.50	22.92	215.222		
3,600.00	3,594.48	3,167.68	3,163.39	12.73	11.07	-163.06	-4,632.10	-1,476.79	4,952.03	4,928.39	23.64	209.500		
3,700.00	3,693.51	3,265.90	3,261.07	13.11	11.43	-163.09	-4,637.84	-1,485.30	4,970.64	4,946.29	24.35	204.092		
3,800.00	3,792.54	3,364.12	3,358.75	13.49	11.80	-163.12	-4,643.58	-1,493.81	4,989.26	4,964.18	25.07	198.974		
3,900.00	3,891.56	3,462.34	3,456.43	13.87	12.17	-163.15	-4,649.33	-1,502.32	5,007.87	4,982.08	25.80	194.126		
4,000.00	3,990.59	3,560.56	3,554.11	14.26	12.53	-163.18	-4,655.07	-1,510.83	5,026.49	4,999.97	26.52	189.527		
4,100.00	4,089.62	3,658.78	3,651.80	14.64	12.91	-163.21	-4,660.81	-1,519.35	5,045.11	5,017.86	27.25	185.160		
4,200.00	4,188.64	3,757.00	3,749.48	15.03	13.28	-163.24	-4,666.55	-1,527.86	5,063.73	5,035.75	27.98	181.009		
4,300.00	4,287.67	3,855.22	3,847.16	15.42	13.65	-163.27	-4,672.29	-1,536.37	5,082.35	5,053.65	28.70	177.058		
4,400.00	4,386.70	3,953.44	3,944.84	15.81	14.02	-163.29	-4,678.03	-1,544.88	5,100.97	5,071.54	29.44	173.295		
4,500.00	4,485.72	4,051.66	4,042.52	16.20	14.40	-163.32	-4,683.77	-1,553.39	5,119.60	5,089.43	30.17	169.707		
4,600.00	4,584.75	4,149.87	4,140.20	16.60	14.77	-163.35	-4,689.51	-1,561.90	5,138.22	5,107.32	30.90	166.281		
4,700.00	4,683.78	4,248.09	4,237.88	16.99	15.15	-163.38	-4,695.25	-1,570.41	5,156.85	5,125.21	31.64	163.009		
4,800.00	4,782.80	4,346.31	4,335.56	17.39	15.53	-163.40	-4,701.00	-1,578.93	5,175.47	5,143.10	32.37	159.879		
4,900.00	4,881.83	4,444.53	4,433.24	17.78	15.90	-163.43	-4,706.74	-1,587.44	5,194.10	5,160.99	33.11	156.884		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance				Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			Minimum Separation (usft)	
5,000.00	4,980.85	4,542.75	4,530.93	18.18	16.28	-163.46	-4,712.48	-1,595.95	5,212.73	5,178.88	33.85	154.015		
5,100.00	5,079.88	4,640.97	4,628.61	18.58	16.66	-163.48	-4,718.22	-1,604.46	5,231.36	5,196.78	34.58	151.264		
5,200.00	5,178.91	4,739.19	4,726.29	18.98	17.04	-163.51	-4,723.96	-1,612.97	5,249.99	5,214.67	35.32	148.625		
5,300.00	5,277.93	4,837.41	4,823.97	19.38	17.42	-163.54	-4,729.70	-1,621.48	5,268.62	5,232.56	36.06	146.090		
5,400.00	5,376.96	4,935.63	4,921.65	19.78	17.80	-163.56	-4,735.44	-1,629.99	5,287.26	5,250.45	36.81	143.655		
5,500.00	5,475.99	5,033.85	5,019.33	20.18	18.18	-163.59	-4,741.18	-1,638.51	5,305.89	5,268.35	37.55	141.314		
5,600.00	5,575.01	15,283.47	10,572.72	20.58	87.43	-96.84	145.34	-1,811.26	5,297.22	5,238.50	58.72	90.211		
5,700.00	5,674.04	15,283.47	10,572.72	20.98	87.43	-97.30	145.34	-1,811.26	5,202.09	5,142.93	59.16	87.940		
5,800.00	5,773.07	15,283.47	10,572.72	21.39	87.43	-97.76	145.34	-1,811.26	5,107.15	5,047.54	59.61	85.682		
5,898.39	5,870.50	15,283.47	10,572.72	21.78	87.43	-98.21	145.34	-1,811.26	5,013.93	4,953.87	60.06	83.476		
5,900.00	5,872.09	15,283.47	10,572.72	21.79	87.43	-98.22	145.34	-1,811.26	5,012.40	4,952.33	60.07	83.440		
6,000.00	5,971.24	15,283.47	10,572.72	22.19	87.43	-98.66	145.34	-1,811.26	4,917.83	4,857.27	60.56	81.209		
6,100.00	6,070.60	15,283.47	10,572.72	22.58	87.43	-99.03	145.34	-1,811.26	4,823.43	4,762.36	61.07	78.987		
6,200.00	6,170.14	15,283.47	10,572.72	22.97	87.43	-99.36	145.34	-1,811.26	4,729.23	4,667.63	61.60	76.776		
6,300.00	6,269.83	15,283.47	10,572.72	23.35	87.43	-99.62	145.34	-1,811.26	4,635.28	4,573.13	62.15	74.578		
6,400.00	6,369.65	15,283.47	10,572.72	23.71	87.43	-99.82	145.34	-1,811.26	4,541.63	4,478.89	62.74	72.392		
6,500.00	6,469.55	15,283.47	10,572.72	24.07	87.43	-99.97	145.34	-1,811.26	4,448.32	4,384.97	63.35	70.221		
6,600.00	6,569.52	15,283.47	10,572.72	24.43	87.43	-100.06	145.34	-1,811.26	4,355.40	4,291.41	63.99	68.067		
6,698.49	6,668.00	15,283.47	10,572.72	24.77	87.43	-100.09	145.34	-1,811.26	4,264.33	4,199.68	64.65	65.961		
6,700.00	6,669.51	15,283.47	10,572.72	24.77	87.43	-100.09	145.34	-1,811.26	4,262.94	4,198.28	64.66	65.930		
6,800.00	6,769.51	15,283.47	10,572.72	25.11	87.43	-100.09	145.34	-1,811.26	4,170.89	4,105.53	65.36	63.811		
6,900.00	6,869.51	15,283.47	10,572.72	25.45	87.43	-100.09	145.34	-1,811.26	4,079.22	4,013.12	66.10	61.714		
7,000.00	6,969.51	15,283.47	10,572.72	25.80	87.43	-100.09	145.34	-1,811.26	3,987.95	3,921.08	66.87	59.640		
7,100.00	7,069.51	15,283.47	10,572.72	26.14	87.43	-100.09	145.34	-1,811.26	3,897.10	3,829.43	67.67	57.589		
7,200.00	7,169.51	15,283.47	10,572.72	26.48	87.43	-100.09	145.34	-1,811.26	3,806.72	3,738.21	68.51	55.562		
7,300.00	7,269.51	15,283.47	10,572.72	26.82	87.43	-100.09	145.34	-1,811.26	3,716.83	3,647.43	69.39	53.561		
7,400.00	7,369.51	15,283.47	10,572.72	27.17	87.43	-100.09	145.34	-1,811.26	3,627.47	3,557.15	70.32	51.586		
7,500.00	7,469.51	15,283.47	10,572.72	27.51	87.43	-100.09	145.34	-1,811.26	3,538.67	3,467.38	71.29	49.639		
7,600.00	7,569.51	15,283.47	10,572.72	27.85	87.43	-100.09	145.34	-1,811.26	3,450.49	3,378.19	72.31	47.720		
7,700.00	7,669.51	15,283.47	10,572.72	28.20	87.43	-100.09	145.34	-1,811.26	3,362.97	3,289.60	73.38	45.832		
7,800.00	7,769.51	15,283.47	10,572.72	28.54	87.43	-100.09	145.34	-1,811.26	3,276.17	3,201.67	74.50	43.975		
7,900.00	7,869.51	15,283.47	10,572.72	28.89	87.43	-100.09	145.34	-1,811.26	3,190.14	3,114.46	75.68	42.151		
8,000.00	7,969.51	15,283.47	10,572.72	29.24	87.43	-100.09	145.34	-1,811.26	3,104.95	3,028.02	76.93	40.362		
8,100.00	8,069.51	15,283.47	10,572.72	29.58	87.43	-100.09	145.34	-1,811.26	3,020.66	2,942.43	78.24	38.610		
8,200.00	8,169.51	15,283.47	10,572.72	29.93	87.43	-100.09	145.34	-1,811.26	2,937.36	2,857.75	79.61	36.895		
8,300.00	8,269.51	15,283.47	10,572.72	30.27	87.43	-100.09	145.34	-1,811.26	2,855.13	2,774.07	81.06	35.221		
8,400.00	8,369.51	15,283.47	10,572.72	30.62	87.43	-100.09	145.34	-1,811.26	2,774.07	2,691.48	82.59	33.588		
8,500.00	8,469.51	15,283.47	10,572.72	30.97	87.43	-100.09	145.34	-1,811.26	2,694.29	2,610.09	84.20	32.000		
8,600.00	8,569.51	15,283.47	10,572.72	31.32	87.43	-100.09	145.34	-1,811.26	2,615.89	2,530.01	85.88	30.458		
8,700.00	8,669.51	15,283.47	10,572.72	31.66	87.43	-100.09	145.34	-1,811.26	2,539.01	2,451.36	87.66	28.965		
8,800.00	8,769.51	15,283.47	10,572.72	32.01	87.43	-100.09	145.34	-1,811.26	2,463.79	2,374.28	89.52	27.524		
8,900.00	8,869.51	15,283.47	10,572.72	32.36	87.43	-100.09	145.34	-1,811.26	2,390.39	2,298.93	91.46	26.136		
9,000.00	8,969.51	15,283.47	10,572.72	32.71	87.43	-100.09	145.34	-1,811.26	2,318.98	2,225.49	93.49	24.804		
9,100.00	9,069.51	15,283.47	10,572.72	33.06	87.43	-100.09	145.34	-1,811.26	2,249.75	2,154.14	95.61	23.531		
9,200.00	9,169.51	15,283.47	10,572.72	33.40	87.43	-100.09	145.34	-1,811.26	2,182.90	2,085.10	97.80	22.319		
9,300.00	9,269.51	15,283.47	10,572.72	33.75	87.43	-100.09	145.34	-1,811.26	2,118.67	2,018.60	100.07	21.172		
9,400.00	9,369.51	15,283.47	10,572.72	34.10	87.43	-100.09	145.34	-1,811.26	2,057.30	1,954.90	102.39	20.092		
9,500.00	9,469.51	15,283.47	10,572.72	34.45	87.43	-100.09	145.34	-1,811.26	1,999.04	1,894.28	104.76	19.082		
9,600.00	9,569.51	15,283.47	10,572.72	34.80	87.43	-100.09	145.34	-1,811.26	1,944.19	1,837.03	107.16	18.144		
9,700.00	9,669.51	15,283.47	10,572.72	35.15	87.43	-100.09	145.34	-1,811.26	1,893.03	1,783.48	109.55	17.280		
9,800.00	9,769.51	15,283.47	10,572.72	35.50	87.43	-100.09	145.34	-1,811.26	1,845.88	1,733.96	111.92	16.493		
9,900.00	9,869.51	15,283.47	10,572.72	35.85	87.43	-100.09	145.34	-1,811.26	1,803.04	1,688.82	114.22	15.786		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
10,000.00	9,969.51	15,283.47	10,572.72	36.20	87.43	-100.09	145.34	-1,811.26	1,764.84	1,648.42	116.42	15.159		
10,100.00	10,069.51	15,283.47	10,572.72	36.55	87.43	-100.09	145.34	-1,811.26	1,731.58	1,613.10	118.48	14.615		
10,200.00	10,169.51	15,283.47	10,572.72	36.90	87.43	-100.09	145.34	-1,811.26	1,703.54	1,583.19	120.35	14.155		
10,300.00	10,269.51	15,283.47	10,572.72	37.25	87.43	-100.09	145.34	-1,811.26	1,681.00	1,559.01	121.99	13.780		
10,400.00	10,369.51	15,283.47	10,572.72	37.60	87.43	-100.09	145.34	-1,811.26	1,664.17	1,540.81	123.36	13.490		
10,500.00	10,469.51	15,283.47	10,572.72	37.95	87.43	-100.09	145.34	-1,811.26	1,653.22	1,528.79	124.43	13.286		
10,600.00	10,569.51	15,283.47	10,572.72	38.31	87.43	-100.09	145.34	-1,811.26	1,648.29	1,523.11	125.18	13.167		
10,631.51	10,601.02	15,283.47	10,572.72	38.42	87.43	-100.09	145.34	-1,811.26	1,647.99	1,522.64	125.35	13.147	CC, ES	
10,700.00	10,669.51	15,283.47	10,572.72	38.66	87.43	-100.09	145.34	-1,811.26	1,649.41	1,523.82	125.59	13.133	SF	
10,800.00	10,769.51	15,283.47	10,572.72	39.01	87.43	-100.09	145.34	-1,811.26	1,656.58	1,530.91	125.67	13.182		
10,900.00	10,869.51	15,283.47	10,572.72	39.36	87.43	-100.09	145.34	-1,811.26	1,669.71	1,544.30	125.41	13.314		
11,000.00	10,969.51	15,283.47	10,572.72	39.71	87.43	-100.09	145.34	-1,811.26	1,688.68	1,563.82	124.86	13.525		
11,100.00	11,069.51	15,283.47	10,572.72	40.06	87.43	-100.09	145.34	-1,811.26	1,713.28	1,589.25	124.03	13.813		
11,200.00	11,169.51	15,283.47	10,572.72	40.41	87.43	-100.09	145.34	-1,811.26	1,743.28	1,620.32	122.97	14.177		
11,300.00	11,269.51	15,283.47	10,572.72	40.77	87.43	-100.09	145.34	-1,811.26	1,778.41	1,656.70	121.71	14.612		
11,400.00	11,369.51	15,283.47	10,572.72	41.12	87.43	-100.09	145.34	-1,811.26	1,818.36	1,698.06	120.31	15.115		
11,500.00	11,469.51	15,283.47	10,572.72	41.47	87.43	-100.09	145.34	-1,811.26	1,862.83	1,744.04	118.79	15.682		
11,600.00	11,569.51	15,283.47	10,572.72	41.82	87.43	-100.09	145.34	-1,811.26	1,911.50	1,794.30	117.20	16.310		
11,700.00	11,669.51	15,283.47	10,572.72	42.18	87.43	-100.09	145.34	-1,811.26	1,964.06	1,848.50	115.56	16.995		
11,800.00	11,769.51	15,283.47	10,572.72	42.53	87.43	-100.09	145.34	-1,811.26	2,020.21	1,906.28	113.92	17.733		
11,900.00	11,869.51	15,283.47	10,572.72	42.88	87.43	-100.09	145.34	-1,811.26	2,079.65	1,967.35	112.30	18.519		
11,902.93	11,872.44	15,283.47	10,572.72	42.89	87.43	-100.09	145.34	-1,811.26	2,081.43	1,969.18	112.25	18.543		
11,950.00	11,919.46	15,283.47	10,572.72	43.04	87.43	-100.02	145.34	-1,811.26	2,110.51	1,999.01	111.49	18.929		
12,000.00	11,969.05	15,283.47	10,572.72	43.19	87.43	-99.80	145.34	-1,811.26	2,141.93	2,031.22	110.71	19.348		
12,050.00	12,017.90	15,283.47	10,572.72	43.32	87.43	-99.43	145.34	-1,811.26	2,173.65	2,063.70	109.95	19.769		
12,100.00	12,065.65	15,283.47	10,572.72	43.44	87.43	-98.92	145.34	-1,811.26	2,205.42	2,096.19	109.23	20.191		
12,150.00	12,111.93	15,283.47	10,572.72	43.56	87.43	-98.26	145.34	-1,811.26	2,237.01	2,128.46	108.55	20.608		
12,200.00	12,156.38	15,283.47	10,572.72	43.66	87.43	-97.47	145.34	-1,811.26	2,268.18	2,160.26	107.91	21.018		
12,250.00	12,198.67	15,283.47	10,572.72	43.75	87.43	-96.55	145.34	-1,811.26	2,298.72	2,191.39	107.33	21.418		
12,300.00	12,238.48	15,283.47	10,572.72	43.83	87.43	-95.51	145.34	-1,811.26	2,328.42	2,221.63	106.79	21.804		
12,350.00	12,275.51	15,283.47	10,572.72	43.90	87.43	-94.35	145.34	-1,811.26	2,357.11	2,250.80	106.31	22.172		
12,400.00	12,309.46	15,283.47	10,572.72	43.97	87.43	-93.10	145.34	-1,811.26	2,384.59	2,278.71	105.88	22.521		
12,450.00	12,340.09	15,283.47	10,572.72	44.04	87.43	-91.75	145.34	-1,811.26	2,410.70	2,305.19	105.51	22.848		
12,500.00	12,367.17	15,283.47	10,572.72	44.10	87.43	-90.34	145.34	-1,811.26	2,435.30	2,330.10	105.20	23.150		
12,550.00	12,390.47	15,266.87	10,572.56	44.16	87.19	-89.42	128.74	-1,811.26	2,458.18	2,353.39	104.79	23.458		
12,600.00	12,409.84	15,221.82	10,572.14	44.22	86.51	-89.42	83.70	-1,811.26	2,478.63	2,374.45	104.19	23.791		
12,650.00	12,425.11	15,175.25	10,571.70	44.28	85.82	-89.42	37.12	-1,811.26	2,496.31	2,392.68	103.64	24.087		
12,700.00	12,436.18	15,127.51	10,571.24	44.35	85.11	-89.42	-10.61	-1,811.26	2,511.08	2,407.94	103.15	24.345		
12,750.00	12,442.96	15,078.96	10,570.78	44.42	84.38	-89.42	-59.16	-1,811.26	2,522.82	2,420.10	102.72	24.560		
12,800.00	12,445.39	15,029.98	10,570.32	44.49	83.66	-89.42	-108.14	-1,811.26	2,531.45	2,429.09	102.36	24.731		
12,807.86	12,445.38	15,022.27	10,570.25	44.51	83.54	-89.42	-115.85	-1,811.26	2,532.51	2,430.21	102.31	24.754		
12,900.00	12,444.58	14,931.82	10,569.39	44.68	82.21	-89.43	-206.30	-1,811.26	2,544.62	2,442.88	101.74	25.011		
13,000.00	12,443.72	14,833.66	10,568.46	44.94	80.76	-89.43	-304.45	-1,811.26	2,557.83	2,456.67	101.16	25.285		
13,100.00	12,442.86	14,735.49	10,567.53	45.27	79.32	-89.44	-402.61	-1,811.26	2,571.12	2,470.50	100.82	25.552		
13,200.00	12,442.00	14,637.33	10,566.60	45.66	77.89	-89.45	-500.77	-1,811.26	2,584.48	2,484.35	100.12	25.813		
13,300.00	12,441.14	14,539.17	10,565.68	46.11	76.47	-89.45	-598.93	-1,811.26	2,597.91	2,498.24	99.66	26.067		
13,400.00	12,440.28	14,441.01	10,564.75	46.63	75.05	-89.46	-697.09	-1,811.26	2,611.41	2,512.16	99.24	26.313		
13,500.00	12,439.42	14,342.84	10,563.82	47.20	73.65	-89.46	-795.25	-1,811.26	2,624.98	2,526.11	98.86	26.552		
13,600.00	12,438.56	14,244.68	10,562.89	47.83	72.25	-89.47	-893.41	-1,811.26	2,638.61	2,540.09	98.52	26.783		
13,700.00	12,437.70	14,146.52	10,561.96	48.52	70.86	-89.47	-991.56	-1,811.26	2,652.32	2,554.10	98.21	27.006		
13,727.27	12,437.47	14,119.75	10,561.71	48.71	70.49	-89.47	-1,018.33	-1,811.26	2,656.07	2,557.93	98.14	27.065		
13,800.00	12,436.84	14,048.19	10,561.03	49.25	69.48	-89.48	-1,089.89	-1,811.26	2,665.43	2,567.50	97.93	27.218		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
13,900.00	12,435.98	13,949.30	10,560.09	50.02	68.11	-89.48	-1,188.77	-1,811.26	2,676.21	2,578.58	97.63	27.411		
14,000.00	12,435.11	13,849.96	10,559.15	50.83	66.74	-89.49	-1,288.11	-1,811.26	2,684.52	2,587.21	97.32	27.586		
14,100.00	12,434.25	13,750.28	10,558.21	51.66	65.37	-89.49	-1,387.79	-1,811.26	2,690.33	2,593.35	96.98	27.740		
14,200.00	12,433.39	13,650.38	10,557.26	52.52	64.02	-89.49	-1,487.68	-1,811.26	2,693.62	2,596.98	96.64	27.873		
14,259.68	12,432.87	13,609.29	10,556.70	53.04	63.47	-89.49	-1,547.34	-1,811.26	2,694.37	2,597.75	96.62	27.886		
14,300.00	12,432.52	13,550.39	10,556.32	53.40	62.68	-89.49	-1,587.66	-1,811.26	2,694.57	2,598.29	96.28	27.986		
14,400.00	12,431.66	13,450.39	10,555.37	54.32	61.36	-89.49	-1,687.66	-1,811.26	2,695.08	2,599.12	95.96	28.087		
14,500.00	12,430.80	13,350.39	10,554.42	55.27	60.05	-89.49	-1,787.65	-1,811.26	2,695.58	2,599.91	95.67	28.176		
14,600.00	12,429.94	13,250.40	10,553.48	56.25	58.76	-89.49	-1,887.64	-1,811.26	2,696.09	2,600.67	95.42	28.254		
14,700.00	12,429.08	13,150.40	10,552.53	57.26	57.49	-89.49	-1,987.64	-1,811.26	2,696.60	2,601.38	95.22	28.321		
14,800.00	12,428.22	13,050.40	10,551.58	58.31	56.24	-89.49	-2,087.63	-1,811.26	2,697.10	2,602.06	95.05	28.377		
14,900.00	12,427.36	12,950.40	10,550.64	59.38	55.01	-89.49	-2,187.62	-1,811.26	2,697.61	2,602.69	94.91	28.422		
15,000.00	12,426.50	12,850.40	10,549.69	60.47	53.80	-89.49	-2,287.62	-1,811.26	2,698.11	2,603.29	94.82	28.455		
15,100.00	12,425.64	12,750.41	10,548.74	61.60	52.62	-89.49	-2,387.61	-1,811.26	2,698.62	2,603.85	94.77	28.476		
15,200.00	12,424.78	12,650.41	10,547.80	62.74	51.47	-89.49	-2,487.61	-1,811.26	2,699.12	2,604.37	94.75	28.486		
15,300.00	12,423.92	12,550.41	10,546.85	63.91	50.34	-89.49	-2,587.60	-1,811.26	2,699.63	2,604.86	94.78	28.485		
15,400.00	12,423.06	12,450.41	10,545.91	65.10	49.24	-89.49	-2,687.59	-1,811.26	2,700.14	2,605.30	94.84	28.471		
15,500.00	12,422.20	12,350.41	10,544.96	66.31	48.17	-89.49	-2,787.59	-1,811.26	2,700.64	2,605.70	94.94	28.445		
15,600.00	12,421.34	12,250.42	10,544.01	67.54	47.14	-89.49	-2,887.58	-1,811.26	2,701.15	2,606.06	95.09	28.407		
15,700.00	12,420.48	12,150.42	10,543.07	68.79	46.14	-89.49	-2,987.57	-1,811.26	2,701.65	2,606.38	95.28	28.356		
15,800.00	12,419.62	12,050.42	10,542.12	70.06	45.18	-89.49	-3,087.57	-1,811.26	2,702.16	2,606.65	95.51	28.293		
15,900.00	12,418.76	11,950.42	10,541.17	71.34	44.26	-89.49	-3,187.56	-1,811.26	2,702.67	2,606.88	95.78	28.217		
16,000.00	12,417.90	11,850.42	10,540.23	72.63	43.39	-89.49	-3,287.55	-1,811.26	2,703.17	2,607.07	96.10	28.128		
16,100.00	12,417.03	11,750.43	10,539.28	73.94	42.56	-89.49	-3,387.55	-1,811.26	2,703.68	2,607.21	96.47	28.026		
16,200.00	12,416.17	11,650.43	10,538.33	75.27	41.78	-89.49	-3,487.54	-1,811.26	2,704.19	2,607.30	96.89	27.910		
16,300.00	12,415.31	11,550.43	10,537.39	76.60	41.05	-89.49	-3,587.54	-1,811.26	2,704.69	2,607.34	97.36	27.782		
16,400.00	12,414.45	11,450.43	10,536.44	77.95	40.37	-89.49	-3,687.53	-1,811.26	2,705.20	2,607.32	97.87	27.640		
16,500.00	12,413.59	11,350.43	10,535.49	79.31	39.76	-89.49	-3,787.52	-1,811.26	2,705.70	2,607.26	98.45	27.484		
16,600.00	12,412.73	11,245.10	10,534.50	80.69	39.16	-89.65	-3,892.85	-1,811.25	2,706.21	2,607.16	99.05	27.322		
16,700.00	12,411.87	11,140.00	10,531.03	82.07	38.74	-97.38	-4,257.76	-1,786.69	2,702.39	2,583.00	119.39	22.635		
16,800.00	12,411.01	11,040.00	10,529.99	83.46	37.33	-96.79	-4,336.05	-1,775.59	2,693.01	2,593.77	99.24	27.137		
16,900.00	12,410.15	10,775.00	10,528.23	84.87	37.26	-94.59	-4,360.69	-1,771.81	2,685.93	2,585.66	100.27	26.788		
17,000.00	12,409.29	10,763.09	10,526.93	86.28	37.23	-91.99	-4,372.40	-1,770.01	2,681.71	2,580.36	101.35	26.460		
17,084.31	12,408.56	10,750.00	10,525.16	87.47	37.19	-89.88	-4,385.22	-1,768.05	2,680.54	2,578.31	102.23	26.221		
17,100.00	12,408.43	10,750.00	10,525.16	87.70	37.19	-89.41	-4,385.22	-1,768.05	2,680.59	2,578.18	102.41	26.176		
17,200.00	12,407.57	10,725.00	10,520.79	89.13	37.13	-87.17	-4,409.54	-1,764.32	2,682.39	2,579.04	103.35	25.954		
17,300.00	12,406.71	10,700.00	10,515.15	90.56	37.06	-84.92	-4,433.61	-1,760.62	2,687.26	2,583.00	104.26	25.774		
17,400.00	12,405.85	10,685.23	10,511.22	92.01	37.02	-82.40	-4,447.68	-1,758.46	2,695.13	2,589.92	105.21	25.618		
17,500.00	12,404.99	10,675.00	10,508.24	93.46	37.00	-79.77	-4,457.36	-1,756.98	2,706.09	2,599.95	106.14	25.496		
17,600.00	12,404.13	10,650.00	10,500.08	94.91	36.95	-77.56	-4,480.71	-1,753.40	2,719.92	2,613.00	106.92	25.438		
17,700.00	12,403.27	10,625.00	10,490.69	96.38	36.91	-75.37	-4,503.61	-1,749.88	2,736.83	2,629.17	107.66	25.422		
17,800.00	12,402.41	10,613.92	10,486.15	97.85	36.90	-72.88	-4,513.61	-1,748.35	2,756.62	2,648.17	108.44	25.420		
17,900.00	12,401.55	10,600.00	10,480.11	99.32	36.89	-70.51	-4,526.00	-1,746.45	2,779.36	2,670.20	109.16	25.460		
18,000.00	12,400.68	10,575.00	10,468.35	100.81	36.87	-68.43	-4,547.80	-1,743.10	2,805.00	2,695.25	109.75	25.558		
18,100.00	12,399.82	10,575.00	10,468.35	102.29	36.87	-65.90	-4,547.80	-1,743.10	2,833.47	2,723.00	110.47	25.650		
18,200.00	12,398.96	10,550.00	10,455.46	103.79	36.84	-63.94	-4,568.97	-1,739.86	2,864.57	2,753.61	110.95	25.818		
18,300.00	12,398.10	10,536.73	10,448.17	105.28	36.83	-61.81	-4,579.93	-1,738.18	2,898.44	2,786.97	111.47	26.002		
18,400.00	12,397.24	10,525.00	10,441.46	106.78	36.81	-59.74	-4,589.44	-1,736.72	2,934.94	2,822.99	111.95	26.216		
18,500.00	12,396.38	10,500.00	10,426.40	108.29	36.78	-57.94	-4,609.16	-1,733.69	2,974.08	2,861.78	112.29	26.485		
18,600.00	12,395.52	10,500.00	10,426.40	109.80	36.78	-55.84	-4,609.16	-1,733.69	3,015.50	2,902.75	112.76	26.744		
18,700.00	12,394.66	10,475.00	10,410.32	111.32	36.75	-54.18	-4,628.08	-1,730.79	3,059.50	2,946.49	113.01	27.073		
18,800.00	12,393.80	10,475.00	10,410.32	112.84	36.75	-52.26	-4,628.08	-1,730.79	3,105.62	2,992.24	113.38	27.391		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
18,900.00	12,392.94	10,481.92	10,401.51	114.36	36.73	-50.59	-4,637.63	-1,729.32	3,154.06	3,040.43	113.63	27.758	
19,000.00	12,392.08	10,450.00	10,393.25	115.89	36.71	-48.98	-4,646.13	-1,728.02	3,204.64	3,090.79	113.84	28.150	
19,100.00	12,391.22	10,450.00	10,393.25	117.42	36.71	-47.32	-4,646.13	-1,728.02	3,257.36	3,143.27	114.09	28.552	
19,200.00	12,390.36	10,425.00	10,375.26	118.95	36.67	-45.97	-4,663.28	-1,725.39	3,311.91	3,197.75	114.16	29.010	
19,300.00	12,389.50	10,425.00	10,375.26	120.49	36.67	-44.47	-4,663.28	-1,725.39	3,368.38	3,254.04	114.34	29.459	
19,400.00	12,388.64	10,412.47	10,365.90	122.03	36.64	-43.14	-4,671.52	-1,724.13	3,426.67	3,312.24	114.42	29.947	
19,500.00	12,387.78	10,400.00	10,356.38	123.57	36.62	-41.86	-4,679.47	-1,722.90	3,486.71	3,372.23	114.48	30.457	
19,600.00	12,386.92	10,400.00	10,356.38	125.12	36.62	-40.57	-4,679.47	-1,722.90	3,548.39	3,433.82	114.57	30.971	
19,700.00	12,386.06	10,387.44	10,346.57	126.66	36.60	-39.41	-4,687.23	-1,721.71	3,611.62	3,497.04	114.58	31.520	
19,800.00	12,385.20	10,375.00	10,336.66	128.22	36.57	-38.31	-4,694.67	-1,720.57	3,676.39	3,561.82	114.57	32.087	
19,900.00	12,384.33	10,375.00	10,336.66	129.77	36.57	-37.19	-4,694.67	-1,720.57	3,742.56	3,627.96	114.60	32.658	
20,000.00	12,383.47	10,375.00	10,336.66	131.33	36.57	-36.13	-4,694.67	-1,720.57	3,810.20	3,695.60	114.60	33.247	
20,100.00	12,382.61	10,350.00	10,316.18	132.89	36.51	-35.23	-4,708.82	-1,718.40	3,879.02	3,764.51	114.50	33.877	
20,200.00	12,381.75	10,350.00	10,316.18	134.45	36.51	-34.26	-4,708.82	-1,718.40	3,949.02	3,834.54	114.48	34.495	
20,300.00	12,380.89	10,350.00	10,316.18	136.01	36.51	-33.34	-4,708.82	-1,718.40	4,020.30	3,905.85	114.44	35.130	
20,400.00	12,380.03	10,350.00	10,316.18	137.58	36.51	-32.46	-4,708.82	-1,718.40	4,092.77	3,978.38	114.39	35.779	
20,500.00	12,379.17	10,325.00	10,294.96	139.15	36.46	-31.70	-4,721.90	-1,716.40	4,166.19	4,051.93	114.26	36.462	
20,600.00	12,378.31	10,325.00	10,294.96	140.72	36.46	-30.90	-4,721.90	-1,716.40	4,240.57	4,126.38	114.20	37.134	
20,700.00	12,377.45	10,325.00	10,294.96	142.29	36.46	-30.13	-4,721.90	-1,716.40	4,315.99	4,201.87	114.12	37.820	
20,800.00	12,376.59	10,325.00	10,294.96	143.86	36.46	-29.40	-4,721.90	-1,716.40	4,392.40	4,278.36	114.04	38.518	
20,900.00	12,375.73	10,312.73	10,284.30	145.44	36.42	-28.73	-4,727.91	-1,715.47	4,469.56	4,355.64	113.92	39.234	
21,000.00	12,374.87	10,300.00	10,273.09	147.02	36.39	-28.08	-4,733.85	-1,714.56	4,547.69	4,433.89	113.80	39.961	
21,100.00	12,374.01	10,300.00	10,273.09	148.59	36.39	-27.44	-4,733.85	-1,714.56	4,626.49	4,512.79	113.71	40.687	
21,200.00	12,373.15	10,300.00	10,273.09	150.18	36.39	-26.82	-4,733.85	-1,714.56	4,706.10	4,592.49	113.61	41.423	
21,300.00	12,372.29	10,300.00	10,273.09	151.76	36.39	-26.23	-4,733.85	-1,714.56	4,786.47	4,672.96	113.51	42.169	
21,400.00	12,371.43	10,300.00	10,273.09	153.34	36.39	-25.66	-4,733.85	-1,714.56	4,867.56	4,754.16	113.40	42.923	
21,500.00	12,370.57	10,286.21	10,260.76	154.93	36.36	-25.14	-4,739.96	-1,713.62	4,949.14	4,835.86	113.28	43.690	
21,600.00	12,369.71	10,275.00	10,250.61	156.52	36.33	-24.63	-4,744.67	-1,712.90	5,031.51	4,918.35	113.16	44.465	
21,700.00	12,368.85	10,275.00	10,250.61	158.11	36.33	-24.13	-4,744.67	-1,712.90	5,114.37	5,001.32	113.05	45.239	
21,800.00	12,367.98	10,275.00	10,250.61	159.70	36.33	-23.64	-4,744.67	-1,712.90	5,197.84	5,084.89	112.95	46.020	
21,900.00	12,367.12	10,275.00	10,250.61	161.29	36.33	-23.18	-4,744.67	-1,712.90	5,281.88	5,169.04	112.84	46.808	
22,000.00	12,366.26	10,275.00	10,250.61	162.88	36.33	-22.73	-4,744.67	-1,712.90	5,366.47	5,253.73	112.74	47.602	
22,100.00	12,365.40	10,275.00	10,250.61	164.47	36.33	-22.29	-4,744.67	-1,712.90	5,451.57	5,338.94	112.63	48.401	
22,200.00	12,364.54	10,261.33	10,238.09	166.07	36.29	-21.89	-4,750.08	-1,712.07	5,536.97	5,424.45	112.52	49.210	
22,300.00	12,363.68	10,250.00	10,227.59	167.67	36.26	-21.50	-4,754.30	-1,711.43	5,623.02	5,510.61	112.41	50.023	
22,400.00	12,362.82	10,250.00	10,227.59	169.26	36.26	-21.11	-4,754.30	-1,711.43	5,709.39	5,597.08	112.31	50.836	
22,500.00	12,361.96	10,250.00	10,227.59	170.86	36.26	-20.73	-4,754.30	-1,711.43	5,796.20	5,683.98	112.21	51.653	
22,565.16	12,361.40	10,250.00	10,227.59	171.78	36.26	-20.49	-4,754.30	-1,711.43	5,852.98	5,738.83	114.15	51.275	



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys													Offset Site Error: 0.00 usft	
Survey Program: 143-VESSEL_GYRO_DROP, 9907-MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-162.21	-4,573.42	-1,467.57	4,803.20					
100.00	100.00	103.39	103.39	0.13	0.08	-162.21	-4,573.17	-1,467.21	4,802.88	4,802.67	0.21	N/A		
200.00	200.00	207.03	207.02	0.49	0.22	-162.22	-4,572.60	-1,466.24	4,802.06	4,801.35	0.71	6,753.732		
300.00	300.00	293.17	293.16	0.85	0.37	-162.23	-4,572.37	-1,465.24	4,801.46	4,800.23	1.22	3,933.060		
400.00	400.00	373.75	373.73	1.21	0.52	-162.24	-4,572.46	-1,464.23	4,801.18	4,799.46	1.72	2,790.960		
410.02	410.02	381.44	381.42	1.25	0.53	-162.24	-4,572.49	-1,464.13	4,801.18	4,799.41	1.77	2,713.091		
500.00	500.00	450.85	450.82	1.57	0.65	-162.26	-4,572.95	-1,463.19	4,801.38	4,799.16	2.21	2,169.431		
600.00	600.00	529.34	529.30	1.93	0.79	-162.27	-4,573.80	-1,462.22	4,802.03	4,799.33	2.71	1,773.018		
700.00	700.00	614.06	614.01	2.29	0.94	-162.28	-4,574.98	-1,461.42	4,803.07	4,799.86	3.21	1,494.392		
800.00	800.00	718.14	718.07	2.64	1.12	-162.30	-4,576.48	-1,460.69	4,804.23	4,800.48	3.75	1,279.868		
900.00	900.00	795.08	795.01	3.00	1.26	-162.31	-4,577.71	-1,460.32	4,805.60	4,801.35	4.25	1,131.657		
1,000.00	1,000.00	887.55	887.46	3.36	1.42	-162.31	-4,579.40	-1,460.17	4,807.29	4,802.52	4.77	1,008.486		
1,100.00	1,100.00	960.39	960.28	3.72	1.55	-162.32	-4,580.84	-1,460.38	4,809.28	4,804.03	5.25	915.546		
1,200.00	1,200.00	1,023.92	1,023.79	4.08	1.66	-162.32	-4,582.40	-1,461.03	4,811.94	4,806.22	5.72	840.872		
1,300.00	1,300.00	1,090.88	1,090.70	4.44	1.78	-162.31	-4,584.48	-1,462.37	4,815.46	4,809.27	6.20	776.928		
1,400.00	1,400.00	1,164.00	1,163.75	4.79	1.91	-162.29	-4,587.02	-1,464.53	4,819.62	4,812.93	6.68	720.971		
1,500.00	1,500.00	1,241.36	1,241.00	5.15	2.05	-162.27	-4,589.72	-1,467.54	4,824.13	4,816.95	7.18	671.918		
1,600.00	1,600.00	1,303.71	1,303.23	5.51	2.16	-162.24	-4,592.04	-1,470.63	4,829.24	4,821.59	7.65	631.493		
1,700.00	1,700.00	1,352.92	1,352.30	5.87	2.25	-162.22	-4,594.23	-1,473.59	4,835.31	4,827.22	8.09	597.646		
1,800.00	1,800.00	1,455.47	1,454.46	6.23	2.44	-162.15	-4,599.16	-1,481.07	4,842.13	4,833.50	8.63	560.789		
1,900.00	1,900.00	1,555.69	1,554.24	6.59	2.63	-162.07	-4,603.26	-1,489.51	4,848.63	4,839.45	9.18	528.408		
2,000.00	2,000.00	1,647.97	1,646.08	6.95	2.80	-161.99	-4,607.01	-1,497.68	4,855.25	4,845.55	9.70	500.425		
2,100.00	2,100.00	1,752.09	1,749.72	7.30	2.99	-161.91	-4,611.35	-1,506.73	4,861.92	4,851.67	10.25	474.318		
2,200.00	2,200.00	1,867.79	1,864.90	7.66	3.20	-161.81	-4,615.94	-1,516.67	4,868.38	4,857.56	10.82	449.950		
2,300.00	2,300.00	1,972.16	1,968.81	8.02	3.39	-161.73	-4,619.89	-1,525.59	4,874.67	4,863.30	11.37	428.834		
2,400.00	2,400.00	2,079.70	2,075.89	8.38	3.59	-161.64	-4,623.76	-1,534.74	4,880.77	4,868.85	11.92	409.447		
2,500.00	2,500.00	2,186.91	2,182.64	8.74	3.78	-161.55	-4,627.49	-1,543.90	4,886.79	4,874.31	12.47	391.811		
2,600.00	2,599.99	2,272.74	2,268.11	9.10	3.94	-161.49	-4,630.40	-1,551.21	4,893.38	4,880.40	12.98	376.903		
2,700.00	2,699.96	2,351.48	2,346.46	9.45	4.08	-161.44	-4,633.35	-1,558.48	4,901.80	4,888.32	13.48	363.635		
2,800.00	2,799.86	2,450.96	2,445.36	9.81	4.26	-161.37	-4,636.86	-1,568.57	4,911.63	4,897.61	14.02	350.391		
2,900.00	2,899.68	2,542.07	2,535.95	10.17	4.43	-161.33	-4,640.17	-1,577.83	4,922.85	4,908.31	14.54	338.598		
3,000.00	2,999.37	2,630.88	2,624.23	10.53	4.59	-161.30	-4,643.59	-1,586.79	4,935.53	4,920.48	15.06	327.824		
3,100.00	3,098.90	2,727.95	2,720.70	10.89	4.77	-161.28	-4,647.46	-1,596.88	4,949.72	4,934.13	15.59	317.524		
3,200.00	3,198.26	2,850.23	2,842.31	11.25	4.99	-161.26	-4,652.07	-1,608.81	4,964.73	4,948.56	16.17	307.013		
3,300.00	3,297.40	2,945.49	2,937.07	11.61	5.16	-161.27	-4,655.66	-1,617.78	4,980.93	4,964.23	16.70	298.230		
3,300.10	3,297.50	2,945.58	2,937.17	11.61	5.16	-161.27	-4,655.66	-1,617.79	4,980.95	4,964.25	16.70	298.222		
3,400.00	3,396.43	3,040.98	3,032.05	11.98	5.33	-161.29	-4,659.27	-1,626.99	4,997.85	4,980.62	17.23	290.001		
3,500.00	3,495.46	3,145.06	3,135.56	12.36	5.52	-161.31	-4,663.14	-1,637.19	5,014.76	4,996.98	17.78	281.975		
3,600.00	3,594.48	3,224.73	3,214.80	12.73	5.66	-161.34	-4,666.17	-1,644.83	5,031.70	5,013.41	18.29	275.139		
3,700.00	3,693.51	3,304.98	3,294.61	13.11	5.80	-161.38	-4,669.72	-1,652.48	5,049.16	5,030.37	18.79	268.669		
3,800.00	3,792.54	3,431.51	3,420.47	13.49	6.03	-161.38	-4,675.25	-1,664.25	5,066.54	5,047.15	19.39	261.262		
3,900.00	3,891.56	3,569.56	3,557.90	13.87	6.28	-161.37	-4,680.50	-1,676.18	5,083.15	5,063.14	20.02	253.961		
4,000.00	3,990.59	3,632.03	3,620.10	14.26	6.39	-161.43	-4,682.98	-1,681.45	5,099.82	5,079.33	20.49	248.915		
4,100.00	4,089.62	3,732.60	3,720.25	14.64	6.56	-161.47	-4,687.44	-1,689.50	5,116.83	5,095.79	21.04	243.221		
4,200.00	4,188.64	3,852.29	3,839.52	15.03	6.78	-161.50	-4,692.57	-1,698.20	5,133.46	5,111.83	21.63	237.369		
4,300.00	4,287.67	3,916.32	3,903.32	15.42	6.89	-161.56	-4,695.52	-1,702.63	5,150.29	5,128.19	22.10	233.010		
4,400.00	4,386.70	3,988.22	3,974.95	15.81	7.01	-161.63	-4,699.30	-1,707.64	5,167.74	5,145.14	22.60	228.701		
4,500.00	4,485.72	4,057.63	4,044.05	16.20	7.14	-161.69	-4,703.13	-1,712.92	5,185.66	5,162.58	23.08	224.646		
4,600.00	4,584.75	4,124.80	4,110.86	16.60	7.26	-161.75	-4,707.18	-1,718.48	5,204.24	5,180.67	23.57	220.832		
4,700.00	4,683.78	4,196.28	4,181.92	16.99	7.38	-161.80	-4,711.78	-1,724.77	5,223.36	5,199.30	24.06	217.110		
4,800.00	4,782.80	4,306.32	4,291.27	17.39	7.58	-161.82	-4,718.93	-1,734.78	5,242.66	5,218.03	24.63	212.815		
4,900.00	4,881.83	4,427.21	4,411.39	17.78	7.80	-161.83	-4,726.17	-1,746.31	5,261.64	5,236.41	25.24	208.500		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,000.00	4,980.85	4,559.34	4,542.75	18.18	8.03	-161.82	-4,732.82	-1,758.85	5,279.59	5,253.73	25.86	204.148	
5,100.00	5,079.88	4,635.25	4,618.18	18.58	8.17	-161.85	-4,736.65	-1,766.56	5,297.86	5,271.49	26.37	200.932	
5,200.00	5,178.91	4,726.06	4,708.38	18.98	8.33	-161.88	-4,741.56	-1,775.81	5,316.47	5,289.57	26.90	197.608	
5,300.00	5,277.93	4,831.80	4,813.21	19.38	8.52	-161.88	-4,747.01	-1,788.73	5,334.91	5,307.43	27.47	194.175	
5,400.00	5,376.96	4,927.09	4,908.06	19.78	8.69	-161.90	-4,752.10	-1,796.47	5,353.46	5,325.43	28.02	191.034	
5,500.00	5,475.99	5,056.12	5,036.24	20.18	8.92	-161.88	-4,758.57	-1,809.76	5,371.76	5,343.12	28.65	187.516	
5,600.00	5,575.01	5,145.60	5,125.21	20.58	9.08	-161.91	-4,762.98	-1,818.31	5,389.74	5,360.56	29.18	184.688	
5,700.00	5,674.04	5,237.48	5,216.56	20.98	9.25	-161.94	-4,767.82	-1,826.79	5,407.94	5,378.22	29.72	181.938	
5,800.00	5,773.07	5,346.19	5,324.66	21.39	9.44	-161.96	-4,773.54	-1,836.75	5,426.11	5,395.81	30.30	179.062	
5,898.39	5,870.50	5,474.04	5,451.86	21.78	9.67	-161.96	-4,779.85	-1,848.06	5,443.59	5,412.67	30.92	176.061	
5,900.00	5,872.09	5,476.01	5,453.82	21.79	9.67	-161.96	-4,779.95	-1,848.22	5,443.87	5,412.95	30.93	176.014	
6,000.00	5,971.24	5,589.95	5,567.25	22.19	9.87	-161.97	-4,785.24	-1,857.59	5,460.51	5,429.00	31.52	173.258	
6,100.00	6,070.60	5,703.87	5,680.66	22.58	10.07	-161.97	-4,790.24	-1,867.15	5,475.69	5,443.59	32.10	170.577	
6,200.00	6,170.14	5,824.36	5,800.64	22.97	10.28	-161.96	-4,795.10	-1,877.04	5,489.20	5,456.50	32.70	167.888	
6,300.00	6,269.83	5,921.03	5,896.94	23.35	10.45	-161.95	-4,798.95	-1,884.62	5,501.24	5,468.01	33.23	165.532	
6,400.00	6,369.65	6,068.03	6,043.38	23.71	10.71	-161.89	-4,804.29	-1,896.26	5,511.73	5,477.85	33.88	162.699	
6,500.00	6,469.55	6,193.71	6,168.68	24.07	10.93	-161.84	-4,807.95	-1,905.36	5,519.96	5,485.49	34.47	160.148	
6,600.00	6,569.52	6,457.92	6,432.50	24.43	11.39	-161.76	-4,814.47	-1,917.40	5,526.19	5,490.86	35.34	156.391	
6,698.49	6,668.00	6,627.15	6,601.71	24.77	11.69	-161.75	-4,815.82	-1,919.38	5,527.79	5,491.80	35.99	153.595	
6,700.00	6,669.51	6,628.81	6,603.37	24.77	11.69	-161.75	-4,815.83	-1,919.39	5,527.80	5,491.81	36.00	153.560	
6,800.00	6,769.51	6,732.25	6,706.81	25.11	11.87	-161.75	-4,816.28	-1,920.06	5,528.42	5,491.90	36.53	151.357	
6,900.00	6,869.51	6,830.16	6,804.72	25.45	12.04	-161.74	-4,816.71	-1,920.75	5,529.06	5,492.02	37.04	149.259	
7,000.00	6,969.51	6,921.06	6,895.61	25.80	12.20	-161.74	-4,817.17	-1,921.40	5,529.77	5,492.22	37.55	147.271	
7,100.00	7,069.51	7,004.60	6,979.14	26.14	12.34	-161.74	-4,817.81	-1,922.02	5,530.73	5,492.69	38.04	145.395	
7,200.00	7,169.51	7,083.04	7,057.58	26.48	12.48	-161.73	-4,818.64	-1,922.72	5,532.02	5,493.49	38.52	143.610	
7,300.00	7,269.51	7,403.09	7,377.56	26.82	13.02	-161.71	-4,816.08	-1,924.44	5,531.18	5,491.74	39.44	140.236	
7,400.00	7,369.51	7,498.10	7,472.54	27.17	13.18	-161.70	-4,813.71	-1,924.13	5,528.72	5,488.77	39.95	138.398	
7,500.00	7,469.51	7,577.26	7,551.68	27.51	13.31	-161.70	-4,811.87	-1,924.05	5,526.49	5,486.06	40.43	136.701	
7,600.00	7,569.51	7,648.55	7,622.96	27.85	13.43	-161.69	-4,810.52	-1,924.15	5,524.74	5,483.85	40.89	135.100	
7,700.00	7,669.51	7,719.07	7,693.47	28.20	13.55	-161.69	-4,809.57	-1,924.29	5,523.52	5,482.16	41.36	133.553	
7,800.00	7,769.51	7,806.01	7,780.40	28.54	13.69	-161.68	-4,808.76	-1,924.49	5,522.71	5,480.85	41.85	131.955	
7,900.00	7,869.51	7,883.43	7,857.82	28.89	13.82	-161.68	-4,808.20	-1,924.88	5,522.18	5,479.85	42.33	130.452	
7,973.44	7,942.95	7,939.96	7,914.35	29.14	13.92	-161.67	-4,807.96	-1,925.33	5,522.07	5,479.39	42.68	129.375	
8,000.00	7,969.51	7,961.34	7,935.73	29.24	13.96	-161.67	-4,807.91	-1,925.51	5,522.08	5,479.27	42.81	128.985	
8,100.00	8,069.51	8,048.33	8,022.72	29.58	14.11	-161.66	-4,807.92	-1,926.20	5,522.33	5,479.02	43.31	127.505	
8,200.00	8,169.51	8,240.51	8,214.89	29.93	14.44	-161.66	-4,807.16	-1,926.05	5,522.03	5,478.03	44.00	125.494	
8,300.00	8,269.51	8,332.70	8,307.06	30.27	14.59	-161.65	-4,805.79	-1,926.25	5,520.70	5,476.19	44.51	124.038	
8,400.00	8,369.51	8,405.94	8,380.30	30.62	14.72	-161.65	-4,804.89	-1,926.67	5,519.72	5,474.74	44.98	122.714	
8,500.00	8,469.51	8,467.54	8,441.90	30.97	14.82	-161.64	-4,804.47	-1,927.23	5,519.35	5,473.92	45.43	121.487	
8,502.57	8,472.08	8,469.13	8,443.48	30.98	14.83	-161.64	-4,804.46	-1,927.25	5,519.35	5,473.91	45.44	121.456	
8,600.00	8,569.51	8,537.89	8,512.24	31.32	14.95	-161.63	-4,804.35	-1,928.23	5,519.63	5,473.73	45.90	120.254	
8,700.00	8,669.51	8,638.51	8,612.84	31.66	15.13	-161.61	-4,804.41	-1,930.12	5,520.28	5,473.85	46.43	118.905	
8,800.00	8,769.51	8,735.84	8,710.16	32.01	15.30	-161.60	-4,804.37	-1,931.56	5,520.72	5,473.77	46.95	117.595	
8,900.00	8,869.51	8,825.14	8,799.46	32.36	15.46	-161.59	-4,804.77	-1,932.31	5,521.39	5,473.94	47.45	116.356	
9,000.00	8,969.51	8,916.69	8,890.99	32.71	15.62	-161.58	-4,805.11	-1,933.64	5,522.21	5,474.25	47.96	115.135	
9,100.00	9,069.51	9,027.98	9,002.25	33.06	15.81	-161.55	-4,805.27	-1,936.29	5,523.11	5,474.60	48.51	113.852	
9,200.00	9,169.51	9,217.44	9,191.62	33.40	16.15	-161.50	-4,803.12	-1,941.44	5,522.80	5,473.60	49.20	112.242	
9,300.00	9,269.51	9,311.22	9,285.40	33.75	16.31	-161.49	-4,802.14	-1,941.63	5,521.88	5,472.16	49.72	111.070	
9,400.00	9,369.51	9,375.46	9,349.63	34.10	16.42	-161.49	-4,801.82	-1,941.41	5,521.33	5,471.16	50.17	110.047	
9,418.95	9,388.46	9,385.68	9,359.86	34.17	16.43	-161.49	-4,801.81	-1,941.44	5,521.32	5,471.06	50.26	109.865	
9,500.00	9,469.51	9,434.16	9,408.34	34.45	16.52	-161.49	-4,801.87	-1,941.83	5,521.60	5,470.98	50.62	109.081	
9,600.00	9,569.51	9,609.43	9,583.59	34.80	16.83	-161.46	-4,800.36	-1,943.89	5,520.89	5,469.60	51.29	107.651	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
9,657.02	9,626.53	9,623.78	9,597.93	35.00	16.85	-161.46	-4,800.19	-1,944.03	5,520.62	5,469.11	51.50	107.186		
9,700.00	9,669.51	9,623.78	9,597.93	35.15	16.85	-161.46	-4,800.19	-1,944.03	5,520.78	5,469.13	51.65	106.891		
9,800.00	9,769.51	9,672.89	9,647.04	35.50	16.93	-161.46	-4,800.40	-1,944.17	5,521.65	5,469.57	52.08	106.030		
9,900.00	9,869.51	9,710.00	9,684.13	35.85	17.00	-161.47	-4,801.55	-1,943.79	5,524.05	5,471.57	52.48	105.266		
10,000.00	9,969.51	9,710.00	9,684.13	36.20	17.00	-161.47	-4,801.55	-1,943.79	5,527.79	5,474.99	52.80	104.696		
10,100.00	10,069.51	9,710.00	9,684.13	36.55	17.00	-161.47	-4,801.55	-1,943.79	5,533.34	5,480.23	53.11	104.182		
10,200.00	10,169.51	9,731.56	9,705.63	36.90	17.04	-161.48	-4,803.01	-1,943.31	5,540.18	5,486.71	53.47	103.619		
10,300.00	10,269.51	9,755.00	9,728.88	37.25	17.08	-161.50	-4,805.81	-1,942.44	5,549.11	5,495.29	53.82	103.104		
10,400.00	10,369.51	9,755.00	9,728.88	37.60	17.08	-161.50	-4,805.81	-1,942.44	5,559.23	5,505.11	54.11	102.730		
10,500.00	10,469.51	9,755.00	9,728.88	37.95	17.08	-161.50	-4,805.81	-1,942.44	5,571.12	5,516.72	54.40	102.408		
10,600.00	10,569.51	9,780.20	9,753.75	38.31	17.12	-161.52	-4,809.75	-1,941.21	5,584.53	5,529.79	54.74	102.011		
10,700.00	10,669.51	9,800.00	9,773.21	38.66	17.15	-161.54	-4,813.17	-1,940.09	5,599.31	5,544.24	55.07	101.679		
10,800.00	10,769.51	9,826.26	9,798.93	39.01	17.20	-161.58	-4,818.17	-1,938.31	5,615.42	5,560.02	55.40	101.352		
10,900.00	10,869.51	9,845.00	9,817.20	39.36	17.23	-161.60	-4,822.06	-1,936.78	5,632.87	5,577.15	55.72	101.097		
11,000.00	10,969.51	9,845.00	9,817.20	39.71	17.23	-161.60	-4,822.06	-1,936.78	5,651.89	5,595.92	55.98	100.971		
11,100.00	11,069.51	9,907.00	9,877.08	40.06	17.71	-161.71	-4,836.96	-1,930.83	5,672.02	5,615.68	56.34	100.678		
11,200.00	11,169.51	9,907.00	9,877.08	40.41	17.71	-161.71	-4,836.96	-1,930.83	5,693.38	5,636.81	56.57	100.647		
11,300.00	11,269.51	9,921.62	9,891.06	40.77	17.71	-161.74	-4,840.95	-1,929.26	5,716.29	5,659.48	56.81	100.618		
11,400.00	11,369.51	9,938.00	9,906.63	41.12	17.72	-161.77	-4,845.68	-1,927.40	5,740.60	5,683.54	57.05	100.616		
11,500.00	11,469.51	9,938.00	9,906.63	41.47	17.72	-161.77	-4,845.68	-1,927.40	5,766.40	5,709.13	57.27	100.689		
11,600.00	11,569.51	9,970.00	9,936.66	41.82	17.73	-161.84	-4,856.02	-1,923.57	5,793.69	5,736.16	57.53	100.709		
11,700.00	11,669.51	9,970.00	9,936.66	42.18	17.73	-161.84	-4,856.02	-1,923.57	5,822.17	5,764.44	57.74	100.841		
11,800.00	11,769.51	9,970.00	9,936.66	42.53	17.73	-161.84	-4,856.02	-1,923.57	5,852.23	5,794.29	57.94	101.007		
11,900.00	11,869.51	9,970.00	9,936.66	42.88	17.73	-161.84	-4,856.02	-1,923.57	5,883.83	5,825.69	58.14	101.205		
11,902.93	11,872.44	9,970.00	9,936.66	42.89	17.73	-161.84	-4,856.02	-1,923.57	5,884.77	5,826.63	58.14	101.211		
11,950.00	11,919.46	9,970.00	9,936.66	43.04	17.73	-161.83	-4,856.02	-1,923.57	5,898.59	5,840.36	58.22	101.309		
12,000.00	11,969.05	9,986.14	9,951.58	43.19	17.73	-161.84	-4,861.90	-1,921.74	5,909.73	5,851.41	58.32	101.329		
12,050.00	12,017.90	10,001.00	9,965.16	43.32	17.74	-161.82	-4,867.76	-1,920.29	5,917.83	5,859.42	58.41	101.315		
12,100.00	12,065.65	10,001.00	9,965.16	43.44	17.74	-161.74	-4,867.76	-1,920.29	5,922.24	5,863.78	58.46	101.299		
12,150.00	12,111.93	10,001.00	9,965.16	43.56	17.74	-161.65	-4,867.76	-1,920.29	5,923.20	5,864.70	58.51	101.242		
12,200.00	12,156.38	10,001.00	9,965.16	43.66	17.74	-161.53	-4,867.76	-1,920.29	5,920.71	5,862.17	58.54	101.144		
12,250.00	12,198.67	10,001.00	9,965.16	43.75	17.74	-161.40	-4,867.76	-1,920.29	5,914.77	5,856.22	58.56	101.006		
12,300.00	12,238.48	10,001.00	9,965.16	43.83	17.74	-161.24	-4,867.76	-1,920.29	5,905.43	5,846.86	58.57	100.828		
12,350.00	12,275.51	10,001.00	9,965.16	43.90	17.74	-161.06	-4,867.76	-1,920.29	5,892.74	5,834.17	58.57	100.609		
12,400.00	12,309.46	10,001.00	9,965.16	43.97	17.74	-160.87	-4,867.76	-1,920.29	5,876.77	5,818.21	58.56	100.351		
12,450.00	12,340.09	10,017.13	9,979.72	44.04	17.74	-160.69	-4,874.58	-1,919.00	5,857.32	5,798.74	58.58	99.991		
12,500.00	12,367.17	10,033.00	9,993.85	44.10	17.75	-160.50	-4,881.73	-1,918.02	5,835.17	5,776.58	58.59	99.598		
12,550.00	12,390.47	10,033.00	9,993.85	44.16	17.75	-160.26	-4,881.73	-1,918.02	5,809.81	5,751.25	58.56	99.214		
12,600.00	12,409.84	10,033.00	9,993.85	44.22	17.75	-160.00	-4,881.73	-1,918.02	5,781.68	5,723.15	58.52	98.790		
12,650.00	12,425.11	10,033.00	9,993.85	44.28	17.75	-159.73	-4,881.73	-1,918.02	5,750.96	5,692.48	58.49	98.327		
12,700.00	12,436.18	10,033.00	9,993.85	44.35	17.75	-159.46	-4,881.73	-1,918.02	5,717.86	5,659.40	58.45	97.824		
12,750.00	12,442.96	10,033.00	9,993.85	44.42	17.75	-159.17	-4,881.73	-1,918.02	5,682.57	5,624.15	58.41	97.282		
12,800.00	12,445.39	10,033.00	9,993.85	44.49	17.75	-158.87	-4,881.73	-1,918.02	5,645.33	5,586.95	58.38	96.702		
12,807.86	12,445.38	10,033.00	9,993.85	44.51	17.75	-158.82	-4,881.73	-1,918.02	5,639.31	5,580.94	58.38	96.605		
12,900.00	12,444.58	10,033.00	9,993.85	44.68	17.75	-158.26	-4,881.73	-1,918.02	5,568.86	5,510.54	58.32	95.487		
13,000.00	12,443.72	10,033.00	9,993.85	44.94	17.75	-157.63	-4,881.73	-1,918.02	5,493.13	5,434.85	58.28	94.248		
13,100.00	12,442.86	10,033.00	9,993.85	45.27	17.75	-156.98	-4,881.73	-1,918.02	5,418.19	5,359.91	58.27	92.980		
13,200.00	12,442.00	10,065.00	10,021.73	45.66	17.76	-156.40	-4,897.39	-1,916.83	5,343.89	5,285.53	58.37	91.560		
13,300.00	12,441.14	10,065.00	10,021.73	46.11	17.76	-155.71	-4,897.39	-1,916.83	5,270.33	5,211.92	58.41	90.226		
13,400.00	12,440.28	10,065.00	10,021.73	46.63	17.76	-154.99	-4,897.39	-1,916.83	5,197.65	5,139.16	58.49	88.861		
13,500.00	12,439.42	10,065.00	10,021.73	47.20	17.76	-154.25	-4,897.39	-1,916.83	5,125.89	5,067.28	58.61	87.464		
13,600.00	12,438.56	10,065.00	10,021.73	47.83	17.76	-153.48	-4,897.39	-1,916.83	5,055.09	4,996.33	58.76	86.034		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,700.00	12,437.70	10,065.00	10,021.73	48.52	17.76	-152.68	-4,897.39	-1,916.83	4,985.29	4,926.34	58.95	84.573		
13,727.27	12,437.47	10,065.00	10,021.73	48.71	17.76	-152.46	-4,897.39	-1,916.83	4,966.43	4,907.43	59.01	84.169		
13,800.00	12,436.84	10,065.00	10,021.73	49.25	17.76	-151.86	-4,897.39	-1,916.83	4,916.03	4,856.86	59.17	83.079		
13,900.00	12,435.98	10,096.00	10,047.80	50.02	17.78	-151.17	-4,914.15	-1,916.45	4,845.89	4,786.39	59.50	81.445		
14,000.00	12,435.11	10,096.00	10,047.80	50.83	17.78	-150.37	-4,914.15	-1,916.45	4,774.77	4,715.01	59.76	79.896		
14,100.00	12,434.25	10,096.00	10,047.80	51.66	17.78	-149.58	-4,914.15	-1,916.45	4,702.93	4,642.89	60.04	78.333		
14,200.00	12,433.39	10,096.00	10,047.80	52.52	17.78	-148.79	-4,914.15	-1,916.45	4,630.41	4,570.09	60.32	76.761		
14,259.68	12,432.87	10,096.00	10,047.80	53.04	17.78	-148.33	-4,914.15	-1,916.45	4,586.85	4,526.35	60.50	75.821		
14,300.00	12,432.52	10,096.00	10,047.80	53.40	17.78	-148.02	-4,914.15	-1,916.45	4,557.42	4,496.80	60.62	75.185		
14,400.00	12,431.66	10,096.00	10,047.80	54.32	17.78	-147.22	-4,914.15	-1,916.45	4,485.18	4,424.24	60.94	73.600		
14,500.00	12,430.80	10,113.29	10,061.86	55.27	17.79	-146.46	-4,924.21	-1,916.52	4,413.66	4,352.32	61.35	71.946		
14,600.00	12,429.94	10,128.00	10,073.55	56.25	17.80	-145.66	-4,933.13	-1,916.78	4,343.46	4,281.67	61.79	70.298		
14,700.00	12,429.08	10,128.00	10,073.55	57.26	17.80	-144.75	-4,933.13	-1,916.78	4,274.18	4,211.95	62.23	68.684		
14,800.00	12,428.22	10,128.00	10,073.55	58.31	17.80	-143.80	-4,933.13	-1,916.78	4,206.13	4,143.42	62.72	67.065		
14,900.00	12,427.36	10,128.00	10,073.55	59.38	17.80	-142.81	-4,933.13	-1,916.78	4,139.39	4,076.14	63.25	65.445		
15,000.00	12,426.50	10,154.00	10,093.57	60.47	17.82	-141.92	-4,949.69	-1,917.69	4,073.81	4,009.91	63.90	63.755		
15,100.00	12,425.64	10,154.00	10,093.57	61.60	17.82	-140.84	-4,949.69	-1,917.69	4,009.44	3,944.91	64.53	62.137		
15,200.00	12,424.78	10,154.00	10,093.57	62.74	17.82	-139.70	-4,949.69	-1,917.69	3,946.56	3,881.35	65.20	60.525		
15,300.00	12,423.92	10,154.00	10,093.57	63.91	17.82	-138.51	-4,949.69	-1,917.69	3,885.23	3,819.29	65.93	58.925		
15,400.00	12,423.06	10,185.00	10,116.18	65.10	17.85	-137.51	-4,970.83	-1,919.22	3,825.29	3,758.50	66.79	57.270		
15,500.00	12,422.20	10,185.00	10,116.18	66.31	17.85	-136.21	-4,970.83	-1,919.22	3,766.75	3,699.12	67.63	55.698		
15,600.00	12,421.34	10,185.00	10,116.18	67.54	17.85	-134.84	-4,970.83	-1,919.22	3,709.97	3,641.45	68.52	54.148		
15,700.00	12,420.48	10,185.00	10,116.18	68.79	17.85	-133.42	-4,970.83	-1,919.22	3,655.05	3,585.59	69.46	52.624		
15,800.00	12,419.62	10,201.89	10,127.76	70.06	17.86	-132.09	-4,983.09	-1,920.13	3,601.66	3,531.17	70.49	51.096		
15,900.00	12,418.76	10,217.00	10,137.56	71.34	17.88	-130.70	-4,994.56	-1,920.94	3,550.37	3,478.80	71.56	49.611		
16,000.00	12,417.90	10,217.00	10,137.56	72.63	17.88	-129.07	-4,994.56	-1,920.94	3,500.84	3,428.18	72.66	48.183		
16,100.00	12,417.03	10,217.00	10,137.56	73.94	17.88	-127.36	-4,994.56	-1,920.94	3,453.50	3,379.70	73.80	46.796		
16,200.00	12,416.17	10,230.84	10,146.01	75.27	17.90	-125.76	-5,005.49	-1,921.70	3,408.13	3,333.12	75.02	45.432		
16,300.00	12,415.31	10,248.00	10,155.71	76.60	17.93	-124.16	-5,019.61	-1,922.67	3,365.18	3,288.90	76.28	44.117		
16,400.00	12,414.45	10,248.00	10,155.71	77.95	17.93	-122.23	-5,019.61	-1,922.67	3,324.19	3,246.65	77.55	42.866		
16,500.00	12,413.59	10,248.00	10,155.71	79.31	17.93	-120.21	-5,019.61	-1,922.67	3,285.74	3,206.89	78.85	41.669		
16,600.00	12,412.73	10,248.00	10,155.71	80.69	17.93	-118.11	-5,019.61	-1,922.67	3,249.91	3,169.72	80.19	40.528		
16,700.00	12,411.87	10,280.00	10,171.19	82.07	17.98	-116.52	-5,047.54	-1,924.47	3,216.21	3,134.59	81.61	39.409		
16,800.00	12,411.01	10,280.00	10,171.19	83.46	17.98	-114.28	-5,047.54	-1,924.47	3,185.00	3,102.00	83.00	38.375		
16,900.00	12,410.15	10,280.00	10,171.19	84.87	17.98	-111.95	-5,047.54	-1,924.47	3,156.66	3,072.26	84.40	37.403		
17,000.00	12,409.29	10,297.54	10,178.23	86.28	18.01	-109.93	-5,063.57	-1,925.49	3,130.81	3,044.97	85.84	36.472		
17,100.00	12,408.43	10,312.00	10,183.35	87.70	18.05	-107.80	-5,077.06	-1,926.38	3,107.77	3,020.49	87.28	35.606		
17,200.00	12,407.57	10,312.00	10,183.35	89.13	18.05	-105.28	-5,077.06	-1,926.38	3,087.50	2,998.80	88.69	34.811		
17,300.00	12,406.71	10,344.00	10,192.70	90.56	18.13	-103.48	-5,107.58	-1,928.49	3,069.96	2,979.79	90.17	34.047		
17,400.00	12,405.85	10,344.00	10,192.70	92.01	18.13	-100.87	-5,107.58	-1,928.49	3,054.99	2,963.43	91.56	33.366		
17,500.00	12,404.99	10,358.94	10,196.11	93.46	18.18	-98.59	-5,122.09	-1,929.48	3,042.94	2,949.98	92.97	32.732		
17,600.00	12,404.13	10,375.00	10,198.99	94.91	18.24	-96.33	-5,137.86	-1,930.50	3,033.77	2,939.42	94.35	32.155		
17,700.00	12,403.27	10,375.00	10,198.99	96.38	18.24	-93.62	-5,137.86	-1,930.50	3,027.54	2,931.89	95.65	31.651		
17,800.00	12,402.41	10,405.00	10,202.15	97.85	18.37	-91.71	-5,167.63	-1,932.19	3,023.99	2,926.97	97.01	31.171		
17,900.00	12,401.55	10,424.46	10,203.00	99.32	18.46	-89.51	-5,187.05	-1,933.07	3,023.20	2,924.90	98.30	30.755		
17,930.33	12,401.28	10,518.79	10,204.83	99.77	19.00	-91.25	-5,281.34	-1,933.98	3,022.76	2,923.82	98.93	30.554		
18,000.00	12,400.68	10,563.00	10,204.80	100.81	19.29	-90.56	-5,325.54	-1,933.04	3,021.71	2,921.80	99.91	30.243		
18,091.95	12,399.89	10,628.66	10,203.19	102.17	19.78	-89.84	-5,391.14	-1,930.85	3,021.10	2,919.86	101.24	29.841		
18,100.00	12,399.82	10,633.41	10,203.00	102.29	19.82	-89.75	-5,395.89	-1,930.68	3,021.11	2,919.76	101.35	29.808		
18,200.00	12,398.96	10,745.06	10,198.04	103.79	20.75	-90.07	-5,507.34	-1,926.23	3,021.38	2,918.44	102.94	29.351		
18,218.12	12,398.81	10,771.67	10,197.09	104.06	20.98	-90.30	-5,533.91	-1,925.16	3,021.30	2,918.05	103.25	29.261		
18,300.00	12,398.10	10,816.85	10,195.25	105.28	21.43	-89.29	-5,579.03	-1,923.66	3,021.51	2,917.06	104.46	28.925		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 511H - Wellbore #1 - Surveys													Offset Site Error:	0.00 usft
Survey Program: 143-VESLI_GYRO_DROP, 9907-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,400.00	12,397.24	10,881.99	10,192.34	106.78	22.08	-88.34	-5,644.08	-1,921.96	3,022.73	2,916.76	105.97	28.524		
18,500.00	12,396.38	10,991.33	10,186.51	108.29	23.23	-88.59	-5,753.24	-1,919.89	3,025.13	2,917.40	107.74	28.078		
18,600.00	12,395.52	11,195.24	10,183.21	109.80	25.60	-91.43	-5,957.02	-1,913.93	3,023.21	2,913.03	110.18	27.438		
18,700.00	12,394.66	11,273.77	10,182.89	111.32	26.57	-90.84	-6,035.52	-1,912.05	3,021.64	2,909.67	111.97	26.985		
18,800.00	12,393.80	11,407.20	10,182.19	112.84	28.28	-91.76	-6,168.92	-1,909.10	3,020.44	2,906.27	114.17	26.456		
18,900.00	12,392.94	11,489.84	10,182.28	114.36	29.38	-91.28	-6,251.52	-1,906.86	3,018.31	2,902.24	116.06	26.006		
19,000.00	12,392.08	11,555.56	10,182.27	115.89	30.26	-90.34	-6,317.24	-1,905.84	3,017.08	2,899.23	117.86	25.600		
19,047.83	12,391.67	11,585.07	10,182.23	116.62	30.66	-89.84	-6,346.74	-1,905.77	3,016.94	2,898.23	118.70	25.415		
19,100.00	12,391.22	11,627.10	10,182.13	117.42	31.24	-89.56	-6,388.78	-1,905.95	3,017.08	2,897.36	119.72	25.201		
19,200.00	12,390.36	11,815.00	10,180.27	118.95	33.87	-91.97	-6,576.61	-1,902.17	3,016.42	2,893.90	122.52	24.620		
19,300.00	12,389.50	11,910.18	10,179.52	120.49	35.24	-91.84	-6,671.72	-1,898.46	3,014.09	2,889.50	124.59	24.192		
19,400.00	12,388.64	12,027.69	10,177.84	122.03	36.96	-92.32	-6,789.02	-1,891.79	3,010.95	2,884.13	126.82	23.742		
19,500.00	12,387.78	12,099.91	10,176.47	123.57	38.03	-91.56	-6,861.12	-1,887.88	3,008.39	2,879.68	128.71	23.373		
19,600.00	12,386.92	12,173.00	10,174.68	125.12	39.12	-90.81	-6,934.12	-1,884.61	3,006.86	2,876.24	130.62	23.021		
19,700.00	12,386.06	12,334.95	10,173.42	126.66	41.56	-92.53	-7,095.85	-1,876.64	3,003.34	2,870.04	133.29	22.532		
19,800.00	12,385.20	12,408.82	10,173.15	128.22	42.68	-91.80	-7,169.66	-1,873.59	3,000.56	2,865.29	135.27	22.182		
19,900.00	12,384.33	12,485.26	10,172.64	129.77	43.85	-91.15	-7,246.06	-1,871.09	2,998.59	2,861.31	137.28	21.843		
20,000.00	12,383.47	12,661.62	10,171.46	131.33	46.56	-93.28	-7,422.29	-1,864.88	2,997.01	2,856.85	140.16	21.382		
20,100.00	12,382.61	12,754.10	10,171.61	132.89	47.99	-93.07	-7,514.64	-1,859.92	2,993.00	2,850.68	142.33	21.029		
20,200.00	12,381.75	12,839.00	10,171.60	134.45	49.32	-92.65	-7,599.43	-1,855.55	2,989.31	2,844.88	144.43	20.697		
20,300.00	12,380.89	12,908.56	10,171.12	136.01	50.41	-91.80	-7,668.91	-1,852.26	2,986.38	2,839.98	146.40	20.399		
20,400.00	12,380.03	12,979.43	10,169.92	137.58	51.52	-90.98	-7,739.71	-1,849.30	2,984.55	2,836.18	148.37	20.116		
20,500.00	12,379.17	20,500.00	10,167.71	139.15	170.04	-91.44	-7,855.80	-1,844.62	2,983.00	2,746.86	236.14	12.632 ES, SF		
20,600.00	12,378.31	13,187.39	10,166.92	140.72	54.80	-91.20	-7,947.47	-1,841.07	2,980.81	2,827.88	152.93	19.491		
20,700.00	12,377.45	13,259.22	10,165.92	142.29	55.93	-90.41	-8,019.26	-1,839.12	2,979.73	2,824.79	154.94	19.231		
20,800.00	12,376.59	13,381.97	10,164.02	143.86	57.87	-91.05	-8,141.96	-1,836.14	2,979.08	2,821.63	157.45	18.920		
20,900.00	12,375.73	13,476.36	10,164.02	145.44	59.37	-90.89	-8,236.34	-1,834.20	2,977.49	2,817.75	159.73	18.640		
21,000.00	12,374.87	13,560.68	10,163.89	147.02	60.71	-90.45	-8,320.65	-1,833.12	2,976.51	2,814.58	161.93	18.382		
21,100.00	12,374.01	13,662.10	10,163.67	148.59	62.32	-90.49	-8,422.06	-1,832.21	2,975.84	2,811.53	164.31	18.111		
21,200.00	12,373.15	13,833.65	10,162.99	150.18	65.07	-92.52	-8,593.50	-1,826.52	2,973.54	2,806.22	167.32	17.772		
21,300.00	12,372.29	13,917.44	10,162.01	151.76	66.42	-92.06	-8,677.16	-1,821.98	2,970.52	2,801.08	169.43	17.532		
21,400.00	12,371.43	13,988.84	10,160.58	153.34	67.57	-91.24	-8,748.45	-1,818.36	2,968.34	2,796.92	171.42	17.316		
21,500.00	12,370.57	14,058.61	10,158.51	154.93	68.70	-90.38	-8,818.12	-1,815.13	2,967.16	2,793.78	173.38	17.114		
21,600.00	12,369.71	14,196.46	10,155.45	156.52	70.93	-91.46	-8,955.80	-1,809.17	2,965.58	2,789.59	175.99	16.851		
21,700.00	12,368.85	14,287.21	10,154.00	158.11	72.39	-91.20	-9,046.49	-1,806.02	2,964.15	2,785.96	178.19	16.634		
21,800.00	12,367.98	14,425.58	10,154.23	159.70	74.64	-92.30	-9,184.75	-1,800.73	2,960.98	2,780.09	180.89	16.369		
21,900.00	12,367.12	14,505.17	10,153.94	161.29	75.93	-91.71	-9,264.28	-1,797.64	2,958.41	2,775.39	183.02	16.164		
22,000.00	12,366.26	14,626.64	10,152.77	162.88	77.90	-92.33	-9,385.64	-1,792.60	2,956.16	2,770.65	185.51	15.935		
22,100.00	12,365.40	14,704.41	10,152.25	164.47	79.17	-91.69	-9,463.33	-1,789.12	2,953.45	2,765.84	187.61	15.743		
22,200.00	12,364.54	14,779.83	10,150.78	166.07	80.40	-90.98	-9,538.66	-1,785.82	2,951.71	2,762.06	189.65	15.564		
22,300.00	12,363.68	14,858.39	10,148.53	167.67	81.68	-90.36	-9,617.11	-1,782.40	2,950.68	2,758.99	191.68	15.393		
22,377.65	12,363.01	14,935.48	10,146.41	168.91	82.93	-89.73	-9,673.15	-1,779.95	2,950.42	2,756.97	193.45	15.252 CC		
22,400.00	12,362.82	14,936.84	10,145.44	169.26	82.96	-89.73	-9,695.43	-1,778.98	2,950.44	2,756.76	193.69	15.233		
22,500.00	12,361.96	15,036.71	10,141.08	170.86	84.58	-89.72	-9,795.11	-1,774.62	2,950.53	2,754.66	195.87	15.063		
22,565.16	12,361.40	15,067.00	10,139.76	171.78	85.08	-88.71	-9,825.34	-1,773.30	2,950.80	2,754.03	196.77	14.996		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	-162.55	-4,573.24	-1,437.58	4,793.95					
100.00	100.00	77.63	77.63	0.13	0.18	-162.55	-4,573.25	-1,437.44	4,793.84	4,793.52	0.32	N/A		
200.00	200.00	181.41	181.40	0.49	0.55	-162.56	-4,573.31	-1,436.48	4,793.61	4,792.57	1.04	4,595.043		
239.60	239.60	210.85	210.85	0.63	0.66	-162.57	-4,573.34	-1,436.26	4,793.56	4,792.27	1.29	3,716.640		
300.00	300.00	250.33	250.32	0.85	0.79	-162.57	-4,573.52	-1,436.07	4,793.73	4,792.08	1.65	2,913.941		
400.00	400.00	332.10	332.09	1.21	1.08	-162.58	-4,574.21	-1,435.65	4,794.37	4,792.08	2.29	2,092.229		
500.00	500.00	437.74	437.72	1.57	1.46	-162.59	-4,575.31	-1,434.83	4,795.14	4,792.12	3.03	1,584.743		
600.00	600.00	506.24	506.22	1.93	1.70	-162.60	-4,576.13	-1,434.50	4,796.15	4,792.52	3.63	1,322.125		
700.00	700.00	583.94	583.91	2.29	1.98	-162.60	-4,577.30	-1,434.46	4,797.61	4,793.35	4.26	1,126.048		
800.00	800.00	692.99	692.94	2.64	2.37	-162.61	-4,579.34	-1,434.26	4,799.33	4,794.33	5.01	958.652		
900.00	900.00	810.64	810.57	3.00	2.79	-162.62	-4,581.15	-1,434.07	4,800.75	4,794.97	5.78	829.987		
1,000.00	1,000.00	971.57	971.50	3.36	3.34	-162.62	-4,582.09	-1,433.95	4,801.22	4,794.52	6.70	716.368		
1,100.00	1,100.00	1,071.57	1,071.50	3.72	3.68	-162.62	-4,582.09	-1,433.95	4,801.22	4,793.82	7.40	649.056		
1,200.00	1,200.00	1,171.57	1,171.50	4.08	4.02	-162.62	-4,582.09	-1,433.95	4,801.22	4,793.13	8.10	593.038		
1,300.00	1,300.00	1,271.57	1,271.50	4.44	4.36	-162.62	-4,582.09	-1,433.95	4,801.22	4,792.42	8.80	545.739		
1,400.00	1,400.00	1,371.57	1,371.50	4.79	4.71	-162.62	-4,582.09	-1,433.95	4,801.22	4,791.72	9.50	505.306		
1,500.00	1,500.00	1,471.57	1,471.50	5.15	5.06	-162.62	-4,582.09	-1,433.95	4,801.22	4,791.01	10.21	470.367		
1,600.00	1,600.00	1,544.60	1,544.53	5.51	5.31	-162.62	-4,582.17	-1,434.10	4,801.42	4,790.60	10.82	443.778		
1,700.00	1,700.00	1,600.00	1,599.92	5.87	5.50	-162.62	-4,582.51	-1,434.72	4,802.39	4,791.02	11.37	422.396		
1,800.00	1,800.00	1,669.19	1,669.09	6.23	5.74	-162.60	-4,583.29	-1,436.14	4,804.12	4,792.15	11.97	401.470		
1,900.00	1,900.00	1,731.44	1,731.30	6.59	5.96	-162.58	-4,584.34	-1,438.05	4,806.64	4,794.10	12.54	383.346		
2,000.00	2,000.00	1,800.00	1,799.79	6.95	6.20	-162.56	-4,585.87	-1,440.83	4,809.96	4,796.82	13.13	366.242		
2,100.00	2,100.00	1,855.74	1,855.44	7.30	6.39	-162.53	-4,587.41	-1,443.62	4,814.05	4,800.36	13.68	351.840		
2,200.00	2,200.00	1,917.78	1,917.33	7.66	6.61	-162.50	-4,589.42	-1,447.29	4,818.93	4,804.67	14.25	338.091		
2,300.00	2,300.00	1,979.71	1,979.08	8.02	6.83	-162.46	-4,591.76	-1,451.54	4,824.59	4,809.77	14.82	325.463		
2,400.00	2,400.00	2,041.54	2,040.66	8.38	7.05	-162.41	-4,594.41	-1,456.36	4,831.05	4,815.66	15.39	313.834		
2,500.00	2,500.00	2,105.48	2,104.28	8.74	7.28	-162.36	-4,597.49	-1,461.96	4,838.29	4,822.32	15.97	302.944		
2,600.00	2,599.99	2,204.92	2,203.18	9.10	7.64	-162.28	-4,602.49	-1,471.06	4,846.54	4,829.86	16.68	290.528		
2,700.00	2,699.96	2,304.31	2,302.03	9.45	8.01	-162.22	-4,607.49	-1,480.15	4,856.10	4,838.71	17.39	279.181		
2,800.00	2,799.86	2,403.63	2,400.80	9.81	8.37	-162.17	-4,612.49	-1,489.25	4,866.97	4,848.86	18.11	268.778		
2,900.00	2,899.68	2,502.84	2,499.46	10.17	8.74	-162.13	-4,617.49	-1,498.33	4,879.14	4,860.32	18.82	259.216		
3,000.00	2,999.37	2,601.91	2,597.99	10.53	9.11	-162.11	-4,622.47	-1,507.39	4,892.61	4,873.07	19.54	250.406		
3,100.00	3,098.90	2,700.81	2,696.35	10.89	9.48	-162.10	-4,627.45	-1,516.45	4,907.36	4,887.11	20.26	242.269		
3,200.00	3,198.26	2,800.49	2,794.51	11.25	9.86	-162.10	-4,632.42	-1,525.48	4,923.40	4,902.42	20.98	234.696		
3,300.00	3,297.40	2,902.01	2,892.45	11.61	10.24	-162.12	-4,637.37	-1,534.49	4,940.72	4,919.01	21.71	227.591		
3,300.10	3,297.50	2,901.91	2,892.55	11.61	10.24	-162.12	-4,637.38	-1,534.50	4,940.74	4,919.03	21.71	227.592		
3,400.00	3,396.43	2,996.34	2,990.26	11.98	10.60	-162.15	-4,642.32	-1,543.49	4,958.68	4,936.26	22.42	221.217		
3,500.00	3,495.46	3,105.31	3,088.08	12.36	11.02	-162.17	-4,647.27	-1,552.50	4,976.64	4,953.46	23.18	214.713		
3,600.00	3,594.48	3,206.96	3,185.89	12.73	11.41	-162.20	-4,652.22	-1,561.50	4,994.60	4,970.68	23.92	208.838		
3,700.00	3,693.51	3,291.39	3,283.70	13.11	11.73	-162.22	-4,657.17	-1,570.50	5,012.56	4,987.97	24.59	203.823		
3,800.00	3,792.54	3,389.74	3,381.51	13.49	12.11	-162.25	-4,662.12	-1,579.50	5,030.52	5,005.20	25.32	198.656		
3,900.00	3,891.56	3,488.09	3,479.33	13.87	12.49	-162.27	-4,667.07	-1,588.50	5,048.49	5,022.43	26.05	193.766		
4,000.00	3,990.59	3,586.44	3,577.14	14.26	12.86	-162.29	-4,672.02	-1,597.51	5,066.45	5,039.66	26.79	189.131		
4,100.00	4,089.62	3,684.79	3,674.95	14.64	13.24	-162.32	-4,676.97	-1,606.51	5,084.42	5,056.89	27.52	184.733		
4,200.00	4,188.64	3,783.14	3,772.76	15.03	13.62	-162.34	-4,681.92	-1,615.51	5,102.38	5,074.12	28.26	180.555		
4,300.00	4,287.67	3,881.49	3,870.58	15.42	14.01	-162.36	-4,686.87	-1,624.51	5,120.35	5,091.35	29.00	176.581		
4,400.00	4,386.70	3,979.84	3,968.39	15.81	14.39	-162.39	-4,691.83	-1,633.51	5,138.32	5,108.58	29.74	172.797		
4,500.00	4,485.72	4,078.19	4,066.20	16.20	14.77	-162.41	-4,696.78	-1,642.52	5,156.29	5,125.81	30.48	169.190		
4,600.00	4,584.75	4,176.54	4,164.01	16.60	15.15	-162.43	-4,701.73	-1,651.52	5,174.26	5,143.04	31.22	165.749		
4,700.00	4,683.78	4,274.89	4,261.83	16.99	15.53	-162.46	-4,706.68	-1,660.52	5,192.23	5,160.27	31.96	162.462		
4,800.00	4,782.80	4,373.24	4,359.64	17.39	15.92	-162.48	-4,711.63	-1,669.52	5,210.20	5,177.50	32.70	159.320		
4,900.00	4,881.83	4,471.59	4,457.45	17.78	16.30	-162.50	-4,716.58	-1,678.52	5,228.17	5,194.72	33.45	156.314		

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,000.00	4,980.85	4,569.95	4,555.26	18.18	16.68	-162.52	-4,721.53	-1,687.53	5,246.14	5,211.95	34.19	153.435		
5,100.00	5,079.88	4,668.30	4,653.08	18.58	17.07	-162.55	-4,726.48	-1,696.53	5,264.12	5,229.18	34.94	150.675		
5,200.00	5,178.91	4,766.65	4,750.89	18.98	17.45	-162.57	-4,731.43	-1,705.53	5,282.09	5,246.41	35.68	148.028		
5,300.00	5,277.93	14,933.27	10,202.71	19.38	86.68	-95.48	145.34	-1,811.26	5,232.26	5,174.53	57.72	90.642		
5,400.00	5,376.96	14,933.27	10,202.71	19.78	86.68	-95.93	145.34	-1,811.26	5,137.22	5,079.06	58.16	88.331		
5,500.00	5,475.99	14,933.27	10,202.71	20.18	86.68	-96.39	145.34	-1,811.26	5,042.37	4,983.76	58.61	86.034		
5,600.00	5,575.01	14,933.27	10,202.71	20.58	86.68	-96.84	145.34	-1,811.26	4,947.72	4,888.64	59.08	83.752		
5,700.00	5,674.04	14,933.27	10,202.71	20.98	86.68	-97.30	145.34	-1,811.26	4,853.29	4,793.73	59.56	81.486		
5,800.00	5,773.07	14,933.27	10,202.71	21.39	86.68	-97.76	145.34	-1,811.26	4,759.08	4,699.02	60.06	79.236		
5,898.39	5,870.50	14,933.27	10,202.71	21.78	86.68	-98.21	145.34	-1,811.26	4,666.63	4,606.06	60.58	77.038		
5,900.00	5,872.09	14,933.27	10,202.71	21.79	86.68	-98.22	145.34	-1,811.26	4,665.12	4,604.53	60.58	77.002		
6,000.00	5,971.24	14,933.27	10,202.71	22.19	86.68	-98.66	145.34	-1,811.26	4,571.38	4,510.25	61.13	74.781		
6,100.00	6,070.60	14,933.27	10,202.71	22.58	86.68	-99.03	145.34	-1,811.26	4,477.88	4,416.18	61.70	72.572		
6,200.00	6,170.14	14,933.27	10,202.71	22.97	86.68	-99.36	145.34	-1,811.26	4,384.65	4,322.35	62.30	70.375		
6,300.00	6,269.83	14,933.27	10,202.71	23.35	86.68	-99.62	145.34	-1,811.26	4,291.75	4,228.82	62.94	68.193		
6,400.00	6,369.65	14,933.27	10,202.71	23.71	86.68	-99.82	145.34	-1,811.26	4,199.23	4,135.63	63.60	66.026		
6,500.00	6,469.55	14,933.27	10,202.71	24.07	86.68	-99.97	145.34	-1,811.26	4,107.14	4,042.84	64.30	63.877		
6,600.00	6,569.52	14,933.27	10,202.71	24.43	86.68	-100.06	145.34	-1,811.26	4,015.53	3,950.50	65.03	61.747		
6,698.49	6,668.00	14,933.27	10,202.71	24.77	86.68	-100.09	145.34	-1,811.26	3,925.85	3,860.06	65.79	59.669		
6,700.00	6,669.51	14,933.27	10,202.71	24.77	86.68	-100.09	145.34	-1,811.26	3,924.48	3,858.68	65.81	59.637		
6,800.00	6,769.51	14,933.27	10,202.71	25.11	86.68	-100.09	145.34	-1,811.26	3,833.96	3,767.34	66.62	57.550		
6,900.00	6,869.51	14,933.27	10,202.71	25.45	86.68	-100.09	145.34	-1,811.26	3,743.91	3,676.44	67.47	55.488		
7,000.00	6,969.51	14,933.27	10,202.71	25.80	86.68	-100.09	145.34	-1,811.26	3,654.39	3,586.02	68.37	53.453		
7,100.00	7,069.51	14,933.27	10,202.71	26.14	86.68	-100.09	145.34	-1,811.26	3,565.42	3,496.11	69.31	51.445		
7,200.00	7,169.51	14,933.27	10,202.71	26.48	86.68	-100.09	145.34	-1,811.26	3,477.05	3,406.76	70.29	49.466		
7,300.00	7,269.51	14,933.27	10,202.71	26.82	86.68	-100.09	145.34	-1,811.26	3,389.32	3,318.00	71.33	47.518		
7,400.00	7,369.51	14,933.27	10,202.71	27.17	86.68	-100.09	145.34	-1,811.26	3,302.30	3,229.88	72.42	45.601		
7,500.00	7,469.51	14,933.27	10,202.71	27.51	86.68	-100.09	145.34	-1,811.26	3,216.03	3,142.46	73.56	43.718		
7,600.00	7,569.51	14,933.27	10,202.71	27.85	86.68	-100.09	145.34	-1,811.26	3,130.57	3,055.80	74.77	41.870		
7,700.00	7,669.51	14,933.27	10,202.71	28.20	86.68	-100.09	145.34	-1,811.26	3,046.01	2,969.97	76.04	40.058		
7,800.00	7,769.51	14,933.27	10,202.71	28.54	86.68	-100.09	145.34	-1,811.26	2,962.40	2,885.02	77.38	38.285		
7,900.00	7,869.51	14,933.27	10,202.71	28.89	86.68	-100.09	145.34	-1,811.26	2,879.84	2,801.05	78.79	36.553		
8,000.00	7,969.51	14,933.27	10,202.71	29.24	86.68	-100.09	145.34	-1,811.26	2,798.42	2,718.15	80.27	34.863		
8,100.00	8,069.51	14,933.27	10,202.71	29.58	86.68	-100.09	145.34	-1,811.26	2,718.23	2,636.40	81.83	33.218		
8,200.00	8,169.51	14,933.27	10,202.71	29.93	86.68	-100.09	145.34	-1,811.26	2,639.40	2,555.93	83.47	31.620		
8,300.00	8,269.51	14,933.27	10,202.71	30.27	86.68	-100.09	145.34	-1,811.26	2,562.05	2,476.85	85.20	30.071		
8,400.00	8,369.51	14,933.27	10,202.71	30.62	86.68	-100.09	145.34	-1,811.26	2,486.32	2,399.31	87.01	28.575		
8,500.00	8,469.51	14,933.27	10,202.71	30.97	86.68	-100.09	145.34	-1,811.26	2,412.35	2,323.44	88.91	27.133		
8,600.00	8,569.51	14,933.27	10,202.71	31.32	86.68	-100.09	145.34	-1,811.26	2,340.32	2,249.42	90.89	25.748		
8,700.00	8,669.51	14,933.27	10,202.71	31.66	86.68	-100.09	145.34	-1,811.26	2,270.41	2,177.44	92.96	24.422		
8,800.00	8,769.51	14,933.27	10,202.71	32.01	86.68	-100.09	145.34	-1,811.26	2,202.82	2,107.71	95.11	23.160		
8,900.00	8,869.51	14,933.27	10,202.71	32.36	86.68	-100.09	145.34	-1,811.26	2,137.77	2,040.44	97.34	21.962		
9,000.00	8,969.51	14,933.27	10,202.71	32.71	86.68	-100.09	145.34	-1,811.26	2,075.51	1,975.88	99.63	20.833		
9,100.00	9,069.51	14,933.27	10,202.71	33.06	86.68	-100.09	145.34	-1,811.26	2,016.28	1,914.32	101.96	19.774		
9,200.00	9,169.51	14,933.27	10,202.71	33.40	86.68	-100.09	145.34	-1,811.26	1,960.37	1,856.04	104.33	18.789		
9,300.00	9,269.51	14,933.27	10,202.71	33.75	86.68	-100.09	145.34	-1,811.26	1,908.07	1,801.35	106.71	17.880		
9,400.00	9,369.51	14,933.27	10,202.71	34.10	86.68	-100.09	145.34	-1,811.26	1,859.67	1,750.59	109.08	17.049		
9,500.00	9,469.51	14,933.27	10,202.71	34.45	86.68	-100.09	145.34	-1,811.26	1,815.50	1,704.11	111.39	16.299		
9,600.00	9,569.51	14,933.27	10,202.71	34.80	86.68	-100.09	145.34	-1,811.26	1,775.87	1,662.25	113.61	15.631		
9,700.00	9,669.51	14,933.27	10,202.71	35.15	86.68	-100.09	145.34	-1,811.26	1,741.08	1,625.37	115.71	15.047		
9,800.00	9,769.51	14,933.27	10,202.71	35.50	86.68	-100.09	145.34	-1,811.26	1,711.44	1,593.80	117.64	14.549		
9,900.00	9,869.51	14,933.27	10,202.71	35.85	86.68	-100.09	145.34	-1,811.26	1,687.21	1,567.86	119.35	14.137		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
10,000.00	9,969.51	14,933.27	10,202.71	36.20	86.68	-100.09	145.34	-1,811.26	1,668.63	1,547.83	120.81	13.812		
10,100.00	10,069.51	14,933.27	10,202.71	36.55	86.68	-100.09	145.34	-1,811.26	1,655.90	1,533.92	121.98	13.575		
10,200.00	10,169.51	14,933.27	10,202.71	36.90	86.68	-100.09	145.34	-1,811.26	1,649.14	1,526.30	122.84	13.426		
10,261.70	10,231.21	14,933.27	10,202.71	37.12	86.68	-100.09	145.34	-1,811.26	1,647.98	1,524.78	123.20	13.376 CC, ES		
10,300.00	10,269.51	14,933.27	10,202.71	37.25	86.68	-100.09	145.34	-1,811.26	1,648.43	1,525.07	123.36	13.362 SF		
10,400.00	10,369.51	14,933.27	10,202.71	37.60	86.68	-100.09	145.34	-1,811.26	1,653.78	1,530.22	123.55	13.385		
10,500.00	10,469.51	14,933.27	10,202.71	37.95	86.68	-100.09	145.34	-1,811.26	1,665.13	1,541.71	123.42	13.492		
10,600.00	10,569.51	14,933.27	10,202.71	38.31	86.68	-100.09	145.34	-1,811.26	1,682.35	1,559.38	122.97	13.681		
10,700.00	10,669.51	14,933.27	10,202.71	38.66	86.68	-100.09	145.34	-1,811.26	1,705.27	1,583.03	122.25	13.950		
10,800.00	10,769.51	14,933.27	10,202.71	39.01	86.68	-100.09	145.34	-1,811.26	1,733.67	1,612.40	121.27	14.296		
10,900.00	10,869.51	14,933.27	10,202.71	39.36	86.68	-100.09	145.34	-1,811.26	1,767.28	1,647.19	120.10	14.716		
11,000.00	10,969.51	14,933.27	10,202.71	39.71	86.68	-100.09	145.34	-1,811.26	1,805.81	1,687.06	118.75	15.206		
11,100.00	11,069.51	14,933.27	10,202.71	40.06	86.68	-100.09	145.34	-1,811.26	1,848.95	1,731.66	117.29	15.764		
11,200.00	11,169.51	14,933.27	10,202.71	40.41	86.68	-100.09	145.34	-1,811.26	1,896.38	1,780.65	115.74	16.386		
11,300.00	11,269.51	14,933.27	10,202.71	40.77	86.68	-100.09	145.34	-1,811.26	1,947.80	1,833.67	114.13	17.066		
11,400.00	11,369.51	14,933.27	10,202.71	41.12	86.68	-100.09	145.34	-1,811.26	2,002.89	1,890.38	112.51	17.802		
11,500.00	11,469.51	14,933.27	10,202.71	41.47	86.68	-100.09	145.34	-1,811.26	2,061.37	1,950.48	110.89	18.589		
11,600.00	11,569.51	14,933.27	10,202.71	41.82	86.68	-100.09	145.34	-1,811.26	2,122.95	2,013.64	109.30	19.423		
11,700.00	11,669.51	14,933.27	10,202.71	42.18	86.68	-100.09	145.34	-1,811.26	2,187.36	2,079.61	107.76	20.299		
11,800.00	11,769.51	14,933.27	10,202.71	42.53	86.68	-100.09	145.34	-1,811.26	2,254.38	2,148.12	106.26	21.215		
11,900.00	11,869.51	14,933.27	10,202.71	42.88	86.68	-100.09	145.34	-1,811.26	2,323.77	2,218.93	104.84	22.166		
11,902.93	11,872.44	14,933.27	10,202.71	42.89	86.68	-100.09	145.34	-1,811.26	2,325.83	2,221.04	104.80	22.194		
11,950.00	11,919.46	14,933.27	10,202.71	43.04	86.68	-100.02	145.34	-1,811.26	2,359.27	2,255.12	104.15	22.653		
12,000.00	11,969.05	14,933.27	10,202.71	43.19	86.68	-99.80	145.34	-1,811.26	2,395.09	2,291.60	103.49	23.144		
12,050.00	12,017.90	14,933.27	10,202.71	43.32	86.68	-99.43	145.34	-1,811.26	2,430.94	2,328.08	102.86	23.634		
12,100.00	12,065.65	14,933.27	10,202.71	43.44	86.68	-98.92	145.34	-1,811.26	2,466.56	2,364.29	102.27	24.118		
12,150.00	12,111.93	14,933.27	10,202.71	43.56	86.68	-98.26	145.34	-1,811.26	2,501.69	2,399.97	101.72	24.594		
12,200.00	12,156.38	14,933.27	10,202.71	43.66	86.68	-97.47	145.34	-1,811.26	2,536.09	2,434.88	101.22	25.056		
12,250.00	12,198.67	14,933.27	10,202.71	43.75	86.68	-96.55	145.34	-1,811.26	2,569.54	2,468.78	100.76	25.503		
12,300.00	12,238.48	14,933.27	10,202.71	43.83	86.68	-95.51	145.34	-1,811.26	2,601.81	2,501.47	100.34	25.929		
12,350.00	12,275.51	14,933.27	10,202.71	43.90	86.68	-94.35	145.34	-1,811.26	2,632.72	2,532.74	99.98	26.333		
12,400.00	12,309.46	14,933.27	10,202.71	43.97	86.68	-93.10	145.34	-1,811.26	2,662.07	2,562.41	99.66	26.711		
12,450.00	12,340.09	14,933.27	10,202.71	44.04	86.68	-91.75	145.34	-1,811.26	2,689.70	2,590.31	99.40	27.061		
12,500.00	12,367.17	14,933.27	10,202.71	44.10	86.68	-90.34	145.34	-1,811.26	2,715.46	2,616.28	99.18	27.379		
12,550.00	12,390.47	14,909.91	10,202.60	44.16	86.32	-89.65	121.99	-1,811.26	2,739.10	2,640.30	98.80	27.723		
12,600.00	12,409.84	14,864.77	10,202.39	44.22	85.65	-89.65	76.84	-1,811.26	2,759.95	2,661.66	98.28	28.081		
12,650.00	12,425.11	14,818.12	10,202.17	44.28	84.95	-89.65	30.20	-1,811.26	2,777.76	2,679.95	97.81	28.400		
12,700.00	12,436.18	14,770.33	10,201.94	44.35	84.23	-89.65	-17.60	-1,811.26	2,792.38	2,695.00	97.38	28.674		
12,750.00	12,442.96	14,721.75	10,201.71	44.42	83.50	-89.65	-66.18	-1,811.26	2,803.71	2,706.70	97.01	28.902		
12,800.00	12,445.39	14,672.75	10,201.48	44.49	82.77	-89.65	-115.17	-1,811.26	2,811.67	2,714.99	96.68	29.081		
12,807.86	12,445.38	14,665.04	10,201.45	44.51	82.66	-89.65	-122.88	-1,811.26	2,812.61	2,715.98	96.64	29.105		
12,900.00	12,444.58	14,574.59	10,201.02	44.68	81.31	-89.66	-213.33	-1,811.26	2,823.19	2,727.06	96.13	29.369		
13,000.00	12,443.72	14,476.43	10,200.56	44.94	79.86	-89.66	-311.49	-1,811.26	2,834.75	2,739.14	95.61	29.650		
13,100.00	12,442.86	14,378.27	10,200.09	45.27	78.41	-89.67	-409.65	-1,811.26	2,846.39	2,751.26	95.13	29.922		
13,200.00	12,442.00	14,280.11	10,199.63	45.66	76.97	-89.67	-507.81	-1,811.26	2,858.11	2,763.43	94.68	30.188		
13,300.00	12,441.14	14,181.94	10,199.17	46.11	75.54	-89.67	-605.97	-1,811.26	2,869.91	2,775.64	94.27	30.444		
13,400.00	12,440.28	14,083.78	10,198.71	46.63	74.11	-89.68	-704.14	-1,811.26	2,881.78	2,787.89	93.89	30.693		
13,500.00	12,439.42	13,985.62	10,198.24	47.20	72.69	-89.68	-802.30	-1,811.26	2,893.74	2,800.18	93.55	30.932		
13,600.00	12,438.56	13,887.46	10,197.78	47.83	71.28	-89.68	-900.46	-1,811.26	2,905.77	2,812.52	93.25	31.161		
13,700.00	12,437.70	13,789.30	10,197.32	48.52	69.89	-89.69	-998.62	-1,811.26	2,917.87	2,824.89	92.98	31.381		
13,727.27	12,437.47	13,762.53	10,197.19	48.71	69.51	-89.69	-1,025.39	-1,811.26	2,921.19	2,828.27	92.91	31.439		
13,800.00	12,436.84	13,709.04	10,196.86	49.25	68.75	-89.69	-1,096.95	-1,811.26	2,929.46	2,836.54	92.92	31.526		

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

Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)
13,900.00	12,435.98	13,607.92	10,196.39	50.02	67.33	-89.69	-1,195.83	-1,811.26	2,938.92	2,846.30	92.63	31.728	
14,000.00	12,435.11	13,507.26	10,195.92	50.83	65.93	-89.69	-1,295.17	-1,811.26	2,946.15	2,853.82	92.32	31.911	
14,100.00	12,434.25	13,406.94	10,195.45	51.66	64.54	-89.69	-1,394.85	-1,811.26	2,951.10	2,859.09	92.01	32.074	
14,200.00	12,433.39	13,306.84	10,194.98	52.52	63.17	-89.70	-1,494.74	-1,811.26	2,953.75	2,862.07	91.68	32.219	
14,259.68	12,432.87	13,233.50	10,194.70	53.04	62.18	-89.70	-1,554.41	-1,811.26	2,954.23	2,862.89	91.33	32.345	
14,300.00	12,432.52	13,206.83	10,194.51	53.40	61.81	-89.70	-1,594.73	-1,811.26	2,954.28	2,862.94	91.33	32.346	
14,400.00	12,431.66	13,106.82	10,194.04	54.32	60.48	-89.70	-1,694.73	-1,811.26	2,954.39	2,863.37	91.02	32.459	
14,500.00	12,430.80	13,006.82	10,193.57	55.27	59.15	-89.70	-1,794.73	-1,811.27	2,954.51	2,863.77	90.74	32.560	
14,600.00	12,429.94	12,906.82	10,193.10	56.25	57.85	-89.70	-1,894.72	-1,811.27	2,954.63	2,864.13	90.50	32.648	
14,700.00	12,429.08	12,806.82	10,192.63	57.26	56.56	-89.70	-1,994.72	-1,811.27	2,954.74	2,864.45	90.29	32.724	
14,800.00	12,428.22	12,706.81	10,192.15	58.31	55.29	-89.70	-2,094.71	-1,811.27	2,954.86	2,864.74	90.12	32.787	
14,900.00	12,427.36	12,606.81	10,191.68	59.38	54.04	-89.70	-2,194.71	-1,811.27	2,954.98	2,864.99	89.99	32.838	
15,000.00	12,426.50	12,506.81	10,191.21	60.47	52.81	-89.70	-2,294.71	-1,811.27	2,955.10	2,865.21	89.89	32.875	
15,100.00	12,425.64	12,406.81	10,190.74	61.60	51.61	-89.70	-2,394.70	-1,811.27	2,955.21	2,865.39	89.83	32.899	
15,200.00	12,424.78	12,306.80	10,190.27	62.74	50.44	-89.70	-2,494.70	-1,811.27	2,955.33	2,865.53	89.80	32.910	
15,300.00	12,423.92	12,206.80	10,189.80	63.91	49.29	-89.70	-2,594.70	-1,811.27	2,955.45	2,865.64	89.81	32.908	
15,400.00	12,423.06	12,106.80	10,189.33	65.10	48.17	-89.70	-2,694.69	-1,811.27	2,955.57	2,865.71	89.86	32.892	
15,500.00	12,422.20	12,006.79	10,188.86	66.31	47.08	-89.70	-2,794.69	-1,811.27	2,955.69	2,865.74	89.94	32.862	
15,600.00	12,421.34	11,906.79	10,188.38	67.54	46.03	-89.70	-2,894.68	-1,811.27	2,955.80	2,865.74	90.07	32.818	
15,700.00	12,420.48	11,806.79	10,187.91	68.79	45.01	-89.70	-2,994.68	-1,811.27	2,955.92	2,865.69	90.23	32.760	
15,800.00	12,419.62	11,706.79	10,187.44	70.06	44.03	-89.70	-3,094.68	-1,811.27	2,956.04	2,865.61	90.43	32.687	
15,900.00	12,418.76	11,606.78	10,186.97	71.34	43.09	-89.70	-3,194.67	-1,811.27	2,956.16	2,865.48	90.68	32.600	
16,000.00	12,417.90	11,506.78	10,186.50	72.63	42.20	-89.70	-3,294.67	-1,811.27	2,956.28	2,865.31	90.97	32.498	
16,100.00	12,417.03	11,406.78	10,186.03	73.94	41.35	-89.70	-3,394.67	-1,811.27	2,956.40	2,865.10	91.30	32.380	
16,200.00	12,416.17	11,306.78	10,185.56	75.27	40.55	-89.70	-3,494.66	-1,811.27	2,956.52	2,864.84	91.68	32.248	
16,300.00	12,415.31	11,193.23	10,185.09	76.60	39.70	-89.70	-3,594.66	-1,811.27	2,956.64	2,864.60	92.03	32.126	
16,400.00	12,414.45	11,106.77	10,184.61	77.95	39.11	-89.70	-3,694.65	-1,811.27	2,956.76	2,864.17	92.58	31.936	
16,500.00	12,413.59	11,006.77	10,184.14	79.31	38.47	-89.70	-3,794.65	-1,811.28	2,956.88	2,863.77	93.11	31.756	
16,600.00	12,412.73	10,906.77	10,183.67	80.69	37.90	-89.70	-3,894.65	-1,811.28	2,957.00	2,863.31	93.69	31.562	
16,700.00	12,411.87	10,806.76	10,183.20	82.07	37.38	-89.70	-3,994.64	-1,811.28	2,957.12	2,862.80	94.32	31.351	
16,800.00	12,411.01	10,706.76	10,182.73	83.46	36.94	-89.70	-4,094.64	-1,811.28	2,957.24	2,862.23	95.01	31.125	
16,900.00	12,410.15	10,606.76	10,182.26	84.87	36.55	-89.70	-4,194.64	-1,811.28	2,957.36	2,861.61	95.76	30.884	
17,000.00	12,409.29	10,493.25	10,181.79	86.28	36.19	-89.70	-4,294.63	-1,811.28	2,957.48	2,860.96	96.53	30.639	
17,100.00	12,408.43	10,450.00	10,181.00	87.70	36.08	-88.06	-4,337.86	-1,811.28	2,958.58	2,861.08	97.50	30.345	
17,200.00	12,407.57	10,450.00	10,181.00	89.13	36.08	-85.17	-4,337.86	-1,811.28	2,962.30	2,863.74	98.56	30.055	
17,300.00	12,406.71	10,425.00	10,179.00	90.56	36.01	-83.02	-4,362.78	-1,811.28	2,968.74	2,869.20	99.54	29.825	
17,400.00	12,405.85	10,400.00	10,175.70	92.01	35.95	-80.89	-4,387.56	-1,811.28	2,978.04	2,877.55	100.48	29.637	
17,500.00	12,404.99	10,388.88	10,173.78	93.46	35.92	-78.41	-4,398.71	-1,811.28	2,990.00	2,888.56	101.44	29.476	
17,600.00	12,404.13	10,375.00	10,171.11	94.91	35.90	-76.03	-4,412.13	-1,811.28	3,004.72	2,902.36	102.36	29.355	
17,700.00	12,403.27	10,350.00	10,165.23	96.38	35.87	-73.99	-4,436.43	-1,811.28	3,022.13	2,918.92	103.20	29.283	
17,800.00	12,402.41	10,337.93	10,161.94	97.85	35.86	-71.67	-4,448.04	-1,811.28	3,042.16	2,938.10	104.06	29.236	
17,900.00	12,401.55	10,325.00	10,158.09	99.32	35.86	-69.42	-4,460.38	-1,811.28	3,064.84	2,959.97	104.87	29.225	
18,000.00	12,400.68	10,300.00	10,149.71	100.81	35.86	-67.52	-4,483.93	-1,811.28	3,090.10	2,984.50	105.60	29.262	
18,100.00	12,399.82	10,300.00	10,149.71	102.29	35.86	-65.10	-4,483.93	-1,811.28	3,117.94	3,011.56	106.38	29.310	
18,200.00	12,398.96	10,275.00	10,140.11	103.79	35.85	-63.31	-4,507.01	-1,811.28	3,148.09	3,041.06	107.03	29.413	
18,300.00	12,398.10	10,260.14	10,133.83	105.28	35.84	-61.36	-4,520.48	-1,811.28	3,180.77	3,073.10	107.67	29.541	
18,400.00	12,397.24	10,250.00	10,129.31	106.78	35.84	-59.38	-4,529.56	-1,811.28	3,215.83	3,107.54	108.29	29.696	
18,500.00	12,396.38	10,225.00	10,117.35	108.29	35.82	-57.75	-4,551.51	-1,811.28	3,253.22	3,144.39	108.82	29.895	
18,600.00	12,395.52	10,225.00	10,117.35	109.80	35.82	-55.75	-4,551.51	-1,811.28	3,292.82	3,183.43	109.39	30.102	
18,700.00	12,394.66	10,200.00	10,104.25	111.32	35.80	-54.23	-4,572.80	-1,811.28	3,334.59	3,224.75	109.84	30.358	
18,800.00	12,393.80	10,200.00	10,104.25	112.84	35.80	-52.39	-4,572.80	-1,811.28	3,378.53	3,268.20	110.33	30.622	
18,900.00	12,392.94	10,175.00	10,090.06	114.36	35.78	-50.99	-4,593.38	-1,811.28	3,424.47	3,313.76	110.71	30.932	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,000.00	12,392.08	10,175.00	10,090.06	115.89	35.78	-49.30	-4,593.38	-1,811.28	3,472.44	3,361.32	111.12	31.249		
19,100.00	12,391.22	10,150.00	10,074.81	117.42	35.75	-48.01	-4,613.18	-1,811.28	3,522.33	3,410.90	111.43	31.609		
19,200.00	12,390.36	10,150.00	10,074.81	118.95	35.75	-46.47	-4,613.18	-1,811.28	3,574.02	3,462.24	111.78	31.974		
19,300.00	12,389.50	10,135.82	10,065.71	120.49	35.74	-45.16	-4,624.06	-1,811.28	3,627.53	3,515.48	112.05	32.373		
19,400.00	12,388.64	10,125.00	10,058.55	122.03	35.72	-43.87	-4,632.17	-1,811.28	3,682.78	3,570.47	112.31	32.791		
19,500.00	12,387.78	10,125.00	10,058.55	123.57	35.72	-42.53	-4,632.17	-1,811.28	3,739.77	3,627.21	112.56	33.225		
19,600.00	12,386.92	10,100.00	10,041.31	125.12	35.69	-41.48	-4,650.27	-1,811.28	3,798.22	3,685.49	112.73	33.692		
19,700.00	12,386.06	10,100.00	10,041.31	126.66	35.69	-40.26	-4,650.27	-1,811.28	3,858.21	3,745.28	112.93	34.165		
19,800.00	12,385.20	10,088.47	10,033.05	128.22	35.67	-39.19	-4,658.31	-1,811.28	3,919.71	3,806.62	113.08	34.663		
19,900.00	12,384.33	10,075.00	10,023.15	129.77	35.65	-38.18	-4,667.45	-1,811.28	3,982.64	3,869.43	113.21	35.179		
20,000.00	12,383.47	10,075.00	10,023.15	131.33	35.65	-37.12	-4,667.45	-1,811.28	4,046.89	3,933.55	113.34	35.706		
20,100.00	12,382.61	10,064.02	10,014.90	132.89	35.63	-36.18	-4,674.69	-1,811.28	4,112.44	3,999.01	113.43	36.254		
20,200.00	12,381.75	10,050.00	10,004.12	134.45	35.61	-35.30	-4,683.65	-1,811.28	4,179.29	4,065.78	113.51	36.819		
20,300.00	12,380.89	10,050.00	10,004.12	136.01	35.61	-34.37	-4,683.65	-1,811.28	4,247.24	4,133.66	113.58	37.393		
20,400.00	12,380.03	10,050.00	10,004.12	137.58	35.61	-33.48	-4,683.65	-1,811.28	4,316.44	4,202.80	113.64	37.982		
20,500.00	12,379.17	10,025.00	9,984.26	139.15	35.56	-32.77	-4,698.84	-1,811.28	4,386.72	4,273.05	113.67	38.593		
20,600.00	12,378.31	10,025.00	9,984.26	140.72	35.56	-31.95	-4,698.84	-1,811.28	4,457.90	4,344.20	113.70	39.207		
20,700.00	12,377.45	10,025.00	9,984.26	142.29	35.56	-31.18	-4,698.84	-1,811.28	4,530.16	4,416.44	113.72	39.835		
20,800.00	12,376.59	10,025.00	9,984.26	143.86	35.56	-30.43	-4,698.84	-1,811.28	4,603.47	4,489.74	113.73	40.476		
20,900.00	12,375.73	10,000.00	9,963.64	145.44	35.51	-29.82	-4,712.96	-1,811.28	4,677.66	4,563.94	113.72	41.132		
21,000.00	12,374.87	10,000.00	9,963.64	147.02	35.51	-29.14	-4,712.96	-1,811.28	4,752.60	4,638.88	113.72	41.793		
21,100.00	12,374.01	10,000.00	9,963.64	148.59	35.51	-28.48	-4,712.96	-1,811.28	4,828.44	4,714.74	113.70	42.465		
21,200.00	12,373.15	10,000.00	9,963.64	150.18	35.51	-27.85	-4,712.96	-1,811.28	4,905.16	4,791.47	113.68	43.148		
21,300.00	12,372.29	10,000.00	9,963.64	151.76	35.51	-27.25	-4,712.96	-1,811.28	4,982.69	4,869.04	113.65	43.841		
21,400.00	12,371.43	9,975.00	9,942.30	153.34	35.45	-26.74	-4,725.99	-1,811.28	5,060.83	4,947.22	113.62	44.542		
21,500.00	12,370.57	9,975.00	9,942.30	154.93	35.45	-26.18	-4,725.99	-1,811.28	5,139.66	5,026.07	113.58	45.250		
21,600.00	12,369.71	9,975.00	9,942.30	156.52	35.45	-25.64	-4,725.99	-1,811.28	5,219.21	5,105.66	113.54	45.967		
21,700.00	12,368.85	9,975.00	9,942.30	158.11	35.45	-25.12	-4,725.99	-1,811.28	5,299.45	5,185.95	113.50	46.692		
21,800.00	12,367.98	9,975.00	9,942.30	159.70	35.45	-24.63	-4,725.99	-1,811.28	5,380.35	5,266.90	113.45	47.425		
21,900.00	12,367.12	9,961.60	9,930.59	161.29	35.42	-24.18	-4,732.51	-1,811.28	5,461.70	5,348.30	113.40	48.162		
22,000.00	12,366.26	9,950.00	9,920.32	162.88	35.39	-23.74	-4,737.88	-1,811.28	5,543.77	5,430.41	113.35	48.907		
22,100.00	12,365.40	9,950.00	9,920.32	164.47	35.39	-23.29	-4,737.88	-1,811.28	5,626.27	5,512.97	113.30	49.658		
22,200.00	12,364.54	9,950.00	9,920.32	166.07	35.39	-22.86	-4,737.88	-1,811.28	5,709.34	5,596.10	113.24	50.416		
22,300.00	12,363.68	9,950.00	9,920.32	167.67	35.39	-22.44	-4,737.88	-1,811.28	5,792.94	5,679.75	113.19	51.180		
22,400.00	12,362.82	9,950.00	9,920.32	169.26	35.39	-22.04	-4,737.88	-1,811.28	5,877.06	5,763.93	113.13	51.949		
22,500.00	12,361.96	9,950.00	9,920.32	170.86	35.39	-21.65	-4,737.88	-1,811.28	5,961.66	5,848.59	113.07	52.724		
22,565.16	12,361.40	9,936.71	9,908.38	171.78	35.36	-21.43	-4,743.73	-1,811.28	6,016.86	5,902.17	114.68	52.465		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-163.93	-4,572.52	-1,317.61	4,758.65					
100.00	100.00	87.37	87.37	0.13	0.22	-163.93	-4,572.44	-1,317.57	4,758.51	4,758.15	0.35	N/A		
200.00	200.00	175.34	175.34	0.49	0.53	-163.93	-4,572.15	-1,317.48	4,758.18	4,757.16	1.02	4,651.175		
205.11	205.11	178.61	178.61	0.51	0.54	-163.93	-4,572.14	-1,317.49	4,758.18	4,757.13	1.05	4,520.259		
300.00	300.00	243.85	243.85	0.85	0.77	-163.92	-4,572.29	-1,317.85	4,758.51	4,756.90	1.62	2,939.884		
400.00	400.00	336.47	336.46	1.21	1.09	-163.92	-4,572.83	-1,318.24	4,759.19	4,756.89	2.30	2,072.836		
500.00	500.00	417.00	416.99	1.57	1.37	-163.92	-4,573.54	-1,318.74	4,760.20	4,757.26	2.94	1,621.315		
600.00	600.00	526.53	526.51	1.93	1.75	-163.91	-4,574.68	-1,319.22	4,761.33	4,757.65	3.68	1,293.720		
700.00	700.00	632.98	632.96	2.29	2.13	-163.92	-4,575.67	-1,319.29	4,762.24	4,757.83	4.42	1,078.611		
800.00	800.00	723.81	723.79	2.64	2.45	-163.92	-4,576.48	-1,319.37	4,763.13	4,758.03	5.10	934.684		
900.00	900.00	873.53	873.50	3.00	2.98	-163.92	-4,577.52	-1,319.77	4,763.97	4,757.99	5.98	796.658		
1,000.00	1,000.00	973.53	973.50	3.36	3.32	-163.92	-4,577.52	-1,319.77	4,763.97	4,757.30	6.68	713.235		
1,100.00	1,100.00	1,080.42	1,080.39	3.72	3.69	-163.92	-4,577.62	-1,319.21	4,763.92	4,756.52	7.41	643.271		
1,200.00	1,200.00	1,189.73	1,189.66	4.08	4.07	-163.95	-4,578.07	-1,316.68	4,763.68	4,755.54	8.14	584.947		
1,300.00	1,300.00	1,298.90	1,298.74	4.44	4.45	-164.01	-4,578.89	-1,312.10	4,763.24	4,754.36	8.88	536.146		
1,400.00	1,400.00	1,407.86	1,407.48	4.79	4.83	-164.09	-4,580.08	-1,305.48	4,762.62	4,752.99	9.63	494.675		
1,500.00	1,500.00	1,516.52	1,515.79	5.15	5.22	-164.20	-4,581.62	-1,296.87	4,761.82	4,751.45	10.38	458.968		
1,600.00	1,600.00	1,624.81	1,623.54	5.51	5.62	-164.32	-4,583.52	-1,286.27	4,760.85	4,749.72	11.13	427.862		
1,700.00	1,700.00	1,732.65	1,730.63	5.87	6.02	-164.48	-4,585.77	-1,273.72	4,759.72	4,747.84	11.88	400.483		
1,800.00	1,800.00	1,839.98	1,836.94	6.23	6.42	-164.65	-4,588.37	-1,259.27	4,758.45	4,745.80	12.65	376.163		
1,900.00	1,900.00	1,946.71	1,942.38	6.59	6.84	-164.85	-4,591.29	-1,242.96	4,757.06	4,743.64	13.42	354.408		
2,000.00	2,000.00	2,047.13	2,041.37	6.95	7.24	-165.05	-4,594.27	-1,226.32	4,755.61	4,741.43	14.18	335.351		
2,100.00	2,100.00	2,145.70	2,138.52	7.30	7.64	-165.25	-4,597.21	-1,209.94	4,754.21	4,739.27	14.94	318.265		
2,200.00	2,200.00	2,244.26	2,235.67	7.66	8.04	-165.45	-4,600.15	-1,193.56	4,752.87	4,737.18	15.70	302.738		
2,300.00	2,300.00	2,342.83	2,332.82	8.02	8.45	-165.65	-4,603.09	-1,177.17	4,751.60	4,735.13	16.47	288.581		
2,400.00	2,400.00	2,441.39	2,429.96	8.38	8.86	-165.86	-4,606.02	-1,160.79	4,750.38	4,733.14	17.23	275.628		
2,500.00	2,500.00	2,539.96	2,527.11	8.74	9.27	-166.06	-4,608.96	-1,144.41	4,749.22	4,731.21	18.01	263.741		
2,577.87	2,577.86	2,616.65	2,602.71	9.02	9.59	-166.22	-4,611.25	-1,131.66	4,748.78	4,730.17	18.61	255.180		
2,600.00	2,599.99	2,638.43	2,624.18	9.10	9.69	-166.26	-4,611.90	-1,128.04	4,748.82	4,730.03	18.78	252.850		
2,700.00	2,699.96	2,736.72	2,721.05	9.45	10.10	-166.48	-4,614.83	-1,111.71	4,749.87	4,730.31	19.56	242.884		
2,800.00	2,799.86	2,834.78	2,817.70	9.81	10.52	-166.71	-4,617.75	-1,095.41	4,752.39	4,732.06	20.33	233.735		
2,900.00	2,899.68	2,932.58	2,914.10	10.17	10.94	-166.95	-4,620.66	-1,079.15	4,756.39	4,735.28	21.11	225.318		
3,000.00	2,999.37	3,030.11	3,010.23	10.53	11.36	-167.21	-4,623.57	-1,062.94	4,761.88	4,740.00	21.89	217.560		
3,100.00	3,098.90	3,127.32	3,106.04	10.89	11.78	-167.47	-4,626.47	-1,046.79	4,768.88	4,746.21	22.67	210.395		
3,200.00	3,198.26	3,224.19	3,201.52	11.25	12.20	-167.75	-4,629.36	-1,030.69	4,777.39	4,753.94	23.45	203.765		
3,300.00	3,297.40	3,320.69	3,296.63	11.61	12.62	-168.04	-4,632.23	-1,014.65	4,787.42	4,763.20	24.23	197.621		
3,300.10	3,297.50	3,320.79	3,296.73	11.61	12.62	-168.04	-4,632.23	-1,014.63	4,787.44	4,763.21	24.23	197.615		
3,400.00	3,396.43	3,416.99	3,391.55	11.98	13.04	-168.33	-4,635.10	-998.64	4,798.29	4,773.29	25.01	191.884		
3,500.00	3,495.46	3,513.29	3,486.47	12.36	13.46	-168.62	-4,637.97	-982.64	4,809.29	4,783.50	25.79	186.487		
3,600.00	3,594.48	3,609.59	3,581.39	12.73	13.88	-168.90	-4,640.84	-966.63	4,820.40	4,793.83	26.57	181.399		
3,700.00	3,693.51	3,705.89	3,676.31	13.11	14.30	-169.19	-4,643.71	-950.63	4,831.65	4,804.29	27.36	176.597		
3,800.00	3,792.54	3,802.20	3,771.23	13.49	14.73	-169.48	-4,646.58	-934.62	4,843.02	4,814.87	28.15	172.058		
3,900.00	3,891.56	3,901.50	3,866.15	13.87	15.16	-169.76	-4,649.45	-918.61	4,854.51	4,825.56	28.95	167.687		
4,000.00	3,990.59	3,994.80	3,961.07	14.26	15.57	-170.04	-4,652.32	-902.61	4,866.12	4,836.39	29.73	163.694		
4,100.00	4,089.62	4,091.10	4,055.98	14.64	16.00	-170.32	-4,655.19	-886.60	4,877.85	4,847.33	30.52	159.834		
4,200.00	4,188.64	4,187.40	4,150.90	15.03	16.42	-170.60	-4,658.06	-870.60	4,889.71	4,858.40	31.31	156.169		
4,300.00	4,287.67	4,283.70	4,245.82	15.42	16.85	-170.88	-4,660.93	-854.59	4,901.68	4,869.58	32.10	152.684		
4,400.00	4,386.70	4,380.00	4,340.74	15.81	17.27	-171.16	-4,663.80	-838.58	4,913.77	4,880.87	32.90	149.369		
4,500.00	4,485.72	4,476.31	4,435.66	16.20	17.70	-171.43	-4,666.67	-822.58	4,925.98	4,892.29	33.69	146.210		
4,600.00	4,584.75	4,572.61	4,530.58	16.60	18.13	-171.71	-4,669.54	-806.57	4,938.31	4,903.82	34.49	143.198		
4,700.00	4,683.78	4,668.91	4,625.50	16.99	18.55	-171.98	-4,672.41	-790.57	4,950.75	4,915.47	35.28	140.324		
4,800.00	4,782.80	4,765.21	4,720.41	17.39	18.98	-172.25	-4,675.28	-774.56	4,963.31	4,927.23	36.08	137.578		

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



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,900.00	4,881.83	4,861.51	4,815.33	17.78	19.41	-172.52	-4,678.15	-758.56	4,975.98	4,939.11	36.87	134.953	
5,000.00	4,980.85	4,957.81	4,910.25	18.18	19.84	-172.79	-4,681.02	-742.55	4,988.76	4,951.10	37.67	132.441	
5,100.00	5,079.88	5,054.11	5,005.17	18.58	20.26	-173.06	-4,683.89	-726.54	5,001.66	4,963.20	38.46	130.036	
5,200.00	5,178.91	5,150.42	5,100.09	18.98	20.69	-173.33	-4,686.76	-710.54	5,014.67	4,975.41	39.26	127.730	
5,300.00	5,277.93	5,046.81	10,232.83	19.38	88.25	-159.22	153.92	-191.14	4,984.07	4,932.14	51.93	95.983	
5,400.00	5,376.96	5,046.81	10,232.83	19.78	88.25	-162.43	153.92	-191.14	4,885.45	4,833.35	52.10	93.772	
5,500.00	5,475.99	5,046.81	10,232.83	20.18	88.25	-165.28	153.92	-191.14	4,786.88	4,734.61	52.28	91.570	
5,600.00	5,575.01	5,046.81	10,232.83	20.58	88.25	-167.81	153.92	-191.14	4,688.38	4,635.93	52.46	89.379	
5,700.00	5,674.04	5,046.81	10,232.83	20.98	88.25	-170.06	153.92	-191.14	4,589.94	4,537.31	52.64	87.197	
5,800.00	5,773.07	5,046.81	10,232.83	21.39	88.25	-172.08	153.92	-191.14	4,491.58	4,438.75	52.83	85.026	
5,898.39	5,870.50	5,046.81	10,232.83	21.78	88.25	-173.85	153.92	-191.14	4,394.87	4,341.85	53.01	82.901	
5,900.00	5,872.09	5,046.81	10,232.83	21.79	88.25	-173.88	153.92	-191.14	4,393.28	4,340.27	53.02	82.866	
6,000.00	5,971.24	5,046.81	10,232.83	22.19	88.25	-175.41	153.92	-191.14	4,294.90	4,241.69	53.21	80.713	
6,100.00	6,070.60	5,046.81	10,232.83	22.58	88.25	-176.62	153.92	-191.14	4,196.29	4,142.88	53.41	78.564	
6,200.00	6,170.14	5,046.81	10,232.83	22.97	88.25	-177.57	153.92	-191.14	4,097.47	4,043.86	53.62	76.423	
6,300.00	6,269.83	5,046.81	10,232.83	23.35	88.25	-178.30	153.92	-191.14	3,998.45	3,944.63	53.82	74.291	
6,400.00	6,369.65	5,046.81	10,232.83	23.71	88.25	-178.84	153.92	-191.14	3,899.25	3,845.22	54.03	72.169	
6,500.00	6,469.55	5,046.81	10,232.83	24.07	88.25	-179.22	153.92	-191.14	3,799.88	3,745.64	54.24	70.056	
6,600.00	6,569.52	5,046.81	10,232.83	24.43	88.25	-179.44	153.92	-191.14	3,700.37	3,645.91	54.45	67.955	
6,698.49	6,668.00	5,046.81	10,232.83	24.77	88.25	-179.51	153.92	-191.14	3,602.23	3,547.57	54.66	65.897	
6,700.00	6,669.51	5,046.81	10,232.83	24.77	88.25	-179.51	153.92	-191.14	3,600.72	3,546.06	54.67	65.865	
6,800.00	6,769.51	5,046.81	10,232.83	25.11	88.25	-179.51	153.92	-191.14	3,501.04	3,446.15	54.89	63.788	
6,900.00	6,869.51	5,046.81	10,232.83	25.45	88.25	-179.51	153.92	-191.14	3,401.37	3,346.26	55.11	61.725	
7,000.00	6,969.51	5,046.81	10,232.83	25.80	88.25	-179.51	153.92	-191.14	3,301.71	3,246.39	55.33	59.674	
7,100.00	7,069.51	5,046.81	10,232.83	26.14	88.25	-179.51	153.92	-191.14	3,202.09	3,146.53	55.56	57.637	
7,200.00	7,169.51	5,046.81	10,232.83	26.48	88.25	-179.51	153.92	-191.14	3,102.48	3,046.70	55.79	55.614	
7,300.00	7,269.51	5,046.81	10,232.83	26.82	88.25	-179.51	153.92	-191.14	3,002.90	2,946.88	56.02	53.604	
7,400.00	7,369.51	5,046.81	10,232.83	27.17	88.25	-179.51	153.92	-191.14	2,903.35	2,847.10	56.26	51.608	
7,500.00	7,469.51	5,046.81	10,232.83	27.51	88.25	-179.51	153.92	-191.14	2,803.84	2,747.34	56.50	49.626	
7,600.00	7,569.51	5,046.81	10,232.83	27.85	88.25	-179.51	153.92	-191.14	2,704.36	2,647.61	56.75	47.658	
7,700.00	7,669.51	5,046.81	10,232.83	28.20	88.25	-179.51	153.92	-191.14	2,604.91	2,547.92	57.00	45.704	
7,800.00	7,769.51	5,046.81	10,232.83	28.54	88.25	-179.51	153.92	-191.14	2,505.52	2,448.27	57.25	43.765	
7,900.00	7,869.51	5,046.81	10,232.83	28.89	88.25	-179.51	153.92	-191.14	2,406.17	2,348.66	57.51	41.840	
8,000.00	7,969.51	5,046.81	10,232.83	29.24	88.25	-179.51	153.92	-191.14	2,306.88	2,249.10	57.77	39.930	
8,100.00	8,069.51	5,046.81	10,232.83	29.58	88.25	-179.51	153.92	-191.14	2,207.65	2,149.61	58.04	38.035	
8,200.00	8,169.51	5,046.81	10,232.83	29.93	88.25	-179.51	153.92	-191.14	2,108.50	2,050.18	58.32	36.155	
8,300.00	8,269.51	5,046.81	10,232.83	30.27	88.25	-179.51	153.92	-191.14	2,009.43	1,950.83	58.60	34.291	
8,400.00	8,369.51	5,046.81	10,232.83	30.62	88.25	-179.51	153.92	-191.14	1,910.45	1,851.56	58.89	32.441	
8,500.00	8,469.51	5,046.81	10,232.83	30.97	88.25	-179.51	153.92	-191.14	1,811.59	1,752.40	59.19	30.608	
8,600.00	8,569.51	5,046.81	10,232.83	31.32	88.25	-179.51	153.92	-191.14	1,712.86	1,653.37	59.50	28.790	
8,700.00	8,669.51	5,046.81	10,232.83	31.66	88.25	-179.51	153.92	-191.14	1,614.29	1,554.48	59.81	26.988	
8,800.00	8,769.51	5,046.81	10,232.83	32.01	88.25	-179.51	153.92	-191.14	1,515.91	1,455.76	60.15	25.203	
8,900.00	8,869.51	5,046.81	10,232.83	32.36	88.25	-179.51	153.92	-191.14	1,417.75	1,357.25	60.50	23.435	
9,000.00	8,969.51	5,046.81	10,232.83	32.71	88.25	-179.51	153.92	-191.14	1,319.87	1,259.00	60.87	21.685	
9,100.00	9,069.51	5,046.81	10,232.83	33.06	88.25	-179.51	153.92	-191.14	1,222.33	1,161.06	61.26	19.952	
9,200.00	9,169.51	5,046.81	10,232.83	33.40	88.25	-179.51	153.92	-191.14	1,125.22	1,063.53	61.69	18.239	
9,300.00	9,269.51	5,046.81	10,232.83	33.75	88.25	-179.51	153.92	-191.14	1,028.67	966.50	62.17	16.547	
9,400.00	9,369.51	5,046.81	10,232.83	34.10	88.25	-179.51	153.92	-191.14	932.84	870.14	62.71	14.877	
9,500.00	9,469.51	5,046.81	10,232.83	34.45	88.25	-179.51	153.92	-191.14	837.99	774.66	63.33	13.233	
9,600.00	9,569.51	5,046.81	10,232.83	34.80	88.25	-179.51	153.92	-191.14	744.49	680.42	64.07	11.619	
9,700.00	9,669.51	5,046.81	10,232.83	35.15	88.25	-179.51	153.92	-191.14	652.92	587.92	65.00	10.045	
9,800.00	9,769.51	5,046.81	10,232.83	35.50	88.25	-179.51	153.92	-191.14	564.21	498.03	66.19	8.524	



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,900.00	9,869.51	15,046.81	10,232.83	35.85	88.25	-179.51	153.92	-191.14	479.97	412.20	67.78	7.082	3.591 CC, ES 3.588 SF
10,000.00	9,969.51	15,046.81	10,232.83	36.20	88.25	-179.51	153.92	-191.14	403.00	333.07	69.93	5.763	
10,100.00	10,069.51	15,046.81	10,232.83	36.55	88.25	-179.51	153.92	-191.14	338.30	265.54	72.76	4.650	
10,200.00	10,169.51	15,046.81	10,232.83	36.90	88.25	-179.51	153.92	-191.14	294.08	218.15	75.93	3.873	
10,289.82	10,259.33	15,046.81	10,232.83	37.22	88.25	-179.51	153.92	-191.14	280.03	202.05	77.97		
10,300.00	10,269.51	15,046.81	10,232.83	37.25	88.25	-179.51	153.92	-191.14	280.21	202.12	78.09		
10,400.00	10,369.51	15,046.81	10,232.83	37.60	88.25	-179.51	153.92	-191.14	300.92	223.09	77.84	3.866	
10,500.00	10,469.51	15,046.81	10,232.83	37.95	88.25	-179.51	153.92	-191.14	350.13	274.28	75.85	4.616	
10,600.00	10,569.51	15,046.81	10,232.83	38.31	88.25	-179.51	153.92	-191.14	417.88	344.23	73.66	5.673	
10,700.00	10,669.51	15,046.81	10,232.83	38.66	88.25	-179.51	153.92	-191.14	496.65	424.70	71.95	6.903	
10,800.00	10,769.51	15,046.81	10,232.83	39.01	88.25	-179.51	153.92	-191.14	581.98	511.20	70.78	8.223	
10,900.00	10,869.51	15,046.81	10,232.83	39.36	88.25	-179.51	153.92	-191.14	671.37	601.34	70.03	9.587	
11,000.00	10,969.51	15,046.81	10,232.83	39.71	88.25	-179.51	153.92	-191.14	763.40	693.81	69.58	10.971	
11,100.00	11,069.51	15,046.81	10,232.83	40.06	88.25	-179.51	153.92	-191.14	857.21	787.86	69.35	12.361	
11,200.00	11,169.51	15,046.81	10,232.83	40.41	88.25	-179.51	153.92	-191.14	952.28	883.03	69.25	13.750	
11,300.00	11,269.51	15,046.81	10,232.83	40.77	88.25	-179.51	153.92	-191.14	1,048.28	979.01	69.27	15.134	
11,400.00	11,369.51	15,046.81	10,232.83	41.12	88.25	-179.51	153.92	-191.14	1,144.95	1,075.60	69.36	16.508	
11,500.00	11,469.51	15,046.81	10,232.83	41.47	88.25	-179.51	153.92	-191.14	1,242.16	1,172.66	69.50	17.872	
11,600.00	11,569.51	15,046.81	10,232.83	41.82	88.25	-179.51	153.92	-191.14	1,339.77	1,270.08	69.69	19.225	
11,700.00	11,669.51	15,046.81	10,232.83	42.18	88.25	-179.51	153.92	-191.14	1,437.72	1,367.81	69.91	20.565	
11,800.00	11,769.51	15,046.81	10,232.83	42.53	88.25	-179.51	153.92	-191.14	1,535.92	1,465.77	70.16	21.893	
11,900.00	11,869.51	15,046.81	10,232.83	42.88	88.25	-179.51	153.92	-191.14	1,634.35	1,563.92	70.43	23.207	
11,902.93	11,872.44	15,046.81	10,232.83	42.89	88.25	-179.51	153.92	-191.14	1,637.24	1,566.80	70.43	23.245	
11,950.00	11,919.46	15,046.81	10,232.83	43.04	88.25	-179.43	153.92	-191.14	1,683.27	1,612.71	70.55	23.858	
12,000.00	11,969.05	15,046.81	10,232.83	43.19	88.25	-179.16	153.92	-191.14	1,731.22	1,660.56	70.66	24.502	
12,050.00	12,017.90	15,046.81	10,232.83	43.32	88.25	-178.69	153.92	-191.14	1,777.93	1,707.19	70.74	25.134	
12,100.00	12,065.65	15,046.81	10,232.83	43.44	88.25	-177.96	153.92	-191.14	1,823.16	1,752.35	70.80	25.749	
12,150.00	12,111.93	15,046.81	10,232.83	43.56	88.25	-176.89	153.92	-191.14	1,866.68	1,795.82	70.86	26.345	
12,200.00	12,156.38	15,046.81	10,232.83	43.66	88.25	-175.35	153.92	-191.14	1,908.29	1,837.39	70.89	26.917	
12,250.00	12,198.67	15,046.81	10,232.83	43.75	88.25	-173.08	153.92	-191.14	1,947.79	1,876.87	70.92	27.463	
12,300.00	12,238.48	15,046.81	10,232.83	43.83	88.25	-169.58	153.92	-191.14	1,985.04	1,914.09	70.95	27.978	
12,350.00	12,275.51	15,046.81	10,232.83	43.90	88.25	-163.82	153.92	-191.14	2,019.87	1,948.90	70.97	28.460	
12,400.00	12,309.46	15,046.81	10,232.83	43.97	88.25	-153.22	153.92	-191.14	2,052.15	1,981.16	71.00	28.905	
12,450.00	12,340.09	15,046.81	10,232.83	44.04	88.25	-131.21	153.92	-191.14	2,081.76	2,010.74	71.03	29.310	
12,500.00	12,367.17	15,046.81	10,232.83	44.10	88.25	-91.30	153.92	-191.14	2,108.60	2,037.53	71.06	29.672	
12,550.00	12,390.47	15,008.41	10,232.76	44.16	87.68	-86.73	115.52	-191.14	2,132.20	2,061.35	70.86	30.092	
12,600.00	12,409.84	14,963.21	10,232.68	44.22	87.01	-87.09	70.32	-191.14	2,151.92	2,081.32	70.60	30.479	
12,650.00	12,425.11	14,916.52	10,232.60	44.28	86.32	-87.39	23.63	-191.14	2,167.60	2,097.26	70.33	30.819	
12,700.00	12,436.18	14,868.69	10,232.52	44.35	85.62	-87.64	-24.20	-191.14	2,179.11	2,109.06	70.06	31.105	
12,750.00	12,442.96	14,820.09	10,232.43	44.42	84.90	-87.85	-72.80	-191.14	2,186.39	2,116.62	69.77	31.336	
12,800.00	12,445.39	14,771.09	10,232.35	44.49	84.19	-88.03	-121.80	-191.14	2,189.37	2,119.88	69.49	31.509	
12,807.86	12,445.38	14,763.37	10,232.34	44.51	84.07	-88.06	-129.52	-191.14	2,189.45	2,120.01	69.44	31.530	
12,900.00	12,444.58	14,672.93	10,232.18	44.68	82.75	-88.32	-219.96	-191.14	2,189.79	2,120.86	68.93	31.769	
13,000.00	12,443.72	14,574.77	10,232.01	44.94	81.33	-88.54	-318.12	-191.14	2,190.32	2,121.91	68.41	32.018	
13,100.00	12,442.86	14,476.61	10,231.84	45.27	79.91	-88.70	-416.28	-191.14	2,191.01	2,123.09	67.92	32.257	
13,200.00	12,442.00	14,378.45	10,231.66	45.66	78.50	-88.84	-514.44	-191.14	2,191.88	2,124.40	67.47	32.484	
13,300.00	12,441.14	14,280.29	10,231.49	46.11	77.09	-88.94	-612.60	-191.14	2,192.90	2,125.84	67.06	32.700	
13,400.00	12,440.28	14,182.13	10,231.32	46.63	75.70	-89.03	-710.76	-191.14	2,194.10	2,127.42	66.68	32.904	
13,500.00	12,439.42	14,083.97	10,231.15	47.20	74.32	-89.11	-808.92	-191.14	2,195.46	2,129.12	66.34	33.096	
13,600.00	12,438.56	13,985.80	10,230.98	47.83	72.94	-89.17	-907.09	-191.14	2,196.98	2,130.96	66.03	33.275	
13,700.00	12,437.70	13,887.64	10,230.81	48.52	71.58	-89.23	-1,005.25	-191.14	2,198.67	2,132.92	65.75	33.441	
13,727.27	12,437.47	13,860.88	10,230.76	48.71	71.21	-89.24	-1,032.01	-191.14	2,199.16	2,133.48	65.68	33.484	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,800.00	12,436.84	13,789.32	10,230.64	49.25	70.22	-89.28	-1,103.57	-191.14	2,200.40	2,134.90	65.50	33.596		
13,900.00	12,435.98	13,709.57	10,230.46	50.02	69.13	-89.31	-1,202.46	-191.14	2,201.80	2,136.42	65.38	33.676		
14,000.00	12,435.11	13,608.91	10,230.29	50.83	67.77	-89.33	-1,301.80	-191.14	2,202.78	2,137.65	65.13	33.820		
14,100.00	12,434.25	13,508.59	10,230.12	51.66	66.42	-89.35	-1,401.48	-191.14	2,203.29	2,138.40	64.89	33.954		
14,200.00	12,433.39	13,408.48	10,229.94	52.52	65.09	-89.36	-1,501.37	-191.14	2,203.29	2,138.64	64.65	34.080		
14,259.68	12,432.87	13,331.86	10,229.84	53.04	64.08	-89.36	-1,561.03	-191.14	2,203.04	2,138.64	64.40	34.209		
14,300.00	12,432.52	13,308.47	10,229.77	53.40	63.78	-89.36	-1,601.36	-191.14	2,202.80	2,138.39	64.41	34.197		
14,400.00	12,431.66	13,208.46	10,229.59	54.32	62.48	-89.36	-1,701.35	-191.14	2,202.22	2,138.02	64.20	34.304		
14,500.00	12,430.80	13,108.46	10,229.42	55.27	61.20	-89.36	-1,801.35	-191.14	2,201.64	2,137.64	64.00	34.400		
14,600.00	12,429.94	13,008.46	10,229.24	56.25	59.94	-89.37	-1,901.34	-191.14	2,201.05	2,137.22	63.83	34.463		
14,700.00	12,429.08	12,908.45	10,229.07	57.26	58.70	-89.37	-2,001.34	-191.14	2,200.47	2,136.79	63.68	34.554		
14,800.00	12,428.22	12,808.45	10,228.89	58.31	57.48	-89.37	-2,101.33	-191.14	2,199.89	2,136.34	63.56	34.613		
14,900.00	12,427.36	12,708.44	10,228.72	59.38	56.28	-89.37	-2,201.33	-191.14	2,199.31	2,135.86	63.45	34.660		
15,000.00	12,426.50	12,608.44	10,228.55	60.47	55.11	-89.37	-2,301.33	-191.14	2,198.73	2,135.35	63.38	34.694		
15,100.00	12,425.64	12,508.43	10,228.37	61.60	53.96	-89.37	-2,401.32	-191.14	2,198.15	2,134.83	63.32	34.715		
15,200.00	12,424.78	12,408.43	10,228.20	62.74	52.83	-89.37	-2,501.32	-191.14	2,197.57	2,134.28	63.29	34.722		
15,300.00	12,423.92	12,308.43	10,228.02	63.91	51.74	-89.37	-2,601.31	-191.14	2,196.99	2,133.70	63.28	34.717		
15,400.00	12,423.06	12,208.42	10,227.85	65.10	50.68	-89.38	-2,701.31	-191.14	2,196.41	2,133.10	63.30	34.698		
15,500.00	12,422.20	12,108.42	10,227.67	66.31	49.65	-89.38	-2,801.30	-191.14	2,195.83	2,132.48	63.35	34.664		
15,600.00	12,421.34	12,008.41	10,227.50	67.54	48.66	-89.38	-2,901.30	-191.14	2,195.25	2,131.83	63.41	34.617		
15,700.00	12,420.48	11,908.41	10,227.32	68.79	47.70	-89.38	-3,001.30	-191.14	2,194.67	2,131.15	63.51	34.555		
15,800.00	12,419.62	11,808.40	10,227.15	70.06	46.79	-89.38	-3,101.29	-191.14	2,194.09	2,130.45	63.64	34.479		
15,900.00	12,418.76	11,708.40	10,226.97	71.34	45.92	-89.38	-3,201.29	-191.14	2,193.51	2,129.72	63.79	34.388		
16,000.00	12,417.90	11,608.40	10,226.80	72.63	45.09	-89.38	-3,301.28	-191.14	2,192.93	2,128.96	63.97	34.282		
16,100.00	12,417.03	11,508.39	10,226.63	73.94	44.32	-89.39	-3,401.28	-191.14	2,192.35	2,128.17	64.18	34.161		
16,200.00	12,416.17	11,408.39	10,226.45	75.27	43.60	-89.39	-3,501.27	-191.14	2,191.77	2,127.35	64.42	34.024		
16,300.00	12,415.31	11,308.38	10,226.28	76.60	42.95	-89.39	-3,601.27	-191.14	2,191.19	2,126.50	64.69	33.871		
16,400.00	12,414.45	11,208.38	10,226.10	77.95	42.35	-89.39	-3,701.26	-191.14	2,190.61	2,125.62	65.00	33.703		
16,500.00	12,413.59	11,108.37	10,225.93	79.31	41.84	-89.39	-3,801.26	-191.14	2,190.04	2,124.70	65.34	33.520		
16,600.00	12,412.73	11,008.37	10,225.75	80.69	41.39	-89.39	-3,901.26	-191.14	2,189.46	2,123.75	65.71	33.320		
16,700.00	12,411.87	10,908.37	10,225.58	82.07	41.03	-89.39	-4,001.25	-191.14	2,188.88	2,122.76	66.12	33.106		
16,800.00	12,411.01	10,808.36	10,225.40	83.46	40.75	-89.39	-4,101.25	-191.14	2,188.30	2,121.74	66.56	32.876		
16,900.00	12,410.15	10,708.36	10,225.23	84.87	40.56	-89.40	-4,201.24	-191.14	2,187.73	2,120.68	67.05	32.631		
17,000.00	12,409.29	10,591.65	10,225.05	86.28	40.42	-89.40	-4,301.24	-191.14	2,187.15	2,119.61	67.54	32.382		
17,014.64	12,409.16	10,589.61	10,225.05	86.48	40.42	-87.38	-4,303.27	-191.14	2,187.10	2,119.43	67.67	32.318		
17,100.00	12,408.43	10,575.00	10,224.80	87.70	40.40	-76.33	-4,317.88	-191.14	2,188.38	2,119.92	68.47	31.963		
17,200.00	12,407.57	10,550.00	10,223.34	89.13	40.39	-65.67	-4,342.84	-191.14	2,193.35	2,123.92	69.42	31.595		
17,300.00	12,406.71	10,535.82	10,221.93	90.56	40.38	-55.38	-4,356.95	-191.14	2,202.00	2,131.50	70.50	31.233		
17,400.00	12,405.85	10,525.00	10,220.57	92.01	40.37	-46.86	-4,367.68	-191.14	2,214.42	2,142.75	71.67	30.897		
17,500.00	12,404.99	10,500.00	10,216.51	93.46	40.36	-41.15	-4,392.34	-191.14	2,230.34	2,157.57	72.77	30.649		
17,600.00	12,404.13	10,475.00	10,211.16	94.91	40.35	-36.49	-4,416.76	-191.14	2,249.97	2,176.08	73.89	30.450		
17,700.00	12,403.27	10,475.00	10,211.16	96.38	40.35	-31.59	-4,416.76	-191.14	2,273.04	2,197.79	75.25	30.208		
17,800.00	12,402.41	10,450.00	10,204.54	97.85	40.34	-28.62	-4,440.87	-191.14	2,299.38	2,223.00	76.38	30.104		
17,900.00	12,401.55	10,425.00	10,196.67	99.32	40.33	-26.12	-4,464.59	-191.14	2,329.21	2,251.70	77.50	30.053		
18,000.00	12,400.68	10,425.00	10,196.67	100.81	40.33	-23.40	-4,464.59	-191.14	2,362.20	2,283.36	78.84	29.962		
18,100.00	12,399.82	10,400.00	10,187.57	102.29	40.32	-21.66	-4,487.87	-191.14	2,398.17	2,318.25	79.91	30.009		
18,200.00	12,398.96	10,385.34	10,181.67	103.79	40.32	-19.98	-4,501.30	-191.14	2,437.21	2,356.16	81.05	30.071		
18,300.00	12,398.10	10,375.00	10,177.26	105.28	40.31	-18.47	-4,510.65	-191.14	2,479.14	2,396.96	82.18	30.167		
18,400.00	12,397.24	10,350.00	10,165.78	106.78	40.30	-17.34	-4,532.85	-191.14	2,523.82	2,440.68	83.14	30.357		
18,500.00	12,396.38	10,350.00	10,165.78	108.29	40.30	-16.08	-4,532.85	-191.14	2,571.13	2,486.87	84.26	30.515		
18,600.00	12,395.52	10,325.00	10,153.14	109.80	40.29	-15.21	-4,554.42	-191.14	2,620.85	2,535.72	85.12	30.788		
18,700.00	12,394.66	10,325.00	10,153.14	111.32	40.29	-14.23	-4,554.42	-191.14	2,673.12	2,586.99	86.13	31.035		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)
18,800.00	12,393.80	10,300.00	10,139.40	112.84	40.27	-13.55	-4,575.30	-191.14	2,727.46	2,640.55	86.90	31.385	
18,900.00	12,392.94	10,300.00	10,139.40	114.36	40.27	-12.76	-4,575.30	-191.14	2,784.16	2,696.36	87.80	31.711	
19,000.00	12,392.08	10,275.00	10,124.58	115.89	40.25	-12.20	-4,595.43	-191.14	2,842.72	2,754.23	88.48	32.128	
19,100.00	12,391.22	10,275.00	10,124.58	117.42	40.25	-11.57	-4,595.43	-191.14	2,903.36	2,814.09	89.27	32.524	
19,200.00	12,390.36	10,250.00	10,108.73	118.95	40.22	-11.10	-4,614.76	-191.14	2,965.77	2,875.90	89.87	33.001	
19,300.00	12,389.50	10,250.00	10,108.73	120.49	40.22	-10.58	-4,614.76	-191.14	3,029.91	2,939.35	90.56	33.458	
19,400.00	12,388.64	10,235.62	10,099.17	122.03	40.21	-10.15	-4,625.49	-191.14	3,095.70	3,004.57	91.13	33.969	
19,500.00	12,387.78	10,225.00	10,091.89	123.57	40.20	-9.74	-4,633.23	-191.14	3,163.08	3,071.39	91.69	34.498	
19,600.00	12,386.92	10,225.00	10,091.89	125.12	40.20	-9.34	-4,633.23	-191.14	3,232.02	3,139.77	92.24	35.037	
19,700.00	12,386.06	10,200.00	10,074.11	126.66	40.17	-9.03	-4,650.80	-191.14	3,302.23	3,209.56	92.68	35.631	
19,800.00	12,385.20	10,200.00	10,074.11	128.22	40.17	-8.68	-4,650.80	-191.14	3,373.73	3,280.57	93.16	36.213	
19,900.00	12,384.33	10,200.00	10,074.11	129.77	40.17	-8.36	-4,650.80	-191.14	3,446.65	3,353.04	93.61	36.819	
20,000.00	12,383.47	10,175.00	10,055.43	131.33	40.13	-8.11	-4,667.41	-191.14	3,520.57	3,426.60	93.97	37.466	
20,100.00	12,382.61	10,175.00	10,055.43	132.89	40.13	-7.83	-4,667.41	-191.14	3,595.60	3,501.24	94.36	38.105	
20,200.00	12,381.75	10,175.00	10,055.43	134.45	40.13	-7.57	-4,667.41	-191.14	3,671.83	3,577.11	94.72	38.764	
20,300.00	12,380.89	10,150.00	10,035.90	136.01	40.09	-7.37	-4,683.02	-191.14	3,748.99	3,653.97	95.02	39.454	
20,400.00	12,380.03	10,150.00	10,035.90	137.58	40.09	-7.14	-4,683.02	-191.14	3,826.98	3,731.64	95.34	40.141	
20,500.00	12,379.17	10,150.00	10,035.90	139.15	40.09	-6.92	-4,683.02	-191.14	3,905.96	3,810.33	95.63	40.842	
20,600.00	12,378.31	10,150.00	10,035.90	140.72	40.09	-6.72	-4,683.02	-191.14	3,985.90	3,889.99	95.91	41.559	
20,700.00	12,377.45	10,125.00	10,015.59	142.29	40.05	-6.56	-4,697.59	-191.14	4,066.46	3,970.30	96.15	42.293	
20,800.00	12,376.59	10,125.00	10,015.59	143.86	40.05	-6.38	-4,697.59	-191.14	4,147.76	4,051.37	96.39	43.029	
20,900.00	12,375.73	10,125.00	10,015.59	145.44	40.05	-6.21	-4,697.59	-191.14	4,229.87	4,133.24	96.62	43.778	
21,000.00	12,374.87	10,125.00	10,015.59	147.02	40.05	-6.05	-4,697.59	-191.14	4,312.73	4,215.89	96.83	44.538	
21,100.00	12,374.01	10,100.00	9,994.54	148.59	40.01	-5.91	-4,711.07	-191.14	4,396.17	4,299.13	97.04	45.305	
21,200.00	12,373.15	10,100.00	9,994.54	150.18	40.01	-5.77	-4,711.07	-191.14	4,480.11	4,382.89	97.23	46.080	
21,300.00	12,372.29	10,100.00	9,994.54	151.76	40.01	-5.63	-4,711.07	-191.14	4,564.70	4,467.30	97.40	46.863	
21,400.00	12,371.43	10,100.00	9,994.54	153.34	40.01	-5.50	-4,711.07	-191.14	4,649.91	4,552.33	97.57	47.656	
21,500.00	12,370.57	10,100.00	9,994.54	154.93	40.01	-5.37	-4,711.07	-191.14	4,735.69	4,637.96	97.73	48.456	
21,600.00	12,369.71	10,075.00	9,972.82	156.52	39.96	-5.27	-4,723.44	-191.14	4,821.91	4,724.01	97.90	49.253	
21,700.00	12,368.85	10,075.00	9,972.82	158.11	39.96	-5.16	-4,723.44	-191.14	4,908.51	4,810.46	98.05	50.063	
21,800.00	12,367.98	10,075.00	9,972.82	159.70	39.96	-5.05	-4,723.44	-191.14	4,995.60	4,897.42	98.19	50.879	
21,900.00	12,367.12	10,075.00	9,972.82	161.29	39.96	-4.94	-4,723.44	-191.14	5,083.17	4,984.86	98.32	51.702	
22,000.00	12,366.26	10,075.00	9,972.82	162.88	39.96	-4.84	-4,723.44	-191.14	5,171.20	5,072.75	98.44	52.531	
22,100.00	12,365.40	10,075.00	9,972.82	164.47	39.96	-4.75	-4,723.44	-191.14	5,259.65	5,161.08	98.56	53.364	
22,200.00	12,364.54	10,050.00	9,950.48	166.07	39.91	-4.67	-4,734.65	-191.14	5,348.42	5,249.71	98.71	54.184	
22,300.00	12,363.68	10,050.00	9,950.48	167.67	39.91	-4.58	-4,734.65	-191.14	5,437.46	5,338.63	98.82	55.023	
22,400.00	12,362.82	10,050.00	9,950.48	169.26	39.91	-4.49	-4,734.65	-191.14	5,526.87	5,427.94	98.93	55.867	
22,500.00	12,361.96	10,050.00	9,950.48	170.86	39.91	-4.41	-4,734.65	-191.14	5,616.63	5,517.60	99.03	56.714	
22,565.16	12,361.40	10,050.00	9,950.48	171.78	39.91	-4.36	-4,734.65	-191.14	5,675.31	5,573.78	101.53	55.900	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor			
0.00	0.00	0.50	-0.50	0.00	0.00	89.70	0.47	89.97	89.97						
100.00	100.00	100.50	99.50	0.13	0.14	89.70	0.47	89.97	89.97	89.70	0.27	332.433			
200.00	200.00	200.50	199.50	0.49	0.49	89.70	0.47	89.97	89.97	88.98	0.99	91.102			
300.00	300.00	300.50	299.50	0.85	0.85	89.70	0.47	89.97	89.97	88.27	1.70	52.784			
400.00	400.00	400.50	399.50	1.21	1.21	89.70	0.47	89.97	89.97	87.55	2.42	37.156			
500.00	500.00	500.50	499.50	1.57	1.57	89.70	0.47	89.97	89.97	86.83	3.14	28.668			
600.00	600.00	600.50	599.50	1.93	1.93	89.70	0.47	89.97	89.97	86.12	3.86	23.337			
700.00	700.00	700.50	699.50	2.29	2.29	89.70	0.47	89.97	89.97	85.40	4.57	19.678			
800.00	800.00	800.50	799.50	2.64	2.65	89.70	0.47	89.97	89.97	84.68	5.29	17.010			
900.00	900.00	900.50	899.50	3.00	3.00	89.70	0.47	89.97	89.97	83.97	6.01	14.980			
1,000.00	1,000.00	1,000.50	999.50	3.36	3.36	89.70	0.47	89.97	89.97	83.25	6.72	13.382			
1,100.00	1,100.00	1,100.50	1,099.50	3.72	3.72	89.70	0.47	89.97	89.97	82.53	7.44	12.093			
1,200.00	1,200.00	1,200.50	1,199.50	4.08	4.08	89.70	0.47	89.97	89.97	81.81	8.16	11.030			
1,300.00	1,300.00	1,300.50	1,299.50	4.44	4.44	89.70	0.47	89.97	89.97	81.10	8.87	10.139			
1,400.00	1,400.00	1,400.50	1,399.50	4.79	4.80	89.70	0.47	89.97	89.97	80.38	9.59	9.381			
1,500.00	1,500.00	1,500.50	1,499.50	5.15	5.15	89.70	0.47	89.97	89.97	79.66	10.31	8.728			
1,600.00	1,600.00	1,600.50	1,599.50	5.51	5.51	89.70	0.47	89.97	89.97	78.95	11.02	8.161			
1,700.00	1,700.00	1,700.50	1,699.50	5.87	5.87	89.70	0.47	89.97	89.97	78.23	11.74	7.663			
1,800.00	1,800.00	1,800.50	1,799.50	6.23	6.23	89.70	0.47	89.97	89.97	77.51	12.46	7.222			
1,900.00	1,900.00	1,900.50	1,899.50	6.59	6.59	89.70	0.47	89.97	89.97	76.80	13.18	6.829			
2,000.00	2,000.00	2,000.50	1,999.50	6.95	6.95	89.70	0.47	89.97	89.97	76.08	13.89	6.476			
2,100.00	2,100.00	2,100.50	2,099.50	7.30	7.31	89.70	0.47	89.97	89.97	75.36	14.61	6.158			
2,200.00	2,200.00	2,200.50	2,199.50	7.66	7.66	89.70	0.47	89.97	89.97	74.65	15.33	5.870			
2,300.00	2,300.00	2,300.50	2,299.50	8.02	8.02	89.70	0.47	89.97	89.97	73.93	16.04	5.608			
2,400.00	2,400.00	2,400.50	2,399.50	8.38	8.38	89.70	0.47	89.97	89.97	73.21	16.76	5.368			
2,500.00	2,500.00	2,499.50	2,499.50	8.74	8.74	89.70	0.47	89.97	89.97	72.50	17.47	5.149 CC			
2,600.00	2,599.99	2,599.32	2,599.32	9.10	9.09	89.67	1.33	90.06	90.41	72.22	18.19	4.971 ES			
2,700.00	2,699.96	2,699.13	2,699.09	9.45	9.45	89.56	3.91	90.34	91.74	72.84	18.90	4.853			
2,800.00	2,799.86	2,798.92	2,798.78	9.81	9.81	89.38	8.22	90.81	93.95	74.34	19.61	4.790			
2,900.00	2,899.68	2,898.67	2,898.34	10.17	10.17	89.14	14.25	91.47	97.05	76.72	20.33	4.774 SF			
3,000.00	2,999.37	2,998.37	2,997.74	10.53	10.52	88.86	22.00	92.31	101.03	79.99	21.04	4.802			
3,100.00	3,098.90	3,098.01	3,096.93	10.89	10.88	88.55	31.47	93.34	105.90	84.14	21.76	4.867			
3,200.00	3,198.26	3,197.58	3,195.86	11.25	11.24	88.22	42.64	94.55	111.66	89.18	22.48	4.968			
3,300.00	3,297.40	3,303.00	3,294.50	11.61	11.62	87.88	55.50	95.95	118.29	95.07	23.22	5.094			
3,300.10	3,297.50	3,302.89	3,294.60	11.61	11.62	87.88	55.51	95.95	118.30	95.08	23.22	5.094			
3,400.00	3,396.43	3,403.19	3,393.27	11.98	11.99	87.53	69.30	97.45	125.39	101.43	23.96	5.233			
3,500.00	3,495.46	3,503.44	3,492.05	12.36	12.37	87.21	83.10	98.95	132.48	107.78	24.70	5.363			
3,600.00	3,594.48	3,603.70	3,590.82	12.73	12.74	86.93	96.90	100.45	139.58	114.13	25.45	5.485			
3,700.00	3,693.51	3,703.95	3,689.60	13.11	13.12	86.67	110.70	101.95	146.68	120.48	26.20	5.599			
3,800.00	3,792.54	3,804.21	3,788.37	13.49	13.50	86.44	124.50	103.45	153.79	126.83	26.95	5.705			
3,900.00	3,891.56	3,904.46	3,887.15	13.87	13.88	86.23	138.30	104.95	160.89	133.18	27.71	5.805			
4,000.00	3,990.59	4,004.72	3,985.92	14.26	14.27	86.03	152.11	106.45	168.00	139.52	28.48	5.899			
4,100.00	4,089.62	4,104.97	4,084.70	14.64	14.65	85.85	165.91	107.95	175.11	145.87	29.25	5.988			
4,200.00	4,188.64	4,205.22	4,183.47	15.03	15.04	85.69	179.71	109.45	182.23	152.21	30.02	6.071			
4,300.00	4,287.67	4,305.48	4,282.24	15.42	15.43	85.53	193.51	110.95	189.34	158.55	30.79	6.149			
4,400.00	4,386.70	4,405.73	4,381.02	15.81	15.82	85.39	207.31	112.45	196.46	164.89	31.57	6.223			
4,500.00	4,485.72	4,505.99	4,479.79	16.20	16.21	85.26	221.11	113.95	203.57	171.23	32.35	6.294			
4,600.00	4,584.75	4,606.24	4,578.57	16.60	16.61	85.14	234.91	115.45	210.69	177.56	33.13	6.360			
4,700.00	4,683.78	4,706.50	4,677.34	16.99	17.00	85.02	248.71	116.94	217.81	183.90	33.91	6.423			
4,800.00	4,782.80	4,806.75	4,776.12	17.39	17.40	84.92	262.52	118.44	224.93	190.23	34.70	6.483			
4,900.00	4,881.83	4,892.99	4,874.89	17.78	17.74	84.82	276.32	119.94	232.05	196.62	35.43	6.550			
5,000.00	4,980.85	5,007.26	4,973.67	18.18	18.19	84.72	290.12	121.44	239.17	202.89	36.27	6.593			

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
5,100.00	5,079.88	5,107.52	5,072.44	18.58	18.59	84.63	303.92	122.94	246.29	209.22	37.06	6.645			
5,200.00	5,178.91	5,207.77	5,171.22	18.98	18.99	84.55	317.72	124.44	253.41	215.55	37.86	6.694			
5,300.00	5,277.93	5,308.03	5,269.99	19.38	19.39	84.47	331.52	125.94	260.53	221.88	38.65	6.741			
5,400.00	5,376.96	5,408.28	5,368.77	19.78	19.79	84.39	345.32	127.44	267.66	228.21	39.45	6.785			
5,500.00	5,475.99	5,508.53	5,467.54	20.18	20.19	84.32	359.12	128.94	274.78	234.54	40.24	6.828			
5,600.00	5,575.01	5,591.21	5,566.31	20.58	20.52	84.25	372.92	130.44	281.90	240.93	40.97	6.880			
5,700.00	5,674.04	5,691.46	5,665.61	20.98	20.93	84.21	386.60	131.93	288.99	247.21	41.77	6.918			
5,800.00	5,773.07	5,792.29	5,765.68	21.39	21.32	84.45	398.85	133.26	295.76	253.19	42.57	6.947			
5,898.39	5,870.50	5,891.46	5,864.31	21.78	21.71	84.98	409.20	134.38	302.08	258.74	43.35	6.969			
5,900.00	5,872.09	5,893.09	5,865.93	21.79	21.71	85.00	409.35	134.40	302.19	258.82	43.36	6.969			
6,000.00	5,971.24	5,993.86	5,966.32	22.19	22.10	85.69	418.09	135.35	308.03	263.89	44.14	6.979			
6,100.00	6,070.60	6,094.63	6,066.84	22.58	22.47	86.38	425.08	136.11	313.03	268.13	44.90	6.972			
6,200.00	6,170.14	6,195.38	6,167.45	22.97	22.84	87.07	430.30	136.68	317.19	271.55	45.65	6.949			
6,300.00	6,269.83	6,296.11	6,268.12	23.35	23.20	87.76	433.77	137.05	320.51	274.13	46.38	6.911			
6,400.00	6,369.65	6,396.79	6,368.79	23.71	23.55	88.46	435.47	137.24	322.99	275.90	47.09	6.859			
6,500.00	6,469.55	6,502.94	6,469.05	24.07	23.92	89.14	435.66	137.26	324.66	276.85	47.81	6.791			
6,600.00	6,569.52	6,602.98	6,569.02	24.43	24.26	89.56	435.66	137.26	325.67	277.17	48.50	6.715			
6,698.49	6,668.00	6,704.49	6,667.50	24.77	24.61	89.70	435.66	137.26	326.00	276.81	49.19	6.627			
6,700.00	6,669.51	6,702.98	6,669.01	24.77	24.60	89.70	435.66	137.26	326.00	276.81	49.19	6.627			
6,800.00	6,769.51	6,802.98	6,769.01	25.11	24.95	89.70	435.66	137.26	326.00	276.12	49.88	6.536			
6,900.00	6,869.51	6,902.98	6,869.01	25.45	25.29	89.70	435.66	137.26	326.00	275.44	50.56	6.447			
7,000.00	6,969.51	7,002.98	6,969.01	25.80	25.63	89.70	435.66	137.26	326.00	274.75	51.25	6.361			
7,100.00	7,069.51	7,102.98	7,069.01	26.14	25.98	89.70	435.66	137.26	326.00	274.06	51.94	6.277			
7,200.00	7,169.51	7,202.98	7,169.01	26.48	26.32	89.70	435.66	137.26	326.00	273.37	52.63	6.194			
7,300.00	7,269.51	7,302.98	7,269.01	26.82	26.67	89.70	435.66	137.26	326.00	272.68	53.32	6.114			
7,400.00	7,369.51	7,402.98	7,369.01	27.17	27.02	89.70	435.66	137.26	326.00	271.99	54.01	6.036			
7,500.00	7,469.51	7,502.98	7,469.01	27.51	27.36	89.70	435.66	137.26	326.00	271.30	54.70	5.960			
7,600.00	7,569.51	7,602.98	7,569.01	27.85	27.71	89.70	435.66	137.26	326.00	270.61	55.39	5.885			
7,700.00	7,669.51	7,702.98	7,669.01	28.20	28.05	89.70	435.66	137.26	326.00	269.91	56.09	5.813			
7,800.00	7,769.51	7,802.98	7,769.01	28.54	28.40	89.70	435.66	137.26	326.00	269.22	56.78	5.742			
7,900.00	7,869.51	7,902.98	7,869.01	28.89	28.75	89.70	435.66	137.26	326.00	268.53	57.47	5.672			
8,000.00	7,969.51	8,002.98	7,969.01	29.24	29.10	89.70	435.66	137.26	326.00	267.83	58.17	5.605			
8,100.00	8,069.51	8,102.98	8,069.01	29.58	29.44	89.70	435.66	137.26	326.00	267.14	58.86	5.538			
8,200.00	8,169.51	8,202.98	8,169.01	29.93	29.79	89.70	435.66	137.26	326.00	266.44	59.56	5.474			
8,300.00	8,269.51	8,302.98	8,269.01	30.27	30.14	89.70	435.66	137.26	326.00	265.75	60.25	5.410			
8,400.00	8,369.51	8,402.98	8,369.01	30.62	30.49	89.70	435.66	137.26	326.00	265.05	60.95	5.349			
8,500.00	8,469.51	8,497.02	8,469.01	30.97	30.82	89.70	435.66	137.26	326.00	264.37	61.63	5.290			
8,504.14	8,473.65	8,501.16	8,473.15	30.98	30.83	89.70	435.66	137.26	326.00	264.34	61.66	5.287			
8,600.00	8,569.51	8,596.12	8,567.69	31.32	31.12	91.05	427.97	137.31	326.10	263.84	62.26	5.238			
8,700.00	8,669.51	8,699.90	8,658.55	31.66	31.34	95.04	405.17	137.45	327.62	264.86	62.75	5.221			
8,800.00	8,769.51	8,774.36	8,736.22	32.01	31.50	100.71	372.20	137.65	333.79	270.86	62.93	5.304			
8,900.00	8,869.51	8,847.75	8,799.16	32.36	31.62	106.93	334.54	137.88	348.48	286.03	62.45	5.580			
9,000.00	8,969.51	8,910.18	8,848.54	32.71	31.71	112.82	296.40	138.11	374.51	313.47	61.04	6.135			
9,100.00	9,069.51	8,962.75	8,886.71	33.06	31.78	117.97	260.27	138.33	412.76	353.93	58.83	7.017			
9,200.00	9,169.51	9,006.93	8,916.10	33.40	31.83	122.27	227.31	138.54	462.35	406.16	56.18	8.229			
9,300.00	9,269.51	9,050.00	8,942.24	33.75	31.88	126.33	193.09	138.75	521.57	467.83	53.74	9.705			
9,400.00	9,369.51	9,075.71	8,956.59	34.10	31.91	128.67	171.76	138.88	588.36	537.32	51.03	11.529			
9,500.00	9,469.51	9,100.00	8,969.25	34.45	31.94	130.80	151.03	139.00	661.22	612.42	48.80	13.551			
9,600.00	9,569.51	9,125.79	8,981.72	34.80	31.97	132.97	128.47	139.14	738.73	691.64	47.09	15.687			
9,700.00	9,669.51	9,150.00	8,992.50	35.15	32.01	134.92	106.78	139.28	819.94	774.19	45.74	17.925			
9,800.00	9,769.51	9,163.35	8,998.04	35.50	32.02	135.96	94.64	139.35	903.97	859.54	44.42	20.348			
9,900.00	9,869.51	9,178.73	9,004.08	35.85	32.05	137.12	80.50	139.44	990.32	946.85	43.47	22.781			

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MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
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Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)					
10,000.00	9,969.51	9,200.00	9,011.80	36.20	32.07	138.67	60.68	139.56	1,078.59	1,035.71	42.88	25.151			
10,100.00	10,069.51	9,200.00	9,011.80	36.55	32.07	138.67	60.68	139.56	1,168.25	1,126.21	42.04	27.787			
10,200.00	10,169.51	9,200.00	9,011.80	36.90	32.07	138.67	60.68	139.56	1,259.46	1,218.05	41.41	30.414			
10,300.00	10,269.51	9,225.01	9,019.92	37.25	32.11	140.39	37.02	139.70	1,351.16	1,309.82	41.34	32.680			
10,400.00	10,369.51	9,250.00	9,027.00	37.60	32.15	142.02	13.06	139.85	1,444.33	1,402.98	41.35	34.931			
10,500.00	10,469.51	9,250.00	9,027.00	37.95	32.15	142.02	13.06	139.85	1,537.69	1,496.63	41.06	37.451			
10,600.00	10,569.51	9,250.00	9,027.00	38.31	32.15	142.02	13.06	139.85	1,631.84	1,590.97	40.87	39.930			
10,700.00	10,669.51	9,250.00	9,027.00	38.66	32.15	142.02	13.06	139.85	1,726.64	1,685.89	40.76	42.364			
10,800.00	10,769.51	9,250.00	9,027.00	39.01	32.15	142.02	13.06	139.85	1,822.00	1,781.29	40.71	44.751			
10,900.00	10,869.51	9,250.00	9,027.00	39.36	32.15	142.02	13.06	139.85	1,917.84	1,877.11	40.73	47.091			
11,000.00	10,969.51	9,272.73	9,032.53	39.71	32.19	143.42	-8.98	139.99	2,013.50	1,972.51	40.99	49.125			
11,100.00	11,069.51	9,277.56	9,033.59	40.06	32.20	143.71	-13.69	140.02	2,109.83	2,068.72	41.11	51.319			
11,200.00	11,169.51	9,300.00	9,038.00	40.41	32.23	145.00	-35.69	140.15	2,206.79	2,165.38	41.41	53.295			
11,300.00	11,269.51	9,300.00	9,038.00	40.77	32.23	145.00	-35.69	140.15	2,303.50	2,261.96	41.54	55.450			
11,400.00	11,369.51	9,300.00	9,038.00	41.12	32.23	145.00	-35.69	140.15	2,400.48	2,358.78	41.70	57.559			
11,500.00	11,469.51	9,300.00	9,038.00	41.47	32.23	145.00	-35.69	140.15	2,497.70	2,455.81	41.89	59.622			
11,600.00	11,569.51	9,300.00	9,038.00	41.82	32.23	145.00	-35.69	140.15	2,595.13	2,553.03	42.10	61.640			
11,700.00	11,669.51	9,300.00	9,038.00	42.18	32.23	145.00	-35.69	140.15	2,692.75	2,650.42	42.33	63.615			
11,800.00	11,769.51	9,300.00	9,038.00	42.53	32.23	145.00	-35.69	140.15	2,790.54	2,747.97	42.57	65.547			
11,900.00	11,869.51	9,300.00	9,038.00	42.88	32.23	145.00	-35.69	140.15	2,888.48	2,845.65	42.83	67.436			
11,902.93	11,872.44	9,300.00	9,038.00	42.89	32.23	145.00	-35.69	140.15	2,891.35	2,848.51	42.84	67.491			
11,950.00	11,919.46	9,300.00	9,038.00	43.04	32.23	144.92	-35.69	140.15	2,937.11	2,894.15	42.96	68.372			
12,000.00	11,969.05	9,300.00	9,038.00	43.19	32.23	144.66	-35.69	140.15	2,984.67	2,941.61	43.07	69.305			
12,050.00	12,017.90	9,300.00	9,038.00	43.32	32.23	144.21	-35.69	140.15	3,030.88	2,987.72	43.16	70.225			
12,100.00	12,065.65	9,300.00	9,038.00	43.44	32.23	143.56	-35.69	140.15	3,075.44	3,032.20	43.24	71.126			
12,150.00	12,111.93	9,320.51	9,041.28	43.66	32.27	143.96	-55.94	140.27	3,117.65	3,074.26	43.40	71.842			
12,200.00	12,156.38	9,324.91	9,041.89	43.66	32.28	143.18	-60.30	140.30	3,157.95	3,114.48	43.47	72.653			
12,250.00	12,198.67	9,350.00	9,044.71	43.75	32.32	143.53	-85.22	140.45	3,196.23	3,152.62	43.61	73.295			
12,300.00	12,238.48	9,350.00	9,044.71	43.83	32.32	142.03	-85.22	140.45	3,231.26	3,187.62	43.64	74.051			
12,350.00	12,275.51	9,350.00	9,044.71	43.90	32.32	140.15	-85.22	140.45	3,263.50	3,219.84	43.66	74.750			
12,400.00	12,309.46	9,350.00	9,044.71	43.97	32.32	137.80	-85.22	140.45	3,292.79	3,249.11	43.68	75.385			
12,450.00	12,340.09	9,350.00	9,044.71	44.04	32.32	134.86	-85.22	140.45	3,318.99	3,275.29	43.70	75.947			
12,500.00	12,367.17	9,350.00	9,044.71	44.10	32.32	131.16	-85.22	140.45	3,341.98	3,298.25	43.73	76.428			
12,550.00	12,390.47	9,350.00	9,044.71	44.16	32.32	126.47	-85.22	140.45	3,361.64	3,317.88	43.76	76.820			
12,600.00	12,409.84	9,372.25	9,046.30	44.22	32.37	124.00	-107.41	140.59	3,377.39	3,333.55	43.84	77.030			
12,650.00	12,425.11	9,379.13	9,046.62	44.28	32.38	118.32	-114.29	140.63	3,389.80	3,345.90	43.90	77.211			
12,700.00	12,436.18	9,401.14	9,047.08	44.35	32.42	114.31	-136.29	140.77	3,398.79	3,354.80	43.99	77.258			
12,750.00	12,442.96	9,401.14	9,047.08	44.42	32.42	104.53	-136.29	140.77	3,403.70	3,359.64	44.06	77.251			
12,800.00	12,445.39	9,407.30	9,047.07	44.49	32.44	91.17	-130.14	140.73	3,404.98	3,360.82	44.17	77.096			
12,807.86	12,445.38	9,402.71	9,047.08	44.51	32.43	91.18	-137.86	140.78	3,404.86	3,360.70	44.16	77.098			
12,900.00	12,444.58	9,493.26	9,047.24	44.68	32.65	91.31	-228.41	141.33	3,402.86	3,358.43	44.43	76.581			
13,000.00	12,443.72	9,608.47	9,047.41	44.94	33.03	91.48	-326.68	141.94	3,400.78	3,355.96	44.83	75.862			
13,100.00	12,442.86	9,689.80	9,047.58	45.27	33.36	91.68	-424.95	142.54	3,398.81	3,353.62	45.19	75.210			
13,200.00	12,442.00	9,788.08	9,047.75	45.66	33.82	91.94	-523.22	143.14	3,396.93	3,351.28	45.65	74.410			
13,300.00	12,441.14	9,886.35	9,047.92	46.11	34.36	92.27	-621.49	143.74	3,395.15	3,348.99	46.16	73.546			
13,400.00	12,440.28	9,984.62	9,048.09	46.63	34.96	92.70	-719.76	144.35	3,393.47	3,346.75	46.73	72.625			
13,500.00	12,439.42	10,082.89	9,048.26	47.20	35.63	93.32	-818.03	144.95	3,391.90	3,344.56	47.34	71.655			
13,600.00	12,438.56	10,181.17	9,048.43	47.83	36.36	94.25	-916.30	145.55	3,390.42	3,342.43	47.99	70.644			
13,700.00	12,437.70	10,279.44	9,048.60	48.52	37.15	95.80	-1,014.57	146.15	3,389.04	3,340.35	48.69	69.599			
13,727.27	12,437.47	10,306.24	9,048.65	48.71	37.37	96.42	-1,041.37	146.32	3,388.68	3,339.79	48.89	69.311			
13,800.00	12,436.84	10,377.87	9,048.77	49.25	37.99	98.69	-1,113.01	146.76	3,387.78	3,338.34	49.44	68.527			
13,900.00	12,435.98	10,476.84	9,048.94	50.02	38.89	104.20	-1,211.97	147.37	3,386.62	3,336.39	50.22	67.431			

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
14,000.00	12,435.11	10,576.25	9,049.11	50.83	39.83	116.10	-1,311.38	147.98	3,385.53	3,334.48	51.05	66.320	
14,100.00	12,434.25	10,675.97	9,049.28	51.66	40.83	142.39	-1,411.10	148.59	3,384.47	3,332.56	51.91	65.200	
14,200.00	12,433.39	10,775.89	9,049.46	52.52	41.87	173.59	-1,511.01	149.20	3,383.43	3,330.63	52.80	64.077	
14,259.68	12,432.87	10,835.55	9,049.56	53.04	42.51	179.66	-1,570.68	149.57	3,382.82	3,329.47	53.35	63.407	
14,300.00	12,432.52	10,875.88	9,049.63	53.40	42.95	179.66	-1,611.00	149.81	3,382.40	3,328.67	53.73	62.956	
14,400.00	12,431.66	10,975.87	9,049.80	54.32	44.06	179.66	-1,710.99	150.43	3,381.37	3,326.69	54.68	61.841	
14,500.00	12,430.80	11,075.87	9,049.98	55.27	45.21	179.66	-1,810.98	151.04	3,380.33	3,324.67	55.66	60.734	
14,600.00	12,429.94	11,175.86	9,050.15	56.25	46.39	179.66	-1,910.98	151.65	3,379.30	3,322.64	56.66	59.638	
14,700.00	12,429.08	11,275.86	9,050.32	57.26	47.60	179.66	-2,010.97	152.27	3,378.27	3,320.57	57.69	58.555	
14,800.00	12,428.22	11,375.85	9,050.49	58.31	48.83	179.66	-2,110.96	152.88	3,377.23	3,318.49	58.75	57.487	
14,900.00	12,427.36	11,475.85	9,050.67	59.38	50.09	179.66	-2,210.95	153.49	3,376.20	3,316.38	59.82	56.437	
15,000.00	12,426.50	11,575.84	9,050.84	60.47	51.37	179.66	-2,310.95	154.11	3,375.17	3,314.25	60.92	55.404	
15,100.00	12,425.64	11,675.83	9,051.01	61.60	52.68	179.66	-2,410.94	154.72	3,374.13	3,312.10	62.03	54.391	
15,200.00	12,424.78	11,775.83	9,051.18	62.74	54.00	179.66	-2,510.93	155.33	3,373.10	3,309.93	63.17	53.398	
15,300.00	12,423.92	11,875.82	9,051.36	63.91	55.34	179.66	-2,610.93	155.95	3,372.07	3,307.75	64.32	52.426	
15,400.00	12,423.06	11,975.82	9,051.53	65.10	56.69	179.66	-2,710.92	156.56	3,371.03	3,305.54	65.49	51.474	
15,500.00	12,422.20	12,075.81	9,051.70	66.31	58.07	179.66	-2,810.91	157.17	3,370.00	3,303.33	66.67	50.544	
15,600.00	12,421.34	12,175.81	9,051.88	67.54	59.45	179.66	-2,910.90	157.79	3,368.97	3,301.09	67.87	49.636	
15,700.00	12,420.48	12,275.80	9,052.05	68.79	60.85	179.66	-3,010.90	158.40	3,367.93	3,298.85	69.09	48.748	
15,800.00	12,419.62	12,375.80	9,052.22	70.06	62.27	179.66	-3,110.89	159.01	3,366.90	3,296.58	70.32	47.883	
15,900.00	12,418.76	12,475.79	9,052.39	71.34	63.69	179.66	-3,210.88	159.63	3,365.87	3,294.31	71.56	47.038	
16,000.00	12,417.90	12,575.79	9,052.57	72.63	65.13	179.66	-3,310.87	160.24	3,364.83	3,292.02	72.81	46.215	
16,100.00	12,417.03	12,675.78	9,052.74	73.94	66.57	179.66	-3,410.87	160.85	3,363.80	3,289.73	74.07	45.412	
16,200.00	12,416.17	12,775.78	9,052.91	75.27	68.03	179.66	-3,510.86	161.47	3,362.77	3,287.42	75.35	44.630	
16,300.00	12,415.31	12,875.77	9,053.09	76.60	69.50	179.66	-3,610.85	162.08	3,361.73	3,285.10	76.63	43.867	
16,400.00	12,414.45	12,975.77	9,053.26	77.95	70.97	179.66	-3,710.84	162.69	3,360.70	3,282.77	77.93	43.125	
16,500.00	12,413.59	13,075.76	9,053.43	79.31	72.45	179.66	-3,810.84	163.31	3,359.67	3,280.43	79.24	42.401	
16,600.00	12,412.73	13,175.75	9,053.60	80.69	73.94	179.66	-3,910.83	163.92	3,358.63	3,278.08	80.55	41.696	
16,700.00	12,411.87	13,275.75	9,053.78	82.07	75.44	179.66	-4,010.82	164.53	3,357.60	3,275.73	81.87	41.010	
16,800.00	12,411.01	13,375.74	9,053.95	83.46	76.94	179.66	-4,110.81	165.15	3,356.57	3,273.36	83.20	40.341	
16,900.00	12,410.15	13,475.74	9,054.12	84.87	78.45	179.66	-4,210.81	165.76	3,355.53	3,270.99	84.54	39.690	
17,000.00	12,409.29	13,575.73	9,054.29	86.28	79.96	179.67	-4,310.80	166.38	3,354.50	3,268.61	85.89	39.055	
17,100.00	12,408.43	13,675.73	9,054.47	87.70	81.48	179.67	-4,410.79	166.99	3,353.47	3,266.22	87.24	38.437	
17,200.00	12,407.57	13,775.72	9,054.64	89.13	83.01	179.67	-4,510.79	167.60	3,352.43	3,263.83	88.61	37.835	
17,300.00	12,406.71	13,875.72	9,054.81	90.56	84.54	179.67	-4,610.78	168.22	3,351.40	3,261.43	89.97	37.249	
17,400.00	12,405.85	13,975.71	9,054.99	92.01	86.07	179.67	-4,710.77	168.83	3,350.37	3,259.02	91.35	36.677	
17,500.00	12,404.99	14,075.71	9,055.16	93.46	87.61	179.67	-4,810.76	169.44	3,349.33	3,256.61	92.73	36.120	
17,600.00	12,404.13	14,175.70	9,055.33	94.91	89.16	179.67	-4,910.76	170.06	3,348.30	3,254.19	94.11	35.578	
17,700.00	12,403.27	14,275.70	9,055.50	96.38	90.71	179.67	-5,010.75	170.67	3,347.27	3,251.76	95.50	35.049	
17,800.00	12,402.41	14,375.69	9,055.68	97.85	92.26	179.67	-5,110.74	171.28	3,346.23	3,249.33	96.90	34.533	
17,900.00	12,401.55	14,475.69	9,055.85	99.32	93.81	179.67	-5,210.73	171.90	3,345.20	3,246.90	98.30	34.030	
18,000.00	12,400.68	14,575.68	9,056.02	100.81	95.37	179.67	-5,310.73	172.51	3,344.17	3,244.46	99.71	33.540	
18,100.00	12,399.82	14,675.67	9,056.20	102.29	96.93	179.67	-5,410.72	173.12	3,343.13	3,242.01	101.12	33.061	
18,200.00	12,398.96	14,775.67	9,056.37	103.79	98.50	179.67	-5,510.71	173.74	3,342.10	3,239.57	102.53	32.595	
18,300.00	12,398.10	14,875.66	9,056.54	105.28	100.07	179.67	-5,610.70	174.35	3,341.07	3,237.11	103.95	32.140	
18,400.00	12,397.24	14,975.66	9,056.71	106.78	101.64	179.67	-5,710.70	174.96	3,340.03	3,234.66	105.38	31.696	
18,500.00	12,396.38	15,075.65	9,056.89	108.29	103.21	179.67	-5,810.69	175.58	3,339.00	3,232.19	106.81	31.262	
18,600.00	12,395.52	15,175.65	9,057.06	109.80	104.79	179.67	-5,910.68	176.19	3,337.97	3,229.73	108.24	30.839	
18,700.00	12,394.66	15,275.64	9,057.23	111.32	106.37	179.67	-6,010.67	176.80	3,336.93	3,227.26	109.67	30.426	
18,800.00	12,393.80	15,375.64	9,057.40	112.84	107.95	179.67	-6,110.67	177.42	3,335.90	3,224.79	111.11	30.023	
18,900.00	12,392.94	15,475.63	9,057.58	114.36	109.53	179.67	-6,210.66	178.03	3,334.87	3,222.31	112.55	29.629	
19,000.00	12,392.08	15,575.63	9,057.75	115.89	111.12	179.67	-6,310.65	178.64	3,333.83	3,219.83	114.00	29.244	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)					
19,100.00	12,391.22	15,675.62	9,057.92	117.42	112.71	179.67	-6,410.65	179.26	3,332.80	3,217.35	115.45	28.868	
19,200.00	12,390.36	15,775.62	9,058.10	118.95	114.30	179.67	-6,510.64	179.87	3,331.77	3,214.87	116.90	28.501	
19,300.00	12,389.50	15,875.61	9,058.27	120.49	115.89	179.67	-6,610.63	180.48	3,330.73	3,212.38	118.36	28.142	
19,400.00	12,388.64	15,975.61	9,058.44	122.03	117.48	179.67	-6,710.62	181.10	3,329.70	3,209.89	119.81	27.791	
19,500.00	12,387.78	16,075.60	9,058.61	123.57	119.08	179.67	-6,810.62	181.71	3,328.67	3,207.39	121.27	27.447	
19,600.00	12,386.92	16,175.59	9,058.79	125.12	120.67	179.67	-6,910.61	182.32	3,327.63	3,204.90	122.74	27.112	
19,700.00	12,386.06	16,275.59	9,058.96	126.66	122.27	179.67	-7,010.60	182.94	3,326.60	3,202.40	124.20	26.784	
19,800.00	12,385.20	16,375.58	9,059.13	128.22	123.87	179.67	-7,110.59	183.55	3,325.57	3,199.90	125.67	26.463	
19,900.00	12,384.33	16,475.58	9,059.31	129.77	125.47	179.67	-7,210.59	184.16	3,324.53	3,197.39	127.14	26.148	
20,000.00	12,383.47	16,575.57	9,059.48	131.33	127.08	179.67	-7,310.58	184.78	3,323.50	3,194.89	128.61	25.841	
20,100.00	12,382.61	16,675.57	9,059.65	132.89	128.68	179.68	-7,410.57	185.39	3,322.47	3,192.38	130.09	25.540	
20,200.00	12,381.75	16,775.56	9,059.82	134.45	130.29	179.68	-7,510.56	186.00	3,321.43	3,189.87	131.57	25.245	
20,300.00	12,380.89	16,875.56	9,060.00	136.01	131.90	179.68	-7,610.56	186.62	3,320.40	3,187.36	133.04	24.957	
20,400.00	12,380.03	16,975.55	9,060.17	137.58	133.50	179.68	-7,710.55	187.23	3,319.37	3,184.84	134.53	24.675	
20,500.00	12,379.17	17,075.55	9,060.34	139.15	135.11	179.68	-7,810.54	187.84	3,318.33	3,182.33	136.01	24.398	
20,600.00	12,378.31	17,175.54	9,060.51	140.72	136.72	179.68	-7,910.53	188.46	3,317.30	3,179.81	137.49	24.127	
20,700.00	12,377.45	17,275.54	9,060.69	142.29	138.34	179.68	-8,010.53	189.07	3,316.27	3,177.29	138.98	23.861	
20,800.00	12,376.59	17,375.53	9,060.86	143.86	139.95	179.68	-8,110.52	189.68	3,315.23	3,174.77	140.47	23.601	
20,900.00	12,375.73	17,475.53	9,061.03	145.44	141.56	179.68	-8,210.51	190.30	3,314.20	3,172.24	141.96	23.346	
21,000.00	12,374.87	17,575.52	9,061.21	147.02	143.18	179.68	-8,310.51	190.91	3,313.17	3,169.72	143.45	23.096	
21,100.00	12,374.01	17,675.51	9,061.38	148.59	144.79	179.68	-8,410.50	191.52	3,312.13	3,167.19	144.95	22.851	
21,200.00	12,373.15	17,775.51	9,061.55	150.18	146.41	179.68	-8,510.49	192.14	3,311.10	3,164.66	146.44	22.611	
21,300.00	12,372.29	17,875.50	9,061.72	151.76	148.03	179.68	-8,610.48	192.75	3,310.07	3,162.13	147.94	22.375	
21,400.00	12,371.43	17,975.50	9,061.90	153.34	149.65	179.68	-8,710.48	193.36	3,309.03	3,159.60	149.44	22.144	
21,500.00	12,370.57	18,075.49	9,062.07	154.93	151.27	179.68	-8,810.47	193.98	3,308.00	3,157.07	150.93	21.917	
21,600.00	12,369.71	18,175.49	9,062.24	156.52	152.89	179.68	-8,910.46	194.59	3,306.97	3,154.53	152.44	21.694	
21,700.00	12,368.85	18,275.48	9,062.42	158.11	154.51	179.68	-9,010.45	195.20	3,305.93	3,152.00	153.94	21.476	
21,800.00	12,367.98	18,375.48	9,062.59	159.70	156.13	179.68	-9,110.45	195.82	3,304.90	3,149.46	155.44	21.261	
21,900.00	12,367.12	18,475.47	9,062.76	161.29	157.75	179.68	-9,210.44	196.43	3,303.87	3,146.92	156.95	21.051	
22,000.00	12,366.26	18,575.47	9,062.93	162.88	159.38	179.68	-9,310.43	197.04	3,302.83	3,144.38	158.45	20.844	
22,100.00	12,365.40	18,675.46	9,063.11	164.47	161.00	179.68	-9,410.42	197.66	3,301.80	3,141.84	159.96	20.641	
22,200.00	12,364.54	18,775.46	9,063.28	166.07	162.62	179.68	-9,510.42	198.27	3,300.77	3,139.30	161.47	20.442	
22,300.00	12,363.68	18,875.45	9,063.45	167.67	164.25	179.68	-9,610.41	198.89	3,299.74	3,136.76	162.98	20.247	
22,400.00	12,362.82	18,975.44	9,063.62	169.26	165.88	179.68	-9,710.40	199.50	3,298.70	3,134.21	164.49	20.054	
22,500.00	12,361.96	19,075.44	9,063.80	170.86	167.50	179.68	-9,810.39	200.11	3,297.67	3,131.67	166.00	19.865	
22,565.16	12,361.40	19,134.90	9,063.90	171.78	168.47	-90.00	-9,869.85	200.48	3,297.00	3,130.24	166.76	19.771	



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	0.30	-0.30	0.00	0.00	89.68	0.34	59.96	59.97						
100.00	100.00	100.30	99.70	0.13	0.14	89.68	0.34	59.96	59.97	59.70	0.27	222.152			
200.00	200.00	200.30	199.70	0.49	0.49	89.68	0.34	59.96	59.97	58.98	0.99	60.763			
300.00	300.00	300.30	299.70	0.85	0.85	89.68	0.34	59.96	59.97	58.26	1.70	35.195			
400.00	400.00	400.30	399.70	1.21	1.21	89.68	0.34	59.96	59.97	57.54	2.42	24.771			
500.00	500.00	500.30	499.70	1.57	1.57	89.68	0.34	59.96	59.97	56.83	3.14	19.111			
600.00	600.00	600.30	599.70	1.93	1.93	89.68	0.34	59.96	59.97	56.11	3.85	15.557			
700.00	700.00	700.30	699.70	2.29	2.29	89.68	0.34	59.96	59.97	55.39	4.57	13.117			
800.00	800.00	800.30	799.70	2.64	2.64	89.68	0.34	59.96	59.97	54.68	5.29	11.339			
900.00	900.00	900.30	899.70	3.00	3.00	89.68	0.34	59.96	59.97	53.96	6.01	9.985			
1,000.00	1,000.00	1,000.30	999.70	3.36	3.36	89.68	0.34	59.96	59.97	53.24	6.72	8.920			
1,100.00	1,100.00	1,100.30	1,099.70	3.72	3.72	89.68	0.34	59.96	59.97	52.53	7.44	8.061			
1,200.00	1,200.00	1,200.30	1,199.70	4.08	4.08	89.68	0.34	59.96	59.97	51.81	8.16	7.352			
1,300.00	1,300.00	1,300.30	1,299.70	4.44	4.44	89.68	0.34	59.96	59.97	51.09	8.87	6.758			
1,400.00	1,400.00	1,400.30	1,399.70	4.79	4.80	89.68	0.34	59.96	59.97	50.38	9.59	6.253			
1,500.00	1,500.00	1,500.30	1,499.70	5.15	5.15	89.68	0.34	59.96	59.97	49.66	10.31	5.818			
1,600.00	1,600.00	1,600.30	1,599.70	5.51	5.51	89.68	0.34	59.96	59.97	48.94	11.02	5.439			
1,700.00	1,700.00	1,700.30	1,699.70	5.87	5.87	89.68	0.34	59.96	59.97	48.22	11.74	5.107			
1,800.00	1,800.00	1,800.30	1,799.70	6.23	6.23	89.68	0.34	59.96	59.97	47.51	12.46	4.813			
1,900.00	1,900.00	1,900.30	1,899.70	6.59	6.59	89.68	0.34	59.96	59.97	46.79	13.17	4.551			
2,000.00	2,000.00	2,000.30	1,999.70	6.95	6.95	89.68	0.34	59.96	59.97	46.07	13.89	4.317			
2,100.00	2,100.00	2,100.30	2,099.70	7.30	7.30	89.68	0.34	59.96	59.97	45.36	14.61	4.105			
2,200.00	2,200.00	2,200.30	2,199.70	7.66	7.66	89.68	0.34	59.96	59.97	44.64	15.33	3.913			
2,300.00	2,300.00	2,300.30	2,299.70	8.02	8.02	89.68	0.34	59.96	59.97	43.92	16.04	3.738			
2,400.00	2,400.00	2,400.30	2,399.70	8.38	8.38	89.68	0.34	59.96	59.97	43.21	16.76	3.578			
2,500.00	2,500.00	2,499.70	2,499.70	8.74	8.74	89.68	0.34	59.96	59.97	42.49	17.47	3.432 CC			
2,600.00	2,599.99	2,599.75	2,599.74	9.10	9.10	89.61	1.21	59.92	60.27	42.08	18.19	3.313 ES			
2,700.00	2,699.96	2,699.79	2,699.75	9.45	9.45	89.42	3.82	59.78	61.18	42.27	18.90	3.236			
2,800.00	2,799.86	2,799.82	2,799.68	9.81	9.81	89.11	8.17	59.56	62.69	43.08	19.62	3.196			
2,900.00	2,899.68	2,899.83	2,899.51	10.17	10.17	88.70	14.27	59.24	64.82	44.49	20.33	3.188 SF			
3,000.00	2,999.37	2,999.82	2,999.19	10.53	10.53	88.22	22.10	58.83	67.56	46.51	21.05	3.210			
3,100.00	3,098.90	3,099.78	3,098.69	10.89	10.89	87.67	31.66	58.33	70.91	49.14	21.77	3.258			
3,200.00	3,198.26	3,199.71	3,197.97	11.25	11.25	87.10	42.95	57.74	74.87	52.38	22.49	3.329			
3,300.00	3,297.40	3,299.88	3,297.01	11.61	11.61	86.51	55.97	57.06	79.45	56.23	23.22	3.422			
3,300.10	3,297.50	3,299.78	3,297.11	11.61	11.61	86.51	55.98	57.06	79.45	56.23	23.22	3.422			
3,400.00	3,396.43	3,400.52	3,395.91	11.98	11.99	85.96	69.85	56.33	84.34	60.38	23.96	3.520			
3,500.00	3,495.46	3,500.65	3,494.82	12.36	12.36	85.46	83.72	55.61	89.23	64.53	24.70	3.613			
3,600.00	3,594.48	3,600.77	3,593.72	12.73	12.73	85.02	97.60	54.89	94.14	68.69	25.45	3.699			
3,700.00	3,693.51	3,700.89	3,692.63	13.11	13.11	84.62	111.48	54.16	99.05	72.84	26.20	3.780			
3,800.00	3,792.54	3,801.02	3,791.53	13.49	13.49	84.26	125.35	53.44	103.96	77.00	26.96	3.856			
3,900.00	3,891.56	3,901.14	3,890.44	13.87	13.87	83.93	139.23	52.71	108.87	81.16	27.72	3.928			
4,000.00	3,990.59	4,001.26	3,989.35	14.26	14.26	83.63	153.11	51.99	113.79	85.31	28.48	3.995			
4,100.00	4,089.62	4,101.38	4,088.25	14.64	14.64	83.35	166.98	51.26	118.72	89.46	29.25	4.058			
4,200.00	4,188.64	4,201.51	4,187.16	15.03	15.03	83.10	180.86	50.54	123.64	93.62	30.03	4.118			
4,300.00	4,287.67	4,301.63	4,286.06	15.42	15.42	82.87	194.74	49.81	128.57	97.77	30.80	4.174			
4,400.00	4,386.70	4,401.75	4,384.97	15.81	15.81	82.65	208.61	49.09	133.50	101.92	31.58	4.227			
4,500.00	4,485.72	4,501.88	4,483.88	16.20	16.20	82.45	222.49	48.36	138.43	106.07	32.36	4.278			
4,600.00	4,584.75	4,602.00	4,582.78	16.60	16.59	82.26	236.37	47.64	143.36	110.22	33.15	4.325			
4,700.00	4,683.78	4,702.12	4,681.69	16.99	16.99	82.09	250.24	46.91	148.30	114.37	33.93	4.371			
4,800.00	4,782.80	4,802.24	4,780.59	17.39	17.38	81.92	264.12	46.19	153.24	118.52	34.72	4.414			
4,900.00	4,881.83	4,902.37	4,879.50	17.78	17.78	81.77	278.00	45.47	158.17	122.66	35.51	4.454			
5,000.00	4,980.85	5,002.49	4,978.40	18.18	18.18	81.63	291.87	44.74	163.11	126.81	36.30	4.493			

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,079.88	5,102.61	5,077.31	18.58	18.58	81.49	305.75	44.02	168.05	130.96	37.09	4.530		
5,200.00	5,178.91	5,202.74	5,176.22	18.98	18.97	81.36	319.63	43.29	172.99	135.10	37.89	4.566		
5,300.00	5,277.93	5,302.86	5,275.12	19.38	19.37	81.24	333.50	42.57	177.93	139.25	38.69	4.599		
5,400.00	5,376.96	5,402.98	5,374.03	19.78	19.77	81.13	347.38	41.84	182.87	143.39	39.48	4.632		
5,500.00	5,475.99	5,503.10	5,472.93	20.18	20.17	81.02	361.26	41.12	187.81	147.53	40.28	4.662		
5,600.00	5,575.01	5,596.77	5,571.84	20.58	20.55	80.92	375.13	40.39	192.76	151.70	41.06	4.695		
5,700.00	5,674.04	5,696.91	5,671.05	20.98	20.95	80.93	388.64	39.69	197.66	155.80	41.86	4.722		
5,800.00	5,773.07	5,797.14	5,770.58	21.39	21.35	81.40	400.50	39.07	202.39	159.73	42.65	4.745		
5,898.39	5,870.50	5,895.69	5,868.62	21.78	21.73	82.31	410.47	38.55	206.91	163.48	43.42	4.765		
5,900.00	5,872.09	5,897.30	5,870.23	21.79	21.73	82.33	410.62	38.54	206.98	163.54	43.43	4.765		
6,000.00	5,971.24	5,997.38	5,969.96	22.19	22.11	83.46	418.99	38.10	211.26	167.05	44.20	4.779		
6,100.00	6,070.60	6,097.42	6,069.77	22.58	22.48	84.58	425.62	37.76	215.00	170.05	44.95	4.783		
6,200.00	6,170.14	6,197.41	6,169.64	22.97	22.85	85.68	430.51	37.50	218.22	172.53	45.69	4.776		
6,300.00	6,269.83	6,297.33	6,269.51	23.35	23.20	86.78	433.65	37.34	220.90	174.49	46.41	4.760		
6,400.00	6,369.65	6,397.20	6,369.36	23.71	23.55	87.88	435.05	37.26	223.05	175.94	47.11	4.735		
6,500.00	6,469.55	6,502.92	6,469.25	24.07	23.91	88.89	435.13	37.26	224.67	176.85	47.82	4.698		
6,600.00	6,569.52	6,602.95	6,569.22	24.43	24.26	89.50	435.13	37.26	225.67	177.16	48.51	4.652		
6,698.49	6,668.00	6,704.47	6,667.70	24.77	24.60	89.70	435.13	37.26	226.00	176.81	49.19	4.594		
6,700.00	6,669.51	6,702.96	6,669.21	24.77	24.60	89.70	435.13	37.26	226.00	176.81	49.19	4.594		
6,800.00	6,769.51	6,802.96	6,769.21	25.11	24.94	89.70	435.13	37.26	226.00	176.12	49.88	4.531		
6,900.00	6,869.51	6,902.96	6,869.21	25.45	25.29	89.70	435.13	37.26	226.00	175.44	50.56	4.470		
7,000.00	6,969.51	7,002.96	6,969.21	25.80	25.63	89.70	435.13	37.26	226.00	174.75	51.25	4.410		
7,100.00	7,069.51	7,102.96	7,069.21	26.14	25.98	89.70	435.13	37.26	226.00	174.06	51.94	4.351		
7,200.00	7,169.51	7,202.96	7,169.21	26.48	26.32	89.70	435.13	37.26	226.00	173.37	52.63	4.294		
7,300.00	7,269.51	7,302.96	7,269.21	26.82	26.67	89.70	435.13	37.26	226.00	172.68	53.32	4.239		
7,400.00	7,369.51	7,402.96	7,369.21	27.17	27.01	89.70	435.13	37.26	226.00	171.99	54.01	4.184		
7,500.00	7,469.51	7,502.96	7,469.21	27.51	27.36	89.70	435.13	37.26	226.00	171.30	54.70	4.131		
7,600.00	7,569.51	7,602.96	7,569.21	27.85	27.71	89.70	435.13	37.26	226.00	170.60	55.40	4.080		
7,700.00	7,669.51	7,702.96	7,669.21	28.20	28.05	89.70	435.13	37.26	226.00	169.91	56.09	4.029		
7,800.00	7,769.51	7,802.96	7,769.21	28.54	28.40	89.70	435.13	37.26	226.00	169.22	56.78	3.980		
7,900.00	7,869.51	7,902.96	7,869.21	28.89	28.75	89.70	435.13	37.26	226.00	168.52	57.48	3.932		
8,000.00	7,969.51	8,002.96	7,969.21	29.24	29.09	89.70	435.13	37.26	226.00	167.83	58.17	3.885		
8,100.00	8,069.51	8,102.96	8,069.21	29.58	29.44	89.70	435.13	37.26	226.00	167.13	58.86	3.839		
8,200.00	8,169.51	8,202.96	8,169.21	29.93	29.79	89.70	435.13	37.26	226.00	166.44	59.56	3.794		
8,300.00	8,269.51	8,302.96	8,269.21	30.27	30.14	89.70	435.13	37.26	226.00	165.74	60.26	3.751		
8,400.00	8,369.51	8,402.96	8,369.21	30.62	30.49	89.70	435.13	37.26	226.00	165.05	60.95	3.708		
8,500.00	8,469.51	8,502.96	8,469.21	30.97	30.84	89.70	435.13	37.26	226.00	164.35	61.65	3.666		
8,600.00	8,569.51	8,602.96	8,569.21	31.32	31.19	89.70	435.13	37.26	226.00	163.65	62.35	3.625		
8,700.00	8,669.51	8,702.96	8,669.21	31.66	31.53	89.70	435.13	37.26	226.00	162.95	63.05	3.585		
8,700.14	8,669.65	8,702.82	8,669.35	31.66	31.53	89.70	435.13	37.26	226.00	162.95	63.05	3.585		
8,800.00	8,769.51	8,794.71	8,766.83	32.01	31.84	90.10	433.53	37.48	226.23	162.54	63.69	3.552		
8,900.00	8,869.51	8,887.23	8,858.13	32.36	32.09	93.67	419.30	39.46	228.93	164.77	64.16	3.568		
9,000.00	8,969.51	8,973.12	8,939.81	32.71	32.28	99.96	393.24	43.08	237.19	172.99	64.21	3.694		
9,100.00	9,069.51	9,049.72	9,008.61	33.06	32.43	107.36	360.03	47.70	255.02	191.63	63.40	4.023		
9,200.00	9,169.51	9,116.18	9,064.24	33.40	32.53	114.47	324.06	52.70	285.28	223.78	61.50	4.639		
9,300.00	9,269.51	9,172.96	9,108.15	33.75	32.61	120.56	288.46	57.65	328.34	269.53	58.81	5.583		
9,400.00	9,369.51	9,221.12	9,142.47	34.10	32.68	125.48	255.00	62.30	382.68	326.80	55.89	6.848		
9,500.00	9,469.51	9,261.94	9,169.25	34.45	32.73	129.37	224.49	66.54	446.10	392.98	53.12	8.398		
9,600.00	9,569.51	9,300.00	9,192.18	34.80	32.78	132.71	194.42	70.72	516.56	465.67	50.89	10.151		
9,700.00	9,669.51	9,326.34	9,206.85	35.15	32.81	134.86	172.75	73.73	592.36	543.66	48.70	12.163		
9,800.00	9,769.51	9,350.00	9,219.15	35.50	32.85	136.67	152.74	76.51	672.30	625.32	46.98	14.310		
9,900.00	9,869.51	9,373.99	9,230.77	35.85	32.88	138.40	131.95	79.40	755.45	709.71	45.74	16.516		

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)				Offset Wellbore Centre +N-S (usft)	+E-W (usft)	
10,000.00	9,969.51	9,400.00	9,242.36	36.20	32.92	140.15	108.89	82.60	841.19	796.28	44.91	18.730		
10,100.00	10,069.51	9,400.00	9,242.36	36.55	32.92	140.15	108.89	82.60	928.96	885.39	43.57	21.320		
10,200.00	10,169.51	9,425.18	9,252.56	36.90	32.96	141.72	86.09	85.77	1,018.14	974.92	43.23	23.554		
10,300.00	10,269.51	9,450.00	9,261.61	37.25	32.99	143.17	63.20	88.96	1,108.97	1,065.97	43.00	25.787		
10,400.00	10,369.51	9,450.00	9,261.61	37.60	32.99	143.17	63.20	88.96	1,200.56	1,158.19	42.37	28.337		
10,500.00	10,469.51	9,450.00	9,261.61	37.95	32.99	143.17	63.20	88.96	1,293.39	1,251.48	41.91	30.861		
10,600.00	10,569.51	9,470.67	9,268.38	38.31	33.03	144.29	43.86	91.64	1,386.70	1,344.76	41.94	33.065		
10,700.00	10,669.51	9,479.41	9,271.03	38.66	33.04	144.75	35.62	92.79	1,480.82	1,438.98	41.84	35.395		
10,800.00	10,769.51	9,500.00	9,276.77	39.01	33.08	145.78	16.03	95.51	1,575.70	1,533.72	41.97	37.541		
10,900.00	10,869.51	9,500.00	9,276.77	39.36	33.08	145.78	16.03	95.51	1,670.72	1,628.85	41.87	39.899		
11,000.00	10,969.51	9,500.00	9,276.77	39.71	33.08	145.78	16.03	95.51	1,766.29	1,724.45	41.84	42.211		
11,100.00	11,069.51	9,500.00	9,276.77	40.06	33.08	145.78	16.03	95.51	1,862.33	1,820.46	41.87	44.477		
11,200.00	11,169.51	9,500.00	9,276.77	40.41	33.08	145.78	16.03	95.51	1,958.77	1,916.82	41.95	46.696		
11,300.00	11,269.51	9,500.00	9,276.77	40.77	33.08	145.78	16.03	95.51	2,055.54	2,013.48	42.06	48.870		
11,400.00	11,369.51	9,523.20	9,282.39	41.12	33.12	146.87	-6.27	98.61	2,152.02	2,109.62	42.41	50.748		
11,500.00	11,469.51	9,527.73	9,283.37	41.47	33.13	147.07	-10.65	99.22	2,249.10	2,206.50	42.61	52.789		
11,600.00	11,569.51	9,550.00	9,287.73	41.82	33.17	148.03	-32.28	102.23	2,346.74	2,303.78	42.96	54.824		
11,700.00	11,669.51	9,550.00	9,287.73	42.18	33.17	148.03	-32.28	102.23	2,444.07	2,400.91	43.16	56.827		
11,800.00	11,769.51	9,550.00	9,287.73	42.53	33.17	148.03	-32.28	102.23	2,541.61	2,498.23	43.38	58.588		
11,900.00	11,869.51	9,550.00	9,287.73	42.88	33.17	148.03	-32.28	102.23	2,639.33	2,595.71	43.62	60.507		
11,902.93	11,872.44	9,550.00	9,287.73	42.89	33.17	148.03	-32.28	102.23	2,642.20	2,598.57	43.63	60.563		
11,950.00	11,919.46	9,550.00	9,287.73	43.04	33.17	147.96	-32.28	102.23	2,687.84	2,644.10	43.73	61.458		
12,000.00	11,969.05	9,550.00	9,287.73	43.19	33.17	147.72	-32.28	102.23	2,735.24	2,691.41	43.83	62.406		
12,050.00	12,017.90	9,550.00	9,287.73	43.32	33.17	147.31	-32.28	102.23	2,781.24	2,737.34	43.91	63.340		
12,100.00	12,065.65	9,550.00	9,287.73	43.44	33.17	146.70	-32.28	102.23	2,825.58	2,781.60	43.97	64.254		
12,150.00	12,111.93	9,550.00	9,287.73	43.56	33.17	145.88	-32.28	102.23	2,867.99	2,823.96	44.03	65.141		
12,200.00	12,156.38	9,550.00	9,287.73	43.66	33.17	144.81	-32.28	102.23	2,908.24	2,864.17	44.07	65.991		
12,250.00	12,198.67	9,550.00	9,287.73	43.75	33.17	143.44	-32.28	102.23	2,946.12	2,902.02	44.10	66.799		
12,300.00	12,238.48	9,575.27	9,291.63	43.83	33.22	143.30	-57.00	105.66	2,980.78	2,936.55	44.24	67.382		
12,350.00	12,275.51	9,600.00	9,294.39	43.90	33.27	142.95	-81.35	109.05	3,013.38	2,969.02	44.35	67.943		
12,400.00	12,309.46	9,600.00	9,294.39	43.97	33.27	140.70	-81.35	109.05	3,042.41	2,998.05	44.36	68.586		
12,450.00	12,340.09	9,600.00	9,294.39	44.04	33.27	137.83	-81.35	109.05	3,068.38	3,024.02	44.37	69.155		
12,500.00	12,367.17	9,600.00	9,294.39	44.10	33.27	134.16	-81.35	109.05	3,091.18	3,046.80	44.39	69.643		
12,550.00	12,390.47	9,600.00	9,294.39	44.16	33.27	129.40	-81.35	109.05	3,110.71	3,066.29	44.41	70.042		
12,600.00	12,409.84	9,600.00	9,294.39	44.22	33.27	123.16	-81.35	109.05	3,126.86	3,082.41	44.45	70.345		
12,650.00	12,425.11	9,623.48	9,296.02	44.28	33.32	119.43	-104.55	112.27	3,139.02	3,094.47	44.55	70.468		
12,700.00	12,436.18	9,649.26	9,296.70	44.35	33.37	115.42	-130.07	115.82	3,148.17	3,103.52	44.65	70.515		
12,750.00	12,442.96	9,649.26	9,296.70	44.42	33.37	104.59	-130.07	115.82	3,153.10	3,108.38	44.72	70.514		
12,800.00	12,445.39	9,649.26	9,296.70	44.49	33.37	91.30	-130.07	115.82	3,154.47	3,109.66	44.81	70.399		
12,807.86	12,445.38	9,649.26	9,296.70	44.51	33.37	89.04	-130.07	115.82	3,154.36	3,109.54	44.82	70.371		
12,900.00	12,444.58	9,736.20	9,297.06	44.68	33.60	87.73	-216.34	126.48	3,152.81	3,107.70	45.11	69.899		
13,000.00	12,443.72	9,842.43	9,297.49	44.94	33.96	90.07	-322.14	135.94	3,150.95	3,105.49	45.46	69.307		
13,100.00	12,442.86	9,947.70	9,297.91	45.27	34.38	92.50	-427.27	141.45	3,148.94	3,103.07	45.87	68.644		
13,200.00	12,442.00	10,050.52	9,298.33	45.66	34.87	94.60	-530.07	143.18	3,146.82	3,100.49	46.33	67.924		
13,300.00	12,441.14	10,148.79	9,298.73	46.11	35.41	95.31	-628.33	143.79	3,144.76	3,097.93	46.83	67.148		
13,400.00	12,440.28	10,247.06	9,299.12	46.63	36.01	96.25	-726.60	144.39	3,142.80	3,095.42	47.39	66.324		
13,500.00	12,439.42	10,345.33	9,299.52	47.20	36.67	97.56	-824.87	144.99	3,140.95	3,092.97	47.99	65.456		
13,600.00	12,438.56	10,443.60	9,299.92	47.83	37.39	99.53	-923.14	145.59	3,139.21	3,090.58	48.63	64.550		
13,700.00	12,437.70	10,541.87	9,300.32	48.52	38.17	102.78	-1,021.40	146.20	3,137.58	3,088.26	49.32	63.613		
13,727.27	12,437.47	10,568.67	9,300.42	48.71	38.39	104.07	-1,048.20	146.36	3,137.15	3,087.64	49.52	63.353		
13,800.00	12,436.84	10,640.30	9,300.71	49.25	39.00	108.66	-1,119.83	146.80	3,136.07	3,086.01	50.06	62.650		
13,900.00	12,435.98	10,739.27	9,301.11	50.02	39.89	118.99	-1,218.80	147.41	3,134.67	3,083.84	50.83	61.666		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
14,000.00	12,435.11	10,838.67	9,301.52	50.83	40.83	136.78	-1,318.20	148.02	3,133.34	3,081.70	51.65	60.667		
14,100.00	12,434.25	10,938.39	9,301.92	51.66	41.81	160.30	-1,417.91	148.63	3,132.06	3,079.56	52.50	59.659		
14,200.00	12,433.39	11,038.31	9,302.32	52.52	42.84	176.84	-1,517.83	149.24	3,130.79	3,077.41	53.38	58.649		
14,259.68	12,432.87	11,102.03	9,302.57	53.04	43.51	179.65	-1,577.49	149.61	3,130.03	3,076.09	53.94	58.025		
14,300.00	12,432.52	11,138.29	9,302.73	53.40	43.91	179.65	-1,617.81	149.86	3,129.52	3,075.23	54.29	57.640		
14,400.00	12,431.66	11,238.28	9,303.13	54.32	45.01	179.65	-1,717.80	150.47	3,128.26	3,073.02	55.24	56.634		
14,500.00	12,430.80	11,338.28	9,303.54	55.27	46.15	179.65	-1,817.79	151.08	3,126.99	3,070.79	56.21	55.635		
14,600.00	12,429.94	11,438.27	9,303.94	56.25	47.32	179.65	-1,917.78	151.70	3,125.73	3,068.53	57.20	54.645		
14,700.00	12,429.08	11,538.26	9,304.35	57.26	48.51	179.65	-2,017.77	152.31	3,124.46	3,066.24	58.22	53.666		
14,800.00	12,428.22	11,638.25	9,304.75	58.31	49.74	179.65	-2,117.76	152.92	3,123.20	3,063.93	59.26	52.700		
14,900.00	12,427.36	11,738.24	9,305.15	59.38	50.98	179.65	-2,217.75	153.54	3,121.93	3,061.60	60.33	51.749		
15,000.00	12,426.50	11,838.24	9,305.56	60.47	52.25	179.65	-2,317.74	154.15	3,120.67	3,059.25	61.42	50.812		
15,100.00	12,425.64	11,938.23	9,305.96	61.60	53.54	179.65	-2,417.72	154.76	3,119.40	3,056.88	62.52	49.893		
15,200.00	12,424.78	12,038.22	9,306.37	62.74	54.86	179.65	-2,517.71	155.38	3,118.14	3,054.49	63.65	48.991		
15,300.00	12,423.92	12,138.21	9,306.77	63.91	56.18	179.65	-2,617.70	155.99	3,116.87	3,052.08	64.79	48.107		
15,400.00	12,423.06	12,238.20	9,307.18	65.10	57.53	179.65	-2,717.69	156.60	3,115.61	3,049.66	65.95	47.241		
15,500.00	12,422.20	12,338.20	9,307.58	66.31	58.89	179.65	-2,817.68	157.22	3,114.34	3,047.22	67.13	46.394		
15,600.00	12,421.34	12,438.19	9,307.98	67.54	60.27	179.65	-2,917.67	157.83	3,113.08	3,044.76	68.32	45.567		
15,700.00	12,420.48	12,538.18	9,308.39	68.79	61.66	179.65	-3,017.66	158.44	3,111.81	3,042.29	69.53	44.758		
15,800.00	12,419.62	12,638.17	9,308.79	70.06	63.07	179.65	-3,117.65	159.06	3,110.55	3,039.80	70.75	43.968		
15,900.00	12,418.76	12,738.16	9,309.20	71.34	64.48	179.65	-3,217.64	159.67	3,109.28	3,037.30	71.98	43.197		
16,000.00	12,417.90	12,838.16	9,309.60	72.63	65.91	179.65	-3,317.63	160.28	3,108.02	3,034.79	73.22	42.445		
16,100.00	12,417.03	12,938.15	9,310.01	73.94	67.35	179.65	-3,417.62	160.90	3,106.75	3,032.27	74.48	41.711		
16,200.00	12,416.17	13,038.14	9,310.41	75.27	68.79	179.65	-3,517.61	161.51	3,105.49	3,029.74	75.75	40.996		
16,300.00	12,415.31	13,138.13	9,310.82	76.60	70.25	179.65	-3,617.60	162.12	3,104.22	3,027.19	77.03	40.299		
16,400.00	12,414.45	13,238.12	9,311.22	77.95	71.72	179.65	-3,717.59	162.74	3,102.96	3,024.64	78.32	39.619		
16,500.00	12,413.59	13,338.12	9,311.62	79.31	73.19	179.65	-3,817.57	163.35	3,101.69	3,022.07	79.62	38.956		
16,600.00	12,412.73	13,438.11	9,312.03	80.69	74.67	179.65	-3,917.56	163.96	3,100.43	3,019.50	80.93	38.311		
16,700.00	12,411.87	13,538.10	9,312.43	82.07	76.16	179.65	-4,017.55	164.58	3,099.16	3,016.92	82.25	37.681		
16,800.00	12,411.01	13,638.09	9,312.84	83.46	77.66	179.65	-4,117.54	165.19	3,097.90	3,014.33	83.57	37.068		
16,900.00	12,410.15	13,738.08	9,313.24	84.87	79.16	179.65	-4,217.53	165.80	3,096.63	3,011.73	84.91	36.471		
17,000.00	12,409.29	13,838.08	9,313.65	86.28	80.67	179.65	-4,317.52	166.42	3,095.37	3,009.12	86.25	35.889		
17,100.00	12,408.43	13,938.07	9,314.05	87.70	82.18	179.65	-4,417.51	167.03	3,094.10	3,006.51	87.60	35.322		
17,200.00	12,407.57	14,038.06	9,314.45	89.13	83.70	179.65	-4,517.50	167.64	3,092.84	3,003.89	88.95	34.769		
17,300.00	12,406.71	14,138.05	9,314.86	90.56	85.23	179.65	-4,617.49	168.26	3,091.57	3,001.26	90.32	34.230		
17,400.00	12,405.85	14,238.04	9,315.26	92.01	86.76	179.65	-4,717.48	168.87	3,090.31	2,998.62	91.69	33.705		
17,500.00	12,404.99	14,338.04	9,315.67	93.46	88.29	179.65	-4,817.47	169.49	3,089.04	2,995.98	93.06	33.194		
17,600.00	12,404.13	14,438.03	9,316.07	94.91	89.83	179.65	-4,917.46	170.10	3,087.78	2,993.34	94.44	32.695		
17,700.00	12,403.27	14,538.02	9,316.48	96.38	91.37	179.65	-5,017.45	170.71	3,086.52	2,990.69	95.83	32.208		
17,800.00	12,402.41	14,638.01	9,316.88	97.85	92.92	179.65	-5,117.44	171.33	3,085.25	2,988.03	97.22	31.734		
17,900.00	12,401.55	14,738.00	9,317.29	99.32	94.47	179.65	-5,217.43	171.94	3,083.99	2,985.37	98.62	31.271		
18,000.00	12,400.68	14,838.00	9,317.69	100.81	96.02	179.65	-5,317.41	172.55	3,082.72	2,982.70	100.02	30.820		
18,100.00	12,399.82	14,937.99	9,318.09	102.29	97.58	179.65	-5,417.40	173.17	3,081.46	2,980.03	101.43	30.380		
18,200.00	12,398.96	15,037.98	9,318.50	103.79	99.14	179.65	-5,517.39	173.78	3,080.19	2,977.35	102.84	29.951		
18,300.00	12,398.10	15,137.97	9,318.90	105.28	100.70	179.65	-5,617.38	174.39	3,078.93	2,974.67	104.26	29.532		
18,400.00	12,397.24	15,237.96	9,319.31	106.78	102.27	179.65	-5,717.37	175.01	3,077.66	2,971.98	105.68	29.123		
18,500.00	12,396.38	15,337.96	9,319.71	108.29	103.84	179.65	-5,817.36	175.62	3,076.40	2,969.29	107.10	28.724		
18,600.00	12,395.52	15,437.95	9,320.12	109.80	105.41	179.65	-5,917.35	176.23	3,075.13	2,966.60	108.53	28.334		
18,700.00	12,394.66	15,537.94	9,320.52	111.32	106.99	179.65	-6,017.34	176.85	3,073.87	2,963.90	109.96	27.953		
18,800.00	12,393.80	15,637.93	9,320.92	112.84	108.57	179.65	-6,117.33	177.46	3,072.60	2,961.20	111.40	27.582		
18,900.00	12,392.94	15,737.92	9,321.33	114.36	110.15	179.65	-6,217.32	178.07	3,071.34	2,958.50	112.84	27.219		
19,000.00	12,392.08	15,837.92	9,321.73	115.89	111.73	179.65	-6,317.31	178.69	3,070.07	2,955.79	114.28	26.864		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
19,100.00	12,391.22	15,937.91	9,322.14	117.42	113.31	179.65	-6,417.30	179.30	3,068.81	2,953.08	115.73	26.517	
19,200.00	12,390.36	16,037.90	9,322.54	118.95	114.90	179.65	-6,517.29	179.91	3,067.54	2,950.36	117.18	26.179	
19,300.00	12,389.50	16,137.89	9,322.95	120.49	116.49	179.65	-6,617.28	180.53	3,066.28	2,947.65	118.63	25.847	
19,400.00	12,388.64	16,237.88	9,323.35	122.03	118.08	179.65	-6,717.26	181.14	3,065.01	2,944.93	120.08	25.524	
19,500.00	12,387.78	16,337.88	9,323.76	123.57	119.67	179.65	-6,817.25	181.75	3,063.75	2,942.20	121.54	25.207	
19,600.00	12,386.92	16,437.87	9,324.16	125.12	121.26	179.65	-6,917.24	182.37	3,062.48	2,939.48	123.00	24.898	
19,700.00	12,386.06	16,537.86	9,324.56	126.66	122.86	179.65	-7,017.23	182.98	3,061.22	2,936.75	124.47	24.595	
19,800.00	12,385.20	16,637.85	9,324.97	128.22	124.46	179.65	-7,117.22	183.59	3,059.95	2,934.02	125.93	24.298	
19,900.00	12,384.33	16,737.84	9,325.37	129.77	126.05	179.65	-7,217.21	184.21	3,058.69	2,931.29	127.40	24.009	
20,000.00	12,383.47	16,837.84	9,325.78	131.33	127.65	179.65	-7,317.20	184.82	3,057.42	2,928.55	128.87	23.725	
20,100.00	12,382.61	16,937.83	9,326.18	132.89	129.26	179.65	-7,417.19	185.43	3,056.16	2,925.81	130.34	23.447	
20,200.00	12,381.75	17,037.82	9,326.59	134.45	130.86	179.65	-7,517.18	186.05	3,054.89	2,923.07	131.82	23.175	
20,300.00	12,380.89	17,137.81	9,326.99	136.01	132.46	179.65	-7,617.17	186.66	3,053.63	2,920.33	133.30	22.909	
20,400.00	12,380.03	17,237.80	9,327.39	137.58	134.07	179.65	-7,717.16	187.27	3,052.36	2,917.59	134.77	22.648	
20,500.00	12,379.17	17,337.80	9,327.80	139.15	135.68	179.65	-7,817.15	187.89	3,051.10	2,914.84	136.26	22.393	
20,600.00	12,378.31	17,437.79	9,328.20	140.72	137.28	179.65	-7,917.14	188.50	3,049.83	2,912.09	137.74	22.142	
20,700.00	12,377.45	17,537.78	9,328.61	142.29	138.89	179.65	-8,017.13	189.11	3,048.57	2,909.34	139.22	21.897	
20,800.00	12,376.59	17,637.77	9,329.01	143.86	140.50	179.65	-8,117.11	189.73	3,047.30	2,906.59	140.71	21.657	
20,900.00	12,375.73	17,737.76	9,329.42	145.44	142.12	179.65	-8,217.10	190.34	3,046.04	2,903.84	142.20	21.421	
21,000.00	12,374.87	17,837.76	9,329.82	147.02	143.73	179.65	-8,317.09	190.95	3,044.77	2,901.08	143.69	21.190	
21,100.00	12,374.01	17,937.75	9,330.23	148.59	145.34	179.65	-8,417.08	191.57	3,043.51	2,898.33	145.18	20.964	
21,200.00	12,373.15	18,037.74	9,330.63	150.18	146.96	179.65	-8,517.07	192.18	3,042.24	2,895.57	146.67	20.742	
21,300.00	12,372.29	18,137.73	9,331.03	151.76	148.57	179.65	-8,617.06	192.79	3,040.98	2,892.81	148.17	20.524	
21,400.00	12,371.43	18,237.72	9,331.44	153.34	150.19	179.65	-8,717.05	193.41	3,039.71	2,890.05	149.66	20.310	
21,500.00	12,370.57	18,337.72	9,331.84	154.93	151.81	179.65	-8,817.04	194.02	3,038.45	2,887.29	151.16	20.101	
21,600.00	12,369.71	18,437.71	9,332.25	156.52	153.42	179.65	-8,917.03	194.63	3,037.18	2,884.52	152.66	19.895	
21,700.00	12,368.85	18,537.70	9,332.65	158.11	155.04	179.65	-9,017.02	195.25	3,035.92	2,881.76	154.16	19.693	
21,800.00	12,367.98	18,637.69	9,333.06	159.70	156.66	179.65	-9,117.01	195.86	3,034.65	2,878.99	155.66	19.495	
21,900.00	12,367.12	18,737.68	9,333.46	161.29	158.28	179.65	-9,217.00	196.47	3,033.39	2,876.22	157.17	19.300	
22,000.00	12,366.26	18,837.68	9,333.86	162.88	159.91	179.65	-9,316.99	197.09	3,032.12	2,873.45	158.67	19.109	
22,100.00	12,365.40	18,937.67	9,334.27	164.47	161.53	179.65	-9,416.98	197.70	3,030.86	2,870.68	160.18	18.922	
22,200.00	12,364.54	19,037.66	9,334.67	166.07	163.15	179.65	-9,516.97	198.32	3,029.59	2,867.91	161.69	18.738	
22,300.00	12,363.68	19,137.65	9,335.08	167.67	164.77	179.65	-9,616.95	198.93	3,028.33	2,865.14	163.19	18.557	
22,400.00	12,362.82	19,237.64	9,335.48	169.26	166.40	179.65	-9,716.94	199.54	3,027.06	2,862.36	164.70	18.379	
22,500.00	12,361.96	19,337.64	9,335.89	170.86	168.02	179.65	-9,816.93	200.16	3,025.80	2,859.59	166.21	18.204	
22,565.16	12,361.40	19,390.56	9,336.10	171.78	168.88	0.00	-9,869.85	200.48	3,025.00	2,858.05	166.95	18.119	



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 516H - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.10	0.10	0.00	0.00	89.70	0.16	29.99	29.99					
100.00	100.00	100.10	100.10	0.13	0.13	89.70	0.16	29.99	29.99	29.72	0.27	111.398		
200.00	200.00	200.10	200.10	0.49	0.49	89.70	0.16	29.99	29.99	29.00	0.99	30.411		
300.00	300.00	300.10	300.10	0.85	0.85	89.70	0.16	29.99	29.99	28.29	1.70	17.609		
400.00	400.00	400.10	400.10	1.21	1.21	89.70	0.16	29.99	29.99	27.57	2.42	12.392		
500.00	500.00	500.10	500.10	1.57	1.57	89.70	0.16	29.99	29.99	26.85	3.14	9.560		
600.00	600.00	600.10	600.10	1.93	1.93	89.70	0.16	29.99	29.99	26.14	3.85	7.782		
700.00	700.00	700.10	700.10	2.29	2.29	89.70	0.16	29.99	29.99	25.42	4.57	6.561		
800.00	800.00	800.10	800.10	2.64	2.64	89.70	0.16	29.99	29.99	24.70	5.29	5.671		
900.00	900.00	900.10	900.10	3.00	3.00	89.70	0.16	29.99	29.99	23.98	6.00	4.994		
1,000.00	1,000.00	1,000.10	1,000.10	3.36	3.36	89.70	0.16	29.99	29.99	23.27	6.72	4.462		
1,100.00	1,100.00	1,100.10	1,100.10	3.72	3.72	89.70	0.16	29.99	29.99	22.55	7.44	4.032		
1,200.00	1,200.00	1,200.10	1,200.10	4.08	4.08	89.70	0.16	29.99	29.99	21.83	8.16	3.677		
1,300.00	1,300.00	1,300.10	1,300.10	4.44	4.44	89.70	0.16	29.99	29.99	21.12	8.87	3.380		
1,400.00	1,400.00	1,400.10	1,400.10	4.79	4.79	89.70	0.16	29.99	29.99	20.40	9.59	3.127		
1,500.00	1,500.00	1,500.10	1,500.10	5.15	5.15	89.70	0.16	29.99	29.99	19.68	10.31	2.910		
1,600.00	1,600.00	1,600.10	1,600.10	5.51	5.51	89.70	0.16	29.99	29.99	18.97	11.02	2.721		
1,700.00	1,700.00	1,700.10	1,700.10	5.87	5.87	89.70	0.16	29.99	29.99	18.25	11.74	2.554		
1,800.00	1,800.00	1,800.10	1,800.10	6.23	6.23	89.70	0.16	29.99	29.99	17.53	12.46	2.407		
1,900.00	1,900.00	1,900.10	1,900.10	6.59	6.59	89.70	0.16	29.99	29.99	16.82	13.17	2.276		
2,000.00	2,000.00	2,000.10	2,000.10	6.95	6.95	89.70	0.16	29.99	29.99	16.10	13.89	2.159		
2,100.00	2,100.00	2,100.10	2,100.10	7.30	7.30	89.70	0.16	29.99	29.99	15.38	14.61	2.053		
2,200.00	2,200.00	2,200.10	2,200.10	7.66	7.66	89.70	0.16	29.99	29.99	14.66	15.33	1.957		
2,300.00	2,300.00	2,300.10	2,300.10	8.02	8.02	89.70	0.16	29.99	29.99	13.95	16.04	1.869		
2,400.00	2,400.00	2,400.10	2,400.10	8.38	8.38	89.70	0.16	29.99	29.99	13.23	16.76	1.789		
2,500.00	2,500.00	2,500.10	2,500.10	8.74	8.74	89.70	0.16	29.99	29.99	12.51	17.48	1.716		
2,500.11	2,500.11	2,500.21	2,500.21	8.74	8.74	89.70	0.16	29.99	29.99	12.51	17.48	1.716	CC	
2,600.00	2,599.99	2,600.21	2,600.20	9.10	9.10	89.59	1.01	29.81	30.16	11.96	18.19	1.658		
2,700.00	2,699.96	2,700.31	2,700.27	9.45	9.46	89.29	3.58	29.26	30.65	11.75	18.91	1.621	ES	
2,800.00	2,799.86	2,800.41	2,800.27	9.81	9.81	88.80	7.86	28.35	31.49	11.87	19.62	1.605		
2,900.00	2,899.68	2,900.51	2,900.18	10.17	10.17	88.17	13.84	27.07	32.65	12.32	20.33	1.606		
3,000.00	2,999.37	3,000.59	2,999.96	10.53	10.53	87.42	21.53	25.43	34.16	13.11	21.05	1.623		
3,100.00	3,098.90	3,100.67	3,099.57	10.89	10.89	86.59	30.92	23.42	36.01	14.24	21.77	1.654		
3,200.00	3,198.26	3,200.74	3,198.99	11.25	11.25	85.72	42.01	21.06	38.20	15.71	22.49	1.699		
3,300.00	3,297.40	3,300.79	3,298.19	11.61	11.62	84.84	54.80	18.33	40.74	17.52	23.22	1.754		
3,300.10	3,297.50	3,300.90	3,298.29	11.61	11.62	84.84	54.81	18.32	40.74	17.52	23.22	1.755		
3,400.00	3,396.43	3,400.76	3,397.18	11.98	11.99	84.05	68.40	15.42	43.45	19.50	23.96	1.814		
3,500.00	3,495.46	3,500.72	3,496.17	12.36	12.36	83.35	82.01	12.52	46.18	21.48	24.70	1.870		
3,600.00	3,594.48	3,600.68	3,595.16	12.73	12.73	82.73	95.62	9.61	48.91	23.46	25.45	1.922		
3,700.00	3,693.51	3,700.64	3,694.14	13.11	13.11	82.17	109.22	6.71	51.64	25.44	26.20	1.971		
3,800.00	3,792.54	3,800.60	3,793.13	13.49	13.49	81.67	122.83	3.81	54.38	27.42	26.96	2.017		
3,900.00	3,891.56	3,900.56	3,892.12	13.87	13.87	81.22	136.44	0.90	57.12	29.40	27.72	2.060		
4,000.00	3,990.59	4,000.52	3,991.11	14.26	14.26	80.81	150.04	-2.00	59.87	31.38	28.49	2.101		
4,100.00	4,089.62	4,100.49	4,090.10	14.64	14.64	80.44	163.65	-4.91	62.62	33.36	29.26	2.140		
4,200.00	4,188.64	4,200.45	4,189.09	15.03	15.03	80.09	177.26	-7.81	65.37	35.34	30.03	2.177		
4,300.00	4,287.67	4,300.41	4,288.07	15.42	15.42	79.78	190.86	-10.71	68.12	37.31	30.81	2.211		
4,400.00	4,386.70	4,400.37	4,387.06	15.81	15.81	79.49	204.47	-13.62	70.88	39.29	31.59	2.244		
4,500.00	4,485.72	4,500.33	4,486.05	16.20	16.20	79.22	218.07	-16.52	73.64	41.26	32.37	2.275		
4,600.00	4,584.75	4,600.29	4,585.04	16.60	16.59	78.97	231.68	-19.43	76.39	43.24	33.16	2.304		
4,700.00	4,683.78	4,700.25	4,684.03	16.99	16.99	78.74	245.29	-22.33	79.16	45.21	33.94	2.332		
4,800.00	4,782.80	4,800.22	4,783.02	17.39	17.38	78.52	258.89	-25.24	81.92	47.18	34.73	2.358		
4,900.00	4,881.83	4,900.18	4,882.00	17.78	17.78	78.32	272.50	-28.14	84.68	49.15	35.53	2.384		

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



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 516H - Wellbore #1 - Design #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,000.00	4,980.85	5,000.14	4,980.99	18.18	18.17	78.13	286.11	-31.04	87.44	51.12	36.32	2.408	
5,100.00	5,079.88	5,100.10	5,079.98	18.58	18.57	77.95	299.71	-33.95	90.21	53.09	37.11	2.431	
5,200.00	5,178.91	5,200.06	5,178.97	18.98	18.97	77.78	313.32	-36.85	92.97	55.06	37.91	2.452	
5,300.00	5,277.93	5,300.02	5,277.96	19.38	19.37	77.63	326.93	-39.76	95.74	57.03	38.71	2.473	
5,400.00	5,376.96	5,400.02	5,376.95	19.78	19.77	77.48	340.53	-42.66	98.51	59.00	39.51	2.493	
5,500.00	5,475.99	5,500.06	5,475.94	20.18	20.17	77.34	354.14	-45.56	101.27	60.96	40.31	2.512	
5,600.00	5,575.01	5,600.09	5,574.92	20.58	20.57	77.20	367.75	-48.47	104.04	62.93	41.11	2.531	
5,700.00	5,674.04	5,699.87	5,673.92	20.98	20.97	77.08	381.35	-51.37	106.81	64.90	41.91	2.548	
5,800.00	5,773.07	5,799.85	5,773.06	21.39	21.37	77.50	393.95	-54.06	109.57	66.85	42.71	2.565	
5,898.39	5,870.50	5,898.17	5,870.76	21.78	21.76	78.75	404.69	-56.35	112.29	68.81	43.48	2.583	
5,900.00	5,872.09	5,899.78	5,872.36	21.79	21.76	78.78	404.85	-56.39	112.34	68.84	43.49	2.583	
6,000.00	5,971.24	5,999.63	5,971.77	22.19	22.14	80.43	414.06	-58.35	115.02	70.76	44.26	2.599	
6,100.00	6,070.60	6,099.43	6,071.27	22.58	22.52	82.04	421.56	-59.95	117.46	72.45	45.01	2.610	
6,200.00	6,170.14	6,199.18	6,170.84	22.97	22.89	83.62	427.36	-61.19	119.64	73.90	45.74	2.616	
6,300.00	6,269.83	6,298.87	6,270.44	23.35	23.25	85.17	431.47	-62.07	121.57	75.12	46.45	2.617	
6,400.00	6,369.65	6,398.51	6,370.05	23.71	23.60	86.71	433.88	-62.58	123.26	76.11	47.14	2.614	
6,500.00	6,469.55	6,501.89	6,469.65	24.07	23.95	88.24	434.60	-62.74	124.69	76.85	47.83	2.607	
6,600.00	6,569.52	6,601.92	6,569.62	24.43	24.30	89.34	434.60	-62.74	125.67	77.16	48.51	2.591	
6,698.49	6,668.00	6,703.44	6,668.10	24.77	24.64	89.70	434.60	-62.74	126.00	76.81	49.19	2.561	
6,700.00	6,669.51	6,701.93	6,669.61	24.77	24.64	89.70	434.60	-62.74	126.00	76.81	49.19	2.561	
6,800.00	6,769.51	6,801.93	6,769.61	25.11	24.98	89.70	434.60	-62.74	126.00	76.12	49.88	2.526	
6,900.00	6,869.51	6,901.93	6,869.61	25.45	25.33	89.70	434.60	-62.74	126.00	75.44	50.56	2.492	
7,000.00	6,969.51	7,001.93	6,969.61	25.80	25.67	89.70	434.60	-62.74	126.00	74.75	51.25	2.458	
7,100.00	7,069.51	7,101.93	7,069.61	26.14	26.01	89.70	434.60	-62.74	126.00	74.06	51.94	2.426	
7,200.00	7,169.51	7,201.93	7,169.61	26.48	26.36	89.70	434.60	-62.74	126.00	73.37	52.63	2.394	
7,300.00	7,269.51	7,301.93	7,269.61	26.82	26.70	89.70	434.60	-62.74	126.00	72.68	53.32	2.363	
7,400.00	7,369.51	7,401.93	7,369.61	27.17	27.05	89.70	434.60	-62.74	126.00	71.99	54.01	2.333	
7,500.00	7,469.51	7,501.93	7,469.61	27.51	27.39	89.70	434.60	-62.74	126.00	71.30	54.70	2.303	
7,600.00	7,569.51	7,601.93	7,569.61	27.85	27.74	89.70	434.60	-62.74	126.00	70.61	55.39	2.275	
7,700.00	7,669.51	7,701.93	7,669.61	28.20	28.09	89.70	434.60	-62.74	126.00	69.91	56.09	2.247	
7,800.00	7,769.51	7,801.93	7,769.61	28.54	28.43	89.70	434.60	-62.74	126.00	69.22	56.78	2.219	
7,900.00	7,869.51	7,901.93	7,869.61	28.89	28.78	89.70	434.60	-62.74	126.00	68.53	57.47	2.192	
8,000.00	7,969.51	8,001.93	7,969.61	29.24	29.13	89.70	434.60	-62.74	126.00	67.83	58.17	2.166	
8,100.00	8,069.51	8,101.93	8,069.61	29.58	29.48	89.70	434.60	-62.74	126.00	67.14	58.86	2.141	
8,200.00	8,169.51	8,201.93	8,169.61	29.93	29.82	89.70	434.60	-62.74	126.00	66.44	59.56	2.116	
8,300.00	8,269.51	8,301.93	8,269.61	30.27	30.17	89.70	434.60	-62.74	126.00	65.75	60.25	2.091	
8,400.00	8,369.51	8,401.93	8,369.61	30.62	30.52	89.70	434.60	-62.74	126.00	65.05	60.95	2.067	
8,500.00	8,469.51	8,501.93	8,469.61	30.97	30.87	89.70	434.60	-62.74	126.00	64.35	61.65	2.044	
8,600.00	8,569.51	8,601.93	8,569.61	31.32	31.22	89.70	434.60	-62.74	126.00	63.66	62.34	2.021	
8,700.00	8,669.51	8,701.93	8,669.61	31.66	31.57	89.70	434.60	-62.74	126.00	62.96	63.04	1.999	
8,800.00	8,769.51	8,801.93	8,769.61	32.01	31.91	89.70	434.60	-62.74	126.00	62.26	63.74	1.977	
8,900.00	8,869.51	8,901.93	8,869.61	32.36	32.26	89.70	434.60	-62.74	126.00	61.56	64.44	1.955	
9,000.00	8,969.51	9,001.93	8,969.61	32.71	32.61	89.70	434.60	-62.74	126.00	60.86	65.14	1.934	
9,100.00	9,069.51	9,101.93	9,069.61	33.06	32.96	89.70	434.60	-62.74	126.00	60.16	65.84	1.914	
9,200.00	9,169.51	9,201.93	9,169.61	33.40	33.31	89.70	434.60	-62.74	126.00	59.46	66.54	1.894	
9,300.00	9,269.51	9,301.93	9,269.61	33.75	33.66	89.70	434.60	-62.74	126.00	58.76	67.24	1.874	
9,400.00	9,369.51	9,401.93	9,369.61	34.10	34.01	89.70	434.60	-62.74	126.00	58.06	67.94	1.855	
9,500.00	9,469.51	9,501.93	9,469.61	34.45	34.36	89.70	434.60	-62.74	126.00	57.36	68.64	1.836	
9,600.00	9,569.51	9,601.93	9,569.61	34.80	34.71	89.70	434.60	-62.74	126.00	56.66	69.34	1.817	
9,700.00	9,669.51	9,701.93	9,669.61	35.15	35.07	89.70	434.60	-62.74	126.00	55.96	70.04	1.799	
9,800.00	9,769.51	9,801.93	9,769.61	35.50	35.42	89.70	434.60	-62.74	126.00	55.26	70.74	1.781	
9,900.00	9,869.51	9,901.93	9,869.61	35.85	35.77	89.70	434.60	-62.74	126.00	54.56	71.44	1.764	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 516H - Wellbore #1 - Design #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,000.00	9,969.51	10,001.93	9,969.61	36.20	36.12	89.70	434.60	-62.74	126.00	53.85	72.15	1.748	
10,100.00	10,069.51	10,101.93	10,069.61	36.55	36.47	89.70	434.60	-62.74	126.00	53.15	72.85	1.730	
10,200.00	10,169.51	10,201.93	10,169.61	36.90	36.82	89.70	434.60	-62.74	126.00	52.45	73.55	1.713	
10,300.00	10,269.51	10,301.93	10,269.61	37.25	37.17	89.70	434.60	-62.74	126.00	51.75	74.25	1.697	
10,400.00	10,369.51	10,401.93	10,369.61	37.60	37.52	89.70	434.60	-62.74	126.00	51.04	74.96	1.681	
10,500.00	10,469.51	10,501.93	10,469.61	37.95	37.88	89.70	434.60	-62.74	126.00	50.34	75.66	1.665	
10,600.00	10,569.51	10,601.93	10,569.61	38.31	38.23	89.70	434.60	-62.74	126.00	49.63	76.37	1.650	
10,700.00	10,669.51	10,701.93	10,669.61	38.66	38.58	89.70	434.60	-62.74	126.00	48.93	77.07	1.635	
10,800.00	10,769.51	10,801.93	10,769.61	39.01	38.93	89.70	434.60	-62.74	126.00	48.23	77.77	1.620	
10,900.00	10,869.51	10,901.93	10,869.61	39.36	39.29	89.70	434.60	-62.74	126.00	47.52	78.48	1.606	
11,000.00	10,969.51	11,001.93	10,969.61	39.71	39.64	89.70	434.60	-62.74	126.00	46.82	79.18	1.591	
11,100.00	11,069.51	11,101.93	11,069.61	40.06	39.99	89.70	434.60	-62.74	126.00	46.11	79.89	1.577	
11,200.00	11,169.51	11,201.93	11,169.61	40.41	40.34	89.70	434.60	-62.74	126.00	45.41	80.59	1.563	
11,300.00	11,269.51	11,301.93	11,269.61	40.77	40.70	89.70	434.60	-62.74	126.00	44.70	81.30	1.550	
11,400.00	11,369.51	11,401.93	11,369.61	41.12	41.05	89.70	434.60	-62.74	126.00	43.99	82.01	1.536	
11,500.00	11,469.51	11,501.93	11,469.61	41.47	41.40	89.70	434.60	-62.74	126.00	43.29	82.71	1.523 SF	
11,600.00	11,569.51	11,594.87	11,566.24	41.82	41.70	91.57	430.46	-61.93	126.90	43.60	83.30	1.523	
11,700.00	11,669.51	11,686.87	11,656.28	42.18	41.95	99.39	412.38	-58.42	132.76	49.31	83.45	1.591	
11,800.00	11,769.51	11,771.09	11,735.16	42.53	42.14	110.31	383.63	-52.83	148.96	66.54	82.41	1.807	
11,900.00	11,869.51	11,845.38	11,800.53	42.88	42.29	120.75	349.08	-46.12	179.76	99.96	79.80	2.253	
11,902.93	11,872.44	11,847.40	11,802.24	42.89	42.29	121.03	348.03	-45.91	180.89	101.18	79.71	2.269	
11,950.00	11,919.46	11,879.48	11,828.88	43.04	42.35	124.84	330.51	-42.50	199.52	121.38	78.13	2.554	
12,000.00	11,969.05	11,912.95	11,855.58	43.19	42.41	127.80	310.69	-38.65	219.60	143.21	76.40	2.875	
12,050.00	12,017.90	11,945.90	11,880.66	43.32	42.46	129.87	289.73	-34.58	239.49	164.86	74.63	3.209	
12,100.00	12,065.65	11,978.39	11,904.15	43.44	42.51	131.24	267.70	-30.30	258.84	185.98	72.86	3.553	
12,150.00	12,111.93	12,010.48	11,926.07	43.56	42.56	132.02	244.70	-25.82	277.37	206.28	71.09	3.901	
12,200.00	12,156.38	12,042.24	11,946.43	43.66	42.60	132.27	220.78	-21.18	294.91	225.55	69.36	4.252	
12,250.00	12,198.67	12,073.70	11,965.24	43.75	42.65	132.03	196.04	-16.37	311.31	243.64	67.67	4.600	
12,300.00	12,238.48	12,100.00	11,979.89	43.83	42.68	130.58	174.59	-12.20	326.52	260.90	65.62	4.976	
12,350.00	12,275.51	12,135.89	11,998.23	43.90	42.73	130.09	144.31	-6.31	340.27	275.78	64.50	5.275	
12,400.00	12,309.46	12,166.69	12,012.40	43.97	42.78	128.32	117.47	-1.09	352.67	289.62	63.06	5.593	
12,450.00	12,340.09	12,200.00	12,026.05	44.04	42.82	126.46	87.65	4.70	363.61	301.70	61.91	5.873	
12,500.00	12,367.17	12,227.85	12,036.09	44.10	42.86	122.83	62.16	9.66	373.01	312.44	60.56	6.159	
12,550.00	12,390.47	12,258.25	12,045.60	44.16	42.91	118.90	33.82	15.17	380.86	321.30	59.56	6.395	
12,600.00	12,409.84	12,288.57	12,053.54	44.22	42.95	114.00	5.10	20.75	387.12	328.38	58.74	6.590	
12,650.00	12,425.11	12,318.82	12,059.91	44.28	43.00	108.01	-23.93	26.39	391.78	333.65	58.13	6.740	
12,700.00	12,436.18	12,350.00	12,064.83	44.35	43.05	101.27	-54.15	32.27	394.81	337.05	57.75	6.836	
12,750.00	12,442.96	12,379.21	12,067.92	44.42	43.09	92.72	-82.66	37.81	396.20	338.62	57.58	6.881	
12,800.00	12,445.39	12,409.38	12,069.55	44.49	43.14	83.81	-112.23	43.56	395.94	338.28	57.66	6.866	
12,807.86	12,445.38	12,414.13	12,069.66	44.51	43.15	82.38	-116.89	44.46	395.75	338.05	57.70	6.859	
12,900.00	12,444.58	12,500.02	12,069.98	44.68	43.32	79.49	-201.20	60.85	394.63	336.62	58.00	6.804	
13,000.00	12,443.72	12,600.01	12,070.27	44.94	43.58	79.49	-299.36	79.93	393.54	335.20	58.34	6.745	
13,100.00	12,442.86	12,701.47	12,070.56	45.27	43.91	80.17	-398.98	99.09	392.39	333.68	58.71	6.683	
13,200.00	12,442.00	12,805.87	12,070.85	45.66	44.32	82.27	-502.02	115.93	390.37	331.44	58.93	6.624	
13,300.00	12,441.14	12,909.92	12,071.15	46.11	44.78	84.38	-605.23	128.96	387.27	328.30	58.98	6.566	
13,400.00	12,440.28	13,013.32	12,071.45	46.63	45.30	86.49	-708.22	138.19	383.28	324.41	58.87	6.511	
13,500.00	12,439.42	13,115.83	12,071.74	47.20	45.85	88.63	-810.58	143.66	378.66	320.03	58.63	6.459	
13,600.00	12,438.56	13,216.76	12,072.03	47.83	46.45	90.47	-911.49	145.52	373.80	315.46	58.35	6.407	
13,700.00	12,437.70	13,315.03	12,072.31	48.52	47.07	90.74	-1,009.76	146.13	369.52	311.28	58.23	6.345	
13,727.27	12,437.47	13,341.83	12,072.38	48.71	47.25	90.85	-1,036.55	146.29	368.50	310.26	58.24	6.327	
13,800.00	12,436.84	13,413.47	12,072.59	49.25	47.74	91.26	-1,108.19	146.73	366.21	307.84	58.37	6.274	
13,900.00	12,435.98	13,512.44	12,072.87	50.02	48.46	92.27	-1,207.15	147.34	363.91	305.14	58.77	6.192	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 516H - Wellbore #1 - Design #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,000.00	12,435.11	13,611.84	12,073.15	50.83	49.23	94.65	-1,306.56	147.95	362.26	302.88	59.37	6.102	
14,100.00	12,434.25	13,711.56	12,073.43	51.66	50.04	102.64	-1,406.27	148.56	360.94	300.86	60.08	6.007	
14,200.00	12,433.39	13,811.48	12,073.72	52.52	50.90	148.37	-1,506.19	149.17	359.77	298.92	60.85	5.913	
14,259.68	12,432.87	13,871.14	12,073.89	53.04	51.43	179.65	-1,565.85	149.54	359.09	297.77	61.32	5.856	
14,300.00	12,432.52	13,911.47	12,074.00	53.40	51.80	179.65	-1,606.17	149.78	358.62	296.99	61.63	5.819	
14,400.00	12,431.66	14,011.46	12,074.29	54.32	52.73	179.65	-1,706.17	150.40	357.48	295.03	62.45	5.725	
14,500.00	12,430.80	14,111.45	12,074.57	55.27	53.70	179.65	-1,806.16	151.01	356.33	293.05	63.29	5.631	
14,600.00	12,429.94	14,211.45	12,074.85	56.25	54.70	179.65	-1,906.15	151.62	355.19	291.04	64.15	5.537	
14,700.00	12,429.08	14,311.44	12,075.14	57.26	55.73	179.65	-2,006.14	152.24	354.04	289.00	65.05	5.443	
14,800.00	12,428.22	14,411.43	12,075.42	58.31	56.79	179.65	-2,106.13	152.85	352.90	286.93	65.97	5.350	
14,900.00	12,427.36	14,511.43	12,075.71	59.38	57.88	179.65	-2,206.12	153.47	351.76	284.84	66.91	5.257	
15,000.00	12,426.50	14,611.42	12,075.99	60.47	59.00	179.65	-2,306.11	154.08	350.61	282.73	67.88	5.165	
15,100.00	12,425.64	14,711.41	12,076.28	61.60	60.14	179.65	-2,406.10	154.69	349.47	280.60	68.87	5.075	
15,200.00	12,424.78	14,811.41	12,076.56	62.74	61.31	179.65	-2,506.09	155.31	348.32	278.44	69.88	4.985	
15,300.00	12,423.92	14,911.40	12,076.84	63.91	62.50	179.65	-2,606.09	155.92	347.18	276.27	70.91	4.896	
15,400.00	12,423.06	15,011.39	12,077.13	65.10	63.71	179.65	-2,706.08	156.53	346.03	274.07	71.96	4.809	
15,500.00	12,422.20	15,111.39	12,077.41	66.31	64.93	179.65	-2,806.07	157.15	344.89	271.86	73.03	4.723	
15,600.00	12,421.34	15,211.38	12,077.70	67.54	66.18	179.65	-2,906.06	157.76	343.74	269.63	74.11	4.638	
15,700.00	12,420.48	15,311.37	12,077.98	68.79	67.45	179.65	-3,006.05	158.37	342.60	267.38	75.22	4.555	
15,800.00	12,419.62	15,411.37	12,078.27	70.06	68.73	179.65	-3,106.04	158.99	341.45	265.12	76.34	4.473	
15,900.00	12,418.76	15,511.36	12,078.55	71.34	70.03	179.65	-3,206.03	159.60	340.31	262.84	77.47	4.393	
16,000.00	12,417.90	15,611.35	12,078.84	72.63	71.34	179.65	-3,306.02	160.21	339.16	260.54	78.62	4.314	
16,100.00	12,417.03	15,711.35	12,079.12	73.94	72.67	179.65	-3,406.02	160.83	338.02	258.23	79.79	4.237	
16,200.00	12,416.17	15,811.34	12,079.40	75.27	74.01	179.65	-3,506.01	161.44	336.87	255.91	80.96	4.161	
16,300.00	12,415.31	15,911.33	12,079.69	76.60	75.36	179.65	-3,606.00	162.05	335.73	253.57	82.16	4.086	
16,400.00	12,414.45	16,011.33	12,079.97	77.95	76.72	179.65	-3,705.99	162.67	334.58	251.22	83.36	4.014	
16,500.00	12,413.59	16,111.32	12,080.26	79.31	78.10	179.65	-3,805.98	163.28	333.44	248.86	84.58	3.942	
16,600.00	12,412.73	16,211.31	12,080.54	80.69	79.49	179.65	-3,905.97	163.89	332.29	246.49	85.80	3.873	
16,700.00	12,411.87	16,311.31	12,080.83	82.07	80.89	179.65	-4,005.96	164.51	331.15	244.11	87.04	3.805	
16,800.00	12,411.01	16,411.30	12,081.11	83.46	82.29	179.65	-4,105.95	165.12	330.00	241.71	88.29	3.738	
16,900.00	12,410.15	16,511.29	12,081.39	84.87	83.71	179.65	-4,205.94	165.73	328.86	239.31	89.55	3.672	
17,000.00	12,409.29	16,611.29	12,081.68	86.28	85.13	179.65	-4,305.94	166.35	327.71	236.90	90.82	3.608	
17,100.00	12,408.43	16,711.28	12,081.96	87.70	86.57	179.65	-4,405.93	166.96	326.57	234.47	92.10	3.546	
17,200.00	12,407.57	16,811.28	12,082.25	89.13	88.01	179.65	-4,505.92	167.57	325.42	232.04	93.38	3.485	
17,300.00	12,406.71	16,911.27	12,082.53	90.56	89.46	179.65	-4,605.91	168.19	324.28	229.60	94.68	3.425	
17,400.00	12,405.85	17,011.26	12,082.82	92.01	90.91	179.65	-4,705.90	168.80	323.13	227.15	95.98	3.367	
17,500.00	12,404.99	17,111.26	12,083.10	93.46	92.37	179.65	-4,805.89	169.41	321.99	224.70	97.29	3.310	
17,600.00	12,404.13	17,211.25	12,083.38	94.91	93.84	179.65	-4,905.88	170.03	320.84	222.23	98.61	3.254	
17,700.00	12,403.27	17,311.24	12,083.67	96.38	95.32	179.65	-5,005.87	170.64	319.70	219.76	99.94	3.199	
17,800.00	12,402.41	17,411.24	12,083.95	97.85	96.80	179.65	-5,105.87	171.25	318.55	217.28	101.27	3.146	
17,900.00	12,401.55	17,511.23	12,084.24	99.32	98.29	179.65	-5,205.86	171.87	317.41	214.80	102.61	3.093	
18,000.00	12,400.68	17,611.22	12,084.52	100.81	99.78	179.65	-5,305.85	172.48	316.26	212.31	103.96	3.042	
18,100.00	12,399.82	17,711.22	12,084.81	102.29	101.27	179.65	-5,405.84	173.09	315.12	209.81	105.31	2.992	
18,200.00	12,398.96	17,811.21	12,085.09	103.79	102.78	179.65	-5,505.83	173.71	313.97	207.31	106.67	2.944	
18,300.00	12,398.10	17,911.20	12,085.37	105.28	104.28	179.65	-5,605.82	174.32	312.83	204.80	108.03	2.896	
18,400.00	12,397.24	18,011.20	12,085.66	106.78	105.80	179.65	-5,705.81	174.93	311.68	202.28	109.40	2.849	
18,500.00	12,396.38	18,111.19	12,085.94	108.29	107.31	179.65	-5,805.80	175.55	310.54	199.76	110.78	2.803	
18,600.00	12,395.52	18,211.18	12,086.23	109.80	108.83	179.65	-5,905.79	176.16	309.39	197.24	112.16	2.759	
18,700.00	12,394.66	18,311.18	12,086.51	111.32	110.36	179.65	-6,005.79	176.78	308.25	194.71	113.54	2.715	
18,800.00	12,393.80	18,411.17	12,086.80	112.84	111.88	179.65	-6,105.78	177.39	307.11	192.18	114.93	2.672	
18,900.00	12,392.94	18,511.16	12,087.08	114.36	113.41	179.65	-6,205.77	178.00	305.96	189.64	116.32	2.630	
19,000.00	12,392.08	18,611.16	12,087.37	115.89	114.95	179.65	-6,305.76	178.62	304.82	187.09	117.72	2.589	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design Cotton Draw Unit - 516H - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
19,100.00	12,391.22	18,711.15	12,087.65	117.42	116.49	179.65	-6,405.75	179.23	303.67	184.55	119.13	2.549		
19,200.00	12,390.36	18,811.14	12,087.93	118.95	118.03	179.65	-6,505.74	179.84	302.53	181.99	120.53	2.510		
19,300.00	12,389.50	18,911.14	12,088.22	120.49	119.57	179.65	-6,605.73	180.46	301.38	179.44	121.94	2.471		
19,400.00	12,388.64	19,011.13	12,088.50	122.03	121.12	179.65	-6,705.72	181.07	300.24	176.88	123.36	2.434		
19,500.00	12,387.78	19,111.12	12,088.79	123.57	122.67	179.65	-6,805.71	181.68	299.09	174.31	124.78	2.397		
19,600.00	12,386.92	19,211.12	12,089.07	125.12	124.23	179.65	-6,905.71	182.30	297.95	171.75	126.20	2.361		
19,700.00	12,386.06	19,311.11	12,089.36	126.66	125.78	179.65	-7,005.70	182.91	296.80	169.18	127.62	2.326		
19,800.00	12,385.20	19,411.10	12,089.64	128.22	127.34	179.65	-7,105.69	183.52	295.66	166.60	129.05	2.291		
19,900.00	12,384.33	19,511.10	12,089.92	129.77	128.90	179.65	-7,205.68	184.14	294.51	164.03	130.48	2.257		
20,000.00	12,383.47	19,611.09	12,090.21	131.33	130.46	179.65	-7,305.67	184.75	293.37	161.45	131.92	2.224		
20,100.00	12,382.61	19,711.09	12,090.49	132.89	132.03	179.65	-7,405.66	185.36	292.22	158.86	133.36	2.191		
20,200.00	12,381.75	19,811.08	12,090.78	134.45	133.60	179.65	-7,505.65	185.98	291.08	156.28	134.80	2.159		
20,300.00	12,380.89	19,911.07	12,091.06	136.01	135.17	179.65	-7,605.64	186.59	289.93	153.69	136.24	2.128		
20,400.00	12,380.03	20,011.07	12,091.35	137.58	136.74	179.65	-7,705.64	187.20	288.79	151.10	137.69	2.097		
20,500.00	12,379.17	20,111.06	12,091.63	139.15	138.31	179.65	-7,805.63	187.82	287.64	148.50	139.14	2.067		
20,600.00	12,378.31	20,211.05	12,091.91	140.72	139.89	179.65	-7,905.62	188.43	286.50	145.91	140.59	2.038		
20,700.00	12,377.45	20,311.05	12,092.20	142.29	141.47	179.65	-8,005.61	189.04	285.35	143.31	142.05	2.009		
20,800.00	12,376.59	20,411.04	12,092.48	143.86	143.05	179.65	-8,105.60	189.66	284.21	140.71	143.50	1.981		
20,900.00	12,375.73	20,511.03	12,092.77	145.44	144.63	179.65	-8,205.59	190.27	283.06	138.10	144.96	1.953		
21,000.00	12,374.87	20,611.03	12,093.05	147.02	146.21	179.65	-8,305.58	190.88	281.92	135.49	146.42	1.925		
21,100.00	12,374.01	20,711.02	12,093.34	148.59	147.80	179.65	-8,405.57	191.50	280.77	132.89	147.89	1.899		
21,200.00	12,373.15	20,811.01	12,093.62	150.18	149.38	179.65	-8,505.56	192.11	279.63	130.28	149.35	1.872		
21,300.00	12,372.29	20,911.01	12,093.91	151.76	150.97	179.65	-8,605.56	192.72	278.48	127.66	150.82	1.846		
21,400.00	12,371.43	21,011.00	12,094.19	153.34	152.56	179.65	-8,705.55	193.34	277.34	125.05	152.29	1.821		
21,500.00	12,370.57	21,110.99	12,094.47	154.93	154.15	179.65	-8,805.54	193.95	276.19	122.43	153.76	1.796		
21,600.00	12,369.71	21,210.99	12,094.76	156.52	155.74	179.65	-8,905.53	194.56	275.05	119.81	155.24	1.772		
21,700.00	12,368.85	21,310.98	12,095.04	158.11	157.34	179.65	-9,005.52	195.18	273.90	117.19	156.71	1.748		
21,800.00	12,367.98	21,410.97	12,095.33	159.70	158.93	179.65	-9,105.51	195.79	272.76	114.57	158.19	1.724		
21,900.00	12,367.12	21,510.97	12,095.61	161.29	160.53	179.65	-9,205.50	196.40	271.61	111.95	159.67	1.701		
22,000.00	12,366.26	21,610.96	12,095.90	162.88	162.13	179.65	-9,305.49	197.02	270.47	109.32	161.15	1.678		
22,100.00	12,365.40	21,710.95	12,096.18	164.47	163.73	179.65	-9,405.49	197.63	269.32	106.69	162.63	1.656		
22,200.00	12,364.54	21,810.95	12,096.46	166.07	165.33	179.65	-9,505.48	198.24	268.18	104.06	164.12	1.634		
22,300.00	12,363.68	21,910.94	12,096.75	167.67	166.93	179.65	-9,605.47	198.86	267.03	101.43	165.60	1.613		
22,400.00	12,362.82	22,010.93	12,097.03	169.26	168.53	179.65	-9,705.46	199.47	265.89	98.80	167.09	1.591		
22,500.00	12,361.96	22,110.93	12,097.32	170.86	170.13	179.65	-9,805.45	200.08	264.74	96.17	168.58	1.570		
22,565.16	12,361.40	22,176.08	12,097.50	171.78	171.18	179.65	-9,870.60	200.48	264.00	94.64	169.36	1.559		



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	69.40	299.97	798.15	852.66				
100.00	100.00	91.80	91.80	0.13	0.15	69.41	300.06	798.56	853.11	852.83	0.28	3,036.876	
200.00	200.00	184.05	184.04	0.49	0.29	69.42	300.34	799.79	854.46	853.68	0.78	1,089.601	
300.00	300.00	291.48	291.46	0.85	0.62	69.43	300.78	801.48	856.10	854.63	1.47	581.405	
400.00	400.00	393.53	393.50	1.21	0.99	69.43	301.05	802.08	856.74	854.54	2.20	390.215	
500.00	500.00	491.29	491.26	1.57	1.34	69.44	301.19	802.89	857.57	854.66	2.90	295.353	
600.00	600.00	589.04	589.00	1.93	1.69	69.46	301.22	804.02	858.66	855.05	3.61	237.762	
700.00	700.00	686.79	686.74	2.29	2.04	69.50	301.14	805.46	860.01	855.69	4.32	199.115	
800.00	800.00	785.66	785.59	2.64	2.39	69.55	300.93	807.23	861.61	856.58	5.03	171.269	
900.00	900.00	889.75	889.67	3.00	2.76	69.61	300.61	808.88	862.99	857.23	5.76	149.812	
1,000.00	1,000.00	993.85	993.76	3.36	3.13	69.67	300.17	810.05	863.89	857.40	6.49	133.103	
1,100.00	1,100.00	1,091.58	1,091.49	3.72	3.48	69.73	299.58	811.14	864.73	857.54	7.20	120.149	
1,200.00	1,200.00	1,190.00	1,189.90	4.08	3.83	69.81	298.77	812.51	865.75	857.84	7.91	109.499	
1,300.00	1,300.00	1,289.66	1,289.54	4.44	4.19	69.91	297.79	814.10	866.91	858.29	8.62	100.555	
1,400.00	1,400.00	1,390.06	1,389.92	4.79	4.55	70.00	296.84	815.64	868.03	858.69	9.34	92.945	
1,500.00	1,500.00	1,490.47	1,490.32	5.15	4.91	70.09	295.96	817.12	869.11	859.06	10.06	86.416	
1,600.00	1,600.00	1,590.88	1,590.72	5.51	5.27	70.17	295.14	818.52	870.15	859.37	10.78	80.753	
1,700.00	1,700.00	1,691.30	1,691.12	5.87	5.63	70.25	294.40	819.84	871.13	859.64	11.49	75.794	
1,800.00	1,800.00	1,791.72	1,791.53	6.23	5.99	70.32	293.71	821.08	872.07	859.86	12.21	71.414	
1,900.00	1,900.00	1,892.13	1,891.94	6.59	6.35	70.38	293.10	822.25	872.96	860.03	12.93	67.516	
2,000.00	2,000.00	1,992.56	1,992.35	6.95	6.71	70.44	292.55	823.35	873.80	860.16	13.65	64.025	
2,100.00	2,100.00	2,092.98	2,092.77	7.30	7.07	70.49	292.06	824.36	874.60	860.23	14.37	60.880	
2,200.00	2,200.00	2,193.41	2,193.19	7.66	7.43	70.54	291.64	825.30	875.34	860.26	15.08	58.031	
2,300.00	2,300.00	2,292.20	2,291.98	8.02	7.78	70.59	291.23	826.35	876.20	860.40	15.80	55.465	
2,400.00	2,400.00	2,391.68	2,391.45	8.38	8.14	70.63	290.84	827.42	877.09	860.57	16.51	53.116	
2,500.00	2,500.00	2,491.16	2,490.92	8.74	8.50	70.68	290.47	828.55	878.03	860.81	17.23	50.966	
2,600.00	2,599.99	2,598.90	2,598.66	9.10	8.87	70.79	289.89	829.40	878.66	860.70	17.96	48.924	
2,700.00	2,699.96	2,707.11	2,706.87	9.45	9.25	71.02	288.89	829.31	878.49	859.80	18.69	47.003	
2,800.00	2,799.86	2,815.22	2,814.96	9.81	9.62	71.37	287.48	828.30	877.54	858.12	19.42	45.190	
2,853.68	2,853.45	2,858.04	2,857.78	10.00	9.77	71.60	287.01	828.23	877.47	857.71	19.76	44.400	
2,900.00	2,899.68	2,900.00	2,899.73	10.17	9.92	71.82	286.57	828.24	877.61	857.53	20.07	43.717	
3,000.00	2,999.37	2,990.45	2,990.18	10.53	10.23	72.40	285.78	828.94	878.83	858.09	20.75	42.359	
3,100.00	3,098.90	3,081.19	3,080.90	10.89	10.55	73.08	285.24	830.54	881.38	859.96	21.42	41.146	
3,200.00	3,198.26	3,180.34	3,180.02	11.25	10.90	73.89	284.59	832.80	884.74	862.60	22.14	39.964	
3,300.00	3,297.40	3,278.76	3,278.41	11.61	11.26	74.81	283.87	835.09	888.55	865.69	22.86	38.876	
3,300.10	3,297.50	3,278.86	3,278.51	11.61	11.26	74.81	283.87	835.09	888.55	865.70	22.86	38.875	
3,400.00	3,396.43	3,377.07	3,376.69	11.98	11.61	75.77	283.26	837.40	892.78	869.20	23.58	37.867	
3,500.00	3,495.46	3,475.40	3,475.00	12.36	11.96	76.72	282.76	839.74	897.30	873.00	24.30	36.927	
3,600.00	3,594.48	3,574.07	3,573.64	12.73	12.32	77.65	282.33	842.12	902.11	877.09	25.03	36.047	
3,700.00	3,693.51	3,673.44	3,672.97	13.11	12.68	78.59	281.55	844.55	907.13	881.37	25.76	35.217	
3,800.00	3,792.54	3,775.18	3,774.67	13.49	13.04	79.56	280.24	846.99	912.26	885.75	26.50	34.423	
3,900.00	3,891.56	3,874.43	3,873.89	13.87	13.40	80.53	278.58	849.09	917.29	890.06	27.24	33.680	
4,000.00	3,990.59	3,973.02	3,972.44	14.26	13.76	81.50	276.77	851.31	922.70	894.73	27.97	32.990	
4,100.00	4,089.62	4,071.73	4,071.10	14.64	14.11	82.46	275.00	853.46	928.30	899.60	28.70	32.340	
4,200.00	4,188.64	4,169.94	4,169.28	15.03	14.46	83.41	273.17	855.64	934.20	904.77	29.44	31.734	
4,300.00	4,287.67	4,266.37	4,265.66	15.42	14.81	84.36	271.19	857.92	940.48	910.31	30.17	31.177	
4,400.00	4,386.70	4,368.48	4,367.71	15.81	15.18	85.32	268.72	860.38	947.01	916.10	30.92	30.631	
4,500.00	4,485.72	4,462.58	4,461.75	16.20	15.52	86.27	266.25	862.59	953.76	922.12	31.63	30.149	
4,600.00	4,584.75	4,561.38	4,560.49	16.60	15.88	87.22	263.72	864.99	960.82	928.45	32.37	29.680	
4,700.00	4,683.78	4,659.06	4,658.10	16.99	16.23	88.14	261.21	867.75	968.55	935.44	33.11	29.255	
4,800.00	4,782.80	4,783.10	4,782.10	17.39	16.67	89.03	259.06	869.58	975.23	941.29	33.94	28.734	
4,900.00	4,881.83	4,891.53	4,890.52	17.78	17.03	89.83	258.33	868.68	979.79	945.10	34.69	28.243	

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design King Tut Federal - #1H - Wellbore #1 - Surveys													Offset Site Error: 0.00 usft
Survey Program: 211-Reference													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	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	4,980.85	4,987.98	4,986.97	18.18	17.36	90.61	257.56	867.90	984.60	949.20	35.40	27.812	
5,100.00	5,079.88	5,084.80	5,083.79	18.58	17.69	91.39	256.91	867.35	989.82	953.70	36.12	27.406	
5,200.00	5,178.91	5,184.46	5,183.44	18.98	18.02	92.16	256.18	866.89	995.33	958.49	36.84	27.015	
5,300.00	5,277.93	5,283.32	5,282.30	19.38	18.36	92.92	255.50	866.35	1,000.93	963.37	37.57	26.644	
5,400.00	5,376.96	5,386.74	5,385.71	19.78	18.71	93.67	254.77	865.62	1,006.55	968.25	38.30	26.278	
5,500.00	5,475.99	5,486.77	5,485.73	20.18	19.05	94.41	254.11	864.60	1,012.02	972.99	39.03	25.931	
5,600.00	5,575.01	5,585.11	5,584.07	20.58	19.38	95.14	253.47	863.58	1,017.65	977.91	39.75	25.604	
5,700.00	5,674.04	5,685.22	5,684.17	20.98	19.72	95.87	252.84	862.53	1,023.43	982.96	40.47	25.289	
5,800.00	5,773.07	5,785.27	5,784.21	21.39	20.06	96.59	252.10	861.31	1,029.21	988.01	41.19	24.985	
5,898.39	5,870.50	5,878.78	5,877.72	21.78	20.38	97.28	251.59	860.40	1,035.27	993.38	41.89	24.714	
5,900.00	5,872.09	5,880.40	5,879.33	21.79	20.38	97.29	251.58	860.39	1,035.37	993.47	41.90	24.710	
6,000.00	5,971.24	5,980.31	5,979.24	22.19	20.72	97.95	250.94	859.51	1,041.33	998.70	42.62	24.431	
6,100.00	6,070.60	6,079.80	6,078.73	22.58	21.06	98.50	250.66	858.63	1,046.44	1,003.10	43.34	24.146	
6,200.00	6,170.14	6,181.21	6,180.13	22.97	21.40	98.96	250.40	857.75	1,050.72	1,006.66	44.05	23.851	
6,300.00	6,269.83	6,284.89	6,283.80	23.35	21.76	99.36	249.91	856.33	1,053.66	1,008.89	44.77	23.534	
6,400.00	6,369.65	6,383.14	6,382.03	23.71	22.09	99.68	249.32	854.91	1,055.65	1,010.18	45.47	23.217	
6,500.00	6,469.55	6,482.37	6,481.26	24.07	22.43	99.93	248.58	853.63	1,056.89	1,010.73	46.16	22.894	
6,600.00	6,569.52	6,582.52	6,581.39	24.43	22.77	100.06	248.45	852.41	1,057.14	1,010.29	46.86	22.561	
6,698.49	6,668.00	6,685.86	6,684.73	24.77	23.12	100.13	248.22	850.98	1,056.32	1,008.77	47.55	22.214	
6,700.00	6,669.51	6,687.49	6,686.36	24.77	23.13	100.13	248.22	850.96	1,056.29	1,008.73	47.56	22.209	
6,800.00	6,769.51	6,788.73	6,787.58	25.11	23.47	100.17	247.83	849.07	1,054.53	1,006.27	48.25	21.855	
6,900.00	6,869.51	6,886.91	6,885.74	25.45	23.81	100.19	247.69	847.37	1,052.84	1,003.91	48.93	21.517	
7,000.00	6,969.51	6,989.65	6,988.47	25.80	24.15	100.20	247.85	845.62	1,051.15	1,001.52	49.63	21.181	
7,100.00	7,069.51	7,082.98	7,081.79	26.14	24.47	100.22	247.76	844.14	1,049.60	999.31	50.29	20.871	
7,200.00	7,169.51	7,190.95	7,189.74	26.48	24.84	100.23	247.77	842.41	1,048.03	997.02	51.01	20.547	
7,300.00	7,269.51	7,286.23	7,285.01	26.82	25.17	100.26	247.64	840.81	1,046.38	994.70	51.68	20.248	
7,400.00	7,369.51	7,389.70	7,388.46	27.17	25.52	100.29	247.39	838.96	1,044.67	992.29	52.38	19.944	
7,500.00	7,469.51	7,490.77	7,489.51	27.51	25.87	100.33	247.07	836.91	1,042.74	989.66	53.08	19.646	
7,600.00	7,569.51	7,590.04	7,588.76	27.85	26.21	100.37	246.66	834.88	1,040.79	987.03	53.77	19.358	
7,700.00	7,669.51	7,689.17	7,687.87	28.20	26.56	100.43	245.96	832.90	1,038.95	984.50	54.46	19.079	
7,800.00	7,769.51	7,774.54	7,773.20	28.54	26.86	100.52	244.45	831.32	1,037.51	982.41	55.10	18.830	
7,815.12	7,784.64	7,785.48	7,784.14	28.60	26.89	100.55	243.98	831.21	1,037.48	982.29	55.19	18.799	
7,900.00	7,869.51	7,842.35	7,840.78	28.89	27.10	100.81	239.22	831.07	1,038.61	982.96	55.65	18.663	
8,000.00	7,969.51	7,906.08	7,903.35	29.24	27.33	101.45	227.25	831.45	1,042.98	986.85	56.13	18.582	
8,100.00	8,069.51	7,979.93	7,974.08	29.58	27.60	102.57	206.23	832.89	1,050.99	994.37	56.62	18.562 SF	
8,200.00	8,169.51	8,053.00	8,041.33	29.93	27.87	104.07	177.74	833.27	1,061.34	1,004.29	57.05	18.602	
8,300.00	8,269.51	8,116.00	8,096.59	30.27	28.11	105.66	147.51	833.25	1,075.28	1,017.95	57.33	18.755	
8,400.00	8,369.51	8,162.19	8,135.30	30.62	28.28	106.95	122.32	833.49	1,093.92	1,036.57	57.35	19.076	
8,500.00	8,469.51	8,210.00	8,173.51	30.97	28.47	108.40	93.63	834.41	1,118.02	1,060.76	57.26	19.526	
8,600.00	8,569.51	8,266.37	8,215.62	31.32	28.71	110.26	56.20	834.52	1,146.57	1,089.40	57.17	20.056	
8,700.00	8,669.51	8,304.00	8,241.35	31.66	28.87	111.62	28.76	833.76	1,180.07	1,123.34	56.73	20.801	
8,800.00	8,769.51	8,336.00	8,261.76	32.01	29.00	112.81	4.13	833.05	1,219.05	1,162.93	56.12	21.722	
8,900.00	8,869.51	8,367.00	8,280.46	32.36	29.14	113.99	-20.59	832.65	1,263.41	1,207.98	55.43	22.794	
9,000.00	8,969.51	8,383.58	8,290.01	32.71	29.22	114.62	-34.15	832.57	1,312.71	1,258.22	54.49	24.091	
9,100.00	9,069.51	8,399.00	8,298.61	33.06	29.29	115.21	-46.94	832.60	1,366.71	1,313.19	53.52	25.538	
9,200.00	9,169.51	8,430.00	8,315.15	33.40	29.44	116.40	-73.16	832.95	1,424.80	1,372.00	52.80	26.986	
9,300.00	9,269.51	8,442.49	8,321.49	33.75	29.50	116.87	-83.91	833.18	1,486.70	1,434.87	51.83	28.682	
9,400.00	9,369.51	8,461.00	8,330.39	34.10	29.59	117.58	-100.14	833.63	1,552.16	1,501.16	51.01	30.430	
9,500.00	9,469.51	8,461.00	8,330.39	34.45	29.59	117.58	-100.14	833.63	1,620.78	1,570.81	49.97	32.434	
9,600.00	9,569.51	8,479.93	8,338.87	34.80	29.69	118.31	-117.05	834.20	1,692.11	1,642.83	49.28	34.338	
9,700.00	9,669.51	8,493.00	8,344.34	35.15	29.75	118.81	-128.91	834.64	1,766.03	1,717.46	48.57	36.360	
9,800.00	9,769.51	8,493.00	8,344.34	35.50	29.75	118.81	-128.91	834.64	1,842.22	1,794.46	47.76	38.572	

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
9,900.00	9,869.51	8,509.66	8,350.86	35.85	29.84	119.45	-144.23	835.23	1,920.30	1,873.05	47.24	40.646	
10,000.00	9,969.51	8,524.00	8,356.08	36.20	29.91	120.00	-157.58	835.74	2,000.25	1,953.49	46.76	42.774	
10,100.00	10,069.51	8,524.00	8,356.08	36.55	29.91	120.00	-157.58	835.74	2,081.73	2,035.55	46.18	45.083	
10,200.00	10,169.51	8,524.00	8,356.08	36.90	29.91	120.00	-157.58	835.74	2,164.76	2,119.10	45.66	47.412	
10,300.00	10,269.51	8,540.51	8,361.65	37.25	30.00	120.63	-173.10	836.41	2,248.88	2,203.49	45.39	49.546	
10,400.00	10,369.51	8,556.00	8,366.49	37.60	30.08	121.22	-187.80	837.17	2,334.33	2,289.17	45.16	51.689	
10,500.00	10,469.51	8,556.00	8,366.49	37.95	30.08	121.22	-187.80	837.17	2,420.67	2,375.85	44.82	54.010	
10,600.00	10,569.51	8,556.00	8,366.49	38.31	30.08	121.22	-187.80	837.17	2,508.01	2,463.48	44.53	56.320	
10,700.00	10,669.51	8,556.00	8,366.49	38.66	30.08	121.22	-187.80	837.17	2,596.27	2,551.98	44.29	58.615	
10,800.00	10,769.51	8,556.00	8,366.49	39.01	30.08	121.22	-187.80	837.17	2,685.35	2,641.25	44.10	60.889	
10,900.00	10,869.51	8,574.23	8,371.72	39.36	30.18	121.90	-205.23	838.25	2,774.83	2,730.72	44.12	62.898	
11,000.00	10,969.51	8,578.80	8,372.95	39.71	30.21	122.07	-209.62	838.55	2,865.14	2,821.10	44.04	65.056	
11,100.00	11,069.51	8,596.00	8,377.28	40.06	30.30	122.69	-226.22	839.82	2,956.21	2,912.10	44.11	67.025	
11,200.00	11,169.51	8,596.00	8,377.28	40.41	30.30	122.69	-226.22	839.82	3,047.54	3,003.48	44.05	69.176	
11,300.00	11,269.51	8,596.00	8,377.28	40.77	30.30	122.69	-226.22	839.82	3,139.40	3,095.37	44.04	71.293	
11,400.00	11,369.51	8,596.00	8,377.28	41.12	30.30	122.69	-226.22	839.82	3,231.75	3,187.70	44.04	73.374	
11,500.00	11,469.51	8,596.00	8,377.28	41.47	30.30	122.69	-226.22	839.82	3,324.53	3,280.45	44.08	75.419	
11,600.00	11,569.51	8,596.00	8,377.28	41.82	30.30	122.69	-226.22	839.82	3,417.73	3,373.59	44.14	77.426	
11,700.00	11,669.51	8,596.00	8,377.28	42.18	30.30	122.69	-226.22	839.82	3,511.30	3,467.07	44.23	79.394	
11,800.00	11,769.51	8,609.23	8,380.29	42.53	30.38	123.17	-239.06	840.83	3,605.05	3,560.63	44.42	81.157	
11,900.00	11,869.51	8,612.37	8,380.95	42.88	30.39	123.29	-242.13	841.05	3,699.20	3,654.64	44.56	83.009	
11,902.93	11,872.44	8,612.46	8,380.97	42.89	30.39	123.29	-242.21	841.06	3,701.96	3,657.39	44.57	83.062	
11,950.00	11,919.46	8,614.16	8,381.32	43.04	30.40	123.29	-243.86	841.18	3,745.89	3,701.25	44.63	83.929	
12,000.00	11,969.05	8,628.00	8,384.02	43.19	30.48	123.58	-257.41	842.09	3,791.46	3,746.70	44.76	84.713	
12,050.00	12,017.90	8,628.00	8,384.02	43.32	30.48	123.23	-257.41	842.09	3,835.30	3,790.52	44.78	85.652	
12,100.00	12,065.65	8,628.00	8,384.02	43.44	30.48	122.73	-257.41	842.09	3,877.33	3,832.54	44.78	86.579	
12,150.00	12,111.93	8,628.00	8,384.02	43.56	30.48	122.08	-257.41	842.09	3,917.28	3,872.50	44.78	87.485	
12,200.00	12,156.38	8,628.00	8,384.02	43.66	30.48	121.28	-257.41	842.09	3,954.91	3,910.16	44.76	88.367	
12,250.00	12,198.67	8,628.00	8,384.02	43.75	30.48	120.31	-257.41	842.09	3,990.02	3,945.30	44.72	89.217	
12,300.00	12,238.48	8,628.00	8,384.02	43.83	30.48	119.18	-257.41	842.09	4,022.40	3,977.72	44.68	90.028	
12,350.00	12,275.51	8,644.55	8,386.77	43.90	30.58	118.58	-273.70	843.00	4,051.61	4,006.90	44.71	90.616	
12,400.00	12,309.46	8,659.00	8,388.76	43.97	30.66	117.77	-288.00	843.63	4,077.90	4,033.18	44.72	91.185	
12,450.00	12,340.09	8,659.00	8,388.76	44.04	30.66	116.16	-288.00	843.63	4,100.78	4,056.13	44.65	91.838	
12,500.00	12,367.17	8,659.00	8,388.76	44.10	30.66	114.37	-288.00	843.63	4,120.32	4,075.74	44.58	92.421	
12,550.00	12,390.47	8,659.00	8,388.76	44.16	30.66	112.41	-288.00	843.63	4,136.42	4,091.91	44.51	92.928	
12,600.00	12,409.84	8,659.00	8,388.76	44.22	30.66	110.25	-288.00	843.63	4,149.00	4,104.55	44.45	93.350	
12,650.00	12,425.11	8,676.35	8,390.59	44.28	30.76	108.85	-305.25	844.24	4,157.67	4,113.22	44.45	93.532	
12,700.00	12,436.18	8,690.00	8,391.60	44.35	30.84	107.13	-318.85	844.63	4,162.88	4,118.43	44.44	93.664	
12,750.00	12,442.96	8,690.00	8,391.60	44.42	30.84	104.54	-318.85	844.63	4,164.22	4,119.83	44.40	93.797	
12,800.00	12,445.39	8,690.00	8,391.60	44.49	30.84	101.80	-318.85	844.63	4,161.90	4,117.54	44.36	93.822	
12,807.86	12,445.38	8,690.00	8,391.60	44.51	30.84	101.36	-318.85	844.63	4,161.20	4,116.85	44.36	93.815	
12,900.00	12,444.58	8,722.00	8,392.96	44.68	31.03	97.98	-350.81	845.36	4,153.19	4,108.77	44.42	93.491	
13,000.00	12,443.72	8,734.65	8,393.21	44.94	31.10	92.68	-363.46	845.57	4,146.29	4,101.80	44.49	93.193	
13,100.00	12,442.86	8,753.00	8,393.29	45.27	31.21	87.48	-381.81	845.76	4,141.35	4,096.71	44.64	92.778	
13,200.00	12,442.00	8,844.33	8,392.18	45.66	31.81	86.96	-473.13	846.46	4,137.84	4,092.85	44.99	91.977	
13,300.00	12,441.14	13,300.00	8,392.28	46.11	64.81	89.23	-605.17	849.76	4,133.46	4,074.77	58.69	70.434	
13,400.00	12,440.28	9,018.11	8,392.17	46.63	33.10	85.26	-646.85	850.85	4,129.67	4,083.83	45.84	90.091	
13,500.00	12,439.42	9,067.00	8,391.12	47.20	33.49	81.66	-695.71	852.13	4,127.48	4,081.25	46.23	89.283	
13,600.00	12,438.56	9,132.73	8,389.10	47.83	34.06	79.17	-761.38	854.13	4,126.40	4,079.68	46.71	88.335	
13,700.00	12,437.70	9,443.10	8,386.77	48.52	37.01	94.69	-1,071.59	854.09	4,122.02	4,073.97	48.05	85.794	
13,727.27	12,437.47	9,471.57	8,386.95	48.71	37.31	94.86	-1,100.01	852.64	4,120.42	4,072.18	48.23	85.427	
13,800.00	12,436.84	9,548.08	8,387.63	49.25	38.10	95.34	-1,176.46	849.54	4,116.29	4,067.54	48.75	84.436	

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,900.00	12,435.98	9,580.00	8,387.60	50.02	38.45	90.17	-1,208.35	848.35	4,112.04	4,062.82	49.22	83.549		
14,000.00	12,435.11	9,631.00	8,386.77	50.83	39.01	86.27	-1,259.31	846.31	4,109.92	4,060.11	49.81	82.516		
14,100.00	12,434.25	9,858.33	8,387.66	51.66	41.62	96.60	-1,486.53	846.30	4,107.37	4,056.14	51.23	80.170		
14,200.00	12,433.39	9,914.00	8,388.93	52.52	42.29	93.02	-1,542.14	848.72	4,104.29	4,052.33	51.96	78.997		
14,259.68	12,432.87	9,941.07	8,389.35	53.04	42.62	90.35	-1,569.16	850.23	4,103.30	4,050.91	52.38	78.332		
14,300.00	12,432.52	9,957.84	8,389.50	53.40	42.83	88.43	-1,585.90	851.31	4,102.98	4,050.31	52.67	77.893		
14,333.91	12,432.23	9,971.94	8,389.58	53.71	43.00	86.81	-1,599.96	852.31	4,102.90	4,049.98	52.93	77.523		
14,400.00	12,431.66	10,008.00	8,389.51	54.32	43.45	84.39	-1,635.91	855.19	4,103.24	4,049.78	53.46	76.752		
14,500.00	12,430.80	10,173.36	8,391.15	55.27	45.55	89.64	-1,800.69	868.68	4,102.42	4,047.55	54.87	74.770		
14,600.00	12,429.94	10,361.94	8,395.16	56.25	48.03	96.52	-1,988.71	882.65	4,100.83	4,044.36	56.46	72.628		
14,700.00	12,429.08	10,425.76	8,397.05	57.26	48.89	93.68	-2,052.39	886.31	4,098.09	4,040.69	57.40	71.400		
14,800.00	12,428.22	10,478.00	8,397.63	58.31	49.59	89.96	-2,104.59	888.21	4,096.64	4,038.36	58.28	70.290		
14,900.00	12,427.36	10,572.00	8,398.77	59.38	50.87	89.48	-2,198.45	892.97	4,095.41	4,035.99	59.42	68.918		
14,983.81	12,426.64	10,623.39	8,399.38	60.30	51.59	86.98	-2,249.72	896.38	4,094.81	4,034.56	60.26	67.956		
15,000.00	12,426.50	10,629.97	8,399.38	60.47	51.68	86.24	-2,256.29	896.76	4,094.83	4,034.43	60.40	67.796		
15,100.00	12,425.64	10,681.23	8,398.79	61.60	52.39	82.53	-2,307.48	899.26	4,095.78	4,034.43	61.35	66.760		
15,200.00	12,424.78	10,788.79	8,398.01	62.74	53.90	83.15	-2,414.77	906.83	4,096.81	4,034.17	62.64	65.401		
15,300.00	12,423.92	10,855.00	8,397.22	63.91	54.84	80.67	-2,480.71	912.78	4,098.61	4,034.88	63.73	64.311		
15,400.00	12,423.06	10,966.03	8,395.48	65.10	56.43	81.54	-2,591.37	921.47	4,100.67	4,035.58	65.09	63.000		
15,500.00	12,422.20	11,182.22	8,392.22	66.31	59.53	90.18	-2,807.46	923.43	4,101.70	4,034.72	66.98	61.241		
15,600.00	12,421.34	11,300.12	8,391.87	67.54	61.23	91.52	-2,925.35	921.90	4,100.85	4,032.50	68.34	60.004		
15,700.00	12,420.48	11,429.73	8,392.07	68.79	63.10	93.76	-3,054.84	916.35	4,098.91	4,029.15	69.76	58.759		
15,800.00	12,419.62	11,526.85	8,392.54	70.06	64.52	93.55	-3,151.87	912.26	4,096.70	4,025.68	71.02	57.682		
15,900.00	12,418.76	11,591.18	8,392.44	71.34	65.46	90.85	-3,216.13	909.24	4,095.03	4,022.91	72.12	56.778		
16,000.00	12,417.90	16,000.00	8,393.85	72.63	130.49	98.46	-3,414.80	897.74	4,092.06	3,987.13	104.93	38.998		
16,100.00	12,417.03	11,849.35	8,394.63	73.94	69.26	95.36	-3,473.82	894.04	4,088.77	4,013.77	75.00	54.514		
16,200.00	12,416.17	11,903.49	8,394.86	75.27	70.06	91.79	-3,527.93	892.31	4,086.76	4,010.67	76.09	53.709		
16,300.00	12,415.31	11,984.00	8,394.84	76.60	71.27	90.26	-3,608.40	889.92	4,085.34	4,008.01	77.33	52.833		
16,400.00	12,414.45	12,056.57	8,394.27	77.95	72.36	88.09	-3,680.91	887.04	4,084.50	4,005.98	78.52	52.018		
16,500.00	12,413.59	12,152.63	8,392.47	79.31	73.80	87.75	-3,776.77	881.22	4,084.32	4,004.49	79.83	51.165		
16,600.00	12,412.73	12,421.19	8,393.65	80.69	77.83	101.32	-4,044.48	860.25	4,080.86	3,998.89	81.97	49.783		
16,700.00	12,411.87	12,510.17	8,395.56	82.07	79.18	100.53	-4,133.20	853.82	4,076.56	3,993.31	83.26	48.965		
16,800.00	12,411.01	12,574.70	8,396.65	83.46	80.16	97.70	-4,197.56	849.30	4,072.81	3,988.38	84.42	48.243		
16,900.00	12,410.15	12,642.00	8,397.00	84.87	81.18	95.02	-4,264.76	845.55	4,070.27	3,984.66	85.62	47.540		
17,000.00	12,409.29	12,675.87	8,396.84	86.28	81.70	89.46	-4,298.60	844.17	4,068.81	3,982.16	86.65	46.957		
17,067.13	12,408.71	12,710.74	8,396.48	87.23	82.24	86.73	-4,333.45	843.22	4,068.55	3,981.13	87.41	46.545		
17,100.00	12,408.43	12,737.00	8,396.08	87.70	82.64	86.17	-4,359.71	842.81	4,068.63	3,980.79	87.84	46.320		
17,200.00	12,407.57	12,782.50	8,395.14	89.13	83.35	81.59	-4,405.20	842.66	4,069.56	3,980.61	88.95	45.751		
17,300.00	12,406.71	12,831.00	8,393.79	90.56	84.10	77.37	-4,453.67	843.22	4,071.62	3,981.53	90.09	45.197		
17,400.00	12,405.85	17,400.00	8,389.47	92.01	155.97	80.81	-4,595.04	848.70	4,074.51	3,948.69	125.82	32.384		
17,500.00	12,404.99	13,113.00	8,388.37	93.46	88.53	84.21	-4,735.20	857.32	4,075.20	3,981.60	93.60	43.539		
17,600.00	12,404.13	13,154.39	8,387.75	94.91	89.19	79.45	-4,776.49	860.19	4,076.78	3,982.03	94.74	43.030		
17,700.00	12,403.27	13,207.00	8,386.40	96.38	90.02	75.76	-4,828.94	864.03	4,079.58	3,983.61	95.96	42.512		
17,800.00	12,402.41	13,463.75	8,385.18	97.85	94.09	88.40	-5,085.27	877.55	4,078.40	3,979.89	98.51	41.401		
17,845.45	12,402.01	13,490.00	8,385.10	98.52	94.50	86.85	-5,111.51	878.42	4,078.33	3,979.25	99.08	41.161		
17,900.00	12,401.55	13,553.10	8,384.77	99.32	95.50	87.54	-5,174.59	880.14	4,078.36	3,978.40	99.96	40.801		
17,963.95	12,400.99	13,608.52	8,384.59	100.27	96.38	86.86	-5,230.00	881.27	4,078.20	3,977.33	100.87	40.430		
18,000.00	12,400.68	13,629.17	8,384.42	100.81	96.70	85.62	-5,250.64	881.66	4,078.27	3,976.94	101.32	40.251		
18,100.00	12,399.82	13,813.98	8,384.87	102.29	99.64	92.44	-5,435.37	886.36	4,077.44	3,974.09	103.35	39.452		
18,200.00	12,398.96	13,866.00	8,385.18	103.79	100.47	88.59	-5,487.35	888.26	4,076.44	3,971.84	104.60	38.972		
18,221.33	12,398.78	13,866.00	8,385.18	104.10	100.47	86.88	-5,487.35	888.26	4,076.38	3,971.58	104.80	38.898		
18,300.00	12,398.10	13,917.45	8,384.92	105.28	101.29	84.72	-5,538.75	890.40	4,076.61	3,970.77	105.84	38.516		

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

Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Semi Major Axis Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
18,400.00	12,397.24	14,044.37	8,383.86	106.78	103.32	86.87	-5,665.50	896.90	4,077.50	3,969.92	107.59	37.900		
18,500.00	12,396.38	18,500.00	8,384.62	108.29	175.11	90.45	-5,810.60	906.46	4,077.32	3,933.65	143.67	28.379		
18,600.00	12,395.52	14,294.24	8,386.41	109.80	107.34	90.77	-5,914.80	913.42	4,075.86	3,964.73	111.12	36.678		
18,690.61	12,394.74	14,336.00	8,386.82	111.17	108.01	86.98	-5,956.46	916.21	4,075.27	3,963.00	112.26	36.302		
18,700.00	12,394.66	14,336.00	8,386.82	111.32	108.01	86.25	-5,956.46	916.21	4,075.28	3,962.93	112.35	36.273		
18,800.00	12,393.80	14,388.91	8,386.68	112.84	108.86	82.66	-6,009.24	919.91	4,075.96	3,962.32	113.65	35.866		
18,900.00	12,392.94	14,455.71	8,385.46	114.36	109.94	80.20	-6,075.85	924.77	4,078.01	3,962.98	115.04	35.450		
19,000.00	12,392.08	14,638.99	8,384.25	115.89	112.90	86.52	-6,258.80	935.51	4,078.45	3,961.23	117.22	34.792		
19,100.00	12,391.22	14,689.54	8,384.04	117.42	113.72	82.82	-6,309.22	939.15	4,079.23	3,960.71	118.52	34.418		
19,200.00	12,390.36	14,807.00	8,383.61	118.95	115.62	84.16	-6,426.36	947.82	4,079.95	3,959.65	120.30	33.915		
19,300.00	12,389.50	14,867.79	8,383.42	120.49	116.61	81.31	-6,487.02	951.74	4,080.86	3,959.19	121.67	33.541		
19,400.00	12,388.64	15,091.05	8,380.83	122.03	120.22	90.37	-6,709.90	963.95	4,083.07	3,958.94	124.13	32.894		
19,500.00	12,387.78	15,228.23	8,382.77	123.57	122.43	93.08	-6,847.05	966.08	4,080.83	3,954.90	125.93	32.406		
19,600.00	12,386.92	15,300.69	8,383.33	125.12	123.60	91.07	-6,919.50	966.94	4,079.29	3,951.94	127.35	32.032		
19,700.00	12,386.06	15,392.90	8,383.76	126.66	125.08	90.50	-7,011.70	966.66	4,077.83	3,948.97	128.86	31.645		
19,789.25	12,385.29	15,436.06	8,383.54	128.05	125.78	87.13	-7,054.86	966.45	4,077.33	3,947.34	129.99	31.367		
19,800.00	12,385.20	15,441.26	8,383.49	128.22	125.86	86.73	-7,060.06	966.44	4,077.33	3,947.21	130.12	31.334		
19,900.00	12,384.33	19,900.00	8,382.21	129.77	197.55	87.12	-7,165.58	965.80	4,077.44	3,910.56	166.89	24.432		
19,944.63	12,383.95	15,591.46	8,381.79	130.46	128.28	87.12	-7,210.25	965.21	4,077.32	3,944.93	132.39	30.798		
20,000.00	12,383.47	15,619.38	8,381.35	131.33	128.72	85.12	-7,238.16	964.89	4,077.50	3,944.42	133.09	30.638		
20,100.00	12,382.61	15,889.26	8,382.41	132.89	133.06	97.58	-7,507.94	959.95	4,075.32	3,939.82	135.50	30.075		
20,200.00	12,381.75	15,946.19	8,383.22	134.45	133.98	94.44	-7,564.83	958.27	4,072.38	3,935.56	136.82	29.764		
20,300.00	12,380.89	16,014.11	8,383.66	136.01	135.07	92.08	-7,632.73	956.64	4,070.34	3,932.15	138.19	29.455		
20,400.00	12,380.03	16,088.67	8,383.74	137.58	136.27	90.18	-7,707.29	955.67	4,069.02	3,929.42	139.60	29.147		
20,500.00	12,379.17	16,155.35	8,383.58	139.15	137.35	87.70	-7,773.96	955.79	4,068.35	3,927.37	140.98	28.857		
20,519.71	12,379.00	16,166.81	8,383.50	139.45	137.53	87.09	-7,785.43	955.92	4,068.33	3,927.09	141.25	28.803		
20,600.00	12,378.31	16,218.00	8,382.96	140.72	138.36	84.93	-7,836.60	956.92	4,068.67	3,926.31	142.36	28.581		
20,700.00	12,377.45	20,700.00	8,383.81	142.29	210.97	96.70	-8,095.30	959.75	4,067.84	3,888.62	179.23	22.697		
20,800.00	12,376.59	16,549.89	8,385.44	143.86	143.75	94.73	-8,168.41	959.29	4,064.69	3,918.38	146.30	27.782		
20,900.00	12,375.73	16,595.00	8,385.82	145.44	144.48	90.65	-8,213.52	959.24	4,062.85	3,915.27	147.59	27.528		
20,992.96	12,374.93	16,640.18	8,385.67	146.90	145.21	87.09	-8,258.70	959.45	4,062.33	3,913.54	148.79	27.303		
21,000.00	12,374.87	16,643.72	8,385.64	147.02	145.27	86.83	-8,262.24	959.48	4,062.33	3,913.45	148.88	27.286		
21,100.00	12,374.01	21,100.00	8,384.43	148.59	217.56	86.79	-8,361.66	960.07	4,062.67	3,876.76	185.91	21.852		
21,200.00	12,373.15	16,859.15	8,383.61	150.18	148.76	87.98	-8,477.64	959.34	4,062.24	3,910.12	152.12	26.703		
21,229.76	12,372.89	16,877.00	8,383.44	150.65	149.05	87.09	-8,495.50	959.15	4,062.18	3,909.66	152.52	26.633		
21,300.00	12,372.29	16,908.04	8,382.95	151.76	149.55	84.17	-8,526.53	958.89	4,062.50	3,909.11	153.39	26.484		
21,400.00	12,371.43	16,971.00	8,380.98	153.34	150.57	81.43	-8,589.46	958.74	4,064.34	3,909.60	154.74	26.266		
21,500.00	12,370.57	17,238.13	8,379.49	154.93	154.90	93.89	-8,856.49	955.26	4,062.88	3,905.67	157.21	25.844		
21,600.00	12,369.71	17,294.52	8,379.63	156.52	155.81	90.61	-8,912.86	953.65	4,061.16	3,902.63	158.53	25.618		
21,700.00	12,368.85	17,348.00	8,379.18	158.11	156.68	87.09	-8,966.32	952.33	4,060.57	3,900.75	159.82	25.407		
21,800.00	12,367.98	17,577.22	8,380.83	159.70	160.40	96.86	-9,195.49	949.93	4,058.37	3,896.31	162.06	25.042		
21,900.00	12,367.12	17,630.00	8,381.80	161.29	161.26	93.31	-9,248.26	950.11	4,055.71	3,892.29	163.42	24.818		
22,000.00	12,366.26	17,704.93	8,382.59	162.88	162.48	91.40	-9,323.18	950.85	4,053.92	3,889.03	164.90	24.585		
22,100.00	12,365.40	17,782.55	8,382.95	164.47	163.75	89.70	-9,400.79	952.14	4,052.81	3,886.42	166.39	24.357		
22,200.00	12,364.54	17,859.85	8,383.05	166.07	165.02	87.98	-9,478.07	954.12	4,052.21	3,884.31	167.90	24.134		
22,300.00	12,363.68	17,954.28	8,382.73	167.67	166.56	87.56	-9,572.45	957.06	4,052.15	3,882.62	169.53	23.902		
22,400.00	12,362.82	18,078.19	8,383.10	169.26	168.60	89.37	-9,696.28	961.63	4,051.56	3,880.19	171.37	23.643		
22,435.30	12,362.52	18,083.00	8,383.13	169.83	168.67	87.08	-9,701.08	961.81	4,051.41	3,879.65	171.76	23.588		
22,500.00	12,361.96	18,083.00	8,383.13	170.86	168.67	82.25	-9,701.08	961.81	4,051.93	3,879.53	172.40	23.503		
22,565.16	12,361.40	18,083.00	8,383.13	171.78	168.67	77.50	-9,701.08	961.81	4,053.49	3,880.83	172.66	23.477		



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	163.75	-5,112.86	1,490.67	5,325.85					
100.00	100.00	67.84	67.84	0.13	0.05	163.75	-5,112.86	1,490.61	5,325.71	5,325.53	0.18	N/A		
164.85	164.85	129.45	129.45	0.37	0.13	163.75	-5,112.86	1,490.48	5,325.68	5,325.19	0.49	N/A		
200.00	200.00	159.70	159.70	0.49	0.18	163.75	-5,112.90	1,490.40	5,325.69	5,325.02	0.67	7,951.840		
300.00	300.00	265.13	265.13	0.85	0.36	163.75	-5,113.11	1,490.13	5,325.82	5,324.61	1.21	4,393.903		
400.00	400.00	379.73	379.73	1.21	0.57	163.75	-5,112.96	1,489.95	5,325.65	5,323.88	1.77	3,006.349		
500.00	500.00	492.54	492.54	1.57	0.77	163.75	-5,112.55	1,489.75	5,325.25	5,322.92	2.33	2,286.340		
600.00	600.00	618.23	618.22	1.93	0.99	163.76	-5,111.74	1,489.10	5,324.49	5,321.58	2.91	1,829.670		
700.00	700.00	713.66	713.64	2.29	1.16	163.76	-5,110.97	1,488.59	5,323.56	5,320.13	3.44	1,548.666		
800.00	800.00	814.06	814.04	2.64	1.34	163.77	-5,110.21	1,487.98	5,322.67	5,318.69	3.97	1,339.414		
900.00	900.00	927.70	927.67	3.00	1.54	163.77	-5,109.19	1,486.88	5,321.52	5,316.99	4.53	1,173.835		
1,000.00	1,000.00	1,013.36	1,013.33	3.36	1.69	163.78	-5,108.50	1,486.07	5,320.48	5,315.44	5.04	1,054.932		
1,100.00	1,100.00	1,107.61	1,107.58	3.72	1.86	163.79	-5,107.88	1,485.28	5,319.62	5,314.05	5.57	955.306		
1,200.00	1,200.00	1,204.75	1,204.71	4.08	2.03	163.79	-5,107.38	1,484.32	5,318.85	5,312.75	6.10	872.200		
1,300.00	1,300.00	1,316.04	1,315.99	4.44	2.23	163.81	-5,106.75	1,483.03	5,317.99	5,311.33	6.65	799.392		
1,400.00	1,400.00	1,409.06	1,409.01	4.79	2.39	163.81	-5,106.12	1,482.28	5,317.10	5,309.93	7.18	740.994		
1,500.00	1,500.00	1,496.93	1,496.87	5.15	2.55	163.82	-5,105.59	1,481.82	5,316.38	5,308.69	7.69	691.346		
1,600.00	1,600.00	1,590.60	1,590.54	5.51	2.72	163.82	-5,105.16	1,481.49	5,315.83	5,307.62	8.21	647.121		
1,700.00	1,700.00	1,700.61	1,700.54	5.87	2.91	163.82	-5,104.61	1,481.11	5,315.27	5,306.50	8.77	606.193		
1,800.00	1,800.00	1,779.28	1,779.21	6.23	3.05	163.82	-5,104.30	1,480.87	5,314.79	5,305.53	9.27	573.551		
1,900.00	1,900.00	1,872.93	1,872.87	6.59	3.22	163.82	-5,104.17	1,480.72	5,314.62	5,304.82	9.79	542.842		
2,000.00	2,000.00	1,986.56	1,986.49	6.95	3.42	163.82	-5,103.95	1,480.44	5,314.37	5,304.02	10.35	513.504		
2,100.00	2,100.00	2,067.55	2,067.48	7.30	3.56	163.82	-5,103.72	1,480.41	5,314.10	5,303.25	10.85	489.828		
2,112.07	2,112.07	2,076.74	2,076.67	7.35	3.58	163.82	-5,103.72	1,480.42	5,314.09	5,303.18	10.91	487.168		
2,200.00	2,200.00	2,174.34	2,174.27	7.66	3.74	163.82	-5,103.68	1,480.55	5,314.10	5,302.71	11.39	466.434		
2,300.00	2,300.00	2,267.15	2,267.09	8.02	3.91	163.82	-5,103.55	1,480.37	5,313.92	5,302.00	11.91	446.051		
2,315.29	2,315.29	2,279.96	2,279.89	8.08	3.93	163.82	-5,103.55	1,480.34	5,313.91	5,301.92	11.99	443.180		
2,400.00	2,400.00	2,357.84	2,357.77	8.38	4.06	163.83	-5,103.66	1,480.21	5,313.98	5,301.56	12.43	427.602		
2,500.00	2,500.00	2,460.28	2,460.21	8.74	4.24	163.83	-5,103.78	1,480.29	5,314.12	5,301.16	12.96	410.020		
2,600.00	2,599.99	2,576.05	2,575.98	9.10	4.44	163.82	-5,103.71	1,480.37	5,314.95	5,301.43	13.52	393.143		
2,700.00	2,699.96	2,662.41	2,662.34	9.45	4.58	163.82	-5,103.61	1,480.20	5,317.39	5,303.37	14.03	379.108		
2,800.00	2,799.86	2,761.94	2,761.87	9.81	4.76	163.82	-5,103.75	1,480.25	5,321.86	5,307.31	14.56	365.620		
2,900.00	2,899.68	2,867.62	2,867.55	10.17	4.94	163.81	-5,103.66	1,480.39	5,327.87	5,312.77	15.10	352.897		
3,000.00	2,999.37	2,958.70	2,958.63	10.53	5.10	163.79	-5,103.49	1,480.95	5,335.65	5,320.03	15.61	341.748		
3,100.00	3,098.90	3,047.74	3,047.67	10.89	5.25	163.77	-5,103.47	1,481.66	5,345.36	5,329.24	16.12	331.531		
3,200.00	3,198.26	3,152.49	3,152.40	11.25	5.43	163.74	-5,103.36	1,483.24	5,356.91	5,340.25	16.66	321.525		
3,300.00	3,297.40	3,260.21	3,260.10	11.61	5.61	163.69	-5,102.71	1,485.69	5,369.91	5,352.71	17.20	312.126		
3,300.10	3,297.50	3,260.31	3,260.20	11.61	5.61	163.69	-5,102.71	1,485.70	5,369.93	5,352.72	17.20	312.117		
3,400.00	3,396.43	3,373.23	3,373.09	11.98	5.81	163.65	-5,102.00	1,487.97	5,383.69	5,365.93	17.76	303.180		
3,500.00	3,495.46	3,476.33	3,476.17	12.36	5.99	163.61	-5,101.10	1,489.90	5,397.20	5,378.91	18.29	295.031		
3,600.00	3,594.48	3,581.25	3,581.06	12.73	6.17	163.56	-5,100.06	1,492.19	5,410.68	5,391.85	18.83	287.281		
3,700.00	3,693.51	3,689.03	3,688.81	13.11	6.36	163.52	-5,098.96	1,494.08	5,424.01	5,404.63	19.38	279.865		
3,800.00	3,792.54	3,798.51	3,798.28	13.49	6.55	163.49	-5,097.90	1,495.09	5,437.18	5,417.24	19.93	272.784		
3,900.00	3,891.56	3,876.28	3,876.05	13.87	6.69	163.47	-5,097.33	1,495.47	5,450.43	5,430.00	20.43	266.826		
4,000.00	3,990.59	3,964.64	3,964.41	14.26	6.84	163.44	-5,097.01	1,495.82	5,464.01	5,443.07	20.94	260.925		
4,100.00	4,089.62	4,044.11	4,043.88	14.64	6.98	163.43	-5,096.93	1,495.96	5,477.79	5,456.36	21.44	255.518		
4,200.00	4,188.64	4,100.00	4,099.77	15.03	7.08	163.41	-5,097.15	1,495.99	5,492.08	5,470.19	21.89	250.887		
4,300.00	4,287.67	4,173.40	4,173.17	15.42	7.20	163.39	-5,097.93	1,495.99	5,506.95	5,484.58	22.37	246.135		
4,400.00	4,386.70	4,246.62	4,246.37	15.81	7.33	163.38	-5,099.26	1,495.97	5,522.47	5,499.61	22.86	241.619		
4,500.00	4,485.72	4,335.12	4,334.85	16.20	7.48	163.37	-5,101.12	1,496.01	5,538.29	5,514.92	23.37	237.009		
4,600.00	4,584.75	4,454.17	4,453.88	16.60	7.69	163.36	-5,103.70	1,495.71	5,554.11	5,530.18	23.94	232.028		
4,700.00	4,683.78	4,581.20	4,580.89	16.99	7.90	163.36	-5,105.77	1,495.01	5,569.30	5,544.77	24.52	227.102		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,800.00	4,782.80	4,686.59	4,686.26	17.39	8.09	163.35	-5,107.21	1,494.37	5,584.25	5,559.18	25.07	222.754	
4,900.00	4,881.83	4,802.89	4,802.55	17.78	8.29	163.35	-5,108.62	1,493.53	5,599.01	5,573.37	25.64	218.400	
5,000.00	4,980.85	4,902.63	4,902.28	18.18	8.46	163.34	-5,109.67	1,492.75	5,613.60	5,587.43	26.17	214.482	
5,100.00	5,079.88	4,994.77	4,994.42	18.58	8.62	163.33	-5,110.71	1,491.95	5,628.24	5,601.55	26.70	210.834	
5,200.00	5,178.91	5,109.91	5,109.54	18.98	8.82	163.33	-5,111.92	1,490.93	5,642.81	5,615.55	27.26	206.985	
5,300.00	5,277.93	5,214.86	5,214.49	19.38	9.01	163.33	-5,112.85	1,489.88	5,657.19	5,629.38	27.81	203.425	
5,400.00	5,376.96	5,320.78	5,320.40	19.78	9.19	163.32	-5,113.63	1,488.79	5,671.41	5,643.05	28.36	199.980	
5,500.00	5,475.99	5,414.79	5,414.40	20.18	9.35	163.32	-5,114.32	1,487.87	5,685.66	5,656.77	28.89	196.823	
5,600.00	5,575.01	5,520.09	5,519.69	20.58	9.54	163.31	-5,115.14	1,486.68	5,699.90	5,670.46	29.44	193.632	
5,700.00	5,674.04	5,625.29	5,624.88	20.98	9.72	163.31	-5,115.77	1,485.43	5,713.94	5,683.95	29.99	190.550	
5,800.00	5,773.07	5,707.07	5,706.65	21.39	9.87	163.30	-5,116.37	1,484.59	5,728.17	5,697.68	30.49	187.867	
5,898.39	5,870.50	5,817.56	5,817.13	21.78	10.06	163.30	-5,117.19	1,483.47	5,742.17	5,711.12	31.05	184.960	
5,900.00	5,872.09	5,819.21	5,818.78	21.79	10.06	163.30	-5,117.20	1,483.45	5,742.39	5,711.34	31.05	184.915	
6,000.00	5,971.24	5,927.45	5,927.01	22.19	10.25	163.30	-5,117.90	1,482.12	5,755.60	5,723.99	31.61	182.081	
6,100.00	6,070.60	6,041.90	6,041.45	22.58	10.45	163.31	-5,118.38	1,480.35	5,766.76	5,734.58	32.18	179.219	
6,200.00	6,170.14	6,137.84	6,137.38	22.97	10.62	163.31	-5,118.77	1,478.81	5,776.18	5,743.47	32.71	176.604	
6,300.00	6,269.83	6,231.53	6,231.06	23.35	10.79	163.31	-5,119.08	1,477.74	5,783.93	5,750.70	33.23	174.053	
6,400.00	6,369.65	6,328.04	6,327.56	23.71	10.96	163.32	-5,119.63	1,476.42	5,790.12	5,756.36	33.76	171.515	
6,500.00	6,469.55	6,440.28	6,439.79	24.07	11.16	163.33	-5,119.94	1,475.06	5,794.33	5,760.01	34.32	168.853	
6,600.00	6,569.52	6,526.42	6,525.93	24.43	11.31	163.33	-5,120.17	1,474.34	5,796.92	5,762.10	34.82	166.485	
6,698.49	6,668.00	6,613.51	6,613.01	24.77	11.46	163.33	-5,120.52	1,474.00	5,798.02	5,762.70	35.32	164.170	
6,700.00	6,669.51	6,615.21	6,614.72	24.77	11.46	163.33	-5,120.52	1,474.00	5,798.03	5,762.70	35.33	164.131	
6,800.00	6,769.51	6,721.36	6,720.86	25.11	11.65	163.34	-5,120.89	1,473.66	5,798.26	5,762.40	35.87	161.668	
6,900.00	6,869.51	6,807.10	6,806.60	25.45	11.80	163.34	-5,121.33	1,473.24	5,798.61	5,762.25	36.36	159.458	
7,000.00	6,969.51	6,886.70	6,886.20	25.80	11.94	163.35	-5,121.97	1,472.91	5,799.26	5,762.41	36.85	157.369	
7,100.00	7,069.51	7,004.69	7,004.18	26.14	12.15	163.36	-5,123.00	1,472.43	5,799.99	5,762.57	37.42	155.017	
7,200.00	7,169.51	7,108.14	7,107.63	26.48	12.33	163.36	-5,123.66	1,472.00	5,800.48	5,762.53	37.95	152.844	
7,300.00	7,269.51	7,194.44	7,193.93	26.82	12.48	163.37	-5,124.25	1,471.78	5,801.07	5,762.62	38.45	150.869	
7,400.00	7,369.51	7,282.91	7,282.39	27.17	12.63	163.37	-5,125.10	1,471.40	5,801.86	5,762.90	38.96	148.932	
7,500.00	7,469.51	7,375.49	7,374.97	27.51	12.80	163.38	-5,126.18	1,470.89	5,802.82	5,763.35	39.47	147.019	
7,600.00	7,569.51	7,469.87	7,469.33	27.85	12.96	163.39	-5,127.33	1,470.57	5,803.89	5,763.91	39.99	145.143	
7,700.00	7,669.51	7,558.83	7,558.28	28.20	13.12	163.39	-5,128.58	1,470.08	5,805.09	5,764.59	40.49	143.357	
7,800.00	7,769.51	7,655.81	7,655.25	28.54	13.29	163.40	-5,130.05	1,469.83	5,806.46	5,765.45	41.02	141.562	
7,900.00	7,869.51	7,762.60	7,762.03	28.89	13.48	163.41	-5,131.63	1,469.40	5,807.76	5,766.20	41.56	139.744	
8,000.00	7,969.51	7,856.93	7,856.35	29.24	13.64	163.42	-5,132.93	1,469.15	5,809.02	5,766.94	42.08	138.053	
8,100.00	8,069.51	7,957.19	7,956.60	29.58	13.82	163.42	-5,134.53	1,468.67	5,810.41	5,767.80	42.61	136.368	
8,200.00	8,169.51	8,066.14	8,065.53	29.93	14.01	163.44	-5,136.19	1,467.84	5,811.65	5,768.50	43.16	134.666	
8,300.00	8,269.51	8,162.09	8,161.47	30.27	14.18	163.45	-5,137.58	1,467.17	5,812.84	5,769.16	43.68	133.085	
8,400.00	8,369.51	8,251.82	8,251.19	30.62	14.34	163.46	-5,138.99	1,466.60	5,814.17	5,769.98	44.19	131.582	
8,500.00	8,469.51	8,346.10	8,345.44	30.97	14.50	163.47	-5,140.73	1,465.73	5,815.67	5,770.97	44.71	130.089	
8,600.00	8,569.51	8,475.77	8,475.08	31.32	14.73	163.49	-5,143.10	1,463.98	5,817.07	5,771.78	45.30	128.425	
8,700.00	8,669.51	8,596.02	8,595.30	31.66	14.94	163.52	-5,144.79	1,461.67	5,817.86	5,771.99	45.87	126.843	
8,800.00	8,769.51	8,742.72	8,741.96	32.01	15.20	163.55	-5,145.76	1,458.60	5,817.80	5,771.31	46.49	125.143	
8,832.47	8,801.98	8,767.35	8,766.58	32.12	15.25	163.56	-5,145.91	1,458.02	5,817.78	5,771.13	46.65	124.723	
8,900.00	8,869.51	8,800.00	8,799.22	32.36	15.30	163.57	-5,146.19	1,457.18	5,817.91	5,770.98	46.93	123.958	
9,000.00	8,969.51	8,869.37	8,868.56	32.71	15.43	163.59	-5,147.25	1,455.18	5,818.63	5,771.23	47.40	122.748	
9,100.00	9,069.51	8,938.06	8,937.19	33.06	15.55	163.61	-5,148.95	1,453.02	5,820.09	5,772.22	47.87	121.582	
9,200.00	9,169.51	9,061.87	9,060.92	33.40	15.77	163.65	-5,152.04	1,449.80	5,821.80	5,773.35	48.45	120.164	
9,300.00	9,269.51	9,236.32	9,235.28	33.75	16.07	163.70	-5,154.22	1,445.04	5,822.09	5,772.96	49.13	118.508	
9,307.46	9,276.97	9,242.61	9,241.57	33.78	16.09	163.71	-5,154.28	1,444.84	5,822.09	5,772.92	49.17	118.418	
9,400.00	9,369.51	9,317.65	9,316.58	34.10	16.22	163.73	-5,155.05	1,442.53	5,822.21	5,772.59	49.62	117.332	
9,500.00	9,469.51	9,389.78	9,388.67	34.45	16.35	163.75	-5,156.02	1,440.59	5,822.75	5,772.65	50.10	116.231	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
9,600.00	9,569.51	9,506.57	9,505.41	34.80	16.55	163.78	-5,157.75	1,437.50	5,823.44	5,772.78	50.66	114.950		
9,700.00	9,669.51	9,597.79	9,596.59	35.15	16.63	163.81	-5,159.06	1,434.93	5,824.03	5,772.93	51.09	113.992		
9,800.00	9,769.51	9,690.68	9,689.43	35.50	16.72	163.84	-5,160.45	1,432.48	5,824.73	5,773.20	51.53	113.036		
9,900.00	9,869.51	9,783.58	9,782.29	35.85	16.81	163.86	-5,161.90	1,430.22	5,825.56	5,773.59	51.97	112.099		
10,000.00	9,969.51	9,872.31	9,870.98	36.20	16.84	163.89	-5,163.42	1,428.07	5,826.53	5,774.18	52.36	111.281		
10,100.00	10,069.51	9,909.00	9,907.65	36.55	16.85	163.90	-5,164.16	1,427.02	5,827.98	5,775.28	52.70	110.583		
10,200.00	10,169.51	9,909.00	9,907.65	36.90	16.85	163.90	-5,164.16	1,427.02	5,831.01	5,777.98	53.02	109.969		
10,300.00	10,269.51	9,961.20	9,959.79	37.25	16.86	163.92	-5,166.21	1,425.46	5,834.59	5,781.22	53.37	109.315		
10,400.00	10,369.51	9,999.00	9,997.47	37.60	16.87	163.94	-5,168.88	1,424.34	5,840.11	5,786.40	53.71	108.728		
10,500.00	10,469.51	9,999.00	9,997.47	37.95	16.87	163.94	-5,168.88	1,424.34	5,846.72	5,792.70	54.02	108.229		
10,600.00	10,569.51	9,999.00	9,997.47	38.31	16.87	163.94	-5,168.88	1,424.34	5,855.04	5,800.72	54.32	107.778		
10,700.00	10,669.51	9,999.00	9,997.47	38.66	16.87	163.94	-5,168.88	1,424.34	5,865.05	5,810.43	54.62	107.375		
10,800.00	10,769.51	10,030.00	10,028.19	39.01	16.88	163.96	-5,172.79	1,423.04	5,876.36	5,821.41	54.94	106.954		
10,900.00	10,869.51	10,030.00	10,028.19	39.36	16.88	163.96	-5,172.79	1,423.04	5,889.21	5,833.98	55.23	106.632		
11,000.00	10,969.51	10,030.00	10,028.19	39.71	16.88	163.96	-5,172.79	1,423.04	5,903.72	5,848.21	55.51	106.354		
11,100.00	11,069.51	10,030.00	10,028.19	40.06	16.88	163.96	-5,172.79	1,423.04	5,919.89	5,864.11	55.79	106.119		
11,200.00	11,169.51	10,045.56	10,043.44	40.41	16.89	163.98	-5,175.71	1,422.16	5,937.40	5,881.33	56.07	105.884		
11,300.00	11,269.51	10,062.00	10,059.42	40.77	16.89	164.00	-5,179.45	1,421.14	5,956.65	5,900.29	56.36	105.689		
11,400.00	11,369.51	10,062.00	10,059.42	41.12	16.89	164.00	-5,179.45	1,421.14	5,977.17	5,920.55	56.62	105.564		
11,500.00	11,469.51	10,062.00	10,059.42	41.47	16.89	164.00	-5,179.45	1,421.14	5,999.30	5,942.42	56.88	105.478		
11,600.00	11,569.51	10,062.00	10,059.42	41.82	16.89	164.00	-5,179.45	1,421.14	6,023.00	5,965.87	57.13	105.429		
11,700.00	11,669.51	10,093.00	10,089.07	42.18	16.91	164.04	-5,188.19	1,418.98	6,048.16	5,990.74	57.42	105.329		
11,800.00	11,769.51	10,093.00	10,089.07	42.53	16.91	164.04	-5,188.19	1,418.98	6,074.48	6,016.81	57.67	105.339		
11,900.00	11,869.51	10,093.00	10,089.07	42.88	16.91	164.04	-5,188.19	1,418.98	6,102.32	6,044.41	57.91	105.383		
11,902.93	11,872.44	10,093.00	10,089.07	42.89	16.91	164.04	-5,188.19	1,418.98	6,103.15	6,045.24	57.91	105.385		
11,950.00	11,919.46	10,093.00	10,089.07	43.04	16.91	164.04	-5,188.19	1,418.98	6,114.95	6,056.93	58.01	105.406		
12,000.00	11,969.05	10,093.00	10,089.07	43.19	16.91	164.03	-5,188.19	1,418.98	6,123.73	6,065.62	58.10	105.391		
12,050.00	12,017.90	10,093.00	10,089.07	43.32	16.91	164.03	-5,188.19	1,418.98	6,128.61	6,070.42	58.19	105.321		
12,100.00	12,065.65	10,093.00	10,089.07	43.44	16.91	164.01	-5,188.19	1,418.98	6,129.55	6,071.28	58.27	105.200		
12,150.00	12,111.93	10,110.35	10,105.37	43.56	16.92	164.03	-5,194.00	1,417.64	6,126.23	6,067.87	58.36	104.970		
12,200.00	12,156.38	10,125.00	10,118.94	43.66	16.93	164.03	-5,199.38	1,416.45	6,119.29	6,060.85	58.44	104.706		
12,250.00	12,198.67	10,125.00	10,118.94	43.75	16.93	164.01	-5,199.38	1,416.45	6,108.24	6,049.76	58.49	104.438		
12,300.00	12,238.48	10,125.00	10,118.94	43.83	16.93	163.98	-5,199.38	1,416.45	6,093.38	6,034.86	58.52	104.127		
12,350.00	12,275.51	10,125.00	10,118.94	43.90	16.93	163.95	-5,199.38	1,416.45	6,074.79	6,016.25	58.54	103.773		
12,400.00	12,309.46	10,125.00	10,118.94	43.97	16.93	163.92	-5,199.38	1,416.45	6,052.57	5,994.02	58.55	103.379		
12,450.00	12,340.09	10,125.00	10,118.94	44.04	16.93	163.88	-5,199.38	1,416.45	6,026.86	5,968.32	58.54	102.946		
12,500.00	12,367.17	10,125.00	10,118.94	44.10	16.93	163.85	-5,199.38	1,416.45	5,997.82	5,939.29	58.53	102.475		
12,550.00	12,390.47	10,140.40	10,133.04	44.16	16.94	163.84	-5,205.44	1,415.13	5,965.40	5,906.86	58.54	101.910		
12,600.00	12,409.84	10,156.00	10,147.14	44.22	16.95	163.83	-5,211.96	1,413.71	5,930.24	5,871.71	58.53	101.312		
12,650.00	12,425.11	10,156.00	10,147.14	44.28	16.95	163.78	-5,211.96	1,413.71	5,892.14	5,833.64	58.50	100.727		
12,700.00	12,436.18	10,156.00	10,147.14	44.35	16.95	163.73	-5,211.96	1,413.71	5,851.54	5,793.08	58.45	100.107		
12,750.00	12,442.96	10,156.00	10,147.14	44.42	16.95	163.68	-5,211.96	1,413.71	5,808.69	5,750.29	58.41	99.455		
12,800.00	12,445.39	10,156.00	10,147.14	44.49	16.95	163.63	-5,211.96	1,413.71	5,763.89	5,705.54	58.36	98.769		
12,807.86	12,445.38	10,156.00	10,147.14	44.51	16.95	163.63	-5,211.96	1,413.71	5,756.69	5,698.34	58.35	98.656		
12,900.00	12,444.58	10,156.00	10,147.14	44.68	16.95	163.53	-5,211.96	1,413.71	5,672.15	5,613.89	58.26	97.364		
13,000.00	12,443.72	10,156.00	10,147.14	44.94	16.95	163.42	-5,211.96	1,413.71	5,580.67	5,522.51	58.15	95.963		
13,100.00	12,442.86	10,156.00	10,147.14	45.27	16.95	163.31	-5,211.96	1,413.71	5,489.48	5,431.43	58.05	94.561		
13,200.00	12,442.00	10,172.44	10,161.80	45.66	16.96	163.24	-5,219.21	1,412.13	5,398.39	5,340.40	57.99	93.094		
13,300.00	12,441.14	10,188.00	10,175.51	46.11	16.97	163.16	-5,226.43	1,410.58	5,307.79	5,249.86	57.92	91.632		
13,400.00	12,440.28	10,188.00	10,175.51	46.63	16.97	163.04	-5,226.43	1,410.58	5,217.33	5,159.50	57.83	90.223		
13,500.00	12,439.42	10,188.00	10,175.51	47.20	16.97	162.91	-5,226.43	1,410.58	5,127.22	5,069.49	57.73	88.813		
13,600.00	12,438.56	10,188.00	10,175.51	47.83	16.97	162.78	-5,226.43	1,410.58	5,037.49	4,979.85	57.64	87.403		



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		
13,700.00	12,437.70	10,188.00	10,175.51	48.52	16.97	162.63	-5,226.43	1,410.58	4,948.15	4,890.61	57.54	85.992	
13,727.27	12,437.47	10,188.00	10,175.51	48.71	16.97	162.60	-5,226.43	1,410.58	4,923.86	4,866.34	57.52	85.607	
13,800.00	12,436.84	10,203.11	10,188.64	49.25	16.98	162.52	-5,233.74	1,409.08	4,859.13	4,801.64	57.49	84.519	
13,900.00	12,435.98	10,220.00	10,203.13	50.02	16.99	162.37	-5,242.27	1,407.48	4,771.11	4,713.65	57.46	83.039	
14,000.00	12,435.11	10,220.00	10,203.13	50.83	16.99	162.10	-5,242.27	1,407.48	4,683.86	4,626.47	57.39	81.616	
14,100.00	12,434.25	10,220.00	10,203.13	51.66	16.99	161.78	-5,242.27	1,407.48	4,597.80	4,540.47	57.34	80.190	
14,200.00	12,433.39	10,220.00	10,203.13	52.52	16.99	161.38	-5,242.27	1,407.48	4,513.12	4,455.81	57.30	78.758	
14,259.68	12,432.87	10,220.00	10,203.13	53.04	16.99	161.12	-5,242.27	1,407.48	4,463.31	4,406.01	57.29	77.901	
14,300.00	12,432.52	10,220.00	10,203.13	53.40	16.99	160.92	-5,242.27	1,407.48	4,429.90	4,372.61	57.29	77.320	
14,400.00	12,431.66	10,237.52	10,217.91	54.32	17.01	160.50	-5,251.54	1,405.94	4,347.24	4,289.89	57.35	75.801	
14,500.00	12,430.80	10,251.00	10,229.08	55.27	17.02	160.05	-5,259.01	1,404.83	4,265.46	4,208.05	57.42	74.290	
14,600.00	12,429.94	10,251.00	10,229.08	56.25	17.02	159.51	-5,259.01	1,404.83	4,184.28	4,126.81	57.47	72.811	
14,700.00	12,429.08	10,251.00	10,229.08	57.26	17.02	158.95	-5,259.01	1,404.83	4,103.92	4,046.38	57.54	71.318	
14,800.00	12,428.22	10,251.00	10,229.08	58.31	17.02	158.35	-5,259.01	1,404.83	4,024.45	3,966.80	57.65	69.812	
14,900.00	12,427.36	10,283.00	10,254.92	59.38	17.06	157.88	-5,277.73	1,402.51	3,945.63	3,887.78	57.86	68.196	
15,000.00	12,426.50	10,283.00	10,254.92	60.47	17.06	157.22	-5,277.73	1,402.51	3,867.60	3,809.58	58.02	66.660	
15,100.00	12,425.64	10,283.00	10,254.92	61.60	17.06	156.52	-5,277.73	1,402.51	3,790.60	3,732.38	58.22	65.111	
15,200.00	12,424.78	10,283.00	10,254.92	62.74	17.06	155.78	-5,277.73	1,402.51	3,714.69	3,656.24	58.45	63.550	
15,300.00	12,423.92	10,315.00	10,279.75	63.91	17.11	155.19	-5,297.83	1,400.67	3,639.66	3,580.86	58.80	61.902	
15,400.00	12,423.06	10,315.00	10,279.75	65.10	17.11	154.37	-5,297.83	1,400.67	3,565.59	3,506.47	59.12	60.315	
15,500.00	12,422.20	10,315.00	10,279.75	66.31	17.11	153.49	-5,297.83	1,400.67	3,492.82	3,433.33	59.48	58.718	
15,600.00	12,421.34	10,332.80	10,293.11	67.54	17.15	152.68	-5,309.57	1,399.80	3,421.14	3,361.20	59.93	57.082	
15,700.00	12,420.48	10,346.00	10,302.79	68.79	17.17	151.79	-5,318.51	1,399.15	3,350.74	3,290.32	60.42	55.453	
15,800.00	12,419.62	10,346.00	10,302.79	70.06	17.17	150.74	-5,318.51	1,399.15	3,281.72	3,220.77	60.95	53.839	
15,900.00	12,418.76	10,377.00	10,324.76	71.34	17.24	149.90	-5,340.31	1,397.47	3,213.94	3,152.36	61.58	52.194	
16,000.00	12,417.90	10,377.00	10,324.76	72.63	17.24	148.70	-5,340.31	1,397.47	3,147.59	3,085.36	62.23	50.580	
16,100.00	12,417.03	10,392.92	10,335.61	73.94	17.28	147.60	-5,351.93	1,396.57	3,082.80	3,019.84	62.96	48.966	
16,200.00	12,416.17	10,409.00	10,346.24	75.27	17.33	146.42	-5,363.97	1,395.76	3,019.68	2,955.93	63.75	47.367	
16,300.00	12,415.31	10,409.00	10,346.24	76.60	17.33	144.95	-5,363.97	1,395.76	2,958.33	2,893.72	64.61	45.787	
16,400.00	12,414.45	10,441.00	10,366.50	77.95	17.42	143.81	-5,388.70	1,394.49	2,898.70	2,833.16	65.54	44.229	
16,500.00	12,413.59	10,441.00	10,366.50	79.31	17.42	142.14	-5,388.70	1,394.49	2,840.91	2,774.37	66.54	42.693	
16,600.00	12,412.73	10,472.00	10,385.03	80.69	17.53	140.81	-5,413.54	1,393.73	2,785.21	2,717.60	67.61	41.198	
16,700.00	12,411.87	10,472.00	10,385.03	82.07	17.53	138.89	-5,413.54	1,393.73	2,731.44	2,662.68	68.76	39.725	
16,800.00	12,411.01	10,489.60	10,394.96	83.46	17.59	137.13	-5,428.05	1,393.47	2,679.97	2,610.00	69.97	38.302	
16,900.00	12,410.15	10,504.00	10,402.71	84.87	17.65	135.18	-5,440.20	1,393.31	2,630.89	2,559.64	71.25	36.926	
17,000.00	12,409.29	10,504.00	10,402.71	86.28	17.65	132.77	-5,440.20	1,393.31	2,584.51	2,511.89	72.61	35.593	
17,100.00	12,408.43	10,535.00	10,418.00	87.70	17.78	130.90	-5,467.16	1,393.01	2,540.38	2,466.39	73.99	34.334	
17,200.00	12,407.57	10,535.00	10,418.00	89.13	17.78	128.14	-5,467.16	1,393.01	2,499.25	2,423.78	75.47	33.114	
17,300.00	12,406.71	10,567.00	10,431.34	90.56	17.93	126.05	-5,496.22	1,392.47	2,461.03	2,384.10	76.93	31.989	
17,400.00	12,405.85	10,567.00	10,431.34	92.01	17.93	122.89	-5,496.22	1,392.47	2,425.61	2,347.10	78.51	30.896	
17,500.00	12,404.99	10,584.49	10,437.50	93.46	18.02	120.06	-5,512.59	1,392.08	2,393.45	2,313.38	80.07	29.892	
17,600.00	12,404.13	10,599.00	10,442.07	94.91	18.10	116.96	-5,526.35	1,391.78	2,364.49	2,282.84	81.66	28.956	
17,700.00	12,403.27	10,617.25	10,447.21	96.38	18.20	113.82	-5,543.86	1,391.53	2,338.79	2,255.54	83.25	28.094	
17,800.00	12,402.41	10,630.00	10,450.46	97.85	18.27	110.29	-5,556.19	1,391.50	2,316.42	2,231.56	84.85	27.299	
17,900.00	12,401.55	10,662.00	10,457.76	99.32	18.47	107.40	-5,587.34	1,391.99	2,297.14	2,210.71	86.42	26.580	
18,000.00	12,400.68	10,694.00	10,464.09	100.81	18.68	104.41	-5,618.68	1,393.27	2,281.08	2,193.08	88.00	25.922	
18,100.00	12,399.82	10,726.00	10,469.42	102.29	18.90	101.35	-5,650.18	1,395.03	2,268.11	2,178.54	89.57	25.322	
18,200.00	12,398.96	10,758.00	10,473.82	103.79	19.13	98.23	-5,681.82	1,396.94	2,258.03	2,166.91	91.12	24.781	
18,300.00	12,398.10	10,789.00	10,477.33	105.28	19.37	95.02	-5,712.56	1,398.84	2,250.71	2,158.06	92.64	24.294	
18,400.00	12,397.24	10,837.90	10,481.70	106.78	19.77	92.62	-5,761.16	1,402.00	2,245.84	2,151.68	94.16	23.852	
18,500.00	12,396.38	10,871.10	10,483.80	108.29	20.06	89.50	-5,794.20	1,404.51	2,243.72	2,148.08	95.63	23.461	
18,509.83	12,396.30	10,873.99	10,483.94	108.44	20.08	89.18	-5,797.08	1,404.75	2,243.68	2,147.90	95.78	23.426 CC	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,600.00	12,395.52	10,922.70	10,485.33	109.80	20.52	87.24	-5,845.60	1,408.69	2,244.44	2,147.33	97.11	23.112		
18,700.00	12,394.66	10,996.56	10,485.71	111.32	21.23	86.04	-5,919.29	1,413.72	2,246.68	2,148.06	98.62	22.782		
18,800.00	12,393.80	11,133.55	10,485.52	112.84	22.67	87.75	-6,055.99	1,422.58	2,249.58	2,149.25	100.33	22.423		
18,900.00	12,392.94	11,234.69	10,488.04	114.36	23.82	87.80	-6,156.89	1,429.15	2,250.05	2,148.00	102.05	22.049		
19,000.00	12,392.08	11,364.95	10,491.07	115.89	25.38	89.18	-6,286.79	1,438.04	2,251.00	2,147.05	103.95	21.654		
19,027.01	12,391.85	11,386.35	10,491.86	116.30	25.66	88.92	-6,308.12	1,439.61	2,250.99	2,146.55	104.44	21.554		
19,100.00	12,391.22	11,452.04	10,493.59	117.42	26.48	88.59	-6,373.67	1,443.60	2,251.11	2,145.36	105.75	21.287		
19,200.00	12,390.36	11,547.06	10,494.38	118.95	27.72	88.36	-6,468.61	1,447.29	2,251.56	2,144.02	107.53	20.938		
19,300.00	12,389.50	11,612.77	10,493.70	120.49	28.59	86.82	-6,534.28	1,449.04	2,252.86	2,143.68	109.18	20.634		
19,400.00	12,388.64	11,685.57	10,491.68	122.03	29.57	85.59	-6,607.03	1,451.04	2,255.62	2,144.78	110.84	20.350		
19,500.00	12,387.78	19,500.00	10,487.78	123.57	137.86	86.83	-6,734.42	1,453.82	2,258.33	2,082.97	175.35	12.879 ES, SF		
19,600.00	12,386.92	11,933.16	10,485.84	125.12	33.01	87.73	-6,854.49	1,455.41	2,259.23	2,144.57	114.67	19.703		
19,700.00	12,386.06	12,098.01	10,486.00	126.66	35.38	90.65	-7,019.33	1,456.68	2,258.24	2,141.41	116.82	19.330		
19,800.00	12,385.20	12,191.66	10,487.90	128.22	36.75	90.36	-7,112.95	1,458.48	2,256.60	2,137.82	118.78	18.998		
19,900.00	12,384.33	12,285.43	10,490.49	129.77	38.14	90.08	-7,206.62	1,461.94	2,255.35	2,134.53	120.82	18.667		
20,000.00	12,383.47	12,373.53	10,492.52	131.33	39.46	89.54	-7,294.63	1,465.10	2,254.44	2,131.60	122.84	18.352		
20,100.00	12,382.61	12,465.58	10,493.48	132.89	40.85	89.19	-7,386.64	1,467.60	2,254.06	2,129.20	124.86	18.053		
20,147.61	12,382.20	12,507.58	10,493.97	133.63	41.49	88.94	-7,428.62	1,468.95	2,253.98	2,128.15	125.82	17.914		
20,200.00	12,381.75	12,544.62	10,494.27	134.45	42.05	88.25	-7,465.63	1,470.29	2,254.16	2,127.33	126.83	17.773		
20,300.00	12,380.89	12,643.49	10,494.31	136.01	43.56	88.20	-7,564.43	1,474.16	2,255.29	2,126.35	128.94	17.491		
20,400.00	12,380.03	12,759.75	10,494.67	137.58	45.35	88.93	-7,680.65	1,477.11	2,255.40	2,124.26	131.14	17.198		
20,500.00	12,379.17	12,857.78	10,495.51	139.15	46.86	88.84	-7,778.63	1,480.20	2,255.45	2,122.17	133.28	16.923		
20,600.00	12,378.31	12,956.73	10,496.20	140.72	48.40	88.79	-7,877.53	1,483.25	2,255.58	2,120.15	135.43	16.655		
20,700.00	12,377.45	13,058.08	10,496.36	142.29	49.98	88.85	-7,978.84	1,485.57	2,255.72	2,118.13	137.58	16.395		
20,800.00	12,376.59	13,140.93	10,495.88	143.86	51.28	88.10	-8,061.69	1,487.02	2,256.15	2,116.56	139.59	16.163		
20,900.00	12,375.73	13,231.07	10,494.56	145.44	52.69	87.66	-8,151.80	1,488.59	2,257.28	2,115.65	141.63	15.938		
21,000.00	12,374.87	13,372.56	10,492.70	147.02	54.92	89.49	-8,293.26	1,489.75	2,257.82	2,113.86	143.96	15.683		
21,100.00	12,374.01	13,484.22	10,492.02	148.59	56.67	90.01	-8,404.93	1,489.24	2,257.00	2,110.90	146.09	15.449		
21,200.00	12,373.15	13,598.40	10,491.73	150.18	58.47	90.63	-8,519.10	1,488.30	2,255.68	2,107.45	148.23	15.217		
21,300.00	12,372.29	13,681.50	10,491.82	151.76	59.79	89.89	-8,602.20	1,487.57	2,254.09	2,103.86	150.23	15.004		
21,360.42	12,371.77	13,720.67	10,491.30	152.72	60.41	88.95	-8,641.37	1,487.23	2,253.81	2,102.44	151.36	14.890		
21,400.00	12,371.43	13,745.76	10,490.73	153.34	60.81	88.30	-8,666.45	1,487.02	2,253.93	2,101.84	152.09	14.820		
21,500.00	12,370.57	13,807.83	10,488.78	154.93	61.79	86.62	-8,728.48	1,486.98	2,255.42	2,101.52	153.90	14.655		
21,600.00	12,369.71	13,968.47	10,484.63	156.52	64.35	89.30	-8,889.06	1,486.41	2,256.20	2,099.90	156.30	14.435		
21,695.16	12,368.89	14,055.49	10,483.05	158.03	65.73	88.94	-8,976.06	1,485.53	2,256.06	2,097.86	158.20	14.261		
21,700.00	12,368.85	14,060.10	10,482.97	158.11	65.81	88.93	-8,980.67	1,485.50	2,256.06	2,097.76	158.30	14.252		
21,800.00	12,367.98	14,149.00	10,481.50	159.70	67.23	88.44	-9,069.56	1,485.30	2,256.23	2,095.92	160.31	14.074		
21,900.00	12,367.12	14,233.72	10,479.93	161.29	68.59	87.76	-9,154.25	1,485.96	2,257.14	2,094.80	162.34	13.904		
22,000.00	12,366.26	14,323.24	10,478.07	162.88	70.02	87.29	-9,243.75	1,487.01	2,258.47	2,094.07	164.40	13.738		
22,100.00	12,365.40	14,399.29	10,475.82	164.47	71.25	86.23	-9,319.76	1,488.10	2,260.64	2,094.30	166.35	13.590		
22,200.00	12,364.54	14,513.27	10,471.90	166.07	73.08	86.85	-9,433.66	1,489.85	2,263.33	2,094.76	168.57	13.426		
22,300.00	12,363.68	14,651.86	10,469.51	167.67	75.32	88.56	-9,572.23	1,490.30	2,263.61	2,092.66	170.96	13.241		
22,400.00	12,362.82	14,743.48	10,467.46	169.26	76.79	88.19	-9,663.82	1,490.12	2,264.27	2,091.27	172.99	13.089		
22,500.00	12,361.96	14,760.00	10,467.06	170.86	77.06	84.49	-9,680.34	1,490.06	2,266.55	2,092.09	174.46	12.992		
22,565.16	12,361.40	14,760.00	10,467.06	171.78	77.06	81.64	-9,680.34	1,490.06	2,270.37	2,095.50	174.87	12.983		



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Survey Program: 239-, 9817-												Offset Well Error:	0.00 usft
Windward Federal - #1H - Wellbore #1 - Surveys													
Reference		Offset		Semi Major Axis		Distance		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	71.49	300.67	898.15	947.14				
100.00	100.00	95.25	95.25	0.13	0.15	71.48	300.92	898.25	947.32	947.03	0.29	3,301.013	
200.00	200.00	191.84	191.83	0.49	0.31	71.44	301.67	898.54	947.85	947.05	0.80	1,185.132	
300.00	300.00	292.06	292.05	0.85	0.57	71.39	302.73	899.02	948.65	947.22	1.42	666.544	
400.00	400.00	388.57	388.55	1.21	0.92	71.37	303.34	899.66	949.48	947.35	2.13	446.417	
500.00	500.00	491.17	491.15	1.57	1.28	71.34	304.09	900.33	950.33	947.48	2.85	333.123	
600.00	600.00	590.44	590.42	1.93	1.64	71.31	304.76	900.97	951.15	947.59	3.57	266.657	
700.00	700.00	689.72	689.69	2.29	2.00	71.29	305.45	901.68	952.05	947.77	4.28	222.387	
800.00	800.00	791.19	791.16	2.64	2.36	71.27	306.03	902.50	953.01	948.00	5.00	190.509	
900.00	900.00	895.54	895.50	3.00	2.73	71.24	306.62	902.89	953.54	947.81	5.73	166.346	
1,000.00	1,000.00	1,000.55	1,000.51	3.36	3.10	71.19	307.41	902.71	953.62	947.16	6.46	147.664	
1,100.00	1,100.00	1,112.48	1,112.44	3.72	3.48	71.19	307.23	901.73	952.73	945.54	7.19	132.452	
1,200.00	1,200.00	1,206.80	1,206.74	4.08	3.79	71.23	306.11	900.81	951.43	943.57	7.87	120.950	
1,260.51	1,260.51	1,259.18	1,259.11	4.29	3.97	71.27	305.39	900.82	951.17	942.91	8.26	115.145	
1,300.00	1,300.00	1,293.88	1,293.81	4.44	4.09	71.30	304.99	901.05	951.28	942.76	8.52	111.649	
1,400.00	1,400.00	1,386.76	1,386.68	4.79	4.41	71.35	304.41	902.12	952.17	942.97	9.20	103.478	
1,500.00	1,500.00	1,483.17	1,483.08	5.15	4.75	71.32	305.36	903.34	953.68	943.78	9.90	96.322	
1,600.00	1,600.00	1,602.62	1,602.51	5.51	5.17	71.21	307.44	903.36	954.25	943.57	10.68	89.337	
1,700.00	1,700.00	1,715.57	1,715.43	5.87	5.56	71.09	308.81	901.48	953.06	941.63	11.43	83.377	
1,800.00	1,800.00	1,818.48	1,818.32	6.23	5.92	71.05	308.78	899.28	951.02	938.88	12.14	78.327	
1,900.00	1,900.00	1,910.80	1,910.63	6.59	6.23	71.08	307.81	897.85	949.23	936.41	12.82	74.062	
1,999.30	1,999.30	1,998.08	1,997.90	6.94	6.53	71.14	306.68	897.63	948.58	935.11	13.47	70.408	
2,000.00	2,000.00	1,998.69	1,998.51	6.95	6.53	71.14	306.68	897.64	948.58	935.10	13.48	70.384	
2,100.00	2,100.00	2,084.83	2,084.64	7.30	6.83	71.21	305.77	898.59	949.29	935.16	14.13	67.170	
2,200.00	2,200.00	2,176.56	2,176.34	7.66	7.15	71.26	305.52	900.74	951.40	936.59	14.81	64.239	
2,300.00	2,300.00	2,278.75	2,278.50	8.02	7.51	71.26	306.28	902.91	953.65	938.12	15.53	61.407	
2,400.00	2,400.00	2,392.80	2,392.53	8.38	7.92	71.16	308.41	904.06	955.24	938.94	16.29	58.626	
2,500.00	2,500.00	2,500.96	2,500.66	8.74	8.30	71.04	310.39	903.52	955.35	938.32	17.03	56.087	
2,600.00	2,599.99	2,608.97	2,608.66	9.10	8.67	71.00	311.64	902.37	954.78	937.02	17.77	53.744	
2,700.00	2,699.96	2,716.96	2,716.63	9.45	9.05	71.12	311.63	900.68	953.52	935.02	18.50	51.555	
2,800.00	2,799.86	2,813.08	2,812.74	9.81	9.38	71.42	310.64	899.43	952.31	933.13	19.18	49.645	
2,900.00	2,899.68	2,906.81	2,906.45	10.17	9.70	71.88	308.75	898.71	951.50	931.64	19.86	47.905	
2,909.10	2,908.75	2,914.16	2,913.79	10.20	9.73	71.93	308.58	898.70	951.50	931.57	19.92	47.764 ES	
3,000.00	2,999.37	2,988.32	2,987.94	10.53	9.98	72.45	307.11	899.36	952.42	931.92	20.50	46.456	
3,100.00	3,098.90	3,081.96	3,081.56	10.89	10.31	73.15	305.60	901.17	954.84	933.65	21.19	45.070	
3,200.00	3,198.26	3,178.55	3,178.11	11.25	10.64	73.91	304.67	903.28	958.03	936.15	21.88	43.778	
3,300.00	3,297.40	3,276.09	3,275.63	11.61	10.99	74.71	304.64	905.36	961.83	939.24	22.59	42.576	
3,300.10	3,297.50	3,276.19	3,275.73	11.61	10.99	74.72	304.64	905.36	961.83	939.24	22.59	42.574	
3,400.00	3,396.43	3,374.13	3,373.65	11.98	11.33	75.52	305.43	907.37	966.08	942.78	23.30	41.456	
3,500.00	3,495.46	3,470.38	3,469.87	12.36	11.67	76.28	306.81	909.16	970.50	946.49	24.01	40.416	
3,600.00	3,594.48	3,559.57	3,559.00	12.73	11.99	77.11	307.07	912.15	976.23	951.53	24.69	39.533	
3,700.00	3,693.51	3,692.93	3,692.33	13.11	12.46	77.87	308.21	914.28	980.61	955.06	25.55	38.381	
3,800.00	3,792.54	3,809.55	3,808.91	13.49	12.86	78.51	310.59	912.45	982.29	955.96	26.33	37.305	
3,900.00	3,891.56	3,907.87	3,907.21	13.87	13.20	79.21	311.75	910.37	983.44	956.39	27.05	36.353	
4,000.00	3,990.59	4,006.85	4,006.17	14.26	13.55	80.00	311.42	908.69	984.89	957.12	27.78	35.459	
4,100.00	4,089.62	4,095.45	4,094.75	14.64	13.85	80.88	309.77	907.88	987.05	958.58	28.47	34.675	
4,200.00	4,188.64	4,180.76	4,180.03	15.03	14.15	81.78	307.62	908.21	990.62	961.47	29.14	33.992	
4,300.00	4,287.67	4,271.68	4,270.90	15.42	14.46	82.70	305.31	909.66	995.61	965.77	29.84	33.365	
4,400.00	4,386.70	4,369.43	4,368.63	15.81	14.80	83.58	303.45	911.51	1,001.23	970.67	30.57	32.757	
4,500.00	4,485.72	4,464.12	4,463.29	16.20	15.14	84.40	302.57	913.35	1,007.23	975.95	31.28	32.200	
4,600.00	4,584.75	4,565.89	4,565.03	16.60	15.50	85.12	303.28	915.36	1,013.61	981.59	32.03	31.649	
4,700.00	4,683.78	4,670.49	4,669.62	16.99	15.86	85.82	304.11	916.92	1,019.67	986.88	32.78	31.102	

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,782.80	4,774.70	4,773.82	17.39	16.23	86.49	305.42	917.81	1,025.28	991.74	33.54	30.567	
4,900.00	4,881.83	4,879.37	4,878.48	17.78	16.60	87.13	307.04	918.31	1,030.67	996.37	34.30	30.049	
5,000.00	4,980.85	4,979.82	4,978.90	18.18	16.95	87.73	309.18	918.15	1,035.58	1,000.54	35.04	29.553	
5,100.00	5,079.88	5,075.40	5,074.46	18.58	17.29	88.33	311.18	918.33	1,040.94	1,005.18	35.77	29.105	
5,200.00	5,178.91	5,171.60	5,170.64	18.98	17.63	88.93	313.11	918.77	1,046.69	1,010.20	36.49	28.683	
5,300.00	5,277.93	5,268.82	5,267.85	19.38	17.97	89.54	314.80	919.50	1,052.84	1,015.61	37.22	28.284	
5,400.00	5,376.96	5,368.36	5,367.37	19.78	18.32	90.16	316.25	920.31	1,059.17	1,021.20	37.96	27.899	
5,500.00	5,475.99	5,473.23	5,472.23	20.18	18.70	90.77	317.68	920.90	1,065.38	1,026.65	38.73	27.510	
5,600.00	5,575.01	5,574.73	5,573.71	20.58	19.05	91.36	319.24	921.00	1,071.23	1,031.75	39.47	27.137	
5,700.00	5,674.04	5,668.98	5,667.96	20.98	19.39	91.96	320.63	921.22	1,077.33	1,037.14	40.19	26.804	
5,800.00	5,773.07	5,769.10	5,768.05	21.39	19.74	92.52	322.49	921.70	1,083.79	1,042.85	40.94	26.474	
5,898.39	5,870.50	5,866.42	5,865.36	21.78	20.09	93.08	324.22	922.11	1,090.18	1,048.52	41.66	26.166	
5,900.00	5,872.09	5,868.01	5,866.95	21.79	20.09	93.09	324.25	922.12	1,090.29	1,048.61	41.68	26.161	
6,000.00	5,971.24	5,966.41	5,965.34	22.19	20.44	93.62	325.71	922.58	1,096.56	1,054.15	42.41	25.856	
6,100.00	6,070.60	6,069.52	6,068.44	22.58	20.81	94.08	326.88	922.89	1,101.96	1,058.81	43.16	25.534	
6,200.00	6,170.14	6,171.51	6,170.43	22.97	21.17	94.48	327.58	922.96	1,106.44	1,062.54	43.89	25.208	
6,300.00	6,269.83	6,274.97	6,273.89	23.35	21.53	94.82	327.90	922.50	1,109.66	1,065.04	44.62	24.868	
6,400.00	6,369.65	6,369.74	6,368.66	23.71	21.86	95.10	328.02	922.29	1,112.32	1,067.01	45.31	24.548	
6,500.00	6,469.55	6,469.11	6,468.02	24.07	22.20	95.31	327.67	922.32	1,114.46	1,068.45	46.01	24.221	
6,600.00	6,569.52	6,573.35	6,572.26	24.43	22.56	95.44	327.46	922.12	1,115.55	1,068.83	46.72	23.876	
6,698.49	6,668.00	6,676.36	6,675.26	24.77	22.91	95.52	326.58	921.44	1,115.39	1,067.97	47.42	23.523	
6,700.00	6,669.51	6,677.93	6,676.84	24.77	22.91	95.52	326.56	921.42	1,115.37	1,067.95	47.43	23.518	
6,800.00	6,769.51	6,773.67	6,772.57	25.11	23.24	95.56	325.96	920.66	1,114.65	1,066.55	48.10	23.175	
6,900.00	6,869.51	6,876.21	6,875.11	25.45	23.59	95.57	325.79	920.32	1,114.34	1,065.54	48.79	22.838	
7,000.00	6,969.51	6,973.75	6,972.65	25.80	23.93	95.59	325.48	919.64	1,113.68	1,064.20	49.47	22.511	
7,100.00	7,069.51	7,072.86	7,071.75	26.14	24.27	95.63	324.65	919.26	1,113.38	1,063.22	50.16	22.197	
7,200.00	7,169.51	7,172.52	7,171.41	26.48	24.61	95.67	324.00	918.87	1,113.05	1,062.21	50.85	21.891	
7,266.01	7,235.53	7,235.24	7,234.13	26.71	24.83	95.70	323.45	918.70	1,112.94	1,061.65	51.29	21.700	
7,300.00	7,269.51	7,267.18	7,266.07	26.82	24.94	95.71	323.11	918.70	1,112.97	1,061.46	51.51	21.605	
7,400.00	7,369.51	7,377.00	7,375.88	27.17	25.32	95.79	321.63	918.38	1,112.83	1,060.58	52.24	21.302	
7,500.00	7,469.51	7,474.77	7,473.62	27.51	25.65	95.90	319.63	917.59	1,112.23	1,059.31	52.92	21.016	
7,600.00	7,569.51	7,572.99	7,571.81	27.85	25.99	96.03	317.15	916.93	1,111.83	1,058.22	53.61	20.741	
7,700.00	7,669.51	7,672.77	7,671.56	28.20	26.34	96.17	314.49	916.33	1,111.51	1,057.22	54.30	20.471	
7,800.00	7,769.51	7,772.37	7,771.10	28.54	26.68	96.32	311.56	915.69	1,111.19	1,056.21	54.99	20.209	
7,900.00	7,869.51	7,870.50	7,869.21	28.89	27.02	96.46	309.00	915.28	1,111.06	1,055.39	55.67	19.958	
8,000.00	7,969.51	7,973.15	7,971.82	29.24	27.38	96.59	306.53	914.78	1,110.85	1,054.48	56.37	19.705	
8,100.00	8,069.51	8,073.28	8,071.92	29.58	27.72	96.72	304.06	914.07	1,110.44	1,053.37	57.07	19.458	
8,200.00	8,169.51	8,170.97	8,169.57	29.93	28.06	96.85	301.54	913.58	1,110.24	1,052.48	57.75	19.224	
8,300.00	8,269.51	8,270.23	8,268.76	30.27	28.41	97.04	297.81	913.02	1,110.14	1,051.69	58.44	18.995	
8,400.00	8,369.51	8,370.01	8,368.47	30.62	28.75	97.25	293.89	912.50	1,110.11	1,050.97	59.14	18.771	
8,451.69	8,421.20	8,421.89	8,420.31	30.80	28.94	97.35	291.98	912.23	1,110.09	1,050.59	59.50	18.657	
8,500.00	8,469.51	8,466.73	8,465.13	30.97	29.09	97.42	290.57	912.12	1,110.16	1,050.34	59.82	18.558	
8,600.00	8,569.51	8,562.55	8,560.91	31.32	29.43	97.54	288.12	912.27	1,110.65	1,050.15	60.50	18.358	
8,700.00	8,669.51	8,667.23	8,665.54	31.66	29.79	97.71	284.83	912.43	1,111.22	1,050.01	61.22	18.152	
8,800.00	8,769.51	8,758.77	8,757.04	32.01	30.11	97.86	281.87	912.39	1,111.64	1,049.76	61.88	17.965	
8,900.00	8,869.51	8,886.03	8,884.19	32.36	30.56	98.12	276.91	912.10	1,112.09	1,049.41	62.68	17.741	
8,980.92	8,950.43	8,950.91	8,949.03	32.64	30.79	98.24	274.55	911.32	1,111.54	1,048.36	63.19	17.591	
9,000.00	8,969.51	8,966.44	8,964.54	32.71	30.84	98.27	274.00	911.27	1,111.58	1,048.27	63.31	17.558	
9,100.00	9,069.51	9,064.47	9,062.51	33.06	31.18	98.45	270.44	911.25	1,112.08	1,048.09	64.00	17.377	
9,200.00	9,169.51	9,176.57	9,174.52	33.40	31.58	98.68	266.04	910.61	1,112.11	1,047.37	64.75	17.177	
9,300.00	9,269.51	9,286.10	9,284.02	33.75	31.96	98.78	264.41	908.98	1,110.85	1,045.37	65.48	16.965	
9,400.00	9,369.51	9,383.23	9,381.11	34.10	32.30	98.92	261.94	907.67	1,109.89	1,043.72	66.17	16.773	



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
9,500.00	9,469.51	9,496.62	9,494.41	34.45	32.70	99.10	258.73	904.75	1,107.75	1,040.84	66.91	16.555	
9,600.00	9,569.51	9,579.82	9,577.55	34.80	32.99	99.23	256.59	902.75	1,105.84	1,038.28	67.56	16.369	
9,632.85	9,602.36	9,603.24	9,600.96	34.92	33.07	99.26	255.93	902.54	1,105.70	1,037.95	67.75	16.320	
9,700.00	9,669.51	9,679.22	9,676.92	35.15	33.34	99.37	253.89	902.46	1,105.98	1,037.73	68.26	16.203	
9,800.00	9,769.51	9,785.61	9,783.26	35.50	33.71	99.48	252.14	899.98	1,103.90	1,034.92	68.98	15.863	
9,900.00	9,869.51	9,875.67	9,873.06	35.85	33.78	99.80	246.14	897.98	1,102.84	1,033.44	69.39	15.892	
9,915.96	9,885.47	9,886.80	9,884.07	35.91	33.78	99.89	244.58	897.68	1,102.80	1,033.35	69.45	15.879	
10,000.00	9,969.51	9,937.44	9,933.95	36.20	33.79	100.34	235.92	896.88	1,104.05	1,034.35	69.70	15.839	
10,100.00	10,069.51	10,015.54	10,009.94	36.55	33.80	101.25	217.97	896.97	1,108.51	1,038.51	70.00	15.836 SF	
10,200.00	10,169.51	10,095.09	10,085.05	36.90	33.83	102.58	191.88	896.30	1,114.81	1,044.53	70.28	15.863	
10,300.00	10,269.51	10,172.61	10,155.34	37.25	33.87	104.22	159.35	894.55	1,123.22	1,052.70	70.52	15.928	
10,400.00	10,369.51	10,224.00	10,199.65	37.60	33.90	105.53	133.40	892.96	1,135.24	1,064.68	70.56	16.089	
10,500.00	10,469.51	10,271.39	10,237.68	37.95	33.95	106.92	105.21	891.54	1,152.46	1,082.00	70.45	16.358	
10,600.00	10,569.51	10,308.18	10,264.29	38.31	33.99	108.17	79.89	890.03	1,175.33	1,105.22	70.11	16.764	
10,700.00	10,669.51	10,333.70	10,280.99	38.66	34.03	109.11	60.63	888.82	1,204.30	1,134.79	69.51	17.326	
10,800.00	10,769.51	10,350.00	10,290.93	39.01	34.06	109.73	47.74	888.15	1,239.57	1,170.90	68.67	18.052	
10,900.00	10,869.51	10,369.58	10,302.15	39.36	34.09	110.49	31.71	887.58	1,280.85	1,213.09	67.75	18.904	
11,000.00	10,969.51	10,381.00	10,308.35	39.71	34.11	110.94	22.11	887.42	1,327.78	1,261.09	66.69	19.910	
11,100.00	11,069.51	10,397.61	10,316.88	40.06	34.15	111.60	7.87	887.36	1,379.81	1,314.15	65.66	21.014	
11,200.00	11,169.51	10,413.00	10,324.25	40.41	34.18	112.22	-5.65	887.48	1,436.51	1,371.88	64.63	22.227	
11,300.00	11,269.51	10,423.51	10,329.01	40.77	34.20	112.64	-15.01	887.62	1,497.33	1,433.75	63.58	23.550	
11,400.00	11,369.51	10,438.00	10,335.29	41.12	34.23	113.23	-28.07	887.85	1,561.80	1,499.16	62.64	24.935	
11,500.00	11,469.51	10,450.30	10,340.36	41.47	34.27	113.72	-39.27	888.09	1,629.51	1,567.77	61.74	26.395	
11,600.00	11,569.51	10,469.00	10,347.70	41.82	34.31	114.48	-56.47	888.57	1,700.15	1,639.16	60.98	27.879	
11,700.00	11,669.51	10,469.00	10,347.70	42.18	34.31	114.48	-56.47	888.57	1,773.30	1,713.18	60.11	29.500	
11,800.00	11,769.51	10,491.26	10,355.87	42.53	34.37	115.37	-77.16	889.13	1,848.64	1,789.08	59.56	31.040	
11,900.00	11,869.51	10,501.00	10,359.27	42.88	34.40	115.76	-86.29	889.32	1,925.99	1,867.05	58.95	32.672	
11,902.93	11,872.44	10,501.00	10,359.27	42.89	34.40	115.76	-86.29	889.32	1,928.29	1,869.36	58.93	32.722	
11,950.00	11,919.46	10,511.43	10,362.79	43.04	34.43	116.10	-96.11	889.50	1,964.59	1,905.88	58.71	33.464	
12,000.00	11,969.05	10,519.13	10,365.31	43.19	34.46	116.18	-103.38	889.62	2,001.77	1,943.35	58.42	34.264	
12,050.00	12,017.90	10,531.00	10,369.06	43.32	34.49	116.25	-114.64	889.79	2,037.31	1,979.15	58.16	35.027	
12,100.00	12,065.65	10,531.00	10,369.06	43.44	34.49	115.69	-114.64	889.79	2,070.99	2,013.20	57.79	35.835	
12,150.00	12,111.93	10,546.30	10,373.63	43.56	34.54	115.58	-129.24	889.97	2,102.56	2,045.01	57.55	36.534	
12,200.00	12,156.38	10,563.00	10,378.26	43.66	34.60	115.39	-145.29	890.11	2,131.95	2,074.63	57.31	37.198	
12,250.00	12,198.67	10,563.00	10,378.26	43.75	34.60	114.34	-145.29	890.11	2,158.87	2,101.93	56.94	37.913	
12,300.00	12,238.48	10,578.66	10,382.24	43.83	34.65	113.80	-160.43	890.17	2,183.25	2,126.55	56.70	38.508	
12,350.00	12,275.51	10,594.00	10,385.81	43.90	34.71	113.10	-175.35	890.14	2,204.96	2,148.51	56.45	39.062	
12,400.00	12,309.46	10,594.00	10,385.81	43.97	34.71	111.54	-175.35	890.14	2,223.91	2,167.80	56.11	39.637	
12,450.00	12,340.09	10,614.06	10,389.96	44.04	34.78	110.76	-194.97	890.00	2,239.86	2,183.96	55.91	40.063	
12,500.00	12,367.17	10,626.00	10,392.16	44.10	34.83	109.46	-206.71	889.89	2,252.91	2,197.24	55.67	40.467	
12,550.00	12,390.47	10,639.24	10,394.35	44.16	34.88	108.08	-219.77	889.72	2,262.91	2,207.45	55.46	40.800	
12,600.00	12,409.84	10,657.00	10,396.90	44.22	34.95	106.80	-237.34	889.38	2,269.82	2,214.53	55.30	41.049	
12,650.00	12,425.11	10,657.00	10,396.90	44.28	34.95	104.46	-237.34	889.38	2,273.62	2,218.55	55.07	41.283	
12,700.00	12,436.18	10,688.00	10,400.22	44.35	35.08	103.67	-268.14	888.49	2,274.23	2,219.22	55.01	41.344	
12,750.00	12,442.96	10,688.00	10,400.22	44.42	35.08	101.08	-268.14	888.49	2,271.61	2,216.75	54.85	41.411	
12,800.00	12,445.39	10,702.65	10,401.28	44.49	35.15	99.22	-282.75	888.00	2,265.90	2,211.11	54.79	41.358	
12,807.86	12,445.38	10,704.44	10,401.39	44.51	35.16	98.89	-284.53	887.94	2,264.72	2,209.94	54.78	41.342	
12,900.00	12,444.58	10,729.73	10,402.43	44.68	35.27	95.18	-309.79	887.17	2,251.87	2,197.14	54.73	41.144	
13,000.00	12,443.72	10,782.00	10,403.17	44.94	35.52	92.48	-362.03	885.62	2,240.51	2,185.71	54.80	40.888	
13,100.00	12,442.86	10,853.77	10,403.36	45.27	35.91	90.86	-433.78	884.01	2,230.75	2,175.79	54.95	40.594	
13,200.00	12,442.00	10,946.36	10,403.53	45.66	36.45	90.52	-526.36	883.61	2,221.93	2,166.72	55.20	40.249	
13,300.00	12,441.14	11,067.60	10,405.80	46.11	37.24	92.05	-647.54	886.44	2,212.81	2,157.21	55.60	39.796	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
13,400.00	12,440.28	11,175.27	10,410.02	46.63	38.03	92.70	-755.03	891.03	2,202.62	2,146.54	56.08	39.276		
13,500.00	12,439.42	11,230.61	10,411.72	47.20	38.46	89.83	-810.27	893.85	2,193.61	2,137.14	56.47	38.843		
13,600.00	12,438.56	11,363.42	10,414.78	47.83	39.56	92.21	-942.87	900.68	2,185.55	2,128.43	57.12	38.265		
13,700.00	12,437.70	11,476.29	10,419.35	48.52	40.57	93.27	-1,055.55	905.28	2,175.33	2,117.57	57.76	37.663		
13,727.27	12,437.47	11,495.63	10,420.09	48.71	40.75	92.76	-1,074.86	906.08	2,172.64	2,114.74	57.91	37.521		
13,800.00	12,436.84	11,547.81	10,421.76	49.25	41.23	91.41	-1,126.97	908.39	2,166.29	2,107.97	58.33	37.140		
13,900.00	12,435.98	11,622.20	10,423.36	50.02	41.96	89.64	-1,201.26	911.76	2,159.71	2,100.72	58.99	36.609		
14,000.00	12,435.11	11,763.85	10,427.40	50.83	43.40	92.72	-1,342.72	917.68	2,153.46	2,093.51	59.95	35.922		
14,100.00	12,434.25	11,842.41	10,429.94	51.66	44.23	91.17	-1,421.15	921.48	2,148.54	2,087.72	60.81	35.330		
14,200.00	12,433.39	11,923.88	10,431.82	52.52	45.12	89.80	-1,502.47	925.98	2,145.94	2,084.15	61.79	34.732		
14,259.68	12,432.87	12,009.94	10,433.83	53.04	46.08	91.73	-1,588.42	929.97	2,144.81	2,082.29	62.52	34.305		
14,300.00	12,432.52	12,041.66	10,434.61	53.40	46.44	91.10	-1,620.10	931.23	2,144.05	2,081.10	62.95	34.059		
14,400.00	12,431.66	12,172.89	10,437.70	54.32	47.96	93.35	-1,751.20	936.17	2,142.40	2,078.19	64.21	33.365		
14,500.00	12,430.80	12,252.75	10,440.01	55.27	48.91	91.88	-1,831.01	937.45	2,139.36	2,074.05	65.31	32.757		
14,600.00	12,429.94	12,389.56	10,442.94	56.25	50.58	94.54	-1,967.77	939.76	2,137.22	2,070.59	66.63	32.076		
14,700.00	12,429.08	12,471.39	10,445.56	57.26	51.60	93.22	-2,049.54	941.12	2,133.81	2,066.00	67.81	31.467		
14,800.00	12,428.22	12,548.07	10,447.50	58.31	52.57	91.53	-2,126.18	942.79	2,131.23	2,062.22	69.01	30.883		
14,900.00	12,427.36	12,693.43	10,451.21	59.38	54.44	94.79	-2,271.47	945.15	2,128.57	2,058.10	70.47	30.203		
15,000.00	12,426.50	12,787.94	10,455.30	60.47	55.67	94.39	-2,365.88	946.20	2,123.97	2,052.18	71.80	29.584		
15,100.00	12,425.64	12,853.00	10,456.22	61.60	56.53	91.87	-2,430.93	946.07	2,121.33	2,048.33	73.00	29.058		
15,200.00	12,424.78	13,002.29	10,459.05	62.74	58.52	95.44	-2,580.14	942.54	2,117.54	2,043.10	74.45	28.444		
15,300.00	12,423.92	13,080.87	10,460.79	63.91	59.58	93.91	-2,658.67	940.32	2,113.41	2,037.71	75.70	27.917		
15,400.00	12,423.06	13,181.43	10,462.22	65.10	60.95	93.96	-2,759.20	938.23	2,110.31	2,033.25	77.05	27.388		
15,500.00	12,422.20	13,277.45	10,464.30	66.31	62.27	93.68	-2,855.16	935.68	2,106.30	2,027.90	78.40	26.865		
15,600.00	12,421.34	13,360.79	10,465.08	67.54	63.43	92.46	-2,938.48	933.91	2,103.57	2,023.83	79.74	26.382		
15,700.00	12,420.48	13,525.09	10,466.84	68.79	65.72	97.24	-3,102.56	925.97	2,099.99	2,018.79	81.20	25.861		
15,800.00	12,419.62	13,705.43	10,474.91	70.06	68.25	103.23	-3,282.17	911.99	2,091.61	2,008.96	82.64	25.310		
15,900.00	12,418.76	13,779.89	10,478.78	71.34	69.31	101.45	-3,356.28	905.94	2,082.78	1,998.87	83.91	24.821		
16,000.00	12,417.90	13,852.91	10,481.82	72.63	70.35	99.51	-3,429.02	900.34	2,075.12	1,989.93	85.19	24.358		
16,100.00	12,417.03	13,917.94	10,483.72	73.94	71.28	96.89	-3,493.86	895.73	2,068.88	1,982.41	86.47	23.926		
16,200.00	12,416.17	13,982.00	10,484.44	75.27	72.21	94.13	-3,557.80	891.89	2,064.59	1,976.83	87.76	23.525		
16,300.00	12,415.31	14,035.25	10,484.16	76.60	72.98	90.47	-3,610.98	889.37	2,062.28	1,973.22	89.05	23.159		
16,400.00	12,414.45	14,140.03	10,482.65	77.95	74.51	90.84	-3,715.71	886.32	2,061.61	1,971.13	90.48	22.784		
16,500.00	12,413.59	14,295.04	10,484.91	79.31	76.80	95.21	-3,870.67	883.61	2,058.54	1,966.41	92.14	22.342		
16,600.00	12,412.73	14,432.41	10,490.62	80.69	78.85	98.15	-4,007.91	882.64	2,053.37	1,959.54	93.82	21.885		
16,700.00	12,411.87	14,544.90	10,497.07	82.07	80.53	99.11	-4,120.22	882.60	2,046.96	1,951.47	95.48	21.435		
16,800.00	12,411.01	14,613.35	10,500.72	83.46	81.56	96.64	-4,188.57	882.79	2,041.06	1,944.04	97.01	21.039		
16,900.00	12,410.15	14,693.00	10,503.49	84.87	82.76	95.04	-4,268.17	882.35	2,036.56	1,938.01	98.55	20.665		
17,000.00	12,409.29	14,778.89	10,505.72	86.28	84.06	93.92	-4,354.03	881.50	2,032.76	1,932.66	100.10	20.308		
17,100.00	12,408.43	14,870.52	10,507.42	87.70	85.45	93.26	-4,445.63	880.54	2,029.63	1,927.97	101.66	19.966		
17,162.84	12,407.89	14,872.00	10,507.44	88.59	85.47	88.34	-4,447.12	880.53	2,028.65	1,926.20	102.46	19.800		
17,200.00	12,407.57	14,872.00	10,507.44	89.13	85.47	85.36	-4,447.12	880.53	2,028.99	1,926.08	102.91	19.716		
17,300.00	12,406.71	14,872.00	10,507.44	90.56	85.47	77.50	-4,447.12	880.53	2,033.29	1,929.22	104.07	19.538		
17,400.00	12,405.85	14,872.00	10,507.44	92.01	85.47	70.08	-4,447.12	880.53	2,042.47	1,937.35	105.12	19.430		
17,500.00	12,404.99	14,872.00	10,507.44	93.46	85.47	63.29	-4,447.12	880.53	2,056.48	1,950.43	106.05	19.391		
17,600.00	12,404.13	14,872.00	10,507.44	94.91	85.47	57.20	-4,447.12	880.53	2,075.22	1,968.36	106.87	19.419		
17,700.00	12,403.27	14,872.00	10,507.44	96.38	85.47	51.84	-4,447.12	880.53	2,098.57	1,991.01	107.56	19.511		
17,800.00	12,402.41	14,872.00	10,507.44	97.85	85.47	47.15	-4,447.12	880.53	2,126.36	2,018.23	108.13	19.665		
17,900.00	12,401.55	14,872.00	10,507.44	99.32	85.47	43.08	-4,447.12	880.53	2,158.44	2,049.85	108.58	19.878		
18,000.00	12,400.68	14,872.00	10,507.44	100.81	85.47	39.54	-4,447.12	880.53	2,194.60	2,085.68	108.93	20.148		
18,100.00	12,399.82	14,872.00	10,507.44	102.29	85.47	36.45	-4,447.12	880.53	2,234.66	2,125.49	109.17	20.470		
18,200.00	12,398.96	14,872.00	10,507.44	103.79	85.47	33.75	-4,447.12	880.53	2,278.41	2,169.10	109.31	20.843		

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)				
18,300.00	12,398.10	14,872.00	10,507.44	105.28	85.47	31.38	-4,447.12	880.53	2,325.63	2,216.26	109.38	21.263
18,400.00	12,397.24	14,872.00	10,507.44	106.78	85.47	29.29	-4,447.12	880.53	2,376.13	2,266.77	109.36	21.727
18,500.00	12,396.38	14,872.00	10,507.44	108.29	85.47	27.44	-4,447.12	880.53	2,429.70	2,320.41	109.29	22.232
18,600.00	12,395.52	14,872.00	10,507.44	109.80	85.47	25.79	-4,447.12	880.53	2,486.14	2,376.98	109.16	22.775
18,700.00	12,394.66	14,872.00	10,507.44	111.32	85.47	24.31	-4,447.12	880.53	2,545.25	2,436.27	108.98	23.354
18,800.00	12,393.80	14,872.00	10,507.44	112.84	85.47	22.98	-4,447.12	880.53	2,606.86	2,498.09	108.77	23.967
18,900.00	12,392.94	14,872.00	10,507.44	114.36	85.47	21.78	-4,447.12	880.53	2,670.80	2,562.27	108.53	24.609
19,000.00	12,392.08	14,872.00	10,507.44	115.89	85.47	20.70	-4,447.12	880.53	2,736.90	2,628.64	108.26	25.281
19,100.00	12,391.22	14,872.00	10,507.44	117.42	85.47	19.71	-4,447.12	880.53	2,805.00	2,697.03	107.97	25.978
19,200.00	12,390.36	14,872.00	10,507.44	118.95	85.47	18.80	-4,447.12	880.53	2,874.97	2,767.30	107.67	26.700
19,300.00	12,389.50	14,872.00	10,507.44	120.49	85.47	17.98	-4,447.12	880.53	2,946.68	2,839.31	107.37	27.445
19,400.00	12,388.64	14,872.00	10,507.44	122.03	85.47	17.21	-4,447.12	880.53	3,019.99	2,912.94	107.05	28.210
19,500.00	12,387.78	14,872.00	10,507.44	123.57	85.47	16.51	-4,447.12	880.53	3,094.80	2,988.06	106.74	28.994
19,600.00	12,386.92	14,872.00	10,507.44	125.12	85.47	15.86	-4,447.12	880.53	3,170.99	3,064.57	106.42	29.796
19,700.00	12,386.06	14,872.00	10,507.44	126.66	85.47	15.26	-4,447.12	880.53	3,248.48	3,142.37	106.11	30.615
19,800.00	12,385.20	14,872.00	10,507.44	128.22	85.47	14.70	-4,447.12	880.53	3,327.17	3,221.37	105.80	31.448
19,900.00	12,384.33	14,872.00	10,507.44	129.77	85.47	14.17	-4,447.12	880.53	3,406.98	3,301.48	105.50	32.295
20,000.00	12,383.47	14,872.00	10,507.44	131.33	85.47	13.68	-4,447.12	880.53	3,487.83	3,382.63	105.20	33.155
20,100.00	12,382.61	14,872.00	10,507.44	132.89	85.47	13.23	-4,447.12	880.53	3,569.64	3,464.74	104.91	34.026
20,200.00	12,381.75	14,872.00	10,507.44	134.45	85.47	12.80	-4,447.12	880.53	3,652.37	3,547.74	104.63	34.908
20,300.00	12,380.89	14,872.00	10,507.44	136.01	85.47	12.39	-4,447.12	880.53	3,735.94	3,631.58	104.35	35.801
20,400.00	12,380.03	14,872.00	10,507.44	137.58	85.47	12.01	-4,447.12	880.53	3,820.29	3,716.21	104.09	36.702
20,500.00	12,379.17	14,872.00	10,507.44	139.15	85.47	11.66	-4,447.12	880.53	3,905.39	3,801.56	103.84	37.611
20,600.00	12,378.31	14,872.00	10,507.44	140.72	85.47	11.32	-4,447.12	880.53	3,991.18	3,887.59	103.59	38.529
20,700.00	12,377.45	14,872.00	10,507.44	142.29	85.47	11.00	-4,447.12	880.53	4,077.62	3,974.26	103.35	39.453
20,800.00	12,376.59	14,872.00	10,507.44	143.86	85.47	10.70	-4,447.12	880.53	4,164.66	4,061.53	103.13	40.384
20,900.00	12,375.73	14,872.00	10,507.44	145.44	85.47	10.41	-4,447.12	880.53	4,252.27	4,149.36	102.91	41.320
21,000.00	12,374.87	14,872.00	10,507.44	147.02	85.47	10.14	-4,447.12	880.53	4,340.42	4,237.72	102.70	42.262
21,100.00	12,374.01	14,872.00	10,507.44	148.59	85.47	9.88	-4,447.12	880.53	4,429.07	4,326.57	102.50	43.209
21,200.00	12,373.15	14,872.00	10,507.44	150.18	85.47	9.63	-4,447.12	880.53	4,518.20	4,415.89	102.31	44.161
21,300.00	12,372.29	14,872.00	10,507.44	151.76	85.47	9.39	-4,447.12	880.53	4,607.77	4,505.64	102.13	45.116
21,400.00	12,371.43	14,872.00	10,507.44	153.34	85.47	9.17	-4,447.12	880.53	4,697.76	4,595.80	101.96	46.075
21,500.00	12,370.57	14,872.00	10,507.44	154.93	85.47	8.95	-4,447.12	880.53	4,788.15	4,686.36	101.79	47.038
21,600.00	12,369.71	14,872.00	10,507.44	156.52	85.47	8.75	-4,447.12	880.53	4,878.92	4,777.28	101.64	48.003
21,700.00	12,368.85	14,872.00	10,507.44	158.11	85.47	8.55	-4,447.12	880.53	4,970.04	4,868.55	101.49	48.971
21,800.00	12,367.98	14,872.00	10,507.44	159.70	85.47	8.36	-4,447.12	880.53	5,061.49	4,960.14	101.35	49.942
21,900.00	12,367.12	14,872.00	10,507.44	161.29	85.47	8.18	-4,447.12	880.53	5,153.27	5,052.05	101.21	50.915
22,000.00	12,366.26	14,872.00	10,507.44	162.88	85.47	8.01	-4,447.12	880.53	5,245.34	5,144.25	101.09	51.889
22,100.00	12,365.40	14,872.00	10,507.44	164.47	85.47	7.84	-4,447.12	880.53	5,337.70	5,236.73	100.97	52.865
22,200.00	12,364.54	14,872.00	10,507.44	166.07	85.47	7.68	-4,447.12	880.53	5,430.33	5,329.47	100.86	53.843
22,300.00	12,363.68	14,872.00	10,507.44	167.67	85.47	7.53	-4,447.12	880.53	5,523.21	5,422.46	100.75	54.822
22,400.00	12,362.82	14,872.00	10,507.44	169.26	85.47	7.38	-4,447.12	880.53	5,616.34	5,515.69	100.65	55.801
22,500.00	12,361.96	14,872.00	10,507.44	170.86	85.47	7.24	-4,447.12	880.53	5,709.71	5,609.15	100.55	56.782
22,565.16	12,361.40	14,872.00	10,507.44	171.78	85.47	7.15	-4,447.12	880.53	5,770.66	5,666.94	103.72	55.638



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	74.26	281.38	998.40	1,037.29				
100.00	100.00	110.68	110.68	0.13	0.15	74.27	281.00	997.83	1,036.71	1,036.43	0.28	3,689.267	
200.00	200.00	209.94	209.93	0.49	0.52	74.29	280.44	996.89	1,035.64	1,034.63	1.01	1,026.189	
300.00	300.00	311.41	311.40	0.85	0.87	74.30	279.88	995.79	1,034.46	1,032.73	1.72	600.292	
400.00	400.00	411.27	411.25	1.21	1.22	74.32	279.30	994.69	1,033.24	1,030.81	2.43	424.900	
500.00	500.00	514.77	514.73	1.57	1.59	74.34	278.48	993.38	1,031.81	1,028.65	3.15	327.223	
600.00	600.00	614.47	614.43	1.93	1.94	74.37	277.55	992.03	1,030.25	1,026.39	3.86	266.807	
700.00	700.00	714.85	714.78	2.29	2.29	74.40	276.62	990.67	1,028.70	1,024.12	4.57	225.004	
800.00	800.00	816.66	816.58	2.64	2.64	74.41	275.92	989.09	1,027.02	1,021.73	5.29	194.244	
900.00	900.00	917.21	917.12	3.00	3.00	74.42	275.33	987.37	1,025.21	1,019.21	6.00	170.916	
1,000.00	1,000.00	1,015.49	1,015.39	3.36	3.34	74.42	274.78	985.76	1,023.48	1,016.78	6.70	152.724	
1,100.00	1,100.00	1,113.98	1,113.86	3.72	3.69	74.44	274.15	984.32	1,021.90	1,014.50	7.41	137.995	
1,200.00	1,200.00	1,212.76	1,212.63	4.08	4.03	74.45	273.47	983.05	1,020.47	1,012.36	8.11	125.825	
1,300.00	1,300.00	1,313.12	1,312.98	4.44	4.38	74.47	272.77	981.76	1,019.05	1,010.23	8.82	115.530	
1,400.00	1,400.00	1,411.23	1,411.08	4.79	4.73	74.48	272.24	980.56	1,017.73	1,008.20	9.52	106.868	
1,500.00	1,500.00	1,509.85	1,509.69	5.15	5.07	74.48	271.90	979.46	1,016.56	1,006.33	10.23	99.394	
1,600.00	1,600.00	1,608.29	1,608.13	5.51	5.42	74.48	271.79	978.44	1,015.53	1,004.60	10.93	92.903	
1,700.00	1,700.00	1,703.10	1,702.93	5.87	5.75	74.45	272.14	977.68	1,014.86	1,003.24	11.62	87.328	
1,800.00	1,800.00	1,799.63	1,799.46	6.23	6.09	74.40	272.84	977.22	1,014.59	1,002.28	12.32	82.380	
1,853.64	1,853.64	1,852.32	1,852.14	6.42	6.27	74.37	273.29	977.07	1,014.57	1,001.88	12.69	79.940	
1,900.00	1,900.00	1,897.85	1,897.68	6.59	6.43	74.35	273.72	976.96	1,014.59	1,001.57	13.02	77.948	
2,000.00	2,000.00	1,998.23	1,998.05	6.95	6.78	74.29	274.74	976.75	1,014.65	1,000.93	13.72	73.934	
2,100.00	2,100.00	2,094.79	2,094.60	7.30	7.12	74.23	275.74	976.68	1,014.86	1,000.45	14.42	70.390	
2,200.00	2,200.00	2,193.91	2,193.71	7.66	7.46	74.18	276.79	976.83	1,015.30	1,000.18	15.12	67.148	
2,300.00	2,300.00	2,297.85	2,297.65	8.02	7.82	74.14	277.55	976.93	1,015.59	999.75	15.84	64.115	
2,400.00	2,400.00	2,401.31	2,401.12	8.38	8.18	74.13	277.64	976.81	1,015.50	998.94	16.56	61.323	
2,500.00	2,500.00	2,506.71	2,506.51	8.74	8.55	74.17	276.82	976.47	1,014.98	997.69	17.29	58.713	
2,600.00	2,599.99	2,608.31	2,608.10	9.10	8.91	74.29	275.42	975.96	1,014.24	996.24	18.00	56.347	
2,700.00	2,699.96	2,707.23	2,707.00	9.45	9.25	74.52	273.69	975.53	1,013.72	995.01	18.70	54.201	
2,729.87	2,729.81	2,734.29	2,734.06	9.56	9.35	74.62	273.14	975.50	1,013.67	994.77	18.90	53.623 CC	
2,800.00	2,799.86	2,798.93	2,798.69	9.81	9.57	74.87	271.78	975.67	1,013.93	994.55	19.38	52.319 ES	
2,900.00	2,899.68	2,887.46	2,887.18	10.17	9.88	75.34	269.70	976.70	1,015.36	995.32	20.04	50.657	
3,000.00	2,999.37	2,974.50	2,974.18	10.53	10.18	75.92	267.59	978.76	1,018.30	997.60	20.70	49.192	
3,100.00	3,098.90	3,061.78	3,061.38	10.89	10.49	76.58	266.11	981.76	1,022.85	1,001.49	21.36	47.895	
3,200.00	3,198.26	3,153.76	3,153.29	11.25	10.81	77.25	266.05	985.53	1,028.84	1,006.81	22.03	46.701	
3,300.00	3,297.40	3,253.68	3,253.12	11.61	11.15	77.96	266.91	989.73	1,035.60	1,012.86	22.74	45.539	
3,300.10	3,297.50	3,253.79	3,253.22	11.61	11.16	77.96	266.91	989.73	1,035.61	1,012.87	22.74	45.538	
3,400.00	3,396.43	3,355.16	3,354.51	11.98	11.51	78.68	268.42	993.51	1,042.36	1,018.90	23.46	44.427	
3,500.00	3,495.46	3,465.33	3,464.61	12.36	11.89	79.36	270.32	997.12	1,048.92	1,024.69	24.22	43.302	
3,600.00	3,594.48	3,574.43	3,573.67	12.73	12.27	80.00	272.49	999.15	1,054.24	1,029.26	24.98	42.202	
3,700.00	3,693.51	3,677.58	3,676.80	13.11	12.63	80.67	273.87	1,000.60	1,059.17	1,033.45	25.72	41.186	
3,800.00	3,792.54	3,776.83	3,776.03	13.49	12.98	81.36	274.70	1,001.87	1,064.03	1,037.59	26.44	40.245	
3,900.00	3,891.56	3,873.99	3,873.19	13.87	13.32	82.05	275.49	1,003.21	1,069.15	1,042.00	27.16	39.372	
4,000.00	3,990.59	3,968.84	3,968.02	14.26	13.65	82.75	276.01	1,004.80	1,074.69	1,046.83	27.86	38.570	
4,100.00	4,089.62	4,064.12	4,063.27	14.64	13.98	83.47	276.17	1,006.85	1,080.80	1,052.23	28.57	37.824	
4,200.00	4,188.64	4,161.21	4,160.33	15.03	14.32	84.19	276.08	1,009.21	1,087.33	1,058.03	29.29	37.118	
4,300.00	4,287.67	4,261.80	4,260.90	15.42	14.67	84.92	275.58	1,011.72	1,094.06	1,064.03	30.03	36.433	
4,400.00	4,386.70	4,361.73	4,360.79	15.81	15.02	85.67	274.54	1,014.03	1,100.74	1,069.98	30.76	35.782	
4,500.00	4,485.72	4,460.35	4,459.39	16.20	15.37	86.42	273.53	1,016.30	1,107.61	1,076.12	31.49	35.173	
4,600.00	4,584.75	4,559.08	4,558.08	16.60	15.71	87.15	272.46	1,018.59	1,114.66	1,082.44	32.22	34.595	
4,700.00	4,683.78	4,657.83	4,656.80	16.99	16.06	87.88	271.41	1,020.87	1,121.90	1,088.95	32.95	34.048	
4,800.00	4,782.80	4,756.65	4,755.58	17.39	16.40	88.59	270.41	1,023.15	1,129.30	1,095.62	33.68	33.530	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,900.00	4,881.83	4,855.82	4,854.72	17.78	16.75	89.29	269.34	1,025.43	1,136.87	1,102.45	34.41	33.036	
5,000.00	4,980.85	4,953.92	4,952.80	18.18	17.09	89.99	268.34	1,027.65	1,144.58	1,109.43	35.14	32.570	
5,100.00	5,079.88	5,076.27	5,075.12	18.58	17.52	90.65	267.89	1,029.76	1,152.01	1,116.04	35.97	32.028	
5,200.00	5,178.91	5,196.90	5,195.72	18.98	17.94	91.16	270.24	1,028.84	1,156.94	1,120.16	36.78	31.456	
5,300.00	5,277.93	5,299.21	5,297.97	19.38	18.29	91.65	273.01	1,027.13	1,161.08	1,123.56	37.53	30.941	
5,400.00	5,376.96	5,398.00	5,396.71	19.78	18.64	92.14	275.70	1,025.40	1,165.23	1,126.97	38.26	30.456	
5,500.00	5,475.99	5,497.70	5,496.36	20.18	18.99	92.62	278.40	1,023.67	1,169.48	1,130.48	39.00	29.989	
5,600.00	5,575.01	5,599.68	5,598.29	20.58	19.34	93.10	281.21	1,021.78	1,173.69	1,133.95	39.74	29.533	
5,700.00	5,674.04	5,695.93	5,694.49	20.98	19.68	93.58	283.85	1,020.02	1,178.01	1,137.54	40.47	29.110	
5,800.00	5,773.07	5,794.76	5,793.26	21.39	20.02	94.06	286.55	1,018.38	1,182.57	1,141.37	41.20	28.702	
5,898.39	5,870.50	5,889.17	5,887.63	21.78	20.35	94.53	289.09	1,016.95	1,187.29	1,145.37	41.92	28.326	
5,900.00	5,872.09	5,890.72	5,889.18	21.79	20.36	94.53	289.13	1,016.93	1,187.37	1,145.44	41.93	28.320	
6,000.00	5,971.24	5,989.70	5,988.12	22.19	20.70	94.97	291.67	1,015.61	1,192.01	1,149.35	42.66	27.943	
6,100.00	6,070.60	6,079.35	6,077.75	22.58	21.02	95.38	293.10	1,014.67	1,196.26	1,152.91	43.35	27.595	
6,200.00	6,170.14	6,175.10	6,173.50	22.97	21.35	95.78	293.15	1,014.21	1,200.42	1,156.36	44.06	27.247	
6,300.00	6,269.83	6,275.06	6,273.46	23.35	21.70	96.11	293.06	1,013.80	1,203.87	1,159.09	44.77	26.888	
6,400.00	6,369.65	6,375.76	6,374.16	23.71	22.05	96.37	292.96	1,013.32	1,206.42	1,160.93	45.49	26.522	
6,500.00	6,469.55	6,475.60	6,474.00	24.07	22.40	96.56	292.70	1,012.78	1,208.08	1,161.89	46.19	26.153	
6,600.00	6,569.52	6,575.35	6,573.75	24.43	22.75	96.69	292.32	1,012.26	1,208.90	1,162.01	46.89	25.780	
6,698.49	6,668.00	6,674.38	6,672.77	24.77	23.09	96.75	291.89	1,011.72	1,208.85	1,161.27	47.58	25.407	
6,700.00	6,669.51	6,675.90	6,674.30	24.77	23.10	96.75	291.88	1,011.71	1,208.84	1,161.25	47.59	25.401	
6,800.00	6,769.51	6,774.29	6,772.67	25.11	23.44	96.78	291.31	1,011.17	1,208.36	1,160.09	48.28	25.030	
6,900.00	6,869.51	6,874.08	6,872.46	25.45	23.79	96.84	290.16	1,010.68	1,208.01	1,159.04	48.97	24.670	
7,000.00	6,969.51	6,983.57	6,981.92	25.80	24.17	96.95	287.77	1,009.65	1,207.34	1,157.65	49.70	24.295	
7,100.00	7,069.51	7,088.07	7,086.31	26.14	24.53	97.16	283.59	1,007.67	1,205.96	1,155.56	50.40	23.926	
7,200.00	7,169.51	7,187.55	7,185.70	26.48	24.88	97.36	279.62	1,005.66	1,204.45	1,153.36	51.09	23.573	
7,300.00	7,269.51	7,289.73	7,287.78	26.82	25.24	97.56	275.73	1,003.56	1,202.91	1,151.12	51.80	23.224	
7,400.00	7,369.51	7,389.36	7,387.31	27.17	25.58	97.75	271.93	1,001.41	1,201.27	1,148.79	52.49	22.887	
7,500.00	7,469.51	7,485.52	7,483.37	27.51	25.92	97.95	268.07	999.46	1,199.82	1,146.65	53.17	22.566	
7,600.00	7,569.51	7,583.32	7,581.05	27.85	26.26	98.18	263.46	997.65	1,198.64	1,144.79	53.85	22.257	
7,700.00	7,669.51	7,683.89	7,681.49	28.20	26.61	98.42	258.66	995.84	1,197.55	1,143.00	54.55	21.953	
7,800.00	7,769.51	7,783.26	7,780.74	28.54	26.96	98.64	254.12	994.05	1,196.45	1,141.21	55.24	21.658	
7,900.00	7,869.51	7,881.09	7,878.47	28.89	27.30	98.86	249.90	992.44	1,195.47	1,139.54	55.93	21.374	
8,000.00	7,969.51	7,980.60	7,977.88	29.24	27.65	99.06	245.79	990.95	1,194.64	1,138.01	56.62	21.098	
8,100.00	8,069.51	8,078.72	8,075.90	29.58	28.00	99.27	241.65	989.53	1,193.88	1,136.57	57.31	20.831	
8,200.00	8,169.51	8,176.46	8,173.52	29.93	28.34	99.50	237.03	988.21	1,193.32	1,135.32	58.00	20.575	
8,300.00	8,269.51	8,276.29	8,273.22	30.27	28.69	99.74	232.15	986.95	1,192.89	1,134.19	58.70	20.323	
8,400.00	8,369.51	8,373.60	8,370.40	30.62	28.97	99.98	227.31	985.74	1,192.52	1,133.20	59.32	20.103	
8,470.23	8,439.74	8,441.53	8,438.24	30.86	29.02	100.15	223.81	985.07	1,192.47	1,132.86	59.61	20.005	
8,500.00	8,469.51	8,470.69	8,467.37	30.97	29.02	100.22	222.44	984.83	1,192.48	1,132.76	59.71	19.970	
8,600.00	8,569.51	8,566.13	8,562.72	31.32	29.02	100.41	218.38	984.31	1,192.70	1,132.64	60.06	19.857	
8,700.00	8,669.51	8,670.27	8,666.76	31.66	29.04	100.63	213.77	983.89	1,193.12	1,132.70	60.43	19.745	
8,800.00	8,769.51	8,777.36	8,773.33	32.01	29.06	101.11	204.12	981.73	1,192.83	1,132.04	60.79	19.621	
8,900.00	8,869.51	8,907.76	8,898.64	32.36	29.10	102.80	170.02	973.10	1,191.83	1,130.66	61.16	19.486	
9,000.00	8,969.51	8,989.37	8,972.56	32.71	29.14	104.46	136.83	963.69	1,190.12	1,128.58	61.54	19.339	
9,012.61	8,982.12	8,998.56	8,980.62	32.75	29.15	104.67	132.57	962.57	1,190.10	1,128.51	61.58	19.325	
9,100.00	9,069.51	9,070.58	9,041.49	33.06	29.21	106.52	95.39	952.90	1,191.07	1,129.17	61.90	19.241	
9,200.00	9,169.51	9,172.11	9,117.79	33.40	29.34	109.72	31.28	934.56	1,194.34	1,132.05	62.29	19.173	
9,300.00	9,269.51	9,225.96	9,152.67	33.75	29.43	111.69	-7.72	921.89	1,200.78	1,138.28	62.50	19.213	
9,400.00	9,369.51	9,247.57	9,165.45	34.10	29.48	112.52	-24.41	916.89	1,213.88	1,151.49	62.39	19.455	
9,500.00	9,469.51	9,265.00	9,175.35	34.45	29.52	113.20	-38.28	913.25	1,234.10	1,172.05	62.05	19.889	
9,600.00	9,569.51	9,280.92	9,184.04	34.80	29.56	113.82	-51.28	910.25	1,261.20	1,199.69	61.51	20.504	

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



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
9,700.00	9,669.51	9,297.00	9,192.43	35.15	29.60	114.46	-64.73	907.54	1,294.86	1,234.05	60.82	21.291	
9,800.00	9,769.51	9,315.36	9,201.46	35.50	29.65	115.19	-80.44	904.61	1,334.53	1,274.49	60.04	22.228	
9,900.00	9,869.51	9,328.00	9,207.31	35.85	29.68	115.71	-91.46	902.56	1,379.67	1,320.54	59.13	23.332	
10,000.00	9,969.51	9,345.82	9,214.97	36.20	29.74	116.44	-107.28	899.66	1,429.89	1,371.65	58.24	24.552	
10,100.00	10,069.51	9,360.00	9,220.53	36.55	29.78	117.03	-120.11	897.33	1,484.84	1,427.54	57.30	25.912	
10,200.00	10,169.51	9,360.00	9,220.53	36.90	29.78	117.03	-120.11	897.33	1,544.10	1,487.85	56.25	27.451	
10,300.00	10,269.51	9,377.75	9,226.78	37.25	29.84	117.77	-136.45	894.35	1,607.04	1,551.64	55.40	29.006	
10,400.00	10,369.51	9,391.00	9,230.92	37.60	29.88	118.33	-148.83	892.03	1,673.51	1,618.95	54.57	30.670	
10,500.00	10,469.51	9,391.00	9,230.92	37.95	29.88	118.33	-148.83	892.03	1,743.00	1,689.33	53.68	32.473	
10,600.00	10,569.51	9,391.00	9,230.92	38.31	29.88	118.33	-148.83	892.03	1,815.35	1,762.49	52.86	34.344	
10,700.00	10,669.51	9,406.75	9,235.26	38.66	29.94	119.01	-163.69	889.16	1,889.92	1,837.68	52.24	36.177	
10,800.00	10,769.51	9,423.00	9,239.04	39.01	30.00	119.70	-179.18	886.02	1,966.92	1,915.23	51.69	38.051	
10,900.00	10,869.51	9,423.00	9,239.04	39.36	30.00	119.70	-179.18	886.02	2,045.62	1,994.53	51.09	40.037	
11,000.00	10,969.51	9,423.00	9,239.04	39.71	30.00	119.70	-179.18	886.02	2,126.11	2,075.54	50.57	42.045	
11,100.00	11,069.51	9,423.00	9,239.04	40.06	30.00	119.70	-179.18	886.02	2,208.20	2,158.09	50.11	44.066	
11,200.00	11,169.51	9,423.00	9,239.04	40.41	30.00	119.70	-179.18	886.02	2,291.71	2,241.99	49.72	46.093	
11,300.00	11,269.51	9,423.00	9,239.04	40.77	30.00	119.70	-179.18	886.02	2,376.50	2,327.11	49.39	48.120	
11,400.00	11,369.51	9,423.00	9,239.04	41.12	30.00	119.70	-179.18	886.02	2,462.42	2,413.31	49.11	50.139	
11,500.00	11,469.51	9,423.00	9,239.04	41.47	30.00	119.70	-179.18	886.02	2,549.38	2,500.49	48.89	52.147	
11,600.00	11,569.51	9,437.37	9,241.77	41.82	30.06	120.32	-192.99	883.17	2,636.93	2,588.14	48.79	54.049	
11,700.00	11,669.51	9,439.34	9,242.10	42.18	30.07	120.41	-194.90	882.77	2,725.55	2,676.89	48.66	56.008	
11,800.00	11,769.51	9,454.00	9,244.16	42.53	30.12	121.04	-209.11	879.85	2,815.18	2,766.54	48.64	57.878	
11,900.00	11,869.51	9,454.00	9,244.16	42.88	30.12	121.04	-209.11	879.85	2,905.17	2,856.59	48.58	59.799	
11,902.93	11,872.44	9,454.00	9,244.16	42.89	30.12	121.04	-209.11	879.85	2,907.81	2,859.23	48.58	59.855	
11,950.00	11,919.46	9,454.00	9,244.16	43.04	30.12	120.97	-209.11	879.85	2,949.81	2,901.26	48.55	60.755	
12,000.00	11,969.05	9,454.00	9,244.16	43.19	30.12	120.76	-209.11	879.85	2,993.09	2,944.59	48.51	61.707	
12,050.00	12,017.90	9,454.00	9,244.16	43.32	30.12	120.39	-209.11	879.85	3,034.75	2,986.31	48.45	62.643	
12,100.00	12,065.65	9,454.00	9,244.16	43.44	30.12	119.87	-209.11	879.85	3,074.54	3,026.17	48.37	63.558	
12,150.00	12,111.93	9,454.00	9,244.16	43.56	30.12	119.20	-209.11	879.85	3,112.24	3,063.95	48.29	64.447	
12,200.00	12,156.38	9,454.00	9,244.16	43.66	30.12	118.36	-209.11	879.85	3,147.63	3,099.43	48.20	65.302	
12,250.00	12,198.67	9,454.00	9,244.16	43.75	30.12	117.36	-209.11	879.85	3,180.54	3,132.43	48.10	66.118	
12,300.00	12,238.48	9,454.00	9,244.16	43.83	30.12	116.20	-209.11	879.85	3,210.78	3,162.78	48.00	66.889	
12,350.00	12,275.51	9,454.00	9,244.16	43.90	30.12	114.85	-209.11	879.85	3,238.21	3,190.31	47.90	67.608	
12,400.00	12,309.46	9,469.96	9,245.73	43.97	30.19	114.13	-224.67	876.63	3,262.36	3,214.52	47.84	68.198	
12,450.00	12,340.09	9,485.00	9,246.62	44.04	30.25	113.21	-239.35	873.53	3,283.71	3,235.94	47.77	68.742	
12,500.00	12,367.17	9,485.00	9,246.62	44.10	30.25	111.38	-239.35	873.53	3,301.57	3,253.91	47.66	69.267	
12,550.00	12,390.47	9,485.00	9,246.62	44.16	30.25	109.36	-239.35	873.53	3,316.18	3,268.61	47.57	69.713	
12,600.00	12,409.84	9,485.00	9,246.62	44.22	30.25	107.16	-239.35	873.53	3,327.44	3,279.96	47.48	70.075	
12,650.00	12,425.11	9,485.00	9,246.62	44.28	30.25	104.79	-239.35	873.53	3,335.32	3,287.91	47.41	70.346	
12,700.00	12,436.18	9,523.48	9,247.79	44.35	30.43	104.47	-277.07	865.98	3,339.07	3,291.65	47.41	70.424	
12,750.00	12,442.96	9,537.91	9,248.04	44.42	30.50	102.69	-291.26	863.37	3,339.45	3,292.07	47.39	70.475	
12,800.00	12,445.39	9,579.00	9,248.17	44.49	30.70	102.41	-331.79	856.65	3,336.52	3,289.12	47.40	70.384	
12,807.86	12,445.38	9,579.00	9,248.17	44.51	30.70	101.98	-331.79	856.65	3,335.62	3,288.22	47.40	70.371	
12,900.00	12,444.58	9,579.00	9,248.17	44.68	30.70	96.71	-331.79	856.65	3,325.81	3,278.43	47.38	70.192	
13,000.00	12,443.72	9,650.46	9,247.86	44.94	31.08	95.19	-402.68	847.79	3,316.90	3,269.39	47.51	69.808	
13,100.00	12,442.86	9,721.46	9,247.99	45.27	31.50	93.53	-473.51	842.95	3,309.06	3,261.34	47.72	69.342	
13,200.00	12,442.00	9,787.15	9,248.61	45.66	31.91	91.42	-539.19	842.08	3,302.10	3,254.12	47.99	68.810	
13,300.00	12,441.14	9,837.81	9,248.68	46.11	32.24	88.16	-589.84	842.54	3,296.52	3,248.23	48.29	68.265	
13,400.00	12,440.28	9,884.68	9,248.17	46.63	32.57	84.50	-636.70	843.41	3,292.48	3,243.84	48.64	67.693	
13,500.00	12,439.42	9,928.01	9,247.00	47.20	32.89	80.47	-680.01	844.45	3,290.15	3,241.11	49.04	67.097	
13,600.00	12,438.56	10,047.22	9,241.96	47.83	33.81	81.77	-799.08	845.58	3,289.15	3,239.59	49.56	66.365	
13,700.00	12,437.70	10,095.70	9,239.63	48.52	34.22	77.88	-847.49	844.27	3,287.92	3,237.89	50.03	65.713	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
13,722.36	12,437.51	10,105.82	9,239.03	48.68	34.31	76.95	-857.59	843.95	3,287.88	3,237.74	50.14	65.568			
13,727.27	12,437.47	10,108.04	9,238.89	48.71	34.33	76.74	-859.80	843.88	3,287.88	3,237.71	50.17	65.536			
13,800.00	12,436.84	10,467.33	9,231.56	49.25	37.75	98.77	-1,218.54	830.59	3,285.71	3,234.47	51.24	64.120			
13,900.00	12,435.98	10,535.58	9,232.86	50.02	38.47	96.53	-1,286.71	827.36	3,278.79	3,226.96	51.83	63.266			
14,000.00	12,435.11	10,616.42	9,233.96	50.83	39.34	95.14	-1,367.47	824.20	3,273.37	3,220.86	52.51	62.336			
14,100.00	12,434.25	10,701.37	9,235.13	51.66	40.29	93.97	-1,452.41	822.92	3,269.21	3,215.93	53.28	61.357			
14,200.00	12,433.39	10,757.28	9,235.71	52.52	40.93	90.27	-1,508.31	823.33	3,266.63	3,212.61	54.02	60.475			
14,259.68	12,432.87	10,805.00	9,235.53	53.04	41.48	89.25	-1,556.02	823.79	3,266.21	3,211.68	54.53	59.899			
14,282.50	12,432.67	10,805.00	9,235.53	53.25	41.48	87.31	-1,556.02	823.79	3,266.13	3,211.46	54.67	59.744			
14,300.00	12,432.52	10,805.00	9,235.53	53.40	41.48	85.83	-1,556.02	823.79	3,266.17	3,211.40	54.78	59.626			
14,400.00	12,431.66	10,870.71	9,234.40	54.32	42.25	82.94	-1,621.72	824.48	3,267.15	3,211.51	55.64	58.723			
14,500.00	12,430.80	11,038.75	9,232.55	55.27	44.29	88.69	-1,789.73	826.40	3,267.36	3,210.48	56.88	57.446			
14,546.63	12,430.40	11,069.14	9,232.41	55.72	44.67	87.32	-1,820.11	826.77	3,267.24	3,209.94	57.30	57.019			
14,600.00	12,429.94	11,102.54	9,232.07	56.25	45.08	85.63	-1,853.50	827.19	3,267.40	3,209.61	57.78	56.545			
14,700.00	12,429.08	11,162.00	9,230.95	57.26	45.83	82.23	-1,912.94	828.26	3,268.63	3,209.92	58.71	55.678			
14,800.00	12,428.22	14,800.00	9,228.23	58.31	93.40	88.76	-2,090.41	831.04	3,269.64	3,188.38	81.26	40.239			
14,900.00	12,427.36	11,455.67	9,228.24	59.38	49.66	90.12	-2,206.55	830.01	3,268.41	3,207.13	61.28	53.339			
15,000.00	12,426.50	15,000.00	9,227.55	60.47	97.84	93.72	-2,348.88	826.84	3,267.75	3,183.19	84.56	38.645			
15,100.00	12,425.64	11,737.44	9,230.23	61.60	53.48	97.08	-2,488.18	823.08	3,264.16	3,200.26	63.90	51.085			
15,200.00	12,424.78	11,805.03	9,231.20	62.74	54.42	94.35	-2,555.73	820.99	3,261.14	3,196.21	64.93	50.225			
15,300.00	12,423.92	11,872.16	9,231.57	63.91	55.36	91.53	-2,622.84	819.27	3,259.12	3,193.14	65.98	49.393			
15,400.00	12,423.06	11,937.00	9,231.24	65.10	56.26	88.49	-2,687.66	817.54	3,258.13	3,191.08	67.04	48.599			
15,443.11	12,422.69	11,958.52	9,230.94	65.62	56.57	86.62	-2,709.17	816.97	3,258.07	3,190.60	67.48	48.284			
15,500.00	12,422.20	11,985.38	9,230.36	66.31	56.95	84.02	-2,736.01	816.38	3,258.47	3,190.42	68.05	47.884			
15,600.00	12,421.34	12,166.82	9,227.19	67.54	59.53	91.07	-2,917.37	812.90	3,259.20	3,189.57	69.63	46.808			
15,700.00	12,420.48	12,236.50	9,226.82	68.79	60.54	88.42	-2,987.03	811.21	3,258.28	3,187.53	70.75	46.051			
15,733.45	12,420.19	12,256.53	9,226.57	69.21	60.83	87.24	-3,007.05	810.74	3,258.21	3,187.09	71.12	45.813			
15,800.00	12,419.62	12,296.39	9,225.83	70.06	61.40	84.89	-3,046.89	809.85	3,258.48	3,186.64	71.85	45.352			
15,900.00	12,418.76	12,398.21	9,223.65	71.34	62.88	85.04	-3,148.68	809.09	3,259.47	3,186.32	73.15	44.559			
16,000.00	12,417.90	12,473.38	9,222.48	72.63	63.99	82.88	-3,223.82	811.00	3,260.56	3,186.18	74.37	43.841			
16,100.00	12,417.03	12,547.85	9,221.02	73.94	65.09	80.72	-3,298.18	814.67	3,262.50	3,186.87	75.62	43.142			
16,200.00	12,416.17	12,618.12	9,219.32	75.27	66.13	78.25	-3,368.29	819.10	3,265.20	3,188.33	76.87	42.476			
16,300.00	12,415.31	12,676.81	9,217.23	76.60	67.00	74.91	-3,426.82	822.93	3,269.05	3,190.98	78.07	41.873			
16,400.00	12,414.45	12,730.39	9,214.60	77.95	67.80	71.29	-3,480.22	826.43	3,274.23	3,194.98	79.25	41.317			
16,500.00	12,413.59	12,917.85	9,205.45	79.31	70.61	78.44	-3,667.10	837.32	3,279.63	3,198.48	81.14	40.417			
16,600.00	12,412.73	12,974.00	9,203.18	80.69	71.45	74.94	-3,723.15	839.79	3,283.52	3,201.17	82.35	39.874			
16,700.00	12,411.87	13,040.17	9,199.74	82.07	72.46	72.35	-3,789.17	842.84	3,288.60	3,204.99	83.61	39.334			
16,800.00	12,411.01	13,137.78	9,193.89	83.46	73.94	72.24	-3,886.49	847.30	3,294.44	3,209.40	85.04	38.739			
16,900.00	12,410.15	16,900.00	9,180.91	84.87	131.56	87.00	-4,169.16	849.98	3,299.67	3,185.98	113.69	29.023			
17,000.00	12,409.29	13,538.14	9,180.44	86.28	80.06	88.44	-4,286.44	850.08	3,299.04	3,210.16	88.88	37.118			
17,038.87	12,408.96	13,563.61	9,180.26	86.83	80.45	87.32	-4,311.90	850.15	3,298.96	3,209.58	89.38	36.911			
17,100.00	12,408.43	13,602.76	9,179.74	87.70	81.05	85.49	-4,351.06	850.20	3,299.16	3,209.01	90.15	36.596			
17,200.00	12,407.57	13,664.60	9,178.35	89.13	82.01	82.31	-4,412.88	850.13	3,300.39	3,208.98	91.41	36.107			
17,300.00	12,406.71	13,730.00	9,176.04	90.56	83.02	79.47	-4,478.24	850.17	3,302.83	3,210.15	92.68	35.637			
17,400.00	12,405.85	14,040.59	9,176.94	92.01	87.85	96.99	-4,788.72	851.85	3,299.97	3,204.77	95.19	34.666			
17,500.00	12,404.99	14,107.00	9,178.53	93.46	88.88	94.20	-4,855.11	852.38	3,296.86	3,200.34	96.53	34.155			
17,600.00	12,404.13	14,176.36	9,179.58	94.91	89.97	91.63	-4,924.45	853.29	3,294.73	3,196.85	97.88	33.661			
17,700.00	12,403.27	14,240.27	9,179.85	96.38	90.97	88.61	-4,988.35	854.47	3,293.72	3,194.52	99.21	33.200			
17,743.15	12,402.90	14,268.12	9,179.78	97.01	91.41	87.33	-5,016.19	855.12	3,293.62	3,193.84	99.79	33.007			
17,800.00	12,402.41	14,296.00	9,179.60	97.85	91.85	84.92	-5,044.06	855.85	3,293.82	3,193.32	100.50	32.774			
17,900.00	12,401.55	14,360.85	9,178.52	99.32	92.87	82.02	-5,108.88	857.58	3,295.10	3,193.26	101.84	32.356			
18,000.00	12,400.68	14,565.16	9,177.60	100.81	96.09	90.68	-5,313.13	861.67	3,294.49	3,190.56	103.93	31.700			

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
18,100.00	12,399.82	14,660.02	9,178.33	102.29	97.59	90.25	-5,407.94	864.51	3,293.40	3,187.93	105.46	31.228		
18,200.00	12,398.96	14,813.75	9,180.92	103.79	100.02	94.68	-5,561.61	865.55	3,290.60	3,183.34	107.26	30.679		
18,300.00	12,398.10	14,877.47	9,181.48	105.28	101.03	91.69	-5,625.32	864.78	3,288.49	3,179.90	108.60	30.281		
18,400.00	12,397.24	14,956.00	9,181.57	106.78	102.28	89.91	-5,703.85	864.30	3,287.27	3,177.26	110.01	29.882		
18,466.04	12,396.67	14,991.23	9,181.37	107.78	102.83	87.35	-5,739.08	864.30	3,286.98	3,176.11	110.86	29.648		
18,500.00	12,396.38	15,010.30	9,181.15	108.29	103.14	86.12	-5,758.16	864.34	3,287.05	3,175.75	111.31	29.531		
18,600.00	12,395.52	15,181.45	9,180.10	109.80	105.85	92.03	-5,929.28	863.40	3,286.67	3,173.50	113.17	29.043		
18,700.00	12,394.66	15,239.00	9,180.01	111.32	106.77	88.49	-5,986.82	862.33	3,285.53	3,171.05	114.47	28.701		
18,756.48	12,394.18	15,281.72	9,179.57	112.17	107.44	87.34	-6,029.53	861.58	3,285.35	3,170.09	115.26	28.504		
18,800.00	12,393.80	15,310.19	9,179.13	112.84	107.90	86.08	-6,058.00	861.15	3,285.45	3,169.61	115.84	28.362		
18,900.00	12,392.94	15,372.69	9,177.72	114.36	108.89	82.95	-6,120.48	860.42	3,286.46	3,169.30	117.16	28.050		
19,000.00	12,392.08	19,000.00	9,174.39	115.89	166.63	84.86	-6,243.62	859.13	3,287.97	3,141.20	146.76	22.403		
19,100.00	12,391.22	15,592.25	9,172.82	117.42	112.39	84.53	-6,339.95	857.50	3,288.27	3,168.00	120.28	27.340		
19,200.00	12,390.36	15,648.02	9,171.12	118.95	113.27	80.84	-6,395.69	856.71	3,289.97	3,168.41	121.56	27.065		
19,300.00	12,389.50	15,837.93	9,165.60	120.49	116.30	88.35	-6,585.46	853.68	3,292.03	3,168.53	123.50	26.657		
19,400.00	12,388.64	19,400.00	9,164.53	122.03	173.30	90.51	-6,710.84	851.70	3,291.65	3,138.92	152.73	21.552		
19,500.00	12,387.78	16,088.00	9,165.82	123.57	120.31	92.62	-6,835.48	850.31	3,289.28	3,162.50	126.78	25.945		
19,600.00	12,386.92	16,139.72	9,165.80	125.12	121.14	88.48	-6,887.20	849.75	3,288.12	3,160.03	128.09	25.670		
19,629.27	12,386.66	16,154.85	9,165.66	125.57	121.38	87.27	-6,902.33	849.62	3,288.05	3,159.58	128.47	25.593		
19,700.00	12,386.06	16,182.00	9,165.24	126.66	121.81	83.55	-6,929.47	849.41	3,288.45	3,159.11	129.34	25.425		
19,800.00	12,385.20	16,249.19	9,163.45	128.22	122.89	80.77	-6,996.64	849.10	3,290.09	3,159.38	130.70	25.172		
19,900.00	12,384.33	16,414.93	9,159.58	129.77	125.55	86.33	-7,162.31	847.80	3,291.14	3,158.57	132.58	24.824		
20,000.00	12,383.47	16,683.67	9,163.12	131.33	129.86	100.90	-7,430.78	838.56	3,287.00	3,152.28	134.72	24.399		
20,100.00	12,382.61	16,750.00	9,164.76	132.89	130.92	98.07	-7,497.03	835.85	3,282.77	3,146.67	136.10	24.121		
20,200.00	12,381.75	16,826.26	9,166.01	134.45	132.15	96.03	-7,573.22	832.92	3,279.42	3,141.91	137.50	23.850		
20,300.00	12,380.89	16,900.06	9,166.75	136.01	133.33	93.75	-7,646.97	830.17	3,276.74	3,137.85	138.90	23.591		
20,400.00	12,380.03	16,969.04	9,166.88	137.58	134.44	90.99	-7,715.91	827.84	3,274.94	3,134.67	140.27	23.347		
20,500.00	12,379.17	17,033.00	9,166.33	139.15	135.47	87.76	-7,779.83	825.64	3,274.17	3,132.56	141.61	23.121		
20,522.40	12,378.98	17,047.34	9,166.11	139.50	135.70	87.03	-7,794.16	825.15	3,274.15	3,132.24	141.91	23.072		
20,600.00	12,378.31	17,092.25	9,165.14	140.72	136.42	84.09	-7,839.04	823.77	3,274.57	3,131.65	142.92	22.912		
20,700.00	12,377.45	17,268.22	9,162.79	142.29	139.25	90.92	-8,014.93	819.97	3,274.54	3,129.76	144.78	22.618		
20,800.00	12,376.59	17,341.09	9,162.56	143.86	140.43	88.45	-8,087.80	819.00	3,273.64	3,127.44	146.19	22.392		
20,841.49	12,376.23	17,368.08	9,162.30	144.52	140.87	87.13	-8,114.79	818.67	3,273.54	3,126.78	146.76	22.305		
20,900.00	12,375.73	17,410.00	9,161.64	145.44	141.54	85.62	-8,156.70	818.16	3,273.73	3,126.15	147.58	22.182		
21,000.00	12,374.87	17,609.62	9,160.59	147.02	144.78	94.70	-8,356.30	817.58	3,273.74	3,124.12	149.62	21.881		
21,100.00	12,374.01	17,679.58	9,161.39	148.59	145.91	91.96	-8,426.25	817.64	3,271.66	3,120.60	151.07	21.657		
21,200.00	12,373.15	17,759.79	9,161.74	150.18	147.21	90.16	-8,506.46	818.11	3,270.38	3,117.81	152.56	21.436		
21,293.10	12,372.35	17,819.75	9,161.73	151.65	148.19	87.12	-8,566.41	819.01	3,269.82	3,115.92	153.89	21.247		
21,300.00	12,372.29	17,823.46	9,161.71	151.76	148.25	86.83	-8,570.12	819.07	3,269.82	3,115.83	153.99	21.234		
21,400.00	12,371.43	18,058.89	9,164.35	153.34	152.08	99.07	-8,805.42	824.11	3,268.59	3,112.28	156.31	20.910		
21,500.00	12,370.57	18,140.10	9,167.06	154.93	153.40	97.38	-8,886.57	825.91	3,264.80	3,106.92	157.89	20.678		
21,600.00	12,369.71	18,203.26	9,168.57	156.52	154.43	94.07	-8,949.70	826.85	3,261.82	3,102.47	159.35	20.469		
21,700.00	12,368.85	18,259.00	9,169.14	158.11	155.34	90.06	-9,005.43	827.69	3,260.15	3,099.39	160.76	20.279		
21,766.86	12,368.27	18,293.77	9,169.08	159.17	155.90	87.16	-9,040.20	828.23	3,259.82	3,098.14	161.68	20.162		
21,800.00	12,367.98	18,310.87	9,168.92	159.70	156.18	85.71	-9,057.29	828.48	3,259.90	3,097.78	162.13	20.107		
21,900.00	12,367.12	18,466.20	9,167.44	161.29	158.71	90.71	-9,212.60	830.69	3,260.48	3,096.44	164.05	19.875		
22,000.00	12,366.26	18,542.00	9,167.65	162.88	159.95	88.53	-9,288.38	832.22	3,259.64	3,094.08	165.56	19.688		
22,033.64	12,365.97	18,560.59	9,167.61	163.42	160.25	87.17	-9,306.96	832.69	3,259.56	3,093.52	166.04	19.632		
22,100.00	12,365.40	18,596.36	9,167.30	164.47	160.84	84.43	-9,342.71	833.74	3,259.87	3,092.92	166.96	19.525		
22,200.00	12,364.54	18,636.00	9,166.59	166.07	161.48	79.12	-9,382.33	835.09	3,261.58	3,093.35	168.23	19.388		
22,300.00	12,363.68	18,704.01	9,164.41	167.67	162.59	76.40	-9,450.25	837.49	3,264.58	3,094.91	169.67	19.240		
22,400.00	12,362.82	18,887.90	9,160.06	169.26	165.60	83.74	-9,633.94	844.59	3,266.39	3,094.42	171.96	18.995		

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



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance					Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)		Separation Factor			
22,500.00	12,361.96	18,948.31	9,158.97	170.86	166.59	80.32	-9,694.27	847.30	3,268.13	3,094.73	173.40	18.847				
22,565.16	12,361.40	18,982.66	9,157.98	171.78	167.15	77.71	-9,728.56	849.09	3,270.01	3,096.06	173.94	18.799 SF				



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
0.00	0.00	2.10	-2.10	0.00	0.00	74.69	281.57	1,028.35	1,066.20						
100.00	100.00	102.10	97.90	0.13	0.05	74.69	281.57	1,028.35	1,066.20	1,066.04	0.16	6,498.620			
200.00	200.00	202.10	197.90	0.49	0.18	74.69	281.57	1,028.35	1,066.20	1,065.61	0.60	1,781.933			
300.00	300.00	302.10	297.90	0.85	0.32	74.69	281.57	1,028.35	1,066.20	1,065.17	1.03	1,032.527			
400.00	400.00	402.10	397.90	1.21	0.45	74.69	281.57	1,028.35	1,066.20	1,064.74	1.47	726.846			
500.00	500.00	502.10	497.90	1.57	0.58	74.69	281.57	1,028.35	1,066.20	1,064.30	1.90	560.816			
600.00	600.00	602.10	597.90	1.93	0.71	74.69	281.57	1,028.35	1,066.20	1,063.87	2.34	456.532			
700.00	700.00	702.10	697.90	2.29	0.84	74.69	281.57	1,028.35	1,066.20	1,063.43	2.77	384.951			
800.00	800.00	802.10	797.90	2.64	0.97	74.69	281.57	1,028.35	1,066.20	1,063.00	3.20	332.774			
900.00	900.00	902.10	897.90	3.00	1.11	74.69	281.57	1,028.35	1,066.20	1,062.57	3.64	293.053			
1,000.00	1,000.00	1,002.10	997.90	3.36	1.24	74.69	281.57	1,028.35	1,066.20	1,062.13	4.07	261.803			
1,100.00	1,100.00	1,102.10	1,097.90	3.72	1.37	74.69	281.57	1,028.35	1,066.20	1,061.70	4.51	236.576			
1,200.00	1,200.00	1,202.10	1,197.90	4.08	1.50	74.69	281.57	1,028.35	1,066.20	1,061.26	4.94	215.783			
1,300.00	1,300.00	1,302.10	1,297.90	4.44	1.63	74.69	281.57	1,028.35	1,066.20	1,060.83	5.38	198.350			
1,400.00	1,400.00	1,402.10	1,397.90	4.79	1.77	74.69	281.57	1,028.35	1,066.20	1,060.39	5.81	183.523			
1,500.00	1,500.00	1,502.10	1,497.90	5.15	1.90	74.69	281.57	1,028.35	1,066.20	1,059.96	6.24	170.759			
1,600.00	1,600.00	1,602.10	1,597.90	5.51	2.03	74.69	281.57	1,028.35	1,066.20	1,059.53	6.68	159.655			
1,700.00	1,700.00	1,702.10	1,697.90	5.87	2.16	74.69	281.57	1,028.35	1,066.20	1,059.09	7.11	149.906			
1,800.00	1,800.00	1,802.10	1,797.90	6.23	2.29	74.69	281.57	1,028.35	1,066.20	1,058.66	7.55	141.280			
1,900.00	1,900.00	1,902.10	1,897.90	6.59	2.42	74.69	281.57	1,028.35	1,066.20	1,058.22	7.98	133.592			
2,000.00	2,000.00	2,002.10	1,997.90	6.95	2.56	74.69	281.57	1,028.35	1,066.20	1,057.79	8.42	126.698			
2,100.00	2,100.00	2,102.10	2,097.90	7.30	2.69	74.69	281.57	1,028.35	1,066.20	1,057.35	8.85	120.481			
2,200.00	2,200.00	2,202.10	2,197.90	7.66	2.82	74.69	281.57	1,028.35	1,066.20	1,056.92	9.28	114.845			
2,300.00	2,300.00	2,302.10	2,297.90	8.02	2.95	74.69	281.57	1,028.35	1,066.20	1,056.49	9.72	109.713			
2,400.00	2,400.00	2,402.10	2,397.90	8.38	3.08	74.69	281.57	1,028.35	1,066.20	1,056.05	10.15	105.020			
2,500.00	2,500.00	2,502.10	2,497.90	8.74	3.22	74.69	281.57	1,028.35	1,066.20	1,055.62	10.59	100.712 CC			
2,600.00	2,599.99	2,602.11	2,597.89	9.10	3.35	74.73	281.57	1,028.35	1,066.33	1,055.31	11.02	96.771			
2,700.00	2,699.96	2,702.14	2,697.86	9.45	3.48	74.87	281.57	1,028.35	1,066.71	1,055.26	11.45	93.172 ES			
2,800.00	2,799.86	2,802.24	2,797.76	9.81	3.61	75.10	281.57	1,028.35	1,067.35	1,055.48	11.88	89.872			
2,900.00	2,899.68	2,902.42	2,897.58	10.17	3.74	75.43	281.57	1,028.35	1,068.28	1,055.98	12.30	86.836			
3,000.00	2,999.37	3,002.73	2,997.27	10.53	3.88	75.84	281.57	1,028.35	1,069.53	1,056.80	12.73	84.036			
3,100.00	3,098.90	3,103.20	3,096.80	10.89	4.01	76.35	281.57	1,028.35	1,071.13	1,057.98	13.15	81.447			
3,200.00	3,198.26	3,203.84	3,196.16	11.25	4.14	76.95	281.57	1,028.35	1,073.12	1,059.55	13.58	79.048			
3,300.00	3,297.40	3,304.70	3,295.30	11.61	4.27	77.63	281.57	1,028.35	1,075.57	1,061.57	14.00	76.820			
3,300.10	3,297.50	3,304.60	3,295.40	11.61	4.27	77.63	281.57	1,028.35	1,075.57	1,061.57	14.00	76.819			
3,400.00	3,396.43	3,405.67	3,394.33	11.98	4.41	78.35	281.57	1,028.35	1,078.34	1,063.91	14.43	74.735			
3,500.00	3,495.46	3,506.64	3,493.36	12.36	4.54	79.08	281.57	1,028.35	1,081.29	1,066.43	14.86	72.767			
3,600.00	3,594.48	3,607.62	3,592.38	12.73	4.67	79.79	281.57	1,028.35	1,084.41	1,069.11	15.29	70.911			
3,700.00	3,693.51	3,708.59	3,691.41	13.11	4.81	80.51	281.57	1,028.35	1,087.69	1,071.97	15.73	69.157			
3,800.00	3,792.54	3,809.56	3,790.44	13.49	4.94	81.22	281.57	1,028.35	1,091.15	1,074.98	16.17	67.499			
3,900.00	3,891.56	3,899.46	3,889.46	13.87	5.04	81.92	281.57	1,028.35	1,094.77	1,078.18	16.59	65.990			
4,000.00	3,990.59	3,988.49	3,988.49	14.26	5.18	82.62	281.57	1,028.35	1,098.55	1,081.52	17.03	64.507			
4,100.00	4,089.62	4,087.52	4,087.52	14.64	5.31	83.32	281.57	1,028.35	1,102.50	1,085.03	17.47	63.102			
4,200.00	4,188.64	4,186.54	4,186.54	15.03	5.44	84.01	281.57	1,028.35	1,106.61	1,088.69	17.92	61.769			
4,300.00	4,287.67	4,285.57	4,285.57	15.42	5.57	84.69	281.57	1,028.35	1,110.88	1,092.52	18.36	60.503			
4,400.00	4,386.70	4,384.60	4,384.60	15.81	5.70	85.37	281.57	1,028.35	1,115.30	1,096.49	18.81	59.302			
4,500.00	4,485.72	4,483.62	4,483.62	16.20	5.83	86.04	281.57	1,028.35	1,119.88	1,100.63	19.26	58.159			
4,600.00	4,584.75	4,582.65	4,582.65	16.60	5.96	86.71	281.57	1,028.35	1,124.62	1,104.91	19.71	57.072			
4,700.00	4,683.78	4,681.68	4,681.68	16.99	6.09	87.37	281.57	1,028.35	1,129.50	1,109.35	20.16	56.037			
4,800.00	4,782.80	4,780.70	4,780.70	17.39	6.22	88.03	281.57	1,028.35	1,134.54	1,113.93	20.61	55.052			
4,900.00	4,881.83	4,879.73	4,879.73	17.78	6.35	88.68	281.57	1,028.35	1,139.72	1,118.66	21.06	54.112			
5,000.00	4,980.85	4,978.75	4,978.75	18.18	6.48	89.33	281.57	1,028.35	1,145.05	1,123.53	21.52	53.215			

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore +N/-S (usft)	Centre +E/-W (usft)						
5,100.00	5,079.88	5,077.78	5,077.78	18.58	6.61	89.97	281.57	1,028.35	1,150.52	1,128.55	21.97	52.359		
5,200.00	5,178.91	5,176.81	5,176.81	18.98	6.74	90.60	281.57	1,028.35	1,156.14	1,133.71	22.43	51.542		
5,300.00	5,277.93	5,275.83	5,275.83	19.38	6.87	91.23	281.57	1,028.35	1,161.89	1,139.00	22.89	50.761		
5,400.00	5,376.96	5,374.86	5,374.86	19.78	7.00	91.85	281.57	1,028.35	1,167.78	1,144.43	23.35	50.013		
5,500.00	5,475.99	5,473.89	5,473.89	20.18	7.13	92.46	281.57	1,028.35	1,173.81	1,150.00	23.81	49.299		
5,600.00	5,575.01	5,572.91	5,572.91	20.58	7.26	93.07	281.57	1,028.35	1,179.97	1,155.70	24.27	48.614		
5,700.00	5,674.04	5,671.94	5,671.94	20.98	7.39	93.67	281.57	1,028.35	1,186.26	1,161.53	24.74	47.958		
5,800.00	5,773.07	5,770.97	5,770.97	21.39	7.53	94.26	281.57	1,028.35	1,192.68	1,167.48	25.20	47.330		
5,898.39	5,870.50	5,868.40	5,868.40	21.78	7.65	94.84	281.57	1,028.35	1,199.13	1,173.47	25.66	46.737		
5,900.00	5,872.09	5,869.99	5,869.99	21.79	7.66	94.85	281.57	1,028.35	1,199.23	1,173.57	25.66	46.727		
6,000.00	5,971.24	5,969.14	5,969.14	22.19	7.79	95.40	281.57	1,028.35	1,205.47	1,179.35	26.13	46.138		
6,100.00	6,070.60	6,068.50	6,068.50	22.58	7.92	95.86	281.57	1,028.35	1,210.97	1,184.39	26.58	45.551		
6,200.00	6,170.14	6,168.04	6,168.04	22.97	8.05	96.26	281.57	1,028.35	1,215.69	1,188.65	27.04	44.965		
6,300.00	6,269.83	6,267.73	6,267.73	23.35	8.18	96.58	281.57	1,028.35	1,219.59	1,192.11	27.48	44.378		
6,400.00	6,369.65	6,367.55	6,367.55	23.71	8.31	96.82	281.57	1,028.35	1,222.65	1,194.73	27.92	43.790		
6,500.00	6,469.55	6,467.45	6,467.45	24.07	8.44	97.00	281.57	1,028.35	1,224.84	1,196.49	28.35	43.200		
6,600.00	6,569.52	6,567.42	6,567.42	24.43	8.58	97.10	281.57	1,028.35	1,226.16	1,197.38	28.78	42.608		
6,698.49	6,668.00	6,665.90	6,665.90	24.77	8.71	97.14	281.57	1,028.35	1,226.59	1,197.40	29.19	42.021		
6,700.00	6,669.51	6,667.41	6,667.41	24.77	8.71	97.14	281.57	1,028.35	1,226.59	1,197.40	29.20	42.012		
6,800.00	6,769.51	6,767.41	6,767.41	25.11	8.84	97.14	281.57	1,028.35	1,226.59	1,196.98	29.61	41.424		
6,900.00	6,869.51	6,867.41	6,867.41	25.45	8.97	97.14	281.57	1,028.35	1,226.59	1,196.57	30.03	40.851		
7,000.00	6,969.51	6,967.41	6,967.41	25.80	9.10	97.14	281.57	1,028.35	1,226.59	1,196.15	30.44	40.293		
7,100.00	7,069.51	7,067.41	7,067.41	26.14	9.23	97.14	281.57	1,028.35	1,226.59	1,195.73	30.86	39.749		
7,200.00	7,169.51	7,167.41	7,167.41	26.48	9.37	97.14	281.57	1,028.35	1,226.59	1,195.32	31.27	39.220		
7,300.00	7,269.51	7,267.41	7,267.41	26.82	9.50	97.14	281.57	1,028.35	1,226.59	1,194.90	31.69	38.704		
7,400.00	7,369.51	7,367.41	7,367.41	27.17	9.63	97.14	281.57	1,028.35	1,226.59	1,194.48	32.11	38.201		
7,500.00	7,469.51	7,467.41	7,467.41	27.51	9.76	97.14	281.57	1,028.35	1,226.59	1,194.07	32.53	37.711		
7,600.00	7,569.51	7,567.41	7,567.41	27.85	9.89	97.14	281.57	1,028.35	1,226.59	1,193.65	32.94	37.233		
7,700.00	7,669.51	7,667.41	7,667.41	28.20	10.03	97.14	281.57	1,028.35	1,226.59	1,193.23	33.36	36.766		
7,800.00	7,769.51	7,767.41	7,767.41	28.54	10.16	97.14	281.57	1,028.35	1,226.59	1,192.81	33.78	36.311		
7,900.00	7,869.51	7,867.41	7,867.41	28.89	10.29	97.14	281.57	1,028.35	1,226.59	1,192.39	34.20	35.866		
8,000.00	7,969.51	7,967.41	7,967.41	29.24	10.42	97.14	281.57	1,028.35	1,226.59	1,191.97	34.62	35.432		
8,100.00	8,069.51	8,067.41	8,067.41	29.58	10.55	97.14	281.57	1,028.35	1,226.59	1,191.55	35.04	35.008		
8,200.00	8,169.51	8,167.41	8,167.41	29.93	10.68	97.14	281.57	1,028.35	1,226.59	1,191.13	35.46	34.594		
8,300.00	8,269.51	8,267.41	8,267.41	30.27	10.82	97.14	281.57	1,028.35	1,226.59	1,190.72	35.88	34.189		
8,400.00	8,369.51	8,367.41	8,367.41	30.62	10.95	97.14	281.57	1,028.35	1,226.59	1,190.30	36.30	33.794		
8,500.00	8,469.51	8,467.41	8,467.41	30.97	11.08	97.14	281.57	1,028.35	1,226.59	1,189.88	36.72	33.407		
8,600.00	8,569.51	8,567.41	8,567.41	31.32	11.21	97.14	281.57	1,028.35	1,226.59	1,189.45	37.14	33.029		
8,700.00	8,669.51	8,667.41	8,667.41	31.66	11.34	97.14	281.57	1,028.35	1,226.59	1,189.03	37.56	32.659		
8,706.06	8,675.57	8,673.47	8,673.47	31.68	11.35	97.14	281.57	1,028.35	1,226.59	1,189.01	37.58	32.637		
8,800.00	8,769.51	8,737.83	8,737.82	32.01	11.42	97.15	281.27	1,028.54	1,227.17	1,189.24	37.93	32.353		
8,900.00	8,869.51	8,775.00	8,774.88	32.36	11.42	97.25	278.83	1,030.05	1,232.10	1,193.83	38.26	32.200		
9,000.00	8,969.51	8,813.07	8,812.47	32.71	11.43	97.47	273.81	1,033.17	1,242.06	1,203.44	38.62	32.163		
9,100.00	9,069.51	8,850.00	8,848.38	33.06	11.44	97.77	266.52	1,037.70	1,257.04	1,218.06	38.98	32.244		
9,200.00	9,169.51	8,883.91	8,880.69	33.40	11.45	98.14	257.77	1,043.14	1,277.01	1,237.66	39.36	32.448		
9,300.00	9,269.51	8,916.89	8,911.32	33.75	11.47	98.57	247.41	1,049.57	1,301.92	1,262.20	39.72	32.777		
9,400.00	9,369.51	8,950.00	8,941.16	34.10	11.49	99.06	235.23	1,057.14	1,331.68	1,291.61	40.07	33.233		
9,500.00	9,469.51	8,975.00	8,962.99	34.45	11.50	99.48	224.89	1,063.56	1,366.16	1,325.78	40.39	33.825		
9,600.00	9,569.51	9,000.00	8,984.15	34.80	11.52	99.92	213.59	1,070.58	1,405.22	1,364.54	40.68	34.546		
9,700.00	9,669.51	9,025.00	9,004.59	35.15	11.54	100.40	201.36	1,078.18	1,448.62	1,407.69	40.94	35.388		
9,800.00	9,769.51	9,050.00	9,024.24	35.50	11.56	100.91	188.24	1,086.33	1,496.15	1,454.98	41.16	36.345		
9,900.00	9,869.51	9,075.00	9,043.06	35.85	11.59	101.44	174.27	1,095.01	1,547.57	1,506.20	41.37	37.408		

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



MS Energy Services
Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
10,000.00	9,969.51	9,100.00	9,061.00	36.20	11.61	101.98	159.48	1,104.20	1,602.68	1,561.13	41.56	38.567	
10,100.00	10,069.51	9,112.68	9,069.74	36.55	11.62	102.27	151.68	1,109.05	1,661.10	1,619.42	41.68	39.852	
10,200.00	10,169.51	9,125.00	9,078.00	36.90	11.64	102.55	143.91	1,113.87	1,722.71	1,680.92	41.79	41.222	
10,300.00	10,269.51	9,150.00	9,094.01	37.25	11.66	103.14	127.61	1,124.00	1,787.17	1,745.23	41.94	42.611	
10,400.00	10,369.51	9,159.85	9,100.04	37.60	11.67	103.37	121.00	1,128.11	1,854.25	1,812.22	42.03	44.118	
10,500.00	10,469.51	9,175.00	9,109.00	37.95	11.69	103.73	110.62	1,134.55	1,923.78	1,881.64	42.14	45.655	
10,600.00	10,569.51	9,185.72	9,115.10	38.31	11.70	103.99	103.13	1,139.20	1,995.51	1,953.28	42.23	47.252	
10,700.00	10,669.51	9,200.00	9,122.92	38.66	11.72	104.33	92.98	1,145.51	2,069.28	2,026.93	42.35	48.866	
10,800.00	10,769.51	9,200.00	9,122.92	39.01	11.72	104.33	92.98	1,145.51	2,144.95	2,102.54	42.41	50.577	
10,900.00	10,869.51	9,225.00	9,135.74	39.36	11.75	104.95	74.75	1,156.83	2,222.22	2,179.63	42.59	52.180	
11,000.00	10,969.51	9,225.00	9,135.74	39.71	11.75	104.95	74.75	1,156.83	2,301.00	2,258.33	42.67	53.922	
11,100.00	11,069.51	9,236.09	9,141.06	40.06	11.76	105.22	66.49	1,161.97	2,381.23	2,338.41	42.82	55.615	
11,200.00	11,169.51	9,250.00	9,147.42	40.41	11.78	105.56	55.98	1,168.50	2,462.79	2,419.81	42.98	57.296	
11,300.00	11,269.51	9,250.00	9,147.42	40.77	11.78	105.56	55.98	1,168.50	2,545.45	2,502.34	43.11	59.047	
11,400.00	11,369.51	9,250.00	9,147.42	41.12	11.78	105.56	55.98	1,168.50	2,629.32	2,586.07	43.25	60.795	
11,500.00	11,469.51	9,275.00	9,157.92	41.47	11.81	106.18	36.71	1,180.47	2,714.09	2,670.59	43.50	62.399	
11,600.00	11,569.51	9,275.00	9,157.92	41.82	11.81	106.18	36.71	1,180.47	2,799.67	2,756.01	43.66	64.122	
11,700.00	11,669.51	9,275.00	9,157.92	42.18	11.81	106.18	36.71	1,180.47	2,886.19	2,842.34	43.84	65.832	
11,800.00	11,769.51	9,275.00	9,157.92	42.53	11.81	106.18	36.71	1,180.47	2,973.55	2,929.51	44.04	67.527	
11,900.00	11,869.51	9,289.17	9,163.34	42.88	11.83	106.53	25.59	1,187.38	3,061.45	3,017.16	44.29	69.124	
11,902.93	11,872.44	9,289.32	9,163.40	42.89	11.83	106.53	25.47	1,187.45	3,064.03	3,019.74	44.30	69.172	
11,950.00	11,919.46	9,300.00	9,167.22	43.04	11.84	106.73	17.00	1,192.71	3,105.30	3,060.88	44.43	69.900	
12,000.00	11,969.05	9,300.00	9,167.22	43.19	11.84	106.51	17.00	1,192.71	3,147.98	3,103.46	44.52	70.714	
12,050.00	12,017.90	9,300.00	9,167.22	43.32	11.84	106.13	17.00	1,192.71	3,189.32	3,144.71	44.60	71.503	
12,100.00	12,065.65	9,300.00	9,167.22	43.44	11.84	105.60	17.00	1,192.71	3,229.08	3,184.39	44.69	72.262	
12,150.00	12,111.93	9,300.00	9,167.22	43.56	11.84	104.92	17.00	1,192.71	3,267.01	3,222.24	44.76	72.986	
12,200.00	12,156.38	9,311.69	9,171.15	43.66	11.85	104.40	7.64	1,198.52	3,302.73	3,257.87	44.87	73.611	
12,250.00	12,198.67	9,325.00	9,175.29	43.75	11.87	103.77	-3.10	1,205.20	3,336.30	3,291.33	44.97	74.190	
12,300.00	12,238.48	9,325.00	9,175.29	43.83	11.87	102.65	-3.10	1,205.20	3,367.20	3,322.18	45.03	74.781	
12,350.00	12,275.51	9,325.00	9,175.29	43.90	11.87	101.39	-3.10	1,205.20	3,395.50	3,350.42	45.08	75.320	
12,400.00	12,309.46	9,325.00	9,175.29	43.97	11.87	99.97	-3.10	1,205.20	3,421.04	3,375.91	45.13	75.801	
12,450.00	12,340.09	9,337.98	9,178.99	44.04	11.88	98.82	-13.66	1,211.76	3,443.49	3,398.28	45.21	76.161	
12,500.00	12,367.17	9,350.00	9,182.12	44.10	11.90	97.53	-23.52	1,217.89	3,462.98	3,417.69	45.29	76.463	
12,550.00	12,390.47	9,350.00	9,182.12	44.16	11.90	95.75	-23.52	1,217.89	3,479.18	3,433.85	45.34	76.741	
12,600.00	12,409.84	9,350.00	9,182.12	44.22	11.90	93.86	-23.52	1,217.89	3,492.21	3,446.82	45.39	76.944	
12,650.00	12,425.11	9,361.22	9,184.77	44.28	11.91	92.26	-32.78	1,223.64	3,501.84	3,456.37	45.47	77.022	
12,700.00	12,436.18	9,375.00	9,187.68	44.35	11.93	90.70	-44.23	1,230.75	3,508.20	3,462.65	45.55	77.012	
12,750.00	12,442.96	9,375.00	9,187.68	44.42	11.93	88.59	-44.23	1,230.75	3,511.02	3,465.40	45.62	76.963	
12,800.00	12,445.39	9,375.00	9,187.68	44.49	11.93	86.45	-44.23	1,230.75	3,510.50	3,464.81	45.69	76.827	
12,807.86	12,445.38	9,375.00	9,187.68	44.51	11.93	86.11	-44.23	1,230.75	3,510.12	3,464.41	45.71	76.797	
12,900.00	12,444.58	9,400.00	9,191.95	44.68	11.96	83.07	-65.15	1,243.74	3,506.17	3,460.24	45.92	76.347	
13,000.00	12,443.72	9,400.00	9,191.95	44.94	11.96	78.70	-65.15	1,243.74	3,504.14	3,457.97	46.17	75.898	
13,021.18	12,443.54	9,400.00	9,191.95	45.01	11.96	77.78	-65.15	1,243.74	3,504.07	3,457.84	46.23	75.794	
13,100.00	12,442.86	9,413.84	9,193.76	45.27	11.97	74.92	-76.80	1,250.98	3,504.74	3,458.25	46.49	75.382	
13,200.00	12,442.00	9,425.00	9,194.93	45.66	11.99	71.08	-86.23	1,256.84	3,507.90	3,461.03	46.87	74.850	
13,300.00	12,441.14	9,437.60	9,195.94	46.11	12.00	67.40	-96.90	1,263.47	3,513.58	3,466.29	47.29	74.298	
13,400.00	12,440.28	9,450.00	9,196.61	46.63	12.01	63.83	-107.41	1,270.00	3,521.77	3,474.01	47.76	73.738	
13,500.00	12,439.42	9,469.54	9,197.01	47.20	12.04	60.69	-124.01	1,280.31	3,532.54	3,484.26	48.28	73.171	
13,600.00	12,438.56	10,284.88	9,197.01	47.83	13.78	89.52	-898.97	1,496.19	3,538.45	3,488.21	50.24	70.429	
13,700.00	12,437.70	10,383.20	9,197.01	48.52	14.12	89.52	-997.28	1,497.01	3,530.35	3,479.38	50.98	69.253	
13,727.27	12,437.47	10,410.01	9,197.01	48.71	14.22	89.52	-1,024.09	1,497.24	3,528.16	3,476.97	51.18	68.930	
13,800.00	12,436.84	10,481.68	9,197.01	49.25	14.52	89.52	-1,095.76	1,497.84	3,522.69	3,470.93	51.76	68.060	

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



MS Energy Services Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)					
13,900.00	12,435.98	10,580.68	9,197.01	50.02	14.97	89.52	-1,194.76	1,498.66	3,516.39	3,463.80	52.59	66.859	
14,000.00	12,435.11	10,680.11	9,197.01	50.83	15.48	89.52	-1,294.18	1,499.50	3,511.48	3,458.00	53.48	65.656	
14,100.00	12,434.25	10,779.85	9,197.01	51.66	16.03	89.52	-1,393.92	1,500.33	3,507.94	3,453.52	54.42	64.457	
14,200.00	12,433.39	10,879.77	9,197.01	52.52	16.62	89.52	-1,493.84	1,501.17	3,505.75	3,450.34	55.41	63.268	
14,259.68	12,432.87	10,939.45	9,197.01	53.04	16.98	89.52	-1,553.51	1,501.67	3,505.09	3,449.06	56.03	62.559	
14,300.00	12,432.52	10,979.77	9,197.01	53.40	17.23	89.52	-1,593.83	1,502.01	3,504.80	3,448.36	56.45	62.089	
14,400.00	12,431.66	11,079.76	9,197.01	54.32	17.86	89.52	-1,693.82	1,502.84	3,504.10	3,446.58	57.52	60.925	
14,500.00	12,430.80	11,179.76	9,197.01	55.27	18.51	89.52	-1,793.82	1,503.68	3,503.39	3,444.77	58.62	59.765	
14,600.00	12,429.94	11,279.76	9,197.01	56.25	19.18	89.52	-1,893.81	1,504.52	3,502.68	3,442.93	59.75	58.619	
14,700.00	12,429.08	11,379.75	9,197.01	57.26	19.85	89.52	-1,993.80	1,505.36	3,501.97	3,441.06	60.92	57.489	
14,800.00	12,428.22	11,479.75	9,197.01	58.31	20.54	89.52	-2,093.79	1,506.19	3,501.27	3,439.16	62.11	56.376	
14,900.00	12,427.36	11,579.74	9,197.01	59.38	21.23	89.52	-2,193.79	1,507.03	3,500.56	3,437.24	63.32	55.283	
15,000.00	12,426.50	11,679.74	9,197.01	60.47	21.93	89.52	-2,293.78	1,507.87	3,499.85	3,435.29	64.56	54.211	
15,100.00	12,425.64	11,779.74	9,197.01	61.60	22.63	89.52	-2,393.77	1,508.70	3,499.15	3,433.32	65.82	53.161	
15,200.00	12,424.78	11,879.73	9,197.01	62.74	23.34	89.52	-2,493.77	1,509.54	3,498.44	3,431.33	67.10	52.134	
15,300.00	12,423.92	11,979.73	9,197.01	63.91	24.06	89.52	-2,593.76	1,510.38	3,497.73	3,429.32	68.41	51.130	
15,400.00	12,423.06	12,079.72	9,197.01	65.10	24.78	89.52	-2,693.75	1,511.22	3,497.03	3,427.29	69.73	50.150	
15,500.00	12,422.20	12,179.72	9,197.01	66.31	25.50	89.52	-2,793.74	1,512.05	3,496.32	3,425.25	71.07	49.193	
15,600.00	12,421.34	12,279.72	9,197.01	67.54	26.23	89.52	-2,893.74	1,512.89	3,495.61	3,423.18	72.43	48.261	
15,700.00	12,420.48	12,379.71	9,197.01	68.79	26.95	89.52	-2,993.73	1,513.73	3,494.91	3,421.10	73.81	47.352	
15,800.00	12,419.62	12,479.71	9,197.01	70.06	27.69	89.52	-3,093.72	1,514.57	3,494.20	3,419.00	75.20	46.467	
15,900.00	12,418.76	12,579.70	9,197.01	71.34	28.42	89.52	-3,193.71	1,515.40	3,493.49	3,416.89	76.60	45.605	
16,000.00	12,417.90	12,679.70	9,197.01	72.63	29.15	89.52	-3,293.71	1,516.24	3,492.79	3,414.77	78.02	44.766	
16,100.00	12,417.03	12,779.70	9,197.01	73.94	29.89	89.52	-3,393.70	1,517.08	3,492.08	3,412.63	79.45	43.950	
16,200.00	12,416.17	12,879.69	9,197.01	75.27	30.63	89.52	-3,493.69	1,517.91	3,491.38	3,410.48	80.90	43.157	
16,300.00	12,415.31	12,979.69	9,197.01	76.60	31.37	89.52	-3,593.68	1,518.75	3,490.67	3,408.31	82.36	42.385	
16,400.00	12,414.45	13,079.69	9,197.01	77.95	32.11	89.52	-3,693.68	1,519.59	3,489.96	3,406.14	83.83	41.634	
16,500.00	12,413.59	13,179.68	9,197.01	79.31	32.86	89.52	-3,793.67	1,520.43	3,489.26	3,403.95	85.30	40.903	
16,600.00	12,412.73	13,279.68	9,197.01	80.69	33.60	89.52	-3,893.66	1,521.26	3,488.55	3,401.76	86.79	40.193	
16,700.00	12,411.87	13,379.67	9,197.01	82.07	34.35	89.52	-3,993.65	1,522.10	3,487.85	3,399.55	88.29	39.503	
16,800.00	12,411.01	13,479.67	9,197.01	83.46	35.09	89.52	-4,093.65	1,522.94	3,487.14	3,397.34	89.80	38.831	
16,900.00	12,410.15	13,579.67	9,197.01	84.87	35.84	89.52	-4,193.64	1,523.78	3,486.44	3,395.12	91.32	38.178	
17,000.00	12,409.29	13,679.66	9,197.01	86.28	36.59	89.52	-4,293.63	1,524.61	3,485.73	3,392.89	92.85	37.543	
17,100.00	12,408.43	13,779.66	9,197.01	87.70	37.34	89.52	-4,393.62	1,525.45	3,485.03	3,390.65	94.38	36.926	
17,200.00	12,407.57	13,879.65	9,197.01	89.13	38.09	89.52	-4,493.62	1,526.29	3,484.32	3,388.40	95.92	36.325	
17,300.00	12,406.71	13,979.65	9,197.01	90.56	38.84	89.52	-4,593.61	1,527.12	3,483.62	3,386.14	97.47	35.740	
17,400.00	12,405.85	14,079.65	9,197.01	92.01	39.59	89.52	-4,693.60	1,527.96	3,482.91	3,383.88	99.03	35.171	
17,500.00	12,404.99	14,179.64	9,197.01	93.46	40.34	89.52	-4,793.59	1,528.80	3,482.21	3,381.62	100.59	34.618	
17,600.00	12,404.13	14,279.64	9,197.01	94.91	41.10	89.52	-4,893.59	1,529.64	3,481.50	3,379.34	102.16	34.079	
17,700.00	12,403.27	14,379.63	9,197.01	96.38	41.85	89.52	-4,993.58	1,530.47	3,480.80	3,377.06	103.73	33.555	
17,800.00	12,402.41	14,479.63	9,197.01	97.85	42.60	89.52	-5,093.57	1,531.31	3,480.09	3,374.77	105.32	33.044	
17,900.00	12,401.55	14,605.52	9,197.00	99.32	43.55	90.15	-5,208.42	1,531.81	3,479.24	3,372.20	107.04	32.504	
18,000.00	12,400.68	14,705.52	9,197.00	100.81	44.30	90.15	-5,308.41	1,531.55	3,478.11	3,369.48	108.62	32.020	
18,100.00	12,399.82	14,805.53	9,197.00	102.29	45.06	90.15	-5,408.41	1,531.30	3,476.97	3,366.77	110.21	31.549	
18,200.00	12,398.96	14,905.54	9,197.00	103.79	45.81	90.15	-5,508.40	1,531.04	3,475.84	3,364.04	111.80	31.090	
18,300.00	12,398.10	15,005.55	9,197.00	105.28	46.57	90.15	-5,608.39	1,530.79	3,474.71	3,361.32	113.39	30.643	
18,400.00	12,397.24	15,105.55	9,197.00	106.78	47.32	90.15	-5,708.38	1,530.53	3,473.58	3,358.59	114.99	30.207	
18,500.00	12,396.38	15,205.56	9,197.00	108.29	48.07	90.15	-5,808.38	1,530.28	3,472.45	3,355.85	116.59	29.782	
18,600.00	12,395.52	15,305.57	9,197.00	109.80	48.83	90.15	-5,908.37	1,530.02	3,471.32	3,353.12	118.20	29.368	
18,700.00	12,394.66	15,405.58	9,197.00	111.32	49.59	90.15	-6,008.36	1,529.77	3,470.19	3,350.38	119.81	28.964	
18,800.00	12,393.80	15,505.58	9,197.00	112.84	50.34	90.15	-6,108.35	1,529.51	3,469.06	3,347.63	121.43	28.569	
18,900.00	12,392.94	15,605.59	9,197.00	114.36	51.10	90.15	-6,208.34	1,529.26	3,467.93	3,344.88	123.04	28.185	

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



MS Energy Services

Anticollision Report



Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
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		Offset		Semi Major Axis		Azimuth from North (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
19,000.00	12,392.08	15,705.60	9,197.00	115.89	51.86	90.15	-6,308.34	1,529.00	3,468.79	3,342.13	124.66	27.809			
19,100.00	12,391.22	15,805.61	9,197.00	117.42	52.61	90.15	-6,408.33	1,528.75	3,465.66	3,339.38	126.29	27.443			
19,200.00	12,390.36	15,905.61	9,197.00	118.95	53.37	90.15	-6,508.32	1,528.49	3,464.53	3,336.62	127.91	27.085			
19,300.00	12,389.50	16,005.62	9,197.00	120.49	54.13	90.15	-6,608.31	1,528.24	3,463.40	3,333.86	129.54	26.735			
19,400.00	12,388.64	16,105.63	9,197.00	122.03	54.89	90.15	-6,708.31	1,527.98	3,462.27	3,331.10	131.18	26.394			
19,500.00	12,387.78	16,205.64	9,197.00	123.57	55.64	90.15	-6,808.30	1,527.72	3,461.14	3,328.33	132.81	26.061			
19,600.00	12,386.92	16,305.64	9,197.00	125.12	56.40	90.15	-6,908.29	1,527.47	3,460.01	3,325.56	134.45	25.735			
19,700.00	12,386.06	16,405.65	9,197.00	126.66	57.16	90.15	-7,008.28	1,527.21	3,458.88	3,322.79	136.09	25.416			
19,800.00	12,385.20	16,505.66	9,197.00	128.22	57.92	90.15	-7,108.27	1,526.96	3,457.75	3,320.02	137.73	25.105			
19,900.00	12,384.33	16,605.67	9,197.00	129.77	58.68	90.15	-7,208.27	1,526.70	3,456.62	3,317.24	139.37	24.801			
20,000.00	12,383.47	16,705.67	9,197.00	131.33	59.44	90.15	-7,308.26	1,526.45	3,455.49	3,314.47	141.02	24.503			
20,100.00	12,382.61	16,805.68	9,197.00	132.89	60.20	90.15	-7,408.25	1,526.19	3,454.36	3,311.69	142.67	24.212			
20,200.00	12,381.75	16,905.69	9,197.00	134.45	60.96	90.15	-7,508.24	1,525.94	3,453.23	3,308.91	144.32	23.927			
20,300.00	12,380.89	16,994.30	9,197.00	136.01	61.63	90.15	-7,608.24	1,525.68	3,452.10	3,306.21	145.89	23.663			
20,400.00	12,380.03	17,105.70	9,197.00	137.58	62.48	90.15	-7,708.23	1,525.43	3,450.97	3,303.34	147.63	23.376			
20,500.00	12,379.17	17,205.71	9,197.00	139.15	63.24	90.15	-7,808.22	1,525.17	3,449.84	3,300.55	149.28	23.109			
20,600.00	12,378.31	17,305.72	9,197.00	140.72	64.00	90.15	-7,908.21	1,524.92	3,448.71	3,297.77	150.94	22.848			
20,700.00	12,377.45	17,394.27	9,197.00	142.29	64.67	90.15	-8,008.20	1,524.66	3,447.58	3,295.06	152.51	22.605			
20,800.00	12,376.59	17,505.73	9,197.00	143.86	65.52	90.15	-8,108.20	1,524.41	3,446.45	3,292.19	154.26	22.341			
20,900.00	12,375.73	17,605.74	9,197.00	145.44	66.28	90.15	-8,208.19	1,524.15	3,445.32	3,289.39	155.93	22.096			
21,000.00	12,374.87	17,694.25	9,197.00	147.02	66.95	90.15	-8,308.18	1,523.90	3,444.19	3,286.69	157.50	21.867			
21,100.00	12,374.01	17,805.76	9,197.00	148.59	67.80	90.15	-8,408.17	1,523.64	3,443.06	3,283.80	159.26	21.620			
21,200.00	12,373.15	17,905.76	9,197.00	150.18	68.56	90.15	-8,508.16	1,523.39	3,441.93	3,281.01	160.92	21.389			
21,300.00	12,372.29	18,005.77	9,197.00	151.76	69.33	90.15	-8,608.16	1,523.13	3,440.80	3,278.21	162.59	21.162			
21,400.00	12,371.43	18,105.78	9,197.00	153.34	70.09	90.15	-8,708.15	1,522.87	3,439.67	3,275.41	164.26	20.940			
21,500.00	12,370.57	18,205.79	9,197.00	154.93	70.85	90.15	-8,808.14	1,522.62	3,438.54	3,272.61	165.93	20.722			
21,600.00	12,369.71	18,305.79	9,197.00	156.52	71.61	90.15	-8,908.13	1,522.36	3,437.41	3,269.81	167.61	20.509			
21,700.00	12,368.85	18,405.80	9,197.00	158.11	72.37	90.15	-9,008.13	1,522.11	3,436.28	3,267.01	169.28	20.300			
21,800.00	12,367.98	18,505.81	9,197.00	159.70	73.14	90.15	-9,108.12	1,521.85	3,435.16	3,264.20	170.95	20.094			
21,900.00	12,367.12	18,605.82	9,197.00	161.29	73.90	90.15	-9,208.11	1,521.60	3,434.03	3,261.40	172.63	19.892			
22,000.00	12,366.26	18,705.82	9,197.00	162.88	74.66	90.15	-9,308.10	1,521.34	3,432.90	3,258.59	174.31	19.695			
22,100.00	12,365.40	18,805.83	9,197.00	164.47	75.42	90.15	-9,408.09	1,521.09	3,431.77	3,255.78	175.98	19.500			
22,200.00	12,364.54	18,905.84	9,197.00	166.07	76.19	90.15	-9,508.09	1,520.83	3,430.64	3,252.98	177.66	19.310			
22,300.00	12,363.68	19,005.85	9,197.00	167.67	76.95	90.15	-9,608.08	1,520.58	3,429.51	3,250.17	179.34	19.123			
22,400.00	12,362.82	19,105.85	9,197.00	169.26	77.71	90.15	-9,708.07	1,520.32	3,428.38	3,247.36	181.02	18.939			
22,500.00	12,361.96	19,194.14	9,197.00	170.86	78.38	90.15	-9,808.06	1,520.07	3,427.25	3,244.64	182.61	18.768			
22,565.16	12,361.40	19,220.87	9,197.00	171.78	78.59	88.48	-9,834.80	1,520.00	3,426.73	3,243.38	183.35	18.689 SF			

devon

MS Energy Services Anticollision Report

MS Energy Services.
WWW.MSENERGYSERVICES.COM

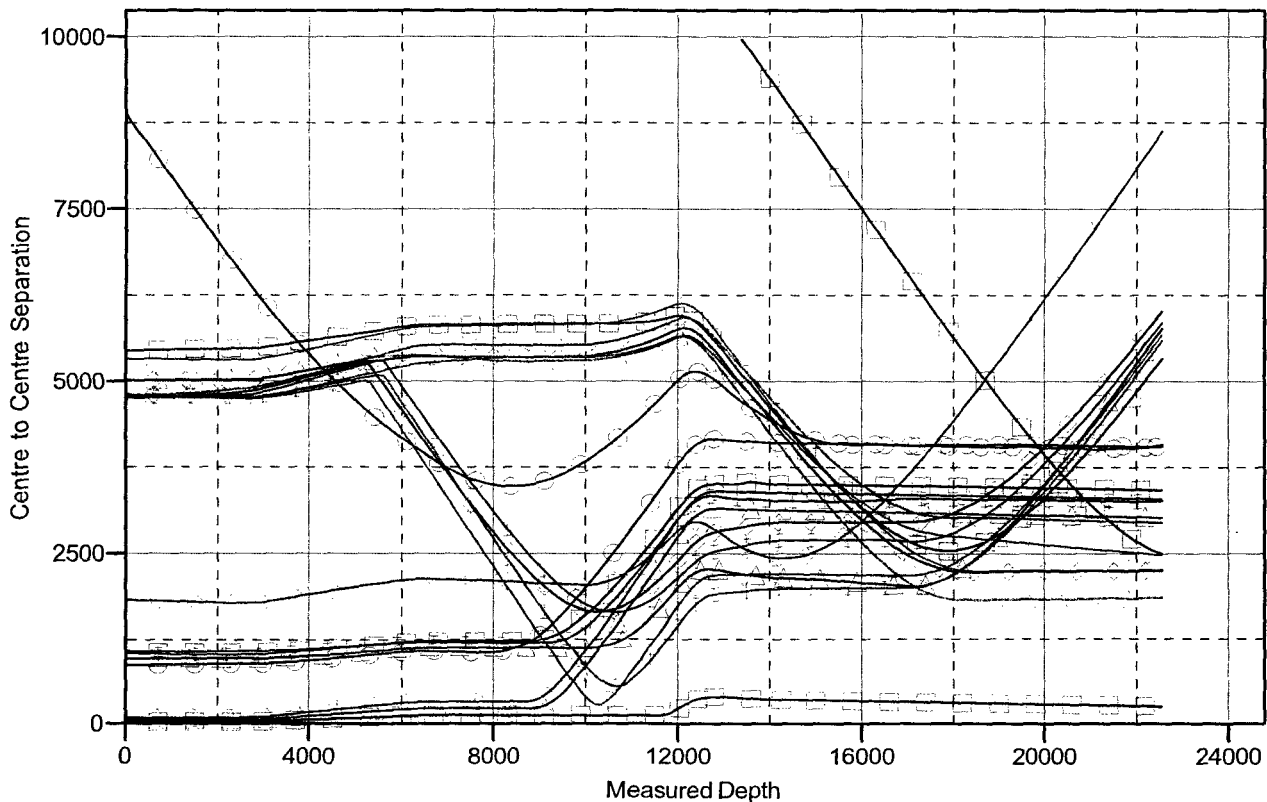
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to Well @ 3566.40usft (Cactus 126)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 517H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.32°

Ladder Plot



LEGEND

859, Wellbore #1, Surveys V0	512H, Wellbore #1, Design #2 V0	516H, Wellbore #1, Design #1 V0
87H, Wellbore #1, Surveys V0	511H, Wellbore #1, Surveys V0	513H, Wellbore #1, Design #2 V0
86H, Wellbore #1, Surveys V0	515H, Wellbore #1, Design #1 V0	292H, Wellbore #1, Surveys V0
81H, Wellbore #1, Surveys V0	294H, Wellbore #1, Design #2 V0	514H, Wellbore #1, Design #1 V0
86H, Wellbore #1, Design #1 V0	291H, Wellbore #1, Design #2 V0	293H, Wellbore #1, Design #2 V0
81H, Wellbore #1, Surveys V0	290H, Wellbore #1, Surveys V0	82, Wellbore #1, Surveys V0
116H, Wellbore #1, Surveys V0	242H, Wellbore #1, Surveys V0	



MS Energy Services

Anticollision Report



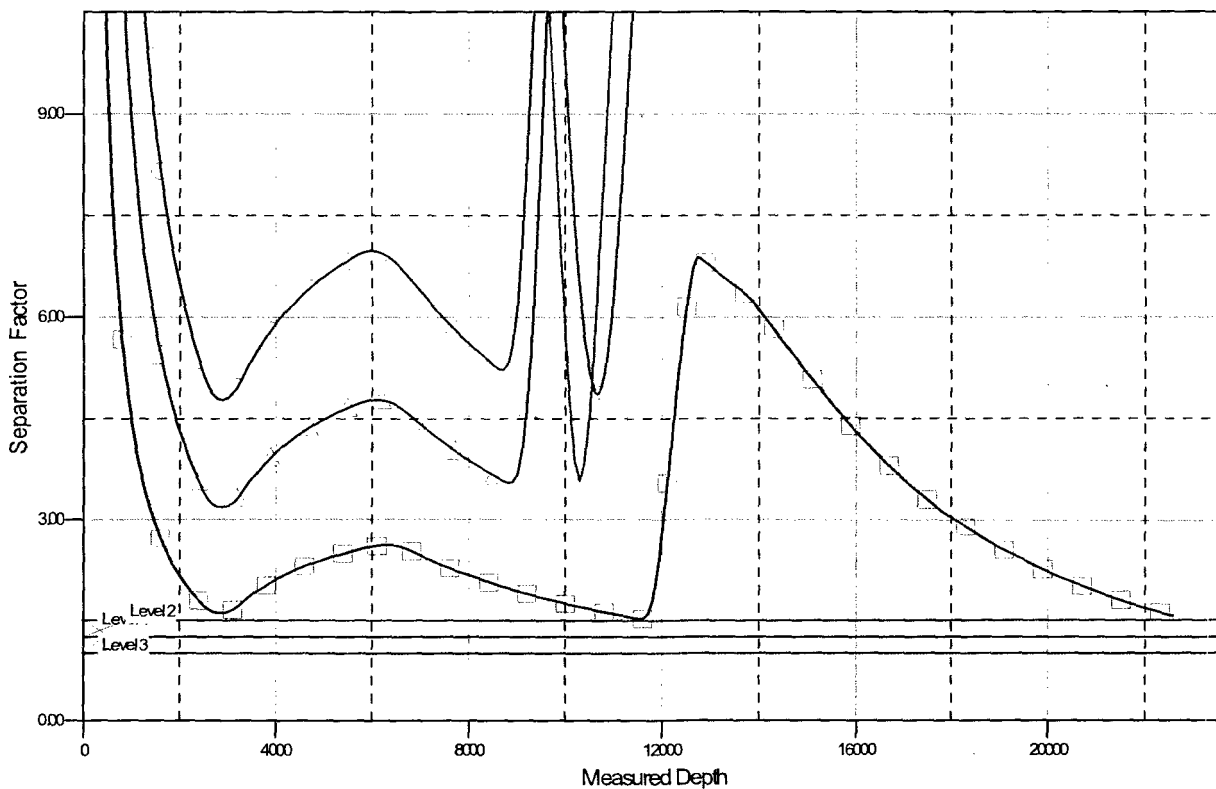
Company: Devon Energy
Project: Eddy County, New Mexico (NAD 83)
Reference Site: Cotton Draw Unit
Site Error: 0.00 usft
Reference Well: 517H
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #1

Local Co-ordinate Reference: Well 517H
TVD Reference: Well @ 3566.40usft (Cactus 126)
MD Reference: Well @ 3566.40usft (Cactus 126)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to Well @ 3566.40usft (Cactus 126)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: 517H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.32°

Separation Factor Plot



LEGEND

#99, Wellbore #1, Surveys V0	512H, Wellbore #1, Design #2 V0	516H, Wellbore #1, Design #1 V0
#1H, Wellbore #1, Surveys V0	511H, Wellbore #1, Surveys V0	513H, Wellbore #1, Design #2 V0
#9H, Wellbore #1, Surveys V0	515H, Wellbore #1, Design #1 V0	292H, Wellbore #1, Surveys V0
#1H, Wellbore #1, Surveys V0	294H, Wellbore #1, Design #2 V0	514H, Wellbore #1, Design #1 V0
#6H, Wellbore #1, Design #1 V0	291H, Wellbore #1, Design #2 V0	293H, Wellbore #1, Design #2 V0
#1H, Wellbore #1, Surveys V0	290H, Wellbore #1, Surveys V0	#2, Wellbore #1, Surveys V0
116H, Wellbore #1, Surveys V0	242H, Wellbore #1, Surveys V0	

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

1. Geologic Formations

TVD of target	12,361'	Pilot hole depth	
MD at TD:	22,565'	Deepest expected fresh water:	400

Basin

[illegible]

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

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
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	12,600	7.625"	29.7	P110	Flushmax III	1.125	1.25	1.6
6.75	0	22,565	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 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

If yes, are there three strings cemented to surface?	
--	--

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / 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	854	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 Contingency	1321	14.8	6.32	1.32	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	340	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	14.5	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.	988	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	12,100'	25%

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

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.

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

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.

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

	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'	12,600'	OBM/Cut Brine	8.6-10	34-65	N/C-6
12,600'	22,565'	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 from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

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

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7070 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? 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.

Devon Energy Prod. Co., L.P./Cotton Draw Unit 517H

6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. *Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.*
 - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

☒ Directional Plan

☐ Other, describe

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

Devon proposes using a multi-bowl wellhead assembly. 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.

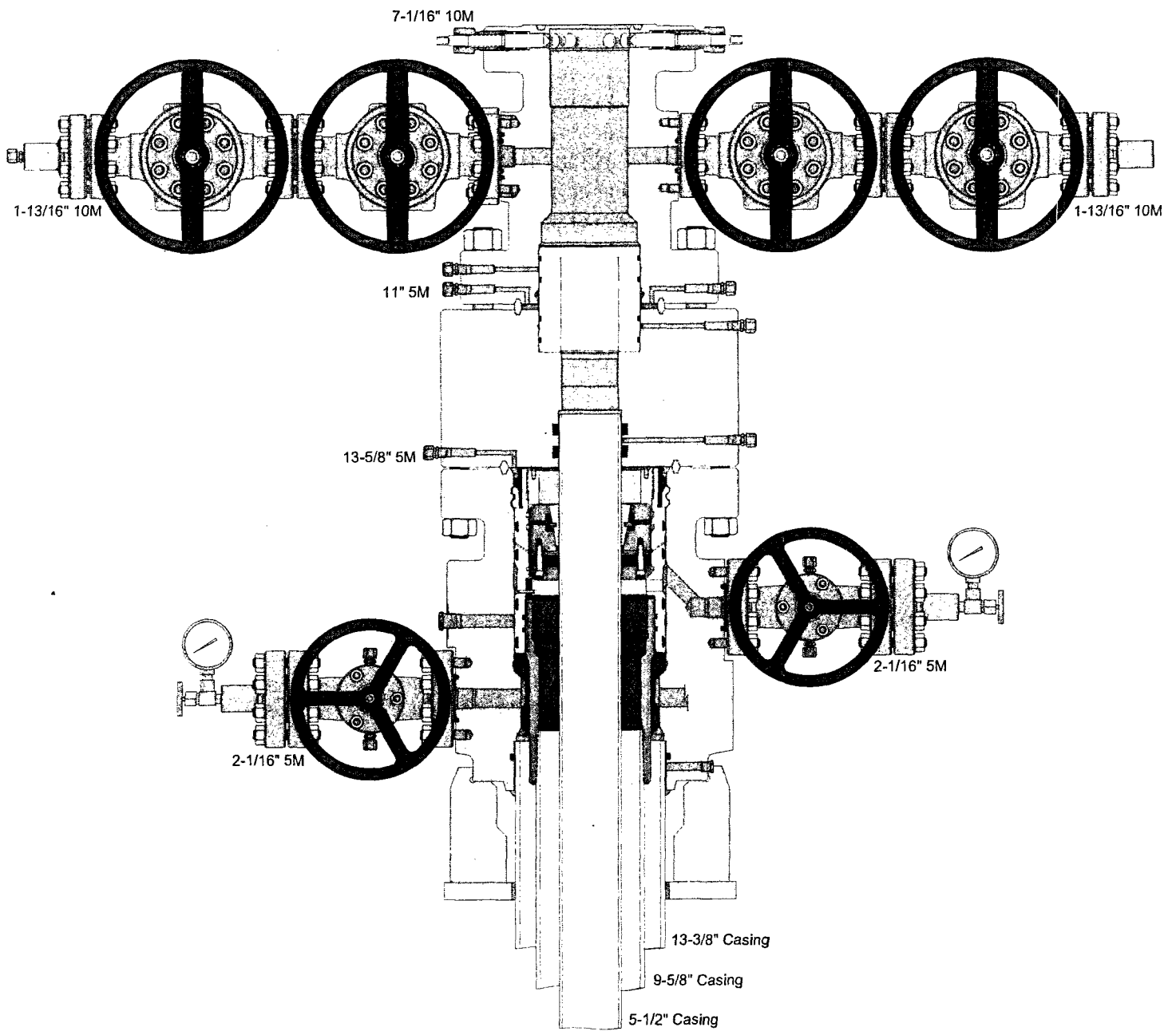
- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial 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.





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.

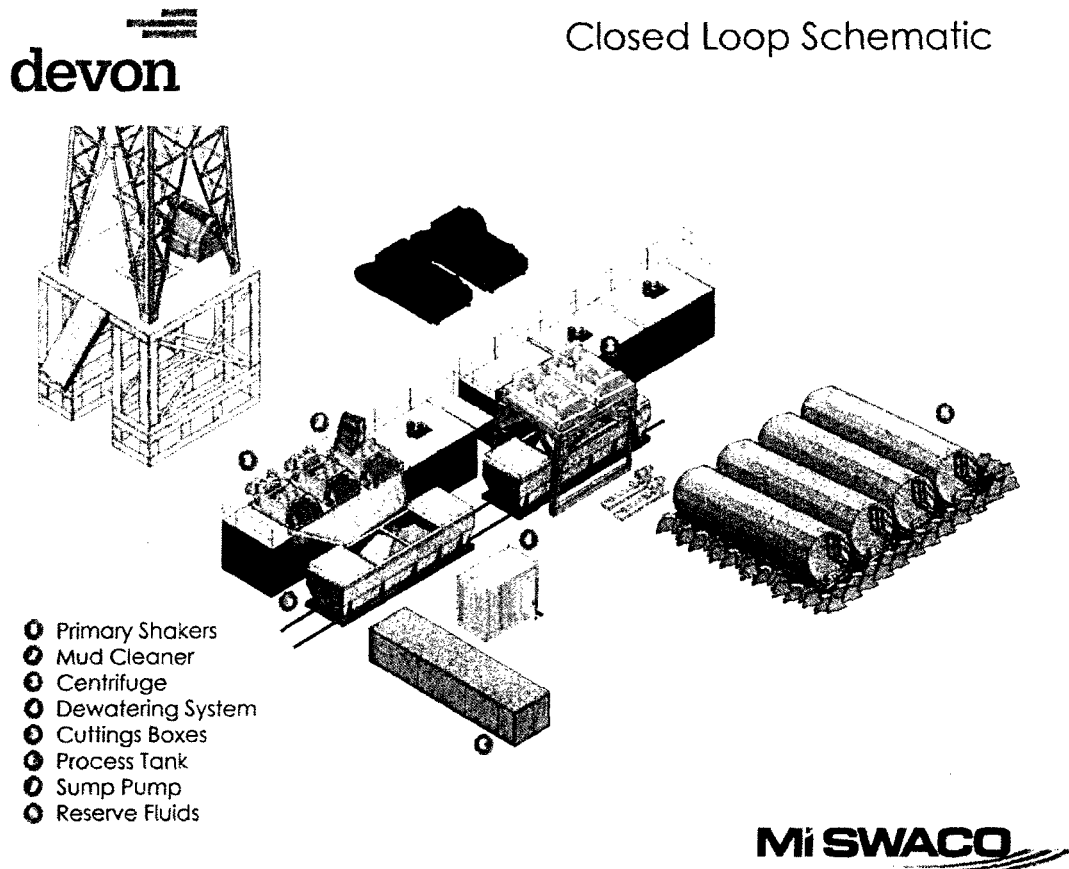
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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.



Fluid Technology

ContiTech Beattie Corp.
Website: www.contitechbeattie.com

Monday, June 14, 2010

RE: Drilling & Production Hoses
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

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

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson
Sales Manager
ContiTech Beattie Corp

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



RIG 212



QUALITY DOCUMENT

**PHOENIX RUBBER
INDUSTRIAL LTD.**

 6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
 Phone: (3662) 566-737 • Fax: (3662) 566-738

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

40920-0-00015 NB0006

40920-0-00015 N8006

8	GNL	+0.000	PC	14:00		
	ROD	+0.000	PC	14:00		
	BL	+1041	SEA	14:00		
7	GNL	+0.000	PC	13:40		
	ROD	+0.000	PC	13:40		
	BL	+1047	SEA	13:40		
6	GNL	+0.000	PC	13:20		
	ROD	+0.000	PC	13:20		
	BL	+1050	SEA	13:20		
5	GNL	+0.000	PC	13:00		
	ROD	+0.000	PC	13:00		
	BL	+1055	SEA	13:00		
4	GNL	+0.000	PC	12:00		
	ROD	+0.000	PC	12:00		
	BL	+1055	SEA	12:00		
3	PRIORITY 34120 12:00					
2						

HOSE INSPECTION AND CERTIFICATION DEPT.

VERIFIED TRUE CO.
PHOENIX RUBBER CO.



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

SUPO Data Report

02/08/2018

APD ID: 10400017580

Submission Date: 08/29/2017

Highlighted data
reflects the most
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

CDU_517H_Ex_Access_Rd_20170828103511.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_517H_Access_Rd_20170828103603.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: 517H

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_517H_1_Mile_Map_08-07-2017.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: 517H

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): 170000

Source volume (acre-feet): 21.911827

Source volume (gal): 7140000

Water source and transportation map:

CDU_517H_Wtr_Xfr_Map_08-07-2017.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: 517H

Section 6 - Construction Materials

Construction Materials description: Dirt fill and caliche will be used to construct well pad.

Construction Materials source location attachment:

CDU_517H_Caliche_Pit_20170829050543.pdf

Section 7 - Methods for Handling Waste

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: 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: DRILLING

Waste content description: Water based cuttings

Amount of waste: 1650 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: 517H

Disposal type description:

Disposal location description: All cuttings will disposed of at R360, Sundance, or equivalent.

Waste type: COMPLETIONS/STIMULATION

Waste content description: Flow back water during completion operations.

Amount of waste: 3000 barrels

Waste disposal frequency : One Time Only

Safe containment description: N/A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Various disposal locations in Lea and Eddy counties.

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: 517H

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_517H_Rig_Layout_08-07-2017.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_517H_Reclamation_20170828104657.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: 517H

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: 517H

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: 517H

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: 517H

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: Gas Capture Plan Grading & Cross Section Misc. Plats Electric Plats Flowline Plats CTB
Plat Battery Connect Plats Electric to Pad

Use a previously conducted onsite? NO

Previous Onsite information:

Other SUPO Attachment

CDU_517H_GasCapturePlan_20170829050957.pdf

CDU_517H_Grading__X_Sec_20170829051010.pdf

CDU_517H_Misc_Plats_20170829051030.pdf

CDU_517H_Electric_20170829051046.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: COTTON DRAW UNIT

Well Number: 517H

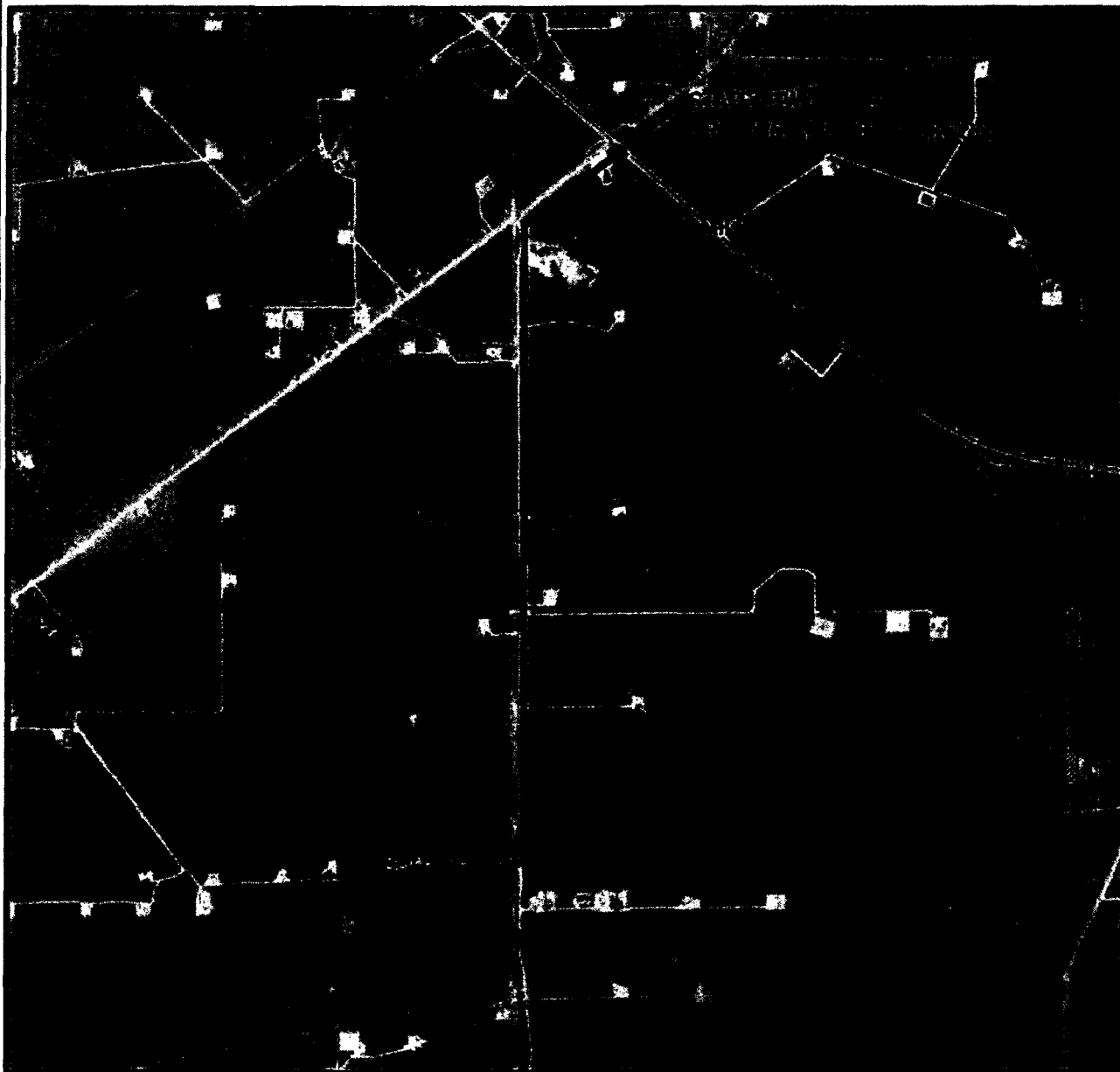
CDU_517H_Flowline_20170829051108.pdf

CDU_517H_CTB_20170829051157.pdf

CDU_517H_Battery_Connect_20170829051212.pdf

CDU_517H_Electric_To_Pad_20171130080513.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 517H

LOCATED 485 FT. FROM THE NORTH LINE
AND 470 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

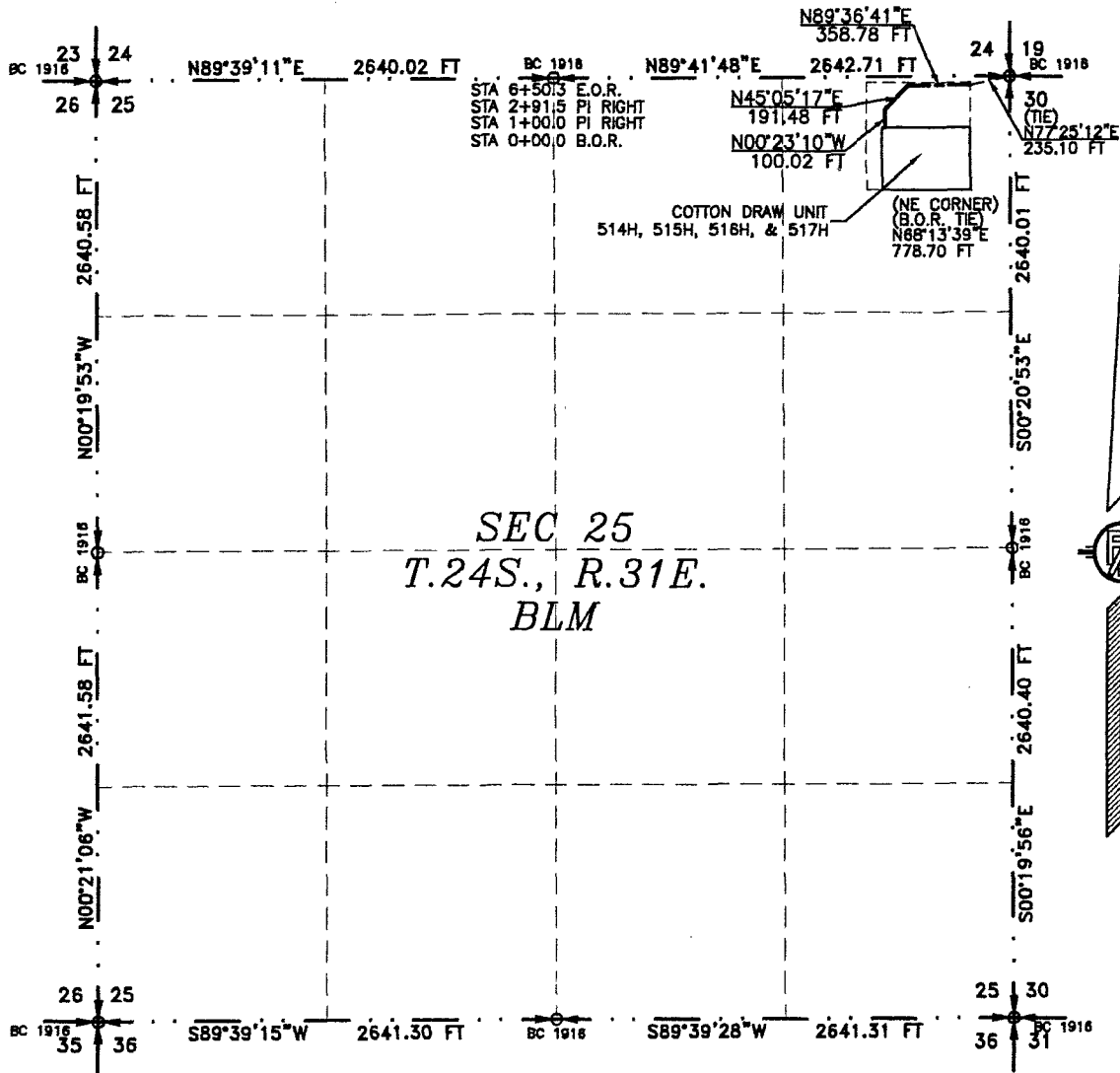
SURVEY NO. 5335

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

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

SURVEYOR CERTIFICATE

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

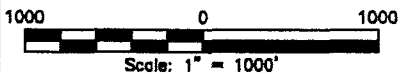
IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 17TH DAY OF JULY 2017.

[Signature]
FILMON F. JARAMILLO, SURVEYOR
NEW MEXICO

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

SURVEY NO. 5335

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO



GENERAL NOTES

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

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

SHEET: 1-2

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 17 DAY OF JULY 2017

FILMON F. JARAMILLO, SRS 12797

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

SURVEY NO. 5335

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

SHEET: 2-2

84_Web_Mercator_Auxiliary_Sphere
Prepared by: Stephen Richards
is current as of: 01-Aug-2017

84_Web_Mercator_Auxiliary_Sphere
Prepared by: Stephen Richards
is current as of: 01-Aug-2017

0.14	Miles	0.56	1:28,457
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ond

point (DYN)
and (DYN)
S BUILT/AFTER
UNIT

CONSTRUCTION PROPOSED

body
lake/Pond
layaReservoir
Swamp/Marsh
In AreasCanal/Ditch
Foundation Area
Water Area

Other Features

Artificial Path
Canal/Ditch
Coastline

connector
pipeline
stream/River

underground
conduit
location

E. Floodway
E., 1%,
, 1%

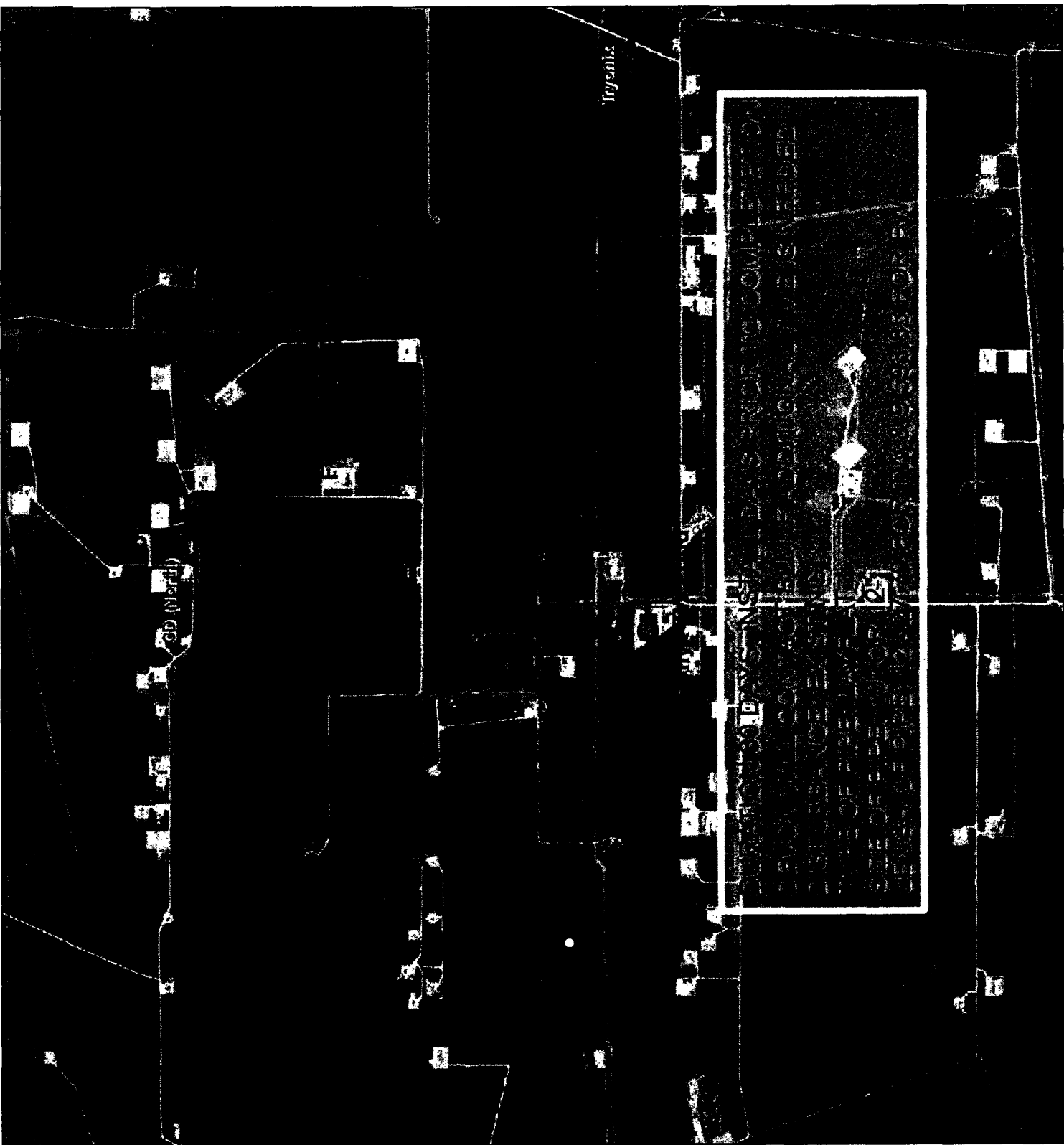
H,
O,

0.2%

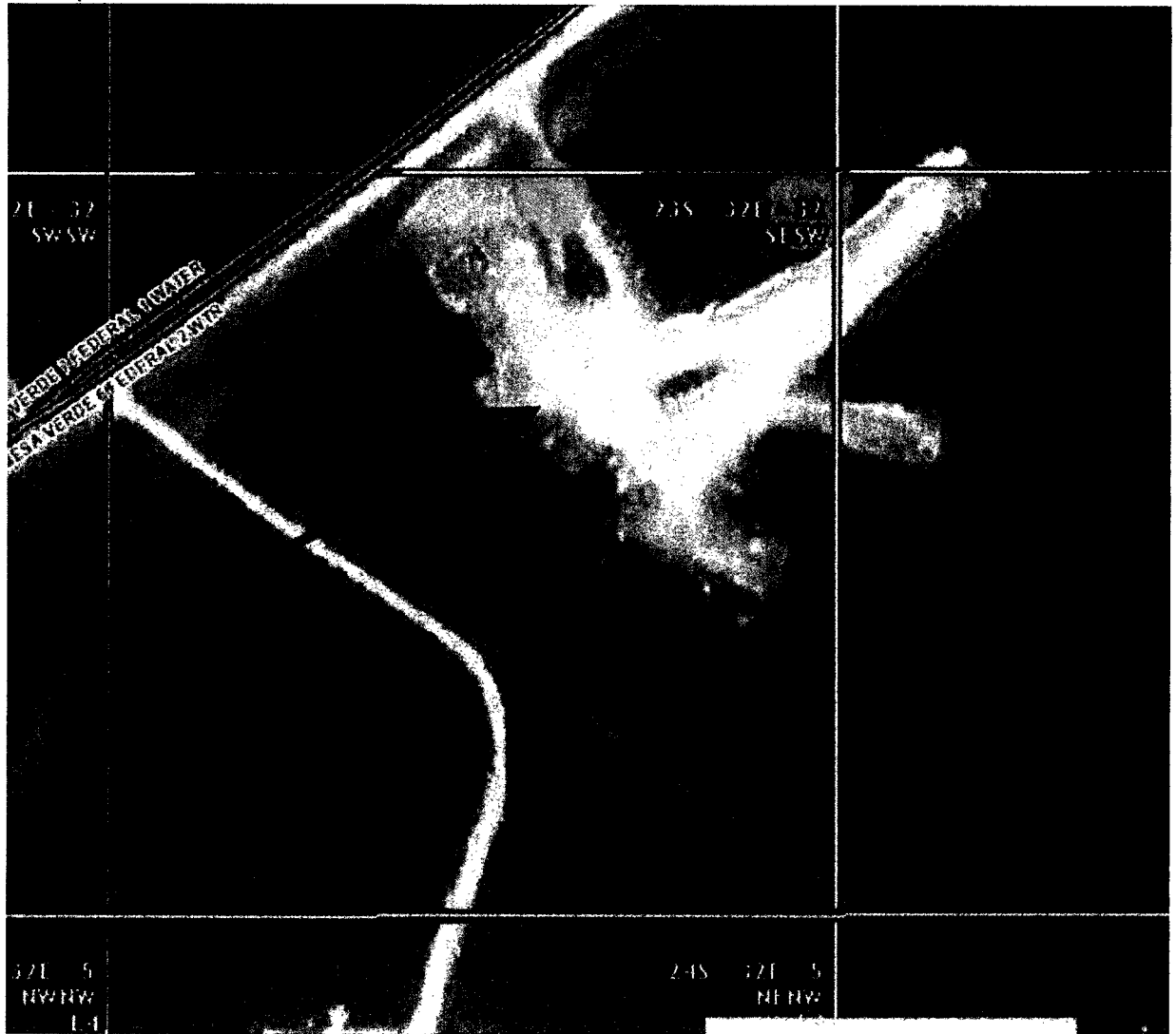
Structure

Area not Included
Open Water

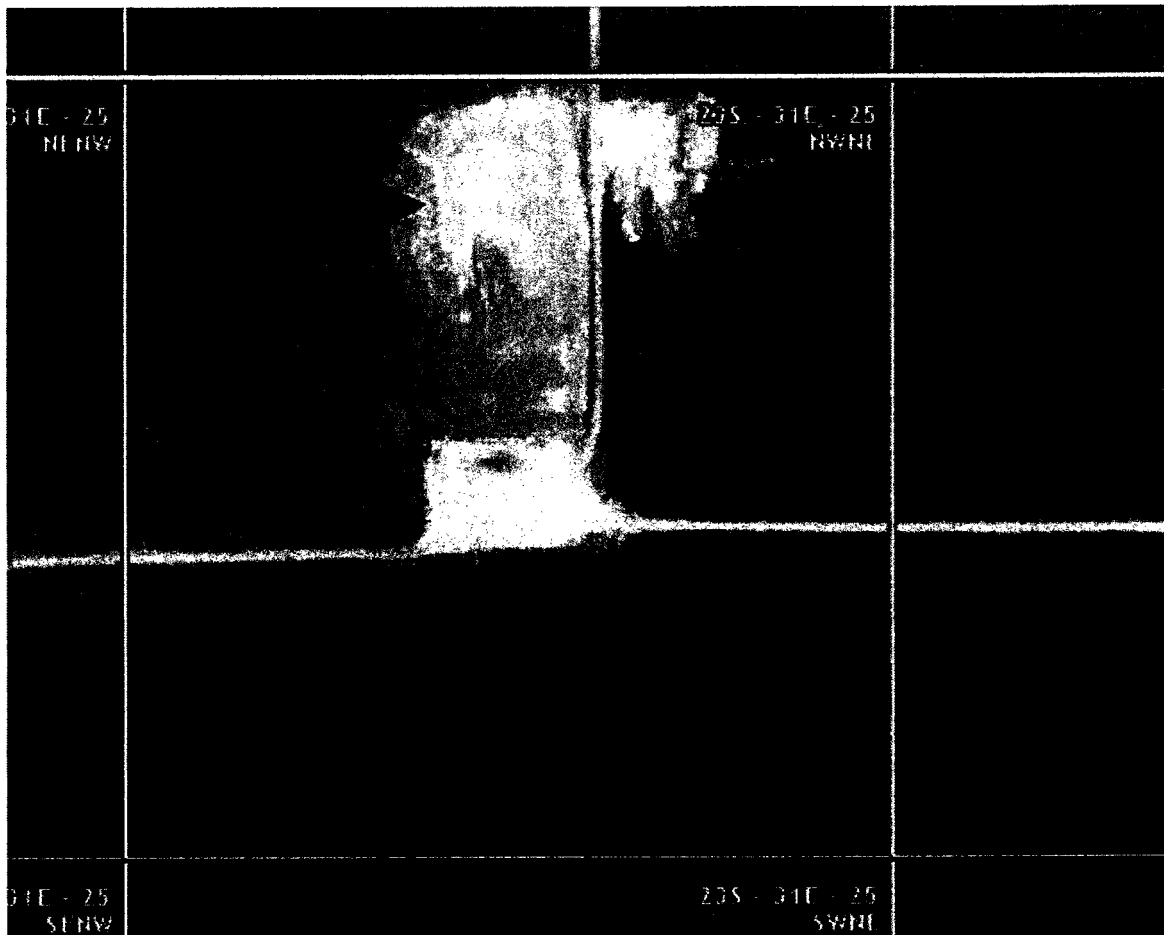
L,
E, Riverine
foodway (Costal
one)



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



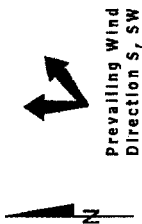
- Fed pit 25- 23S- 31E



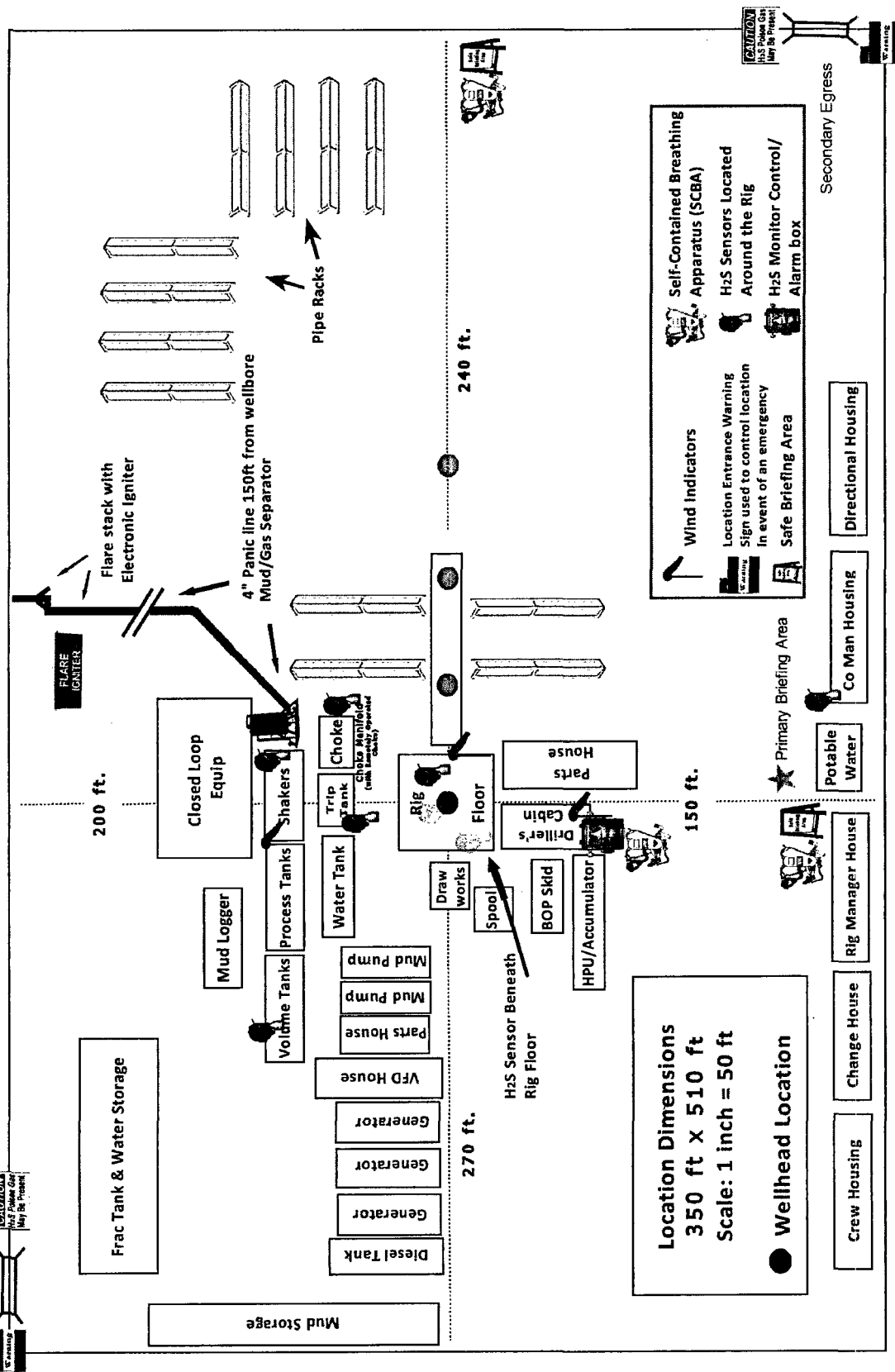
- Private pit 26- 23S- 31E



Devon Energy - Well Pad Rig Location Layout Safety Equipment Location



CAUTION
H2S Poison Gas
May Be Present

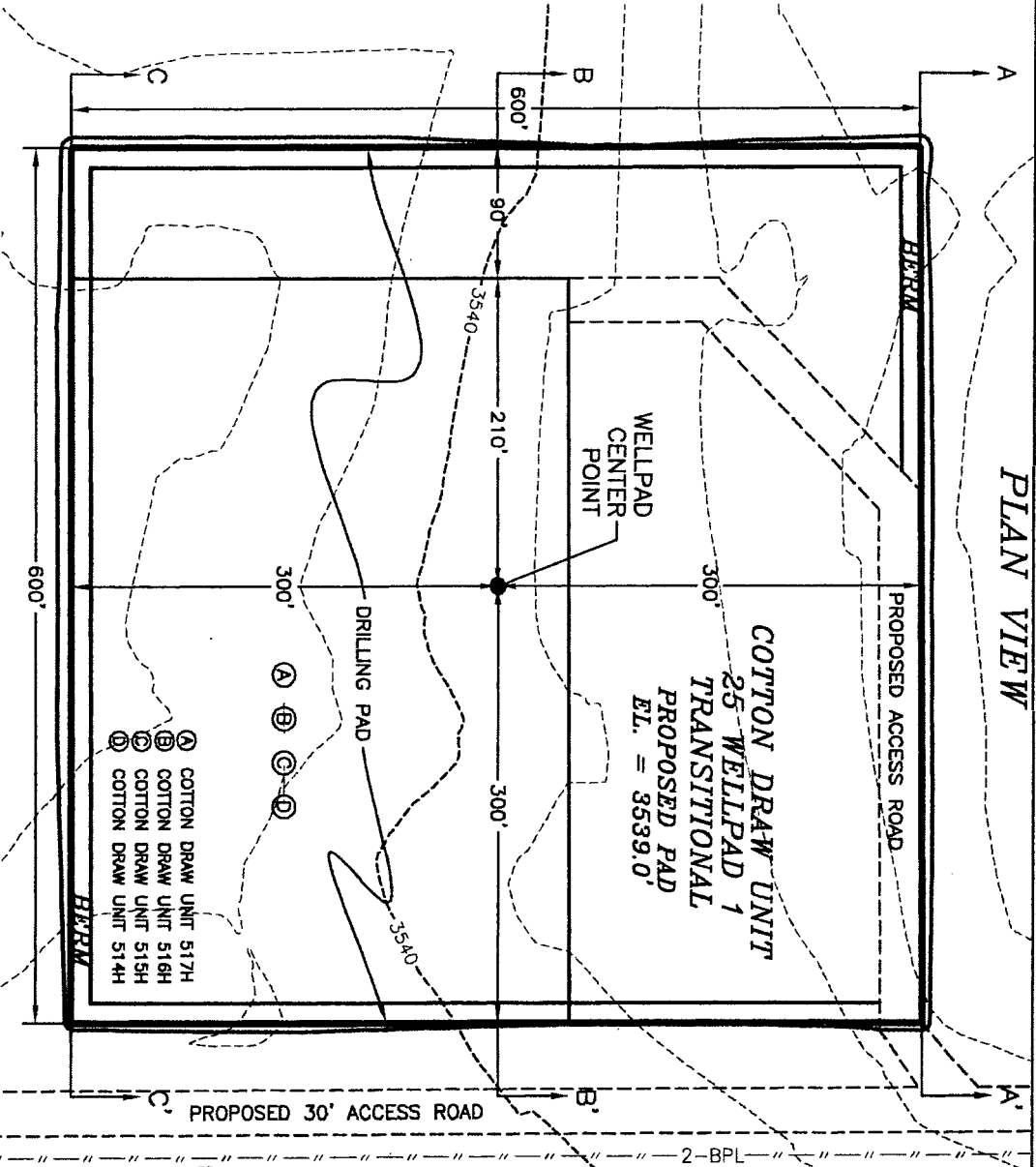


Location Dimensions
350 ft x 510 ft
Scale: 1 inch = 50 ft
● Wellhead Location

PLAN VIEW



012 60 120 240
SCALE 1" = 120'



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR COTTON DRAW UNIT 517H
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MADRON SURVEYING, INC. 301 SOUTH DAVALL
(979) 234-3341 CARLSBAD, NEW MEXICO

JULY 13, 2017

EARTHWORK QUANTITIES FOR
COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL

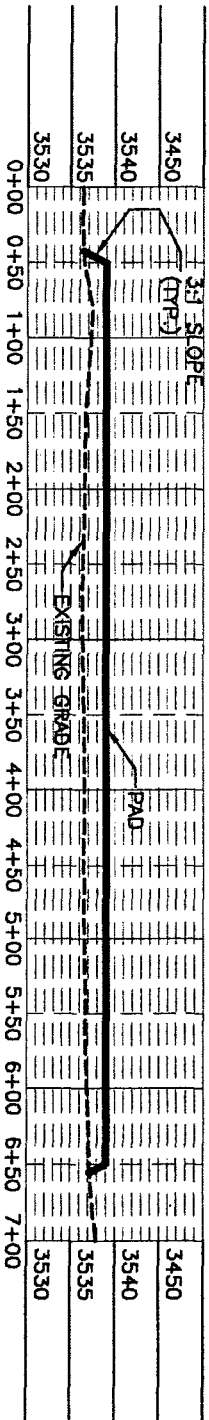
CUT	FILL	NET
13827 CU. YD	6837 CU. YD	6890 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

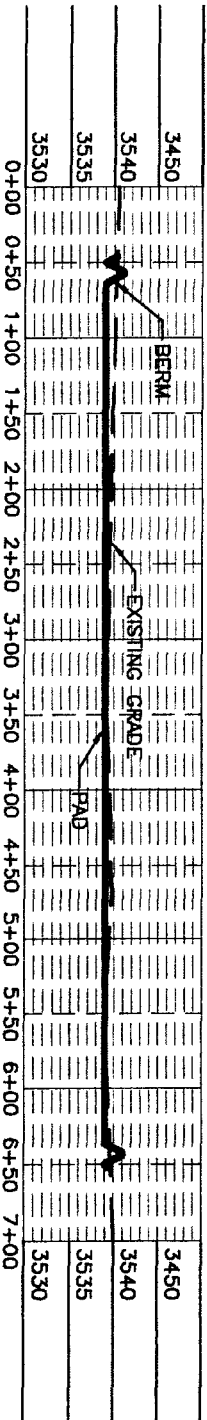
SHEET 1-2
SURVEY NO. 6386

CROSS-SECTIONS

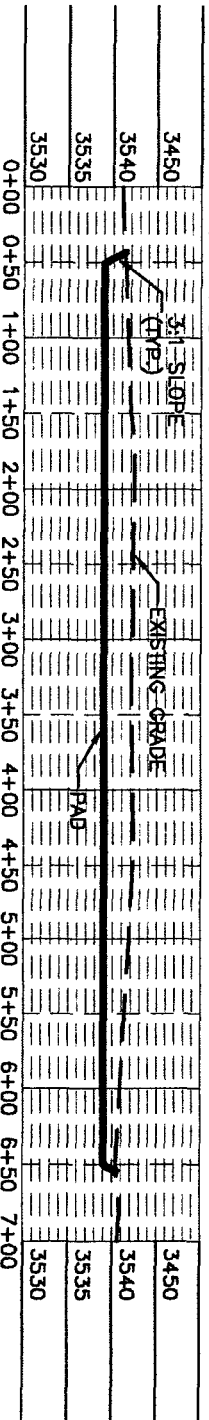
SECTION A-A'



SECTION B-B'



SECTION C-C'



0+2 60 120 240
SCALE 1" = 120' - 1" = 20' VER

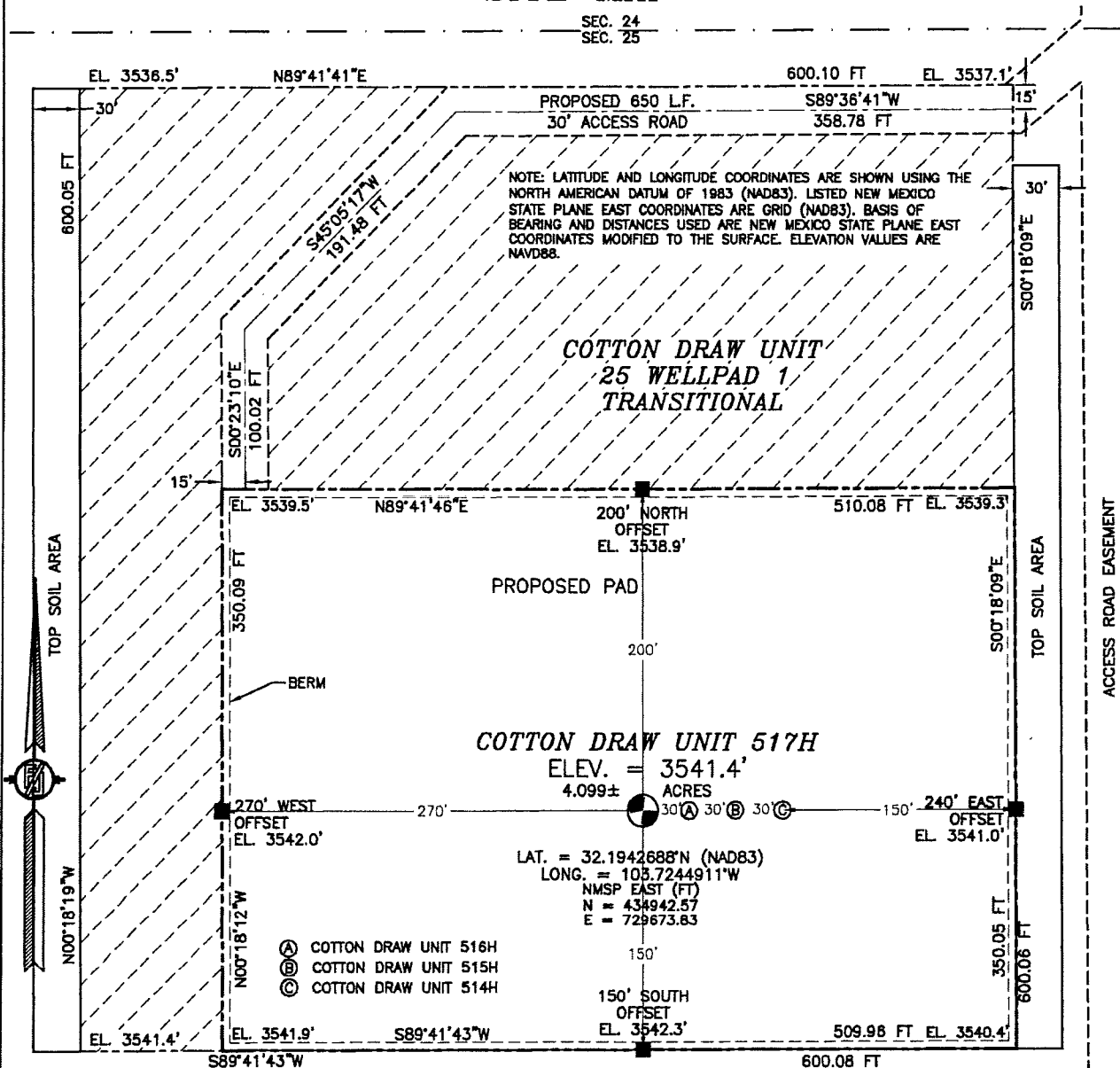
DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR COTTON DRAW UNIT 617H
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

EARTHWORK QUANTITIES FOR
COTTON DRAW UNIT 25 WELLPAD 1 TRANSITIONAL
CUT FILL NET
13827 CU. YD. 6837 CU. YD. 6890 CU. YD. (CUT)
EARTHWORK QUANTITIES ARE ESTIMATED

MADRON SURVEYING, INC. JULY 13, 2017
301 SOUTH CAMEL (575) 234-3341 CARLSBAD, NEW MEXICO

SHEET 2-2
SURVEY NO. 6386

**SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP**



0 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 850 FEET TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

**DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 517H**

**LOCATED 485 FT. FROM THE NORTH LINE
AND 470 FT. FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.**

EDDY COUNTY, STATE OF NEW MEXICO

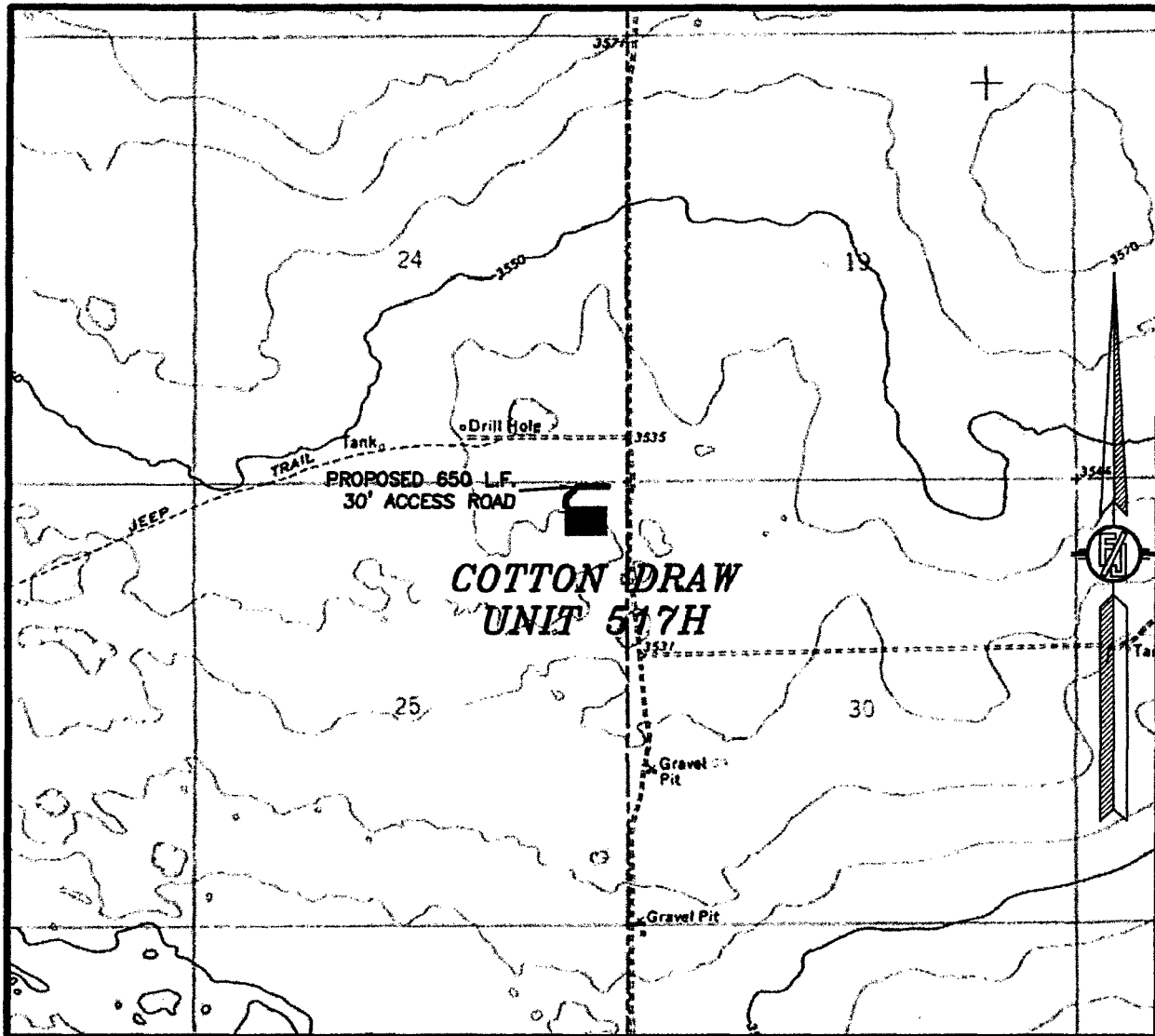
JULY 13, 2017

SURVEY NO. 5335

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

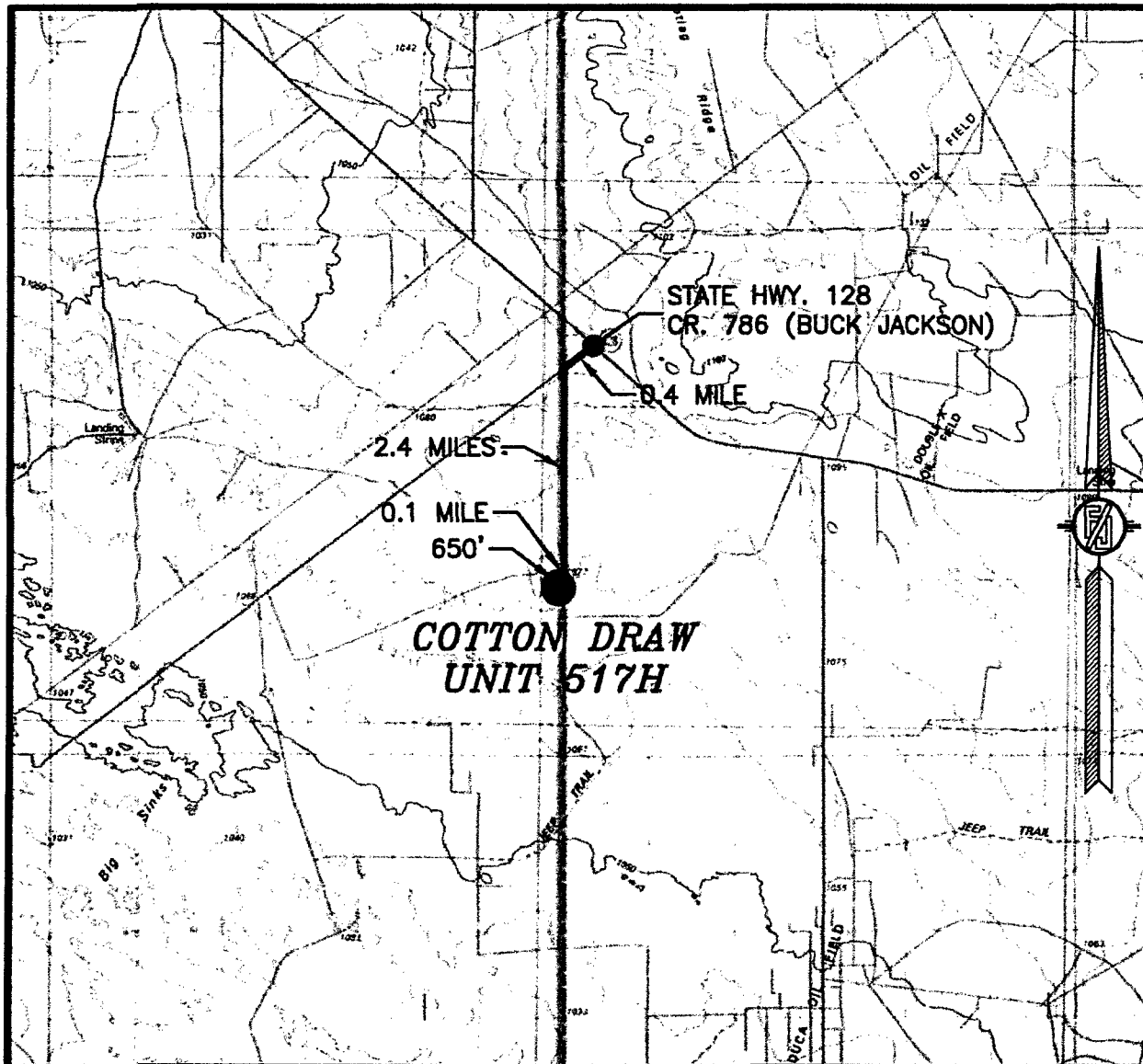
DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 517H
LOCATED 485 FT. FROM THE NORTH LINE
AND 470 FT. FROM THE EAST LINE OF
SECTION 25, TOWNSHIP 24 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JULY 13, 2017

SURVEY NO. 5335

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 517H

LOCATED 485 FT. FROM THE NORTH LINE

AND 470 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. 5335

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
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.
COTTON DRAW UNIT 517H

LOCATED 485 FT. FROM THE NORTH LINE
AND 470 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. 5335

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



**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:

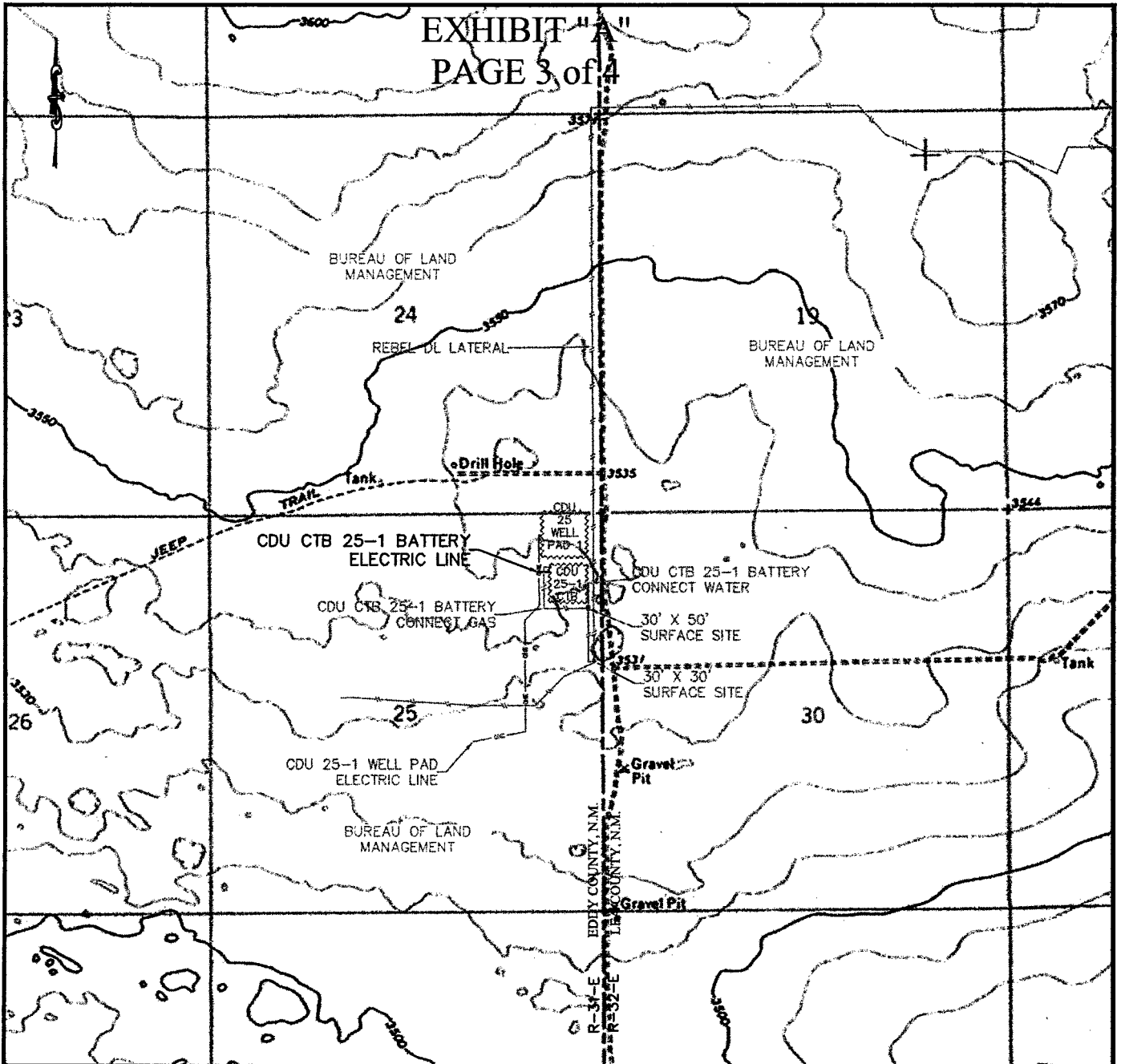
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/20/2017

Drawn for:



LINE NUMBER:
EL8038

WBS NUMBER:
XX-124092.01

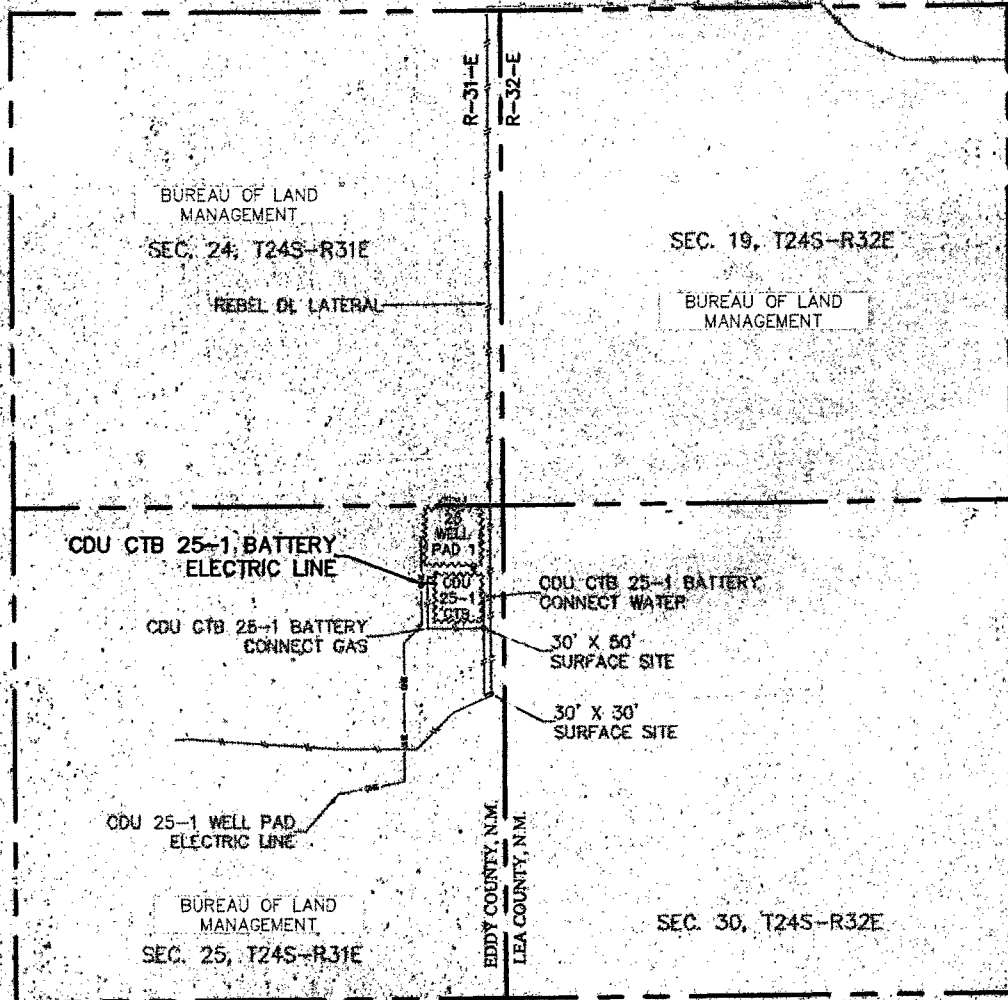
SCALE:
1" = 2000'

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

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/20/2017

Drawn for:



LINE NUMBER:
EL8038

WBS NUMBER:
XX-124092.01

SCALE:
1" = 2000'

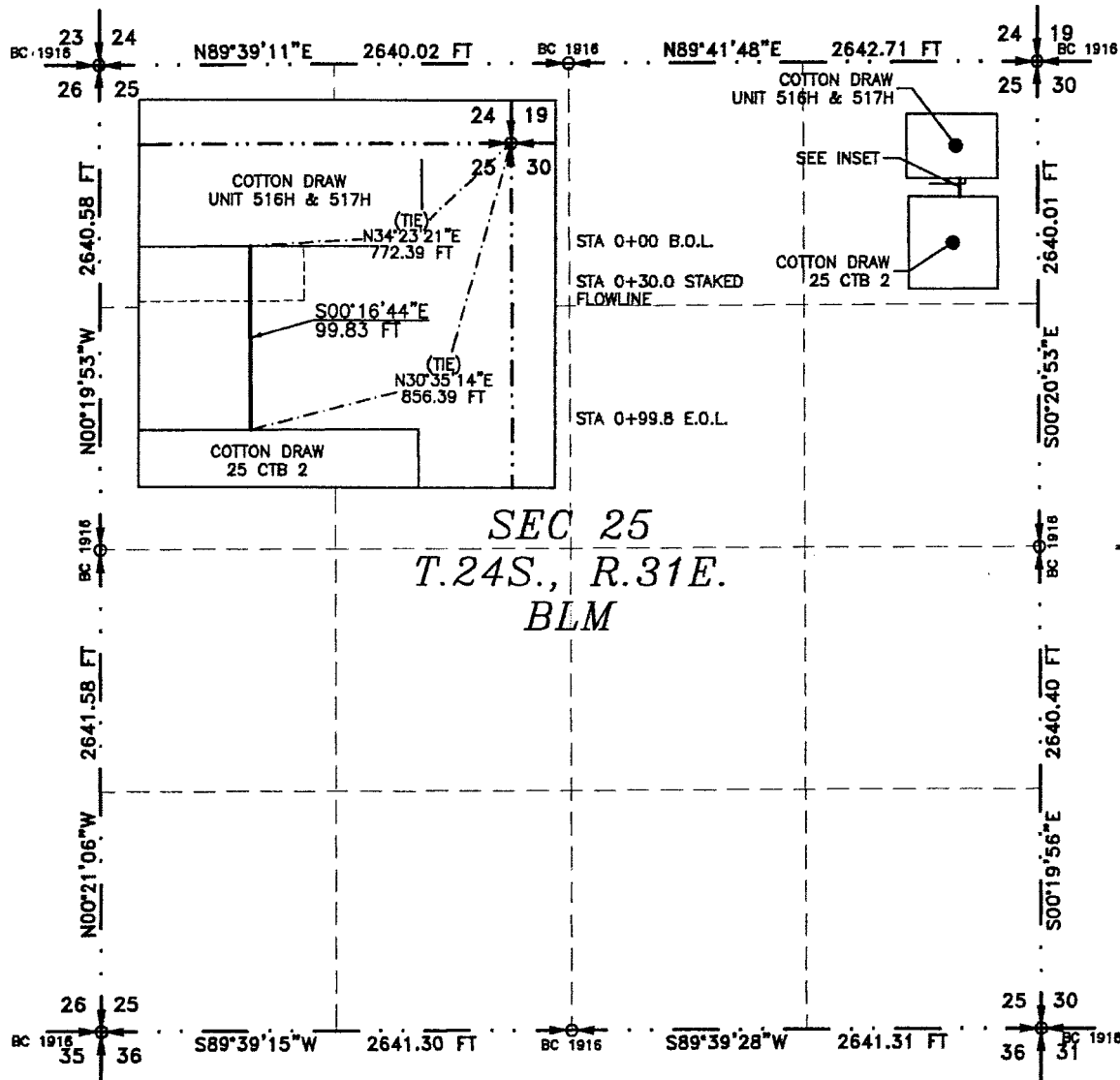
REVISIONS:

SHEET:
4 OF 4

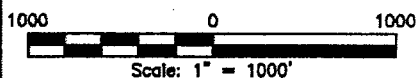
FLOWLINE PLAT

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



GENERAL NOTES

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

SHEET: 1-4

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 21ST DAY OF JULY 2017

[Signature]
FILMON F. JARAMILLO, PLS. 12797
REGISTERED PROFESSIONAL SURVEYOR

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

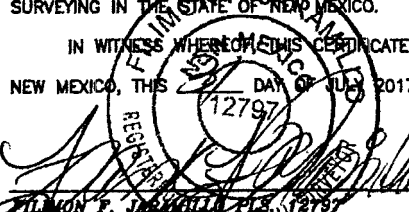
1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

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

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD,
NEW MEXICO, THIS 21 DAY OF JULY, 2017


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

SHEET: 2-4

MADRON SURVEYING, INC.

SURVEY NO. 5366

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

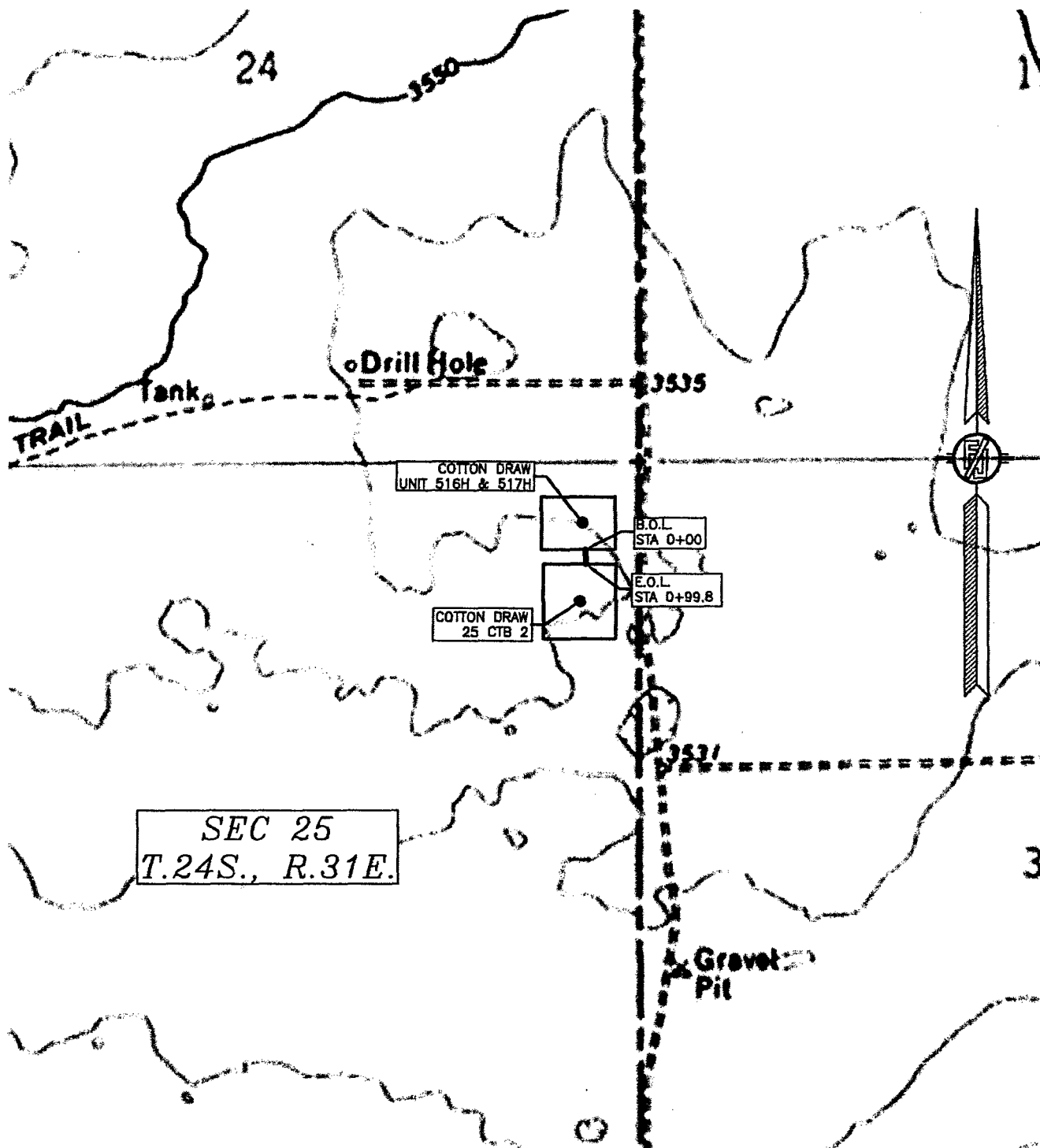
DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING

SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

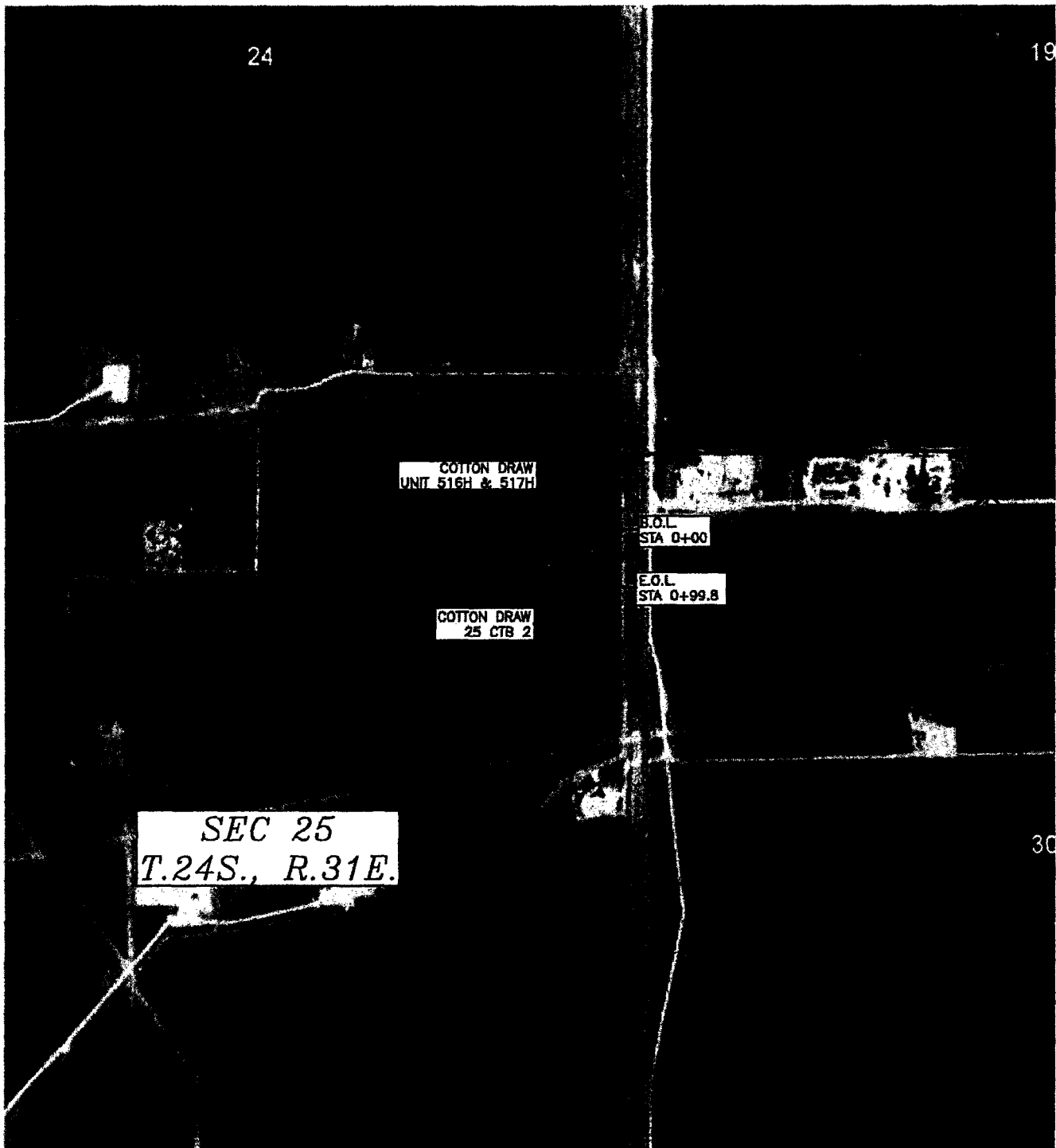
JULY 21, 2017



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

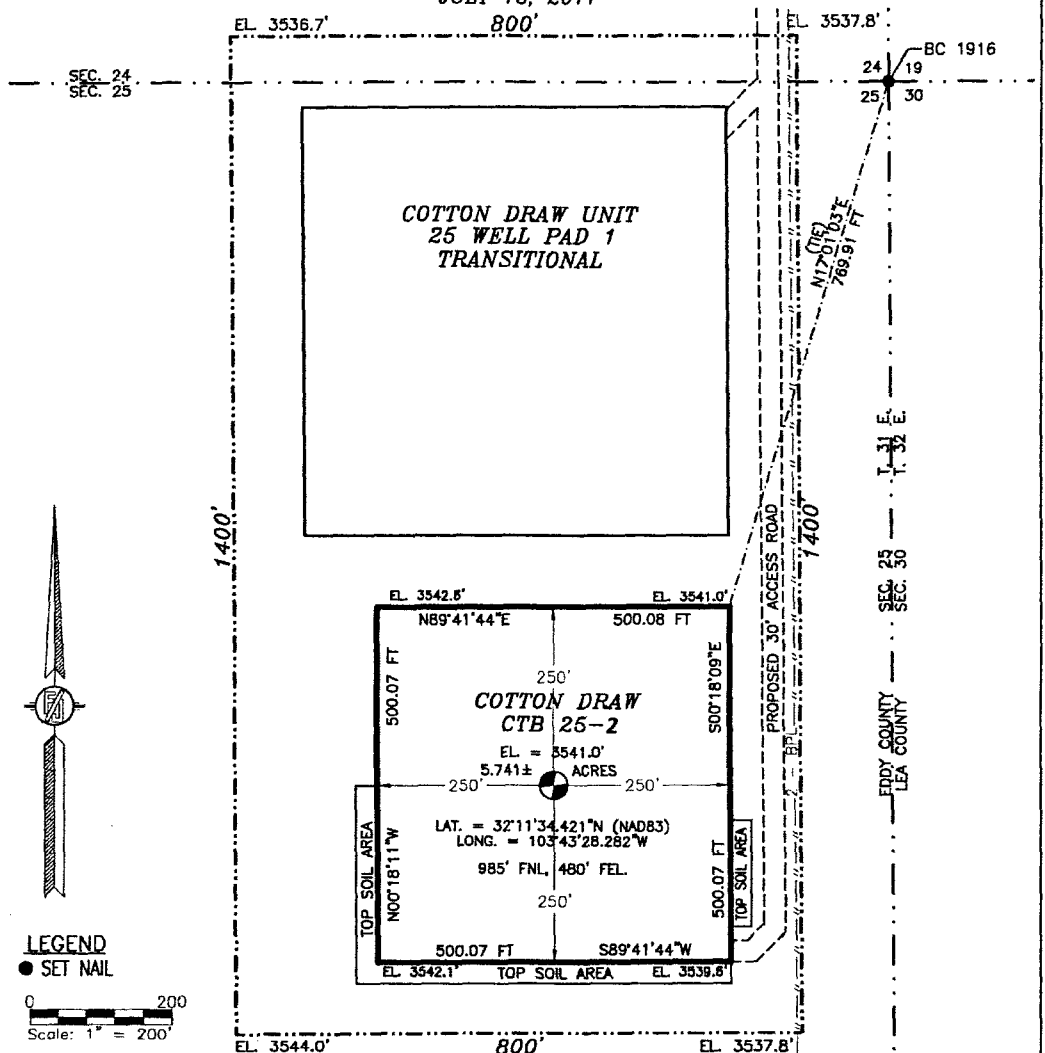
DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 25, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JULY 21, 2017



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.

SHEET: 1-3

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO, THIS 12 DAY OF JULY 2017

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

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

SURVEY NO. 5338

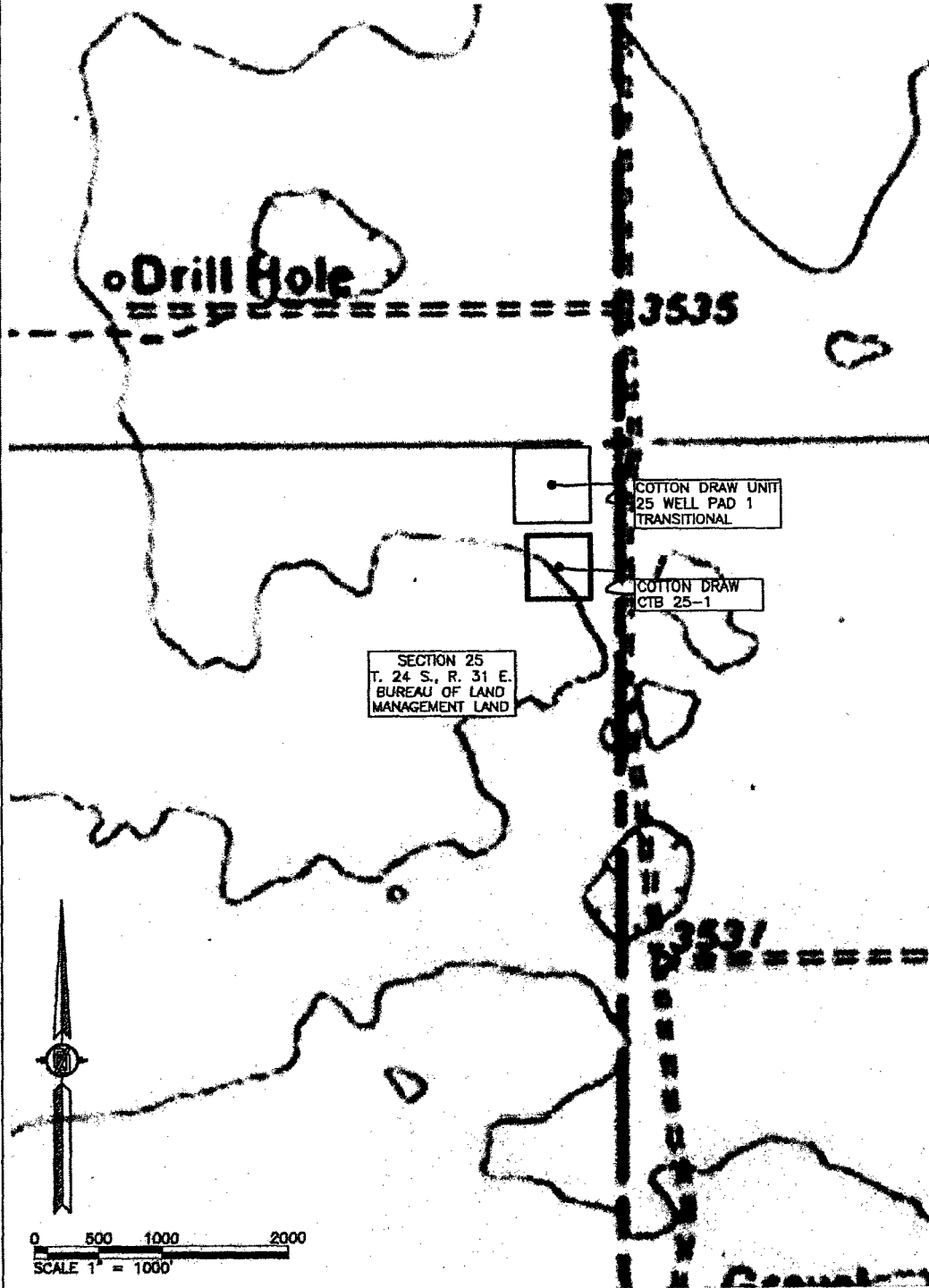
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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

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

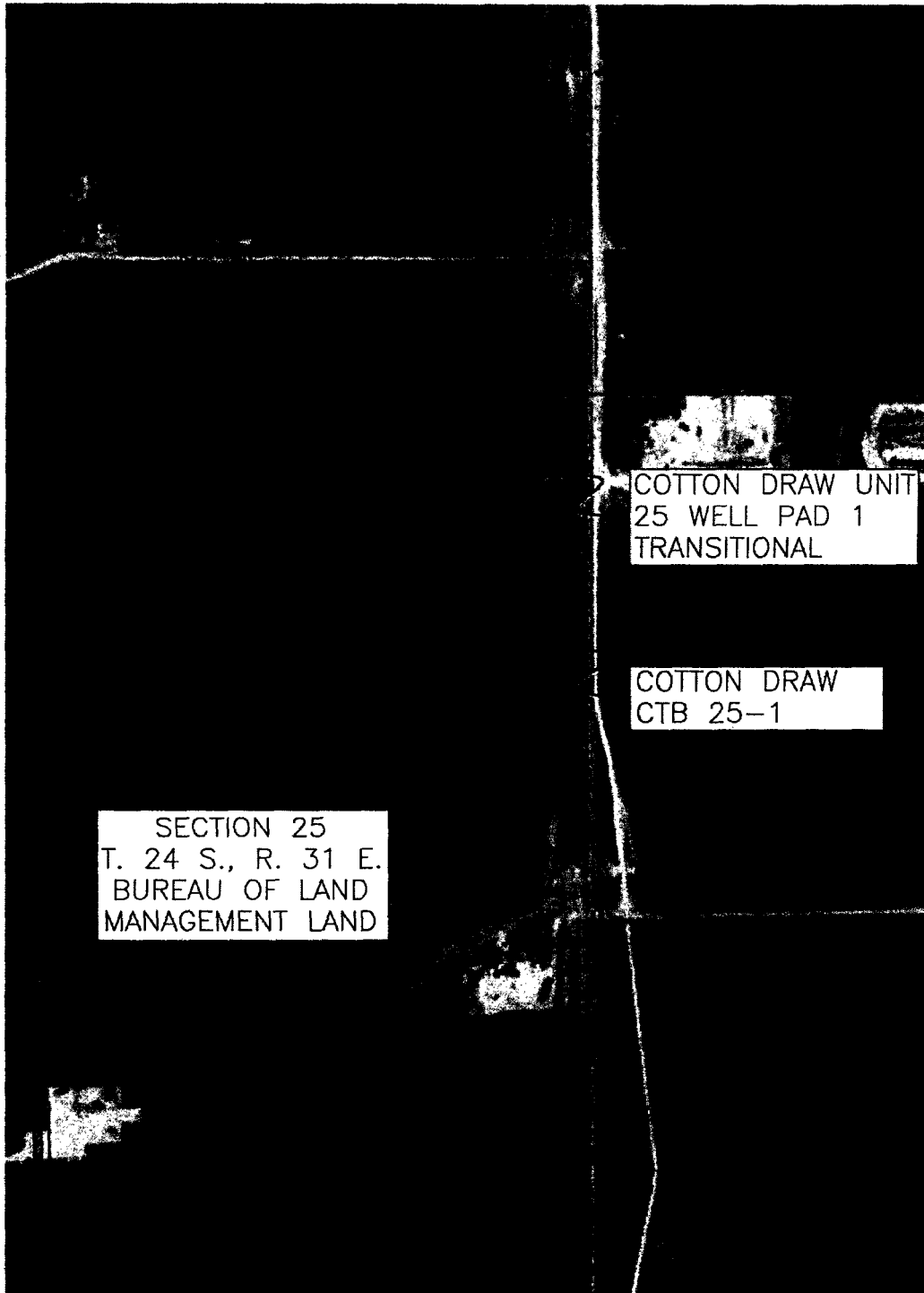
SURVEY NO. 5338

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



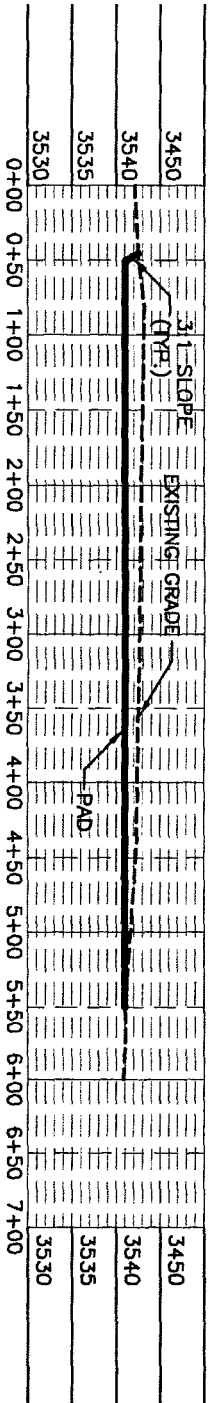
SHEET: 3-3

SURVEY NO. 5338

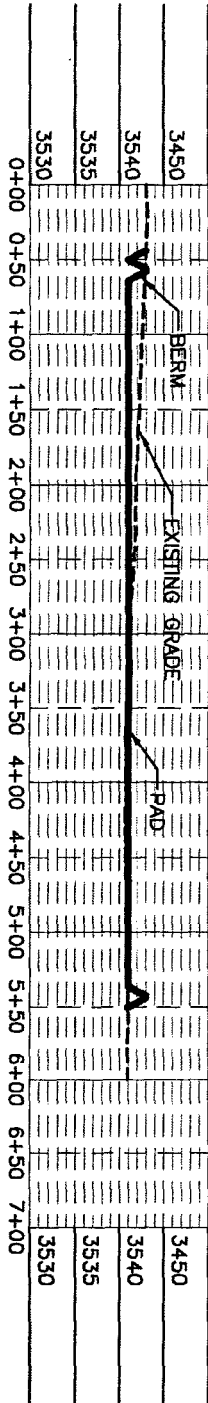
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

CROSS-SECTIONS

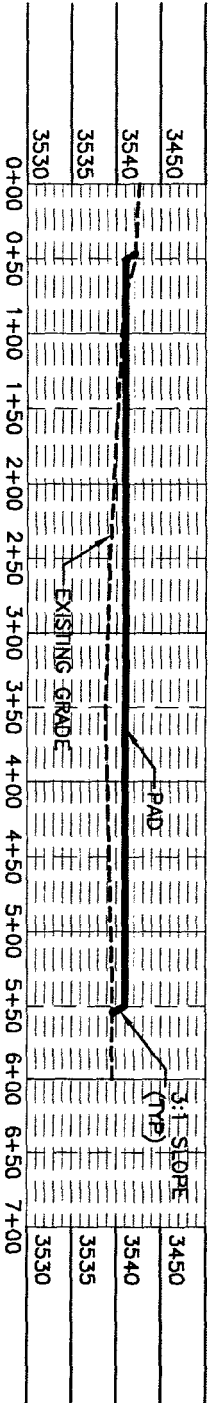
SECTION A-A'



SECTION B-B'



SECTION C-C'



0+12 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

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

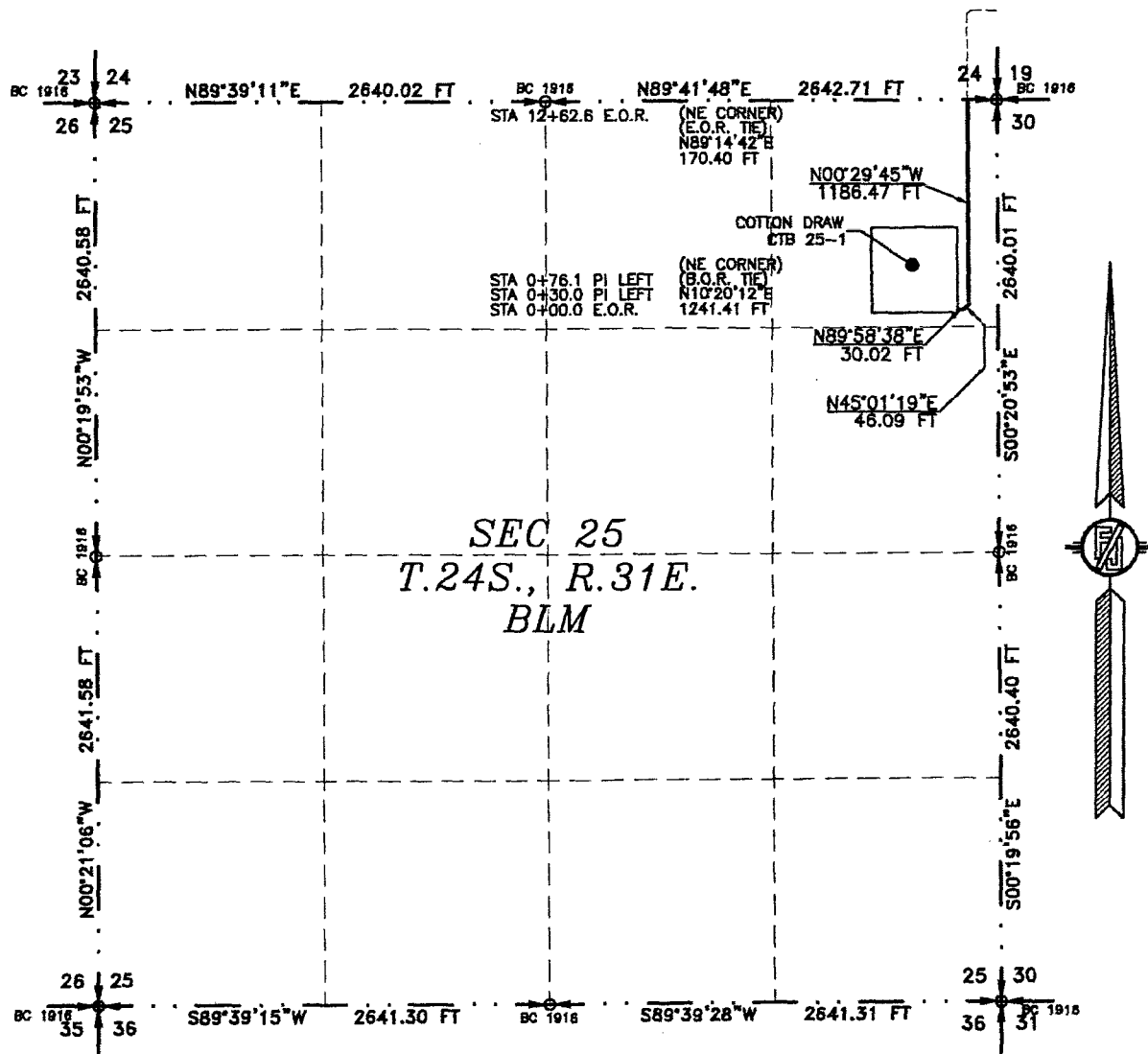
SHEET 2-2
SURVEY NO. 6938

JULY 13, 2017

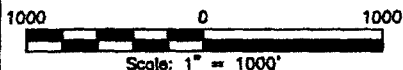
301 SOUTH CANAL
(575) 234-3341

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



SEE NEXT SHEET (2-2) FOR DESCRIPTION



GENERAL NOTES

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

SHEET: 1-2

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO, THIS 13th DAY OF JULY 2017

FILMON F. JARAMILLO, SURVEYOR NO. 12797
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

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

SURVEY NO. 5338

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

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.

SHEET: 2-2

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO, THIS 13 DAY OF JULY 2017

12797

FILMON F. JARAMILLO, P.S. 12797

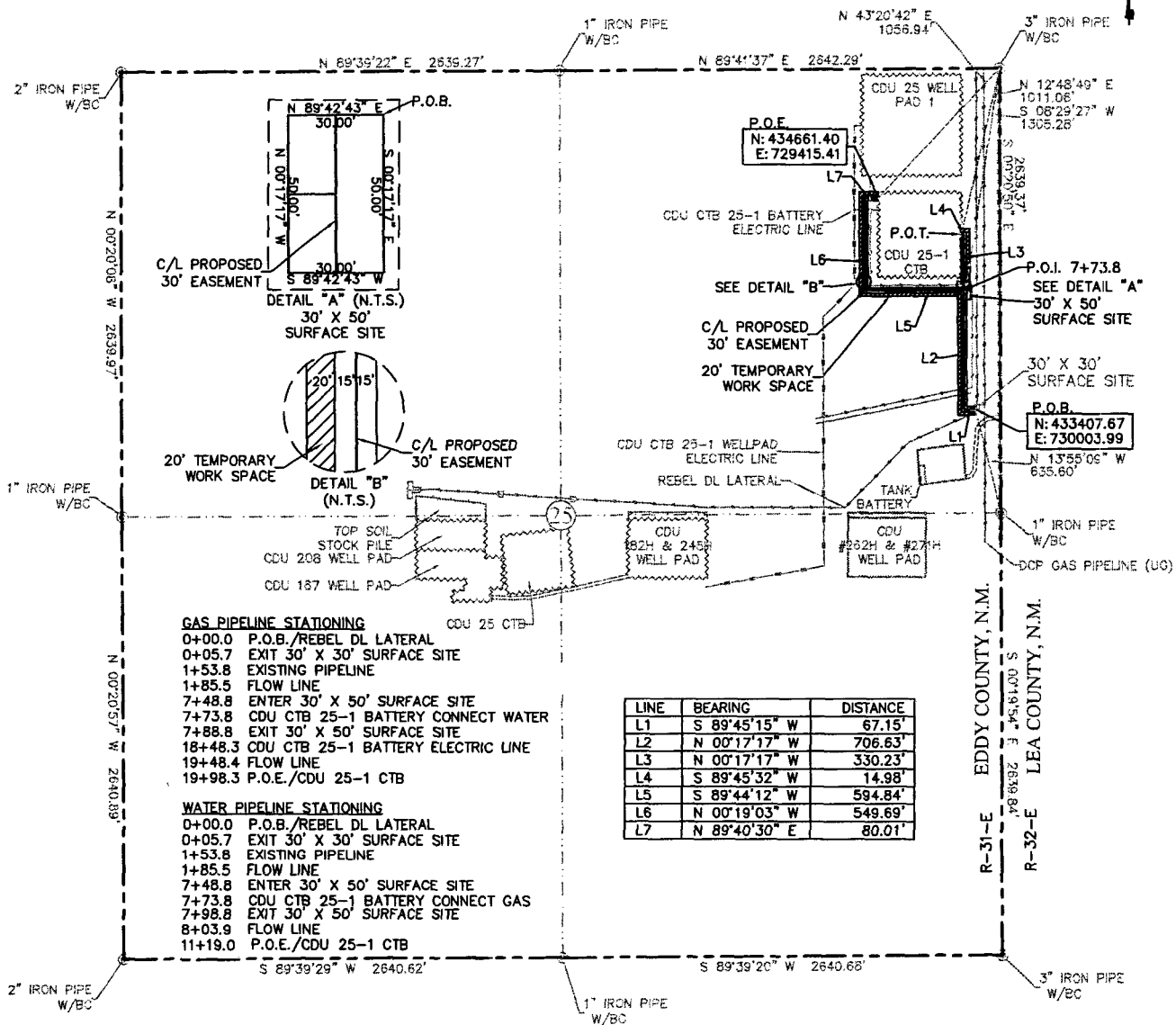
301 SOUTH CANAL
(575) 234-3341

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

SURVEY NO. 5338

CARLSBAD, NEW MEXICO

EXHIBIT "A"
PAGE 1 of 5
SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



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'

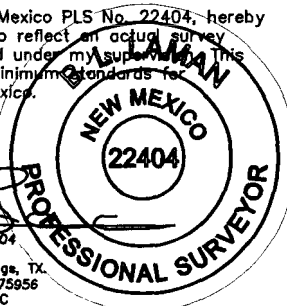
30' X 50' SURFACE SITE AREA = 0.034 ACRE(S)
 30' EASEMENT AREA = 1.604 ACRE(S)
 20' TEMPORARY WORK SPACE AREA = 1.145 ACRE(S)
 2343.53' FEET OR 142.03 RODS

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 PLS #22404
 Signed: 08-27-2017
 353 CR 526 Magnolia Springs, TX
 (903) 388-3045 75956
 Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 8/17/2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU CTB 25-1 BATTERY
CONNECT GAS & WATER

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 25, T24S-R31E, N.M.P.M.

LINE NUMBER:
780139X.Z

WBS NUMBER:
XX-124092.01

SCALE:
1" = 1000'

REVISIONS:

SHEET:
1 OF 5

0 1000 2000



**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;

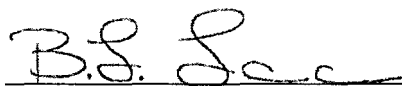
N 00°17'17" W a distance of 50.00' to a point;

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

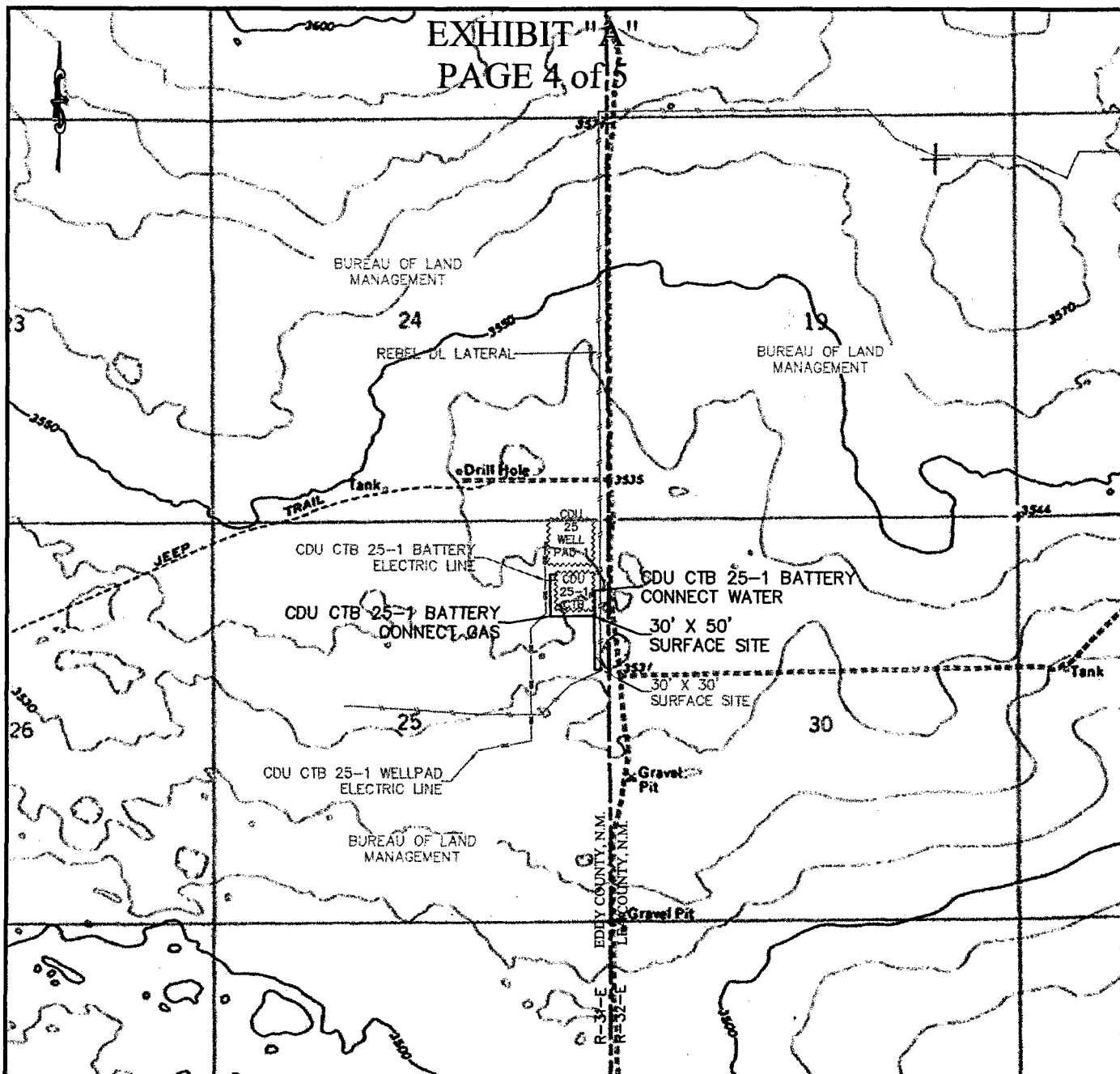
(903) 388-3045 75951

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

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/17/2017

Drawn for:

devon

LINE NUMBER:
760139XZ

WBS NUMBER:
XX-124092.01

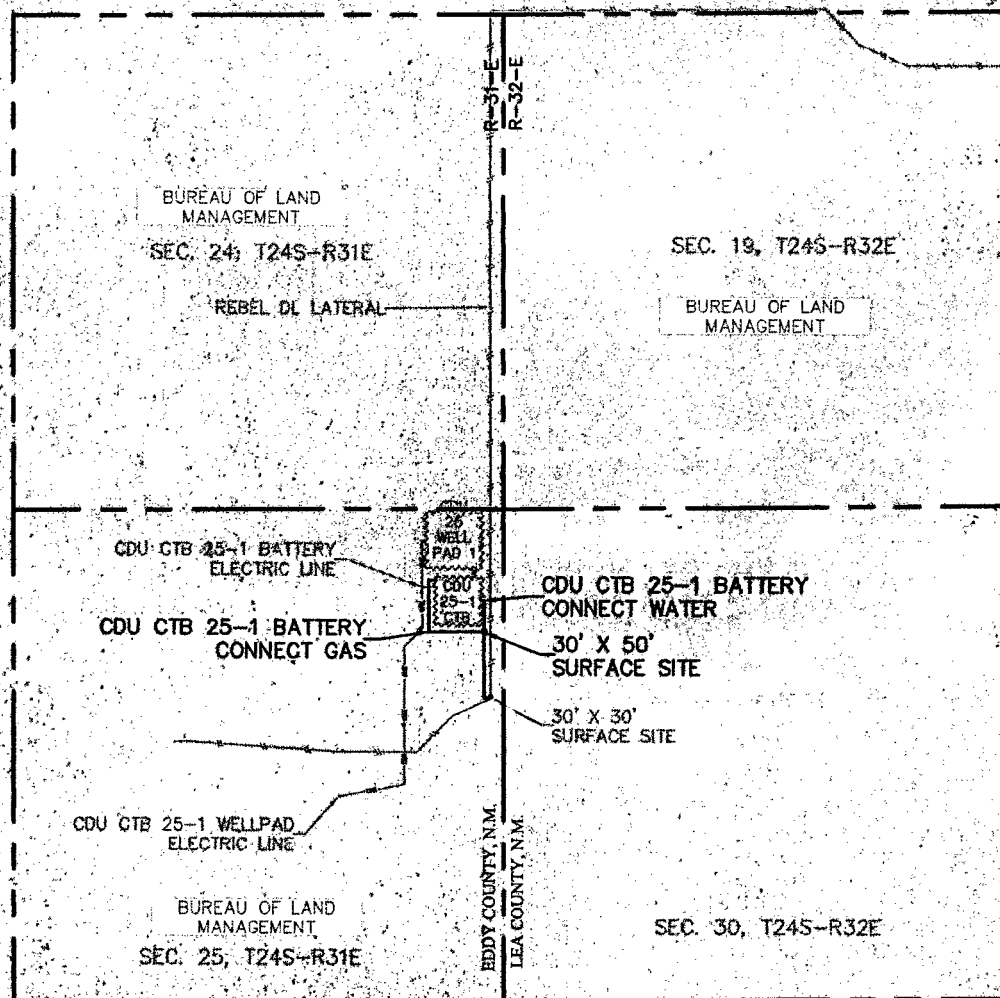
SCALE:
1" = 2000'

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

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/17/2017

Drawn for:



LINE NUMBER:
760139XZ

WBS NUMBER:
XX-124092.01

SCALE:
1" = 2000'

REVISIONS:

SHEET:
5 OF 5



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 southeast quarter (SE ¼) and 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 3" iron pipe w/BC for the southeast corner of Section 25, T24S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 39°10'20" W a distance of 2836.37' to the **Point of Beginning** of this easement having coordinates of Northing=432349.83, Easting=728380.57 feet and continuing the following courses;

Thence N 80°03'04" E a distance of 721.80' to an angle point;

Thence N 00°17'12" W a distance of 1480.74' to an angle point;

Thence N 44°41'53" E a distance of 268.28' to an angle point;

Thence N 00°18'17" W a distance of 944.41' to an angle point;

Thence N 89°40'03" E, a distance of 44.99' to the **Point of Ending** having coordinates of Northing=435090.61, Easting=729312.76 feet, from said point a 3" iron pipe w/BC for the northeast corner of Section 25, T24S-R31E bears N 67°42'43" E a distance of 894.99', covering **3460.22' or 209.71 rods** and having an area of **2.383 acres**.

NOTES:

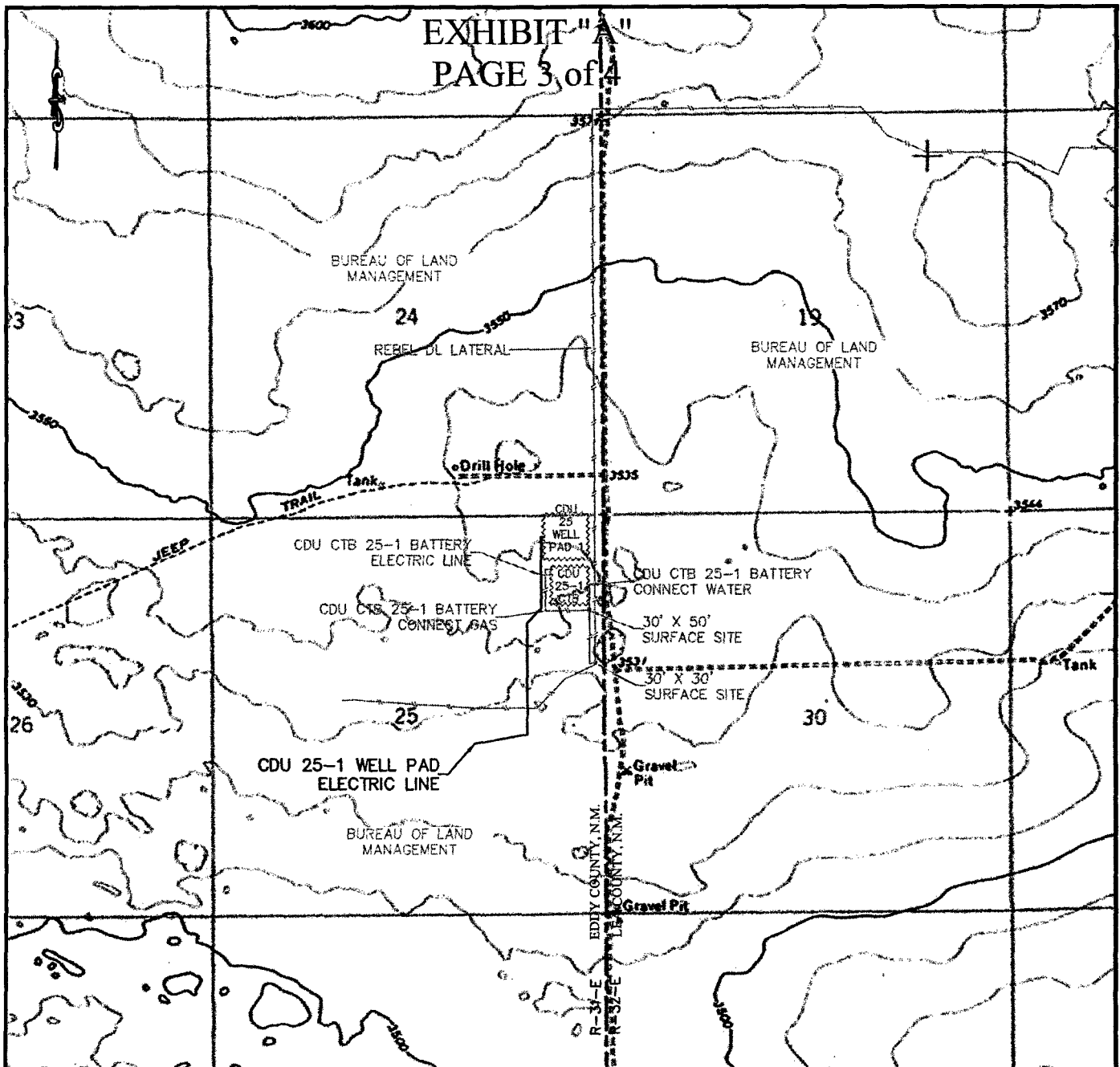
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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





QUAD MAP

SECTION 25, T24S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/19/2017

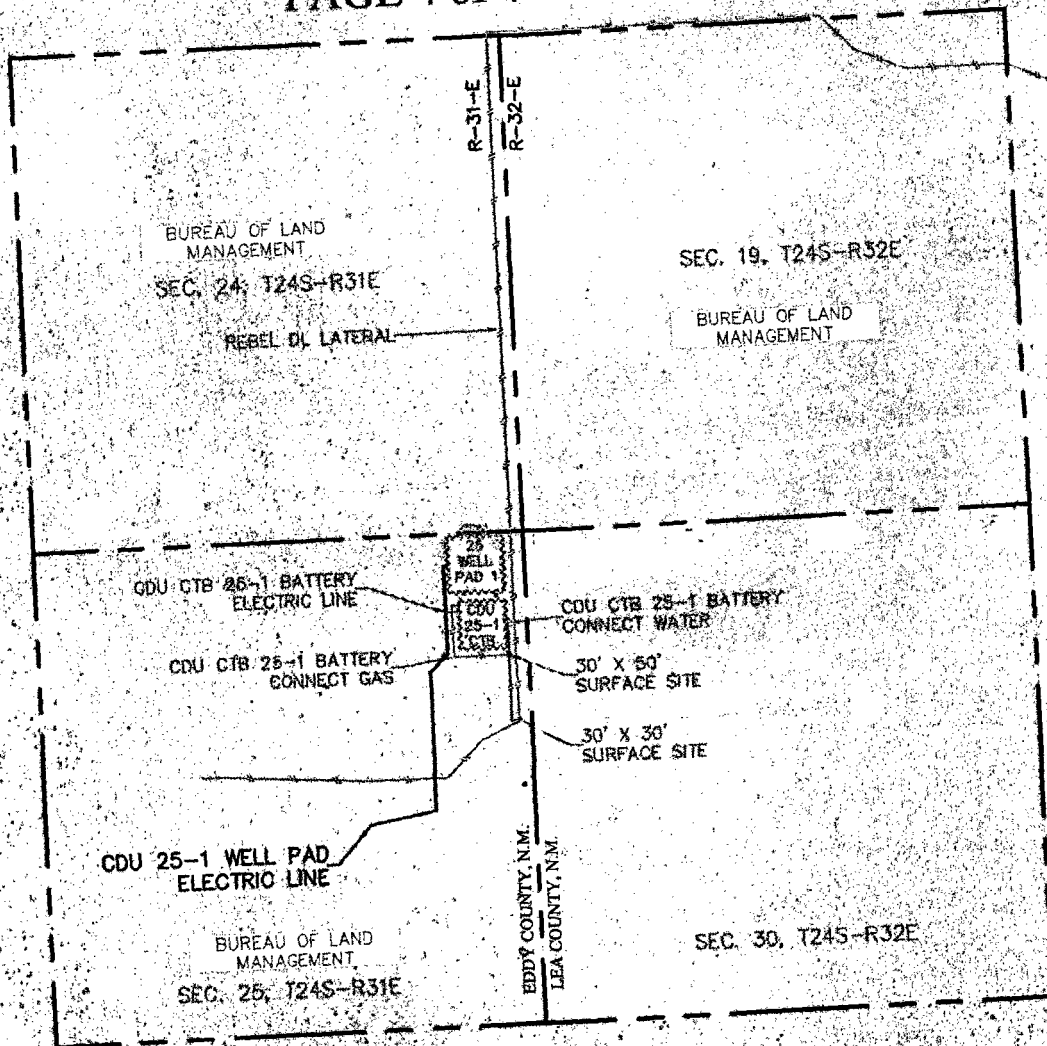
Drawn for:



LINE NUMBER:
EL8039
WBS NUMBER:
XX-124092.01
SCALE:
1" = 2000'
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

DEVON ENERGY PRODUCTION CO., L.P.

PROPOSED 30' EASEMENT

Drawn by:
CHRIS MAAS

Date: 08/19/2017

Drawn for:

devon

LINE NUMBER:
EL8039

WBS NUMBER:
XX-124092.01

SCALE:
1" = 2000'

REVISIONS:

SHEET:
4 OF 4

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Info Data Report

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: