

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.Case Serial No.
NMNM0359295A

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

HOBBS OGD

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

DEVON ENERGY PRODUCTION COMPANY

Contact: LINDA GOOD

E-mail: linda.good@devn.com

3a. Address

333 WEST SHERIDAN AVE
OKLAHOMA CITY, OK 73102

3b. Phone No. (include area code)

Ph: 405-552-6558

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 28 T25S R32E Mer NMP NWNE 175FNL 1950FEL

8. Well Name and No.

MARWARI 28-16 STATE FED COM 236H

9. API Well No.

30-025-45205

10. Field and Pool or Exploratory Area

WC-025 G-08 S253235G; BS

11. County or Parish, State

LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Attention Haque & Chris,

Devon Energy Production Co., L.P. respectfully request permission to change the following for the subject well:

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

Bottomhole Location changed from 330 FNL 1980 FEL, Unit B, Sec 16-T25S-R32E to 20 FSL 660 FEL, Unit P, Sec 33-T25S-R32E.

Pool code/name changed from WC-025 G-07 S253206M; Bone Spring to WC-025 G-08 S253235G; Bone Spring.

Attached are the revised Drilling Plan, Directional Plan, Survey, AC Report and C-102 plat.

14. I hereby certify that the foregoing is true and correct.

**Electronic Submission #442263 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION COMPANY, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/01/2018 ()**

Name (Printed/Typed) LINDA GOOD

Title REGULATORY SPECIALIST

Signature (Electronic Submission)

Date 11/01/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Mustafa Haque**Petroleum Engineer**

Date 11-06-2018

Conditions of approval, if any, are attached. Approval of this notice 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.

Carlsbad Field Office

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.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****Ka

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
511 S. First St., Artesia, NM 88210
Phone: (575) 748-1253 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-45205	² Pool Code 97903	³ Pool Name WC-025 G-08 S253235G; Bone Spring
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N

⁴ Property Code 322445	⁵ Property Name MARWARI 28-16 STATE FED COM	⁶ Well Number 236H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3389.3

" Surface Location

UL or lot no. B	Section 28	Township 25 S	Range 32 E	Lot Idn	Feet from the 175	North/South line NORTH	Feet from the 1950	East/West line EAST	County LEA
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" Bottom Hole Location If Different From Surface

UL or lot no. P	Section 33	Township 25 S	Range 32 E	Lot Idn	Feet from the 20	North/South line SOUTH	Feet from the 660	East/West line EAST	County LEA
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¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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o allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

NW CORNER SEC. 28 LAT. = 32.1085668°N LONG. = 103.6886834°W NMSP EAST (FT) N = 403829.87 E = 740937.30 W Q CORNER SEC. 28 LAT. = 32.1013805°N LONG. = 103.6886378°W NMSP EAST (FT) N = 401215.68 E = 740987.06 SW CORNER SEC. 28 LAT. = 32.0941331°N LONG. = 103.6886262°W NMSP EAST (FT) N = 398579.22 E = 740986.41 W Q CORNER SEC. 33 LAT. = 32.0868667°N LONG. = 103.6886534°W NMSP EAST (FT) N = 395935.76 E = 740993.81 SW CORNER SEC. 33 LAT. = 32.0796245°N LONG. = 103.6886768°W NMSP EAST (FT) N = 393301.15 E = 741002.30	N 88°51'38"E 2661.92 FT N Q CORNER SEC. 28 LAT. = 32.1085668°N LONG. = 103.6886834°W NMSP EAST (FT) N = 403829.87 E = 740937.30 N 89°21'15"E 2660.68 FT FTP 1950' SEC. 28 MARWARI 28-16 STATE FED COM 236H ELEV. = 3389.3' LAT. = 32.1081974°N (NAD83) LONG. = 103.677937°W NMSP EAST (FT) N = 403715.83 E = 744309.91 S Q CORNER SEC. 28 LAT. = 32.0941449°N LONG. = 103.6800514°W NMSP EAST (FT) N = 398599.50 E = 743641.83 NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVD83. SEC. 33 LAST TAKE POINT 100' FSL, 660' FEL LAT. = 32.0799331°N LONG. = 103.6736197°W NMSP EAST (FT) N = 393441.60 E = 745665.21 BOTTOM OF HOLE LAT. = 32.079132°N LONG. = 103.6736201°W NMSP EAST (FT) N = 393361.61 E = 745665.57 S Q CORNER SEC. 33 LAT. = 32.0796430°N LONG. = 103.6800793°W NMSP EAST (FT) N = 393323.87 E = 743665.13 SE CORNER SEC. 33 LAT. = 32.0796633°N LONG. = 103.6714898°W NMSP EAST (FT) N = 393347.47 E = 746325.50	NE CORNER SEC. 28 LAT. = 32.1087061°N LONG. = 103.6714983°W NMSP EAST (FT) N = 403912.78 E = 746258.05 FIRST TAKE POINT 100' FSL, 660' FEL LAT. = 32.1084219°N LONG. = 103.6736267°W NMSP EAST (FT) N = 403805.36 E = 745599.03 SE CORNER SEC. 28 LAT. = 32.0941915°N LONG. = 103.6714657°W NMSP EAST (FT) N = 398632.65 E = 746300.54	" OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Linda Good</i> 11/1/2018 Signature Date Linda Good Printed Name linda.good@dmv.com E-mail Address " SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. OCTOBER 31, 2018 Date of Survey <i>FRIMON F. JARAMILLO</i> Signature and Seal of Professional Surveyor Certificate Number: FRIMON F. JARAMILLO, PLS 12797 SURVEY NO. 5899D
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Intent ☒ As Drilled ☐

API #
30-025-45205

Operator Name: DEVON ENERGY PRODUCTION CO., L.P.	Property Name: MARWARI 28-16 STATE FED COM	Well Number 236H
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Kick Off Point (KOP)

UL A	Section 28	Township 25S	Range 32E	Lot	Feet 63	From N/S NORTH	Feet 660	From E/W EAST	County LEA
Latitude 32.10851942					Longitude -103.67361111				NAD

First Take Point (FTP)

UL A	Section 28	Township 25S	Range 32E	Lot	Feet 100	From N/S NORTH	Feet 660	From E/W EAST	County LEA
Latitude 32.1084219					Longitude 103.6736287				NAD 83

Last Take Point (LTP)

UL P	Section 33	Township 25S	Range 32E	Lot	Feet 100	From N/S SOUTH	Feet 660	From E/W EAST	County LEA
Latitude 32.0799331					Longitude 103.6736197				NAD 83

Is this well the defining well for the Horizontal Spacing Unit? ☒ Yes

Is this well an infill well? ☐

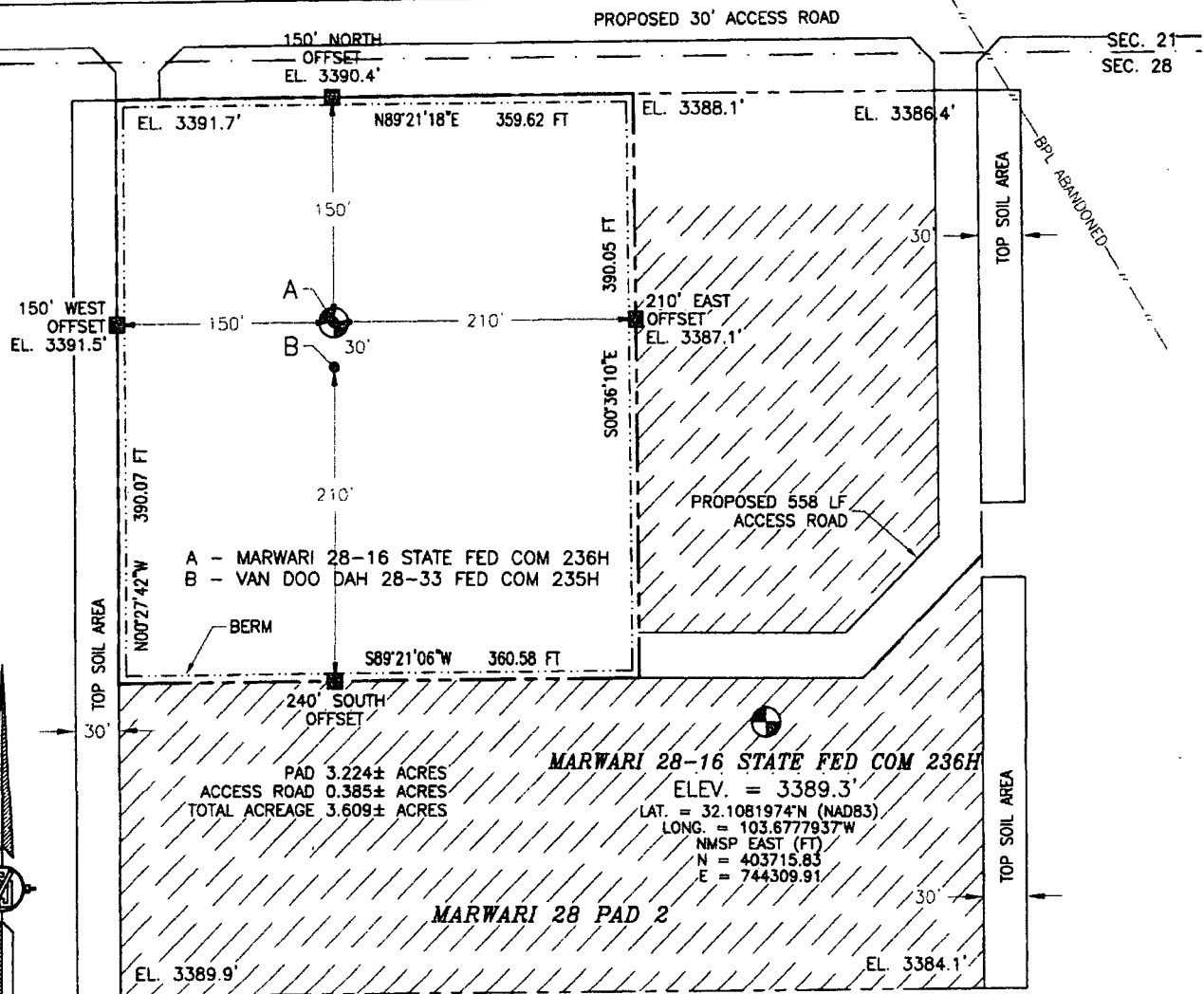
If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #	Operator Name:	Property Name:	Well Number

KZ 06/29/2018

SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVD88.



012 60 120 240
SCALE 1" = 120'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CR 1 (ORLA) & MONSANTO ROAD GO WEST APPROX. 0.65 MILE, GO SOUTH ON 20' CALICHE LEASE ROAD FOR APPROX. 1.09 MILES, FOLLOW ROAD SURVEY EAST APPROX. 0.33 OF A MILE, THEN SOUTH-SOUTHWEST-WEST 583' TO SOUTHEAST PAD CORNER FOR THIS LOCATION.

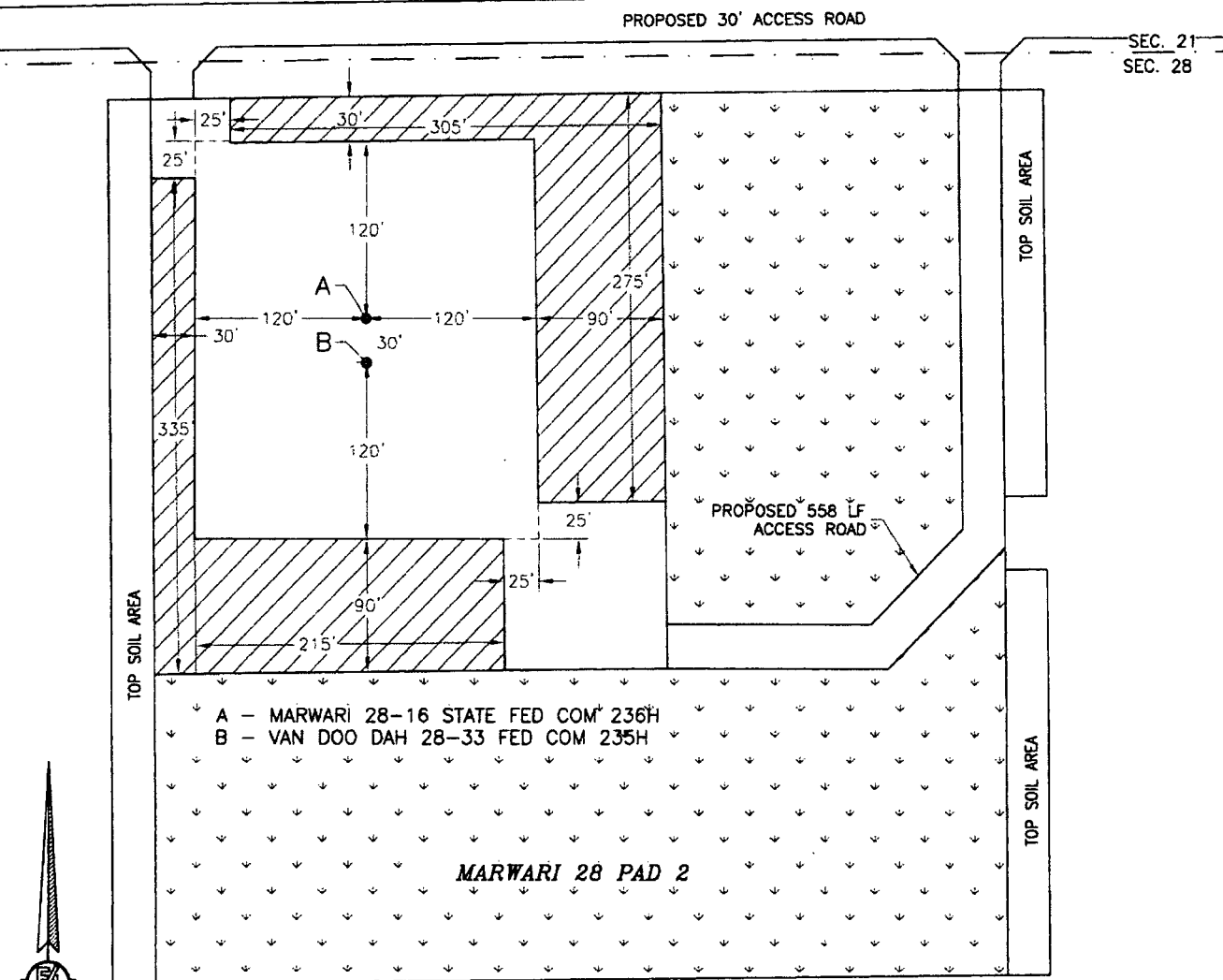
DEVON ENERGY PRODUCTION COMPANY, L.P.
MARWARI 28-16 STATE FED COM 236H
LOCATED 175 FT. FROM THE NORTH LINE
AND 1950 FT. FROM THE EAST LINE OF
SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

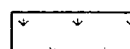
SURVEY NO. 5899D

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

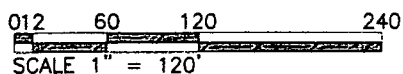
SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN



DENOTES INTERIM PAD
RECLAMATION AREA



DENOTES GRADING SITE
RECLAMATION AREA



1.395± ACRES INTERIM PAD RECLAMATION AREA
4.648± ACRES GRADING SITE RECLAMATION AREA
2.222± ACRES NON-RECLAIMED AREA
8.265± ACRES MARWARI 28 PAD 2

DEVON ENERGY PRODUCTION COMPANY, L.P.
MARWARI 28-16 STATE FED COM 236H
LOCATED 175 FT. FROM THE NORTH LINE
AND 1950 FT. FROM THE EAST LINE OF
SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

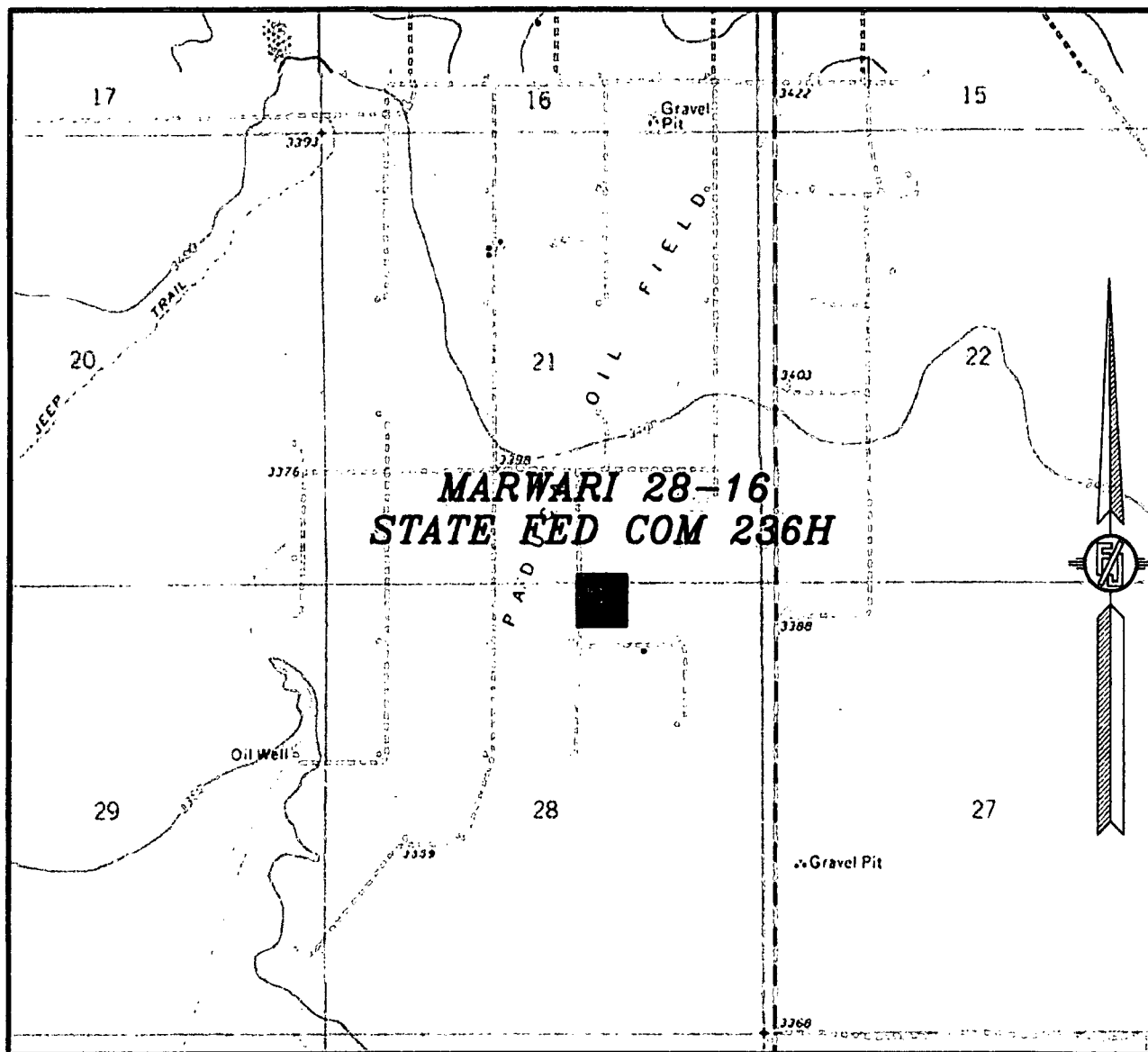
SURVEY NO. 5899D

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
PADUCA BREAKS WEST

NOT TO SCALE

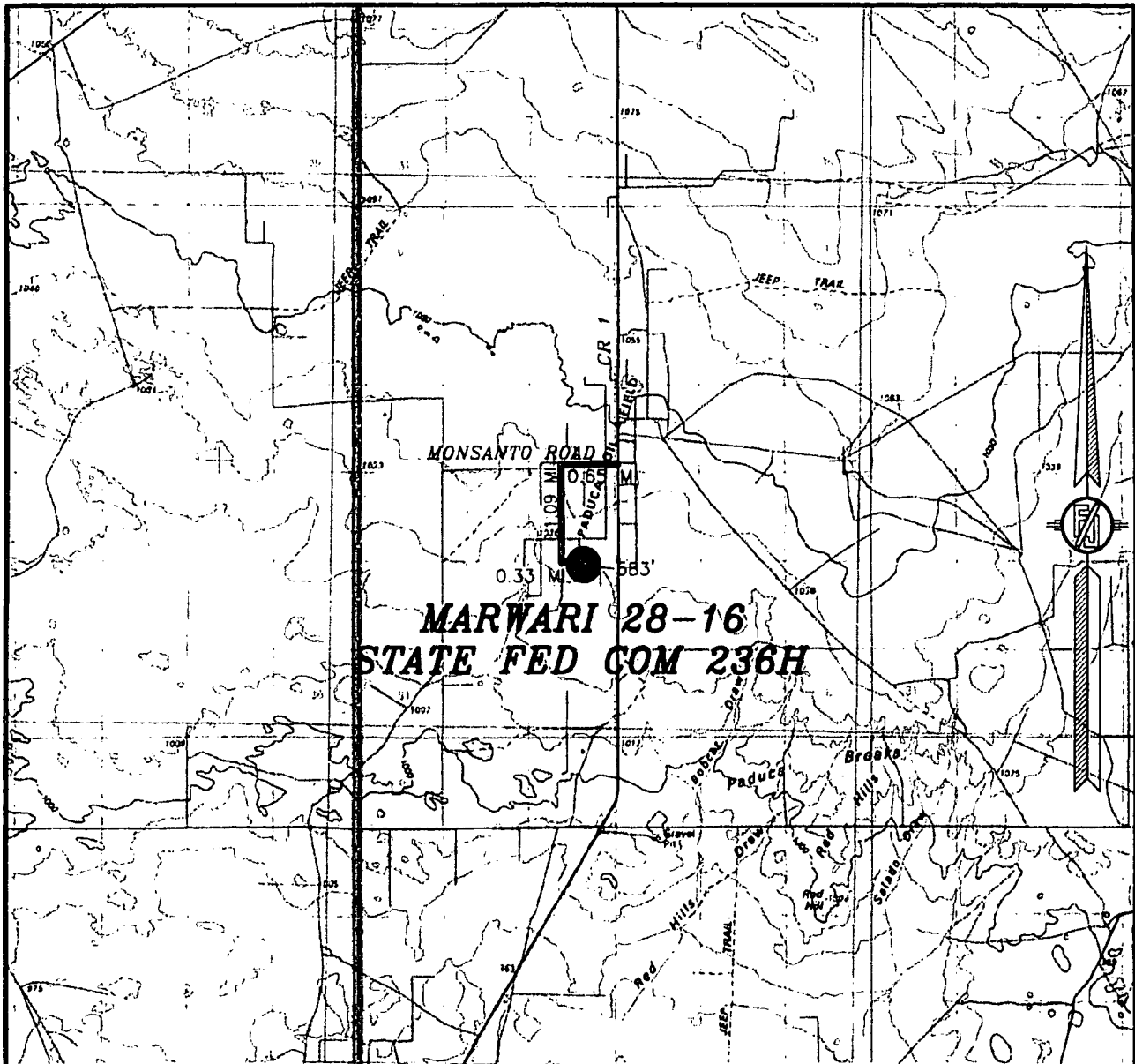
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SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

SURVEY NO. 5899D

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

SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.
MARWARI 28-16 STATE FED COM 236H

LOCATED 175 FT. FROM THE NORTH LINE
AND 1950 FT. FROM THE EAST LINE OF
SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

DIRECTIONS TO LOCATION

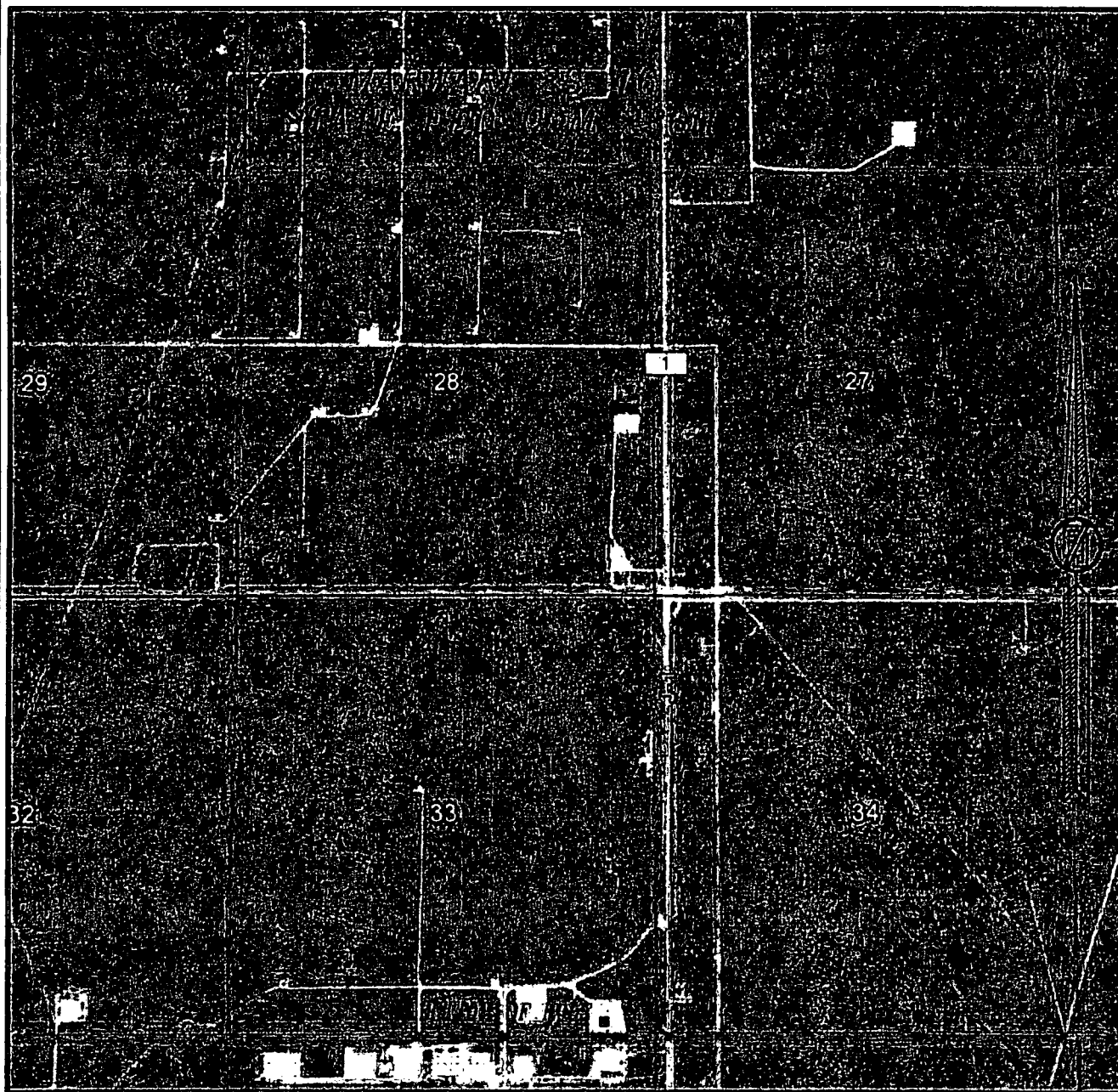
FROM THE INTERSECTION OF CR 1 (ORLA) & MONSANTO ROAD GO
WEST APPROX. 0.65 MILE, GO SOUTH ON 20' CALICHE LEASE ROAD
FOR APPROX. 1.09 MILES, FOLLOW ROAD SURVEY EAST APPROX.
0.33 OF A MILE, THEN SOUTH-SOUTHWEST-WEST 583' TO
SOUTHEAST PAD CORNER FOR THIS LOCATION.

OCTOBER 31, 2018

SURVEY NO. 5899D

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

SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2015

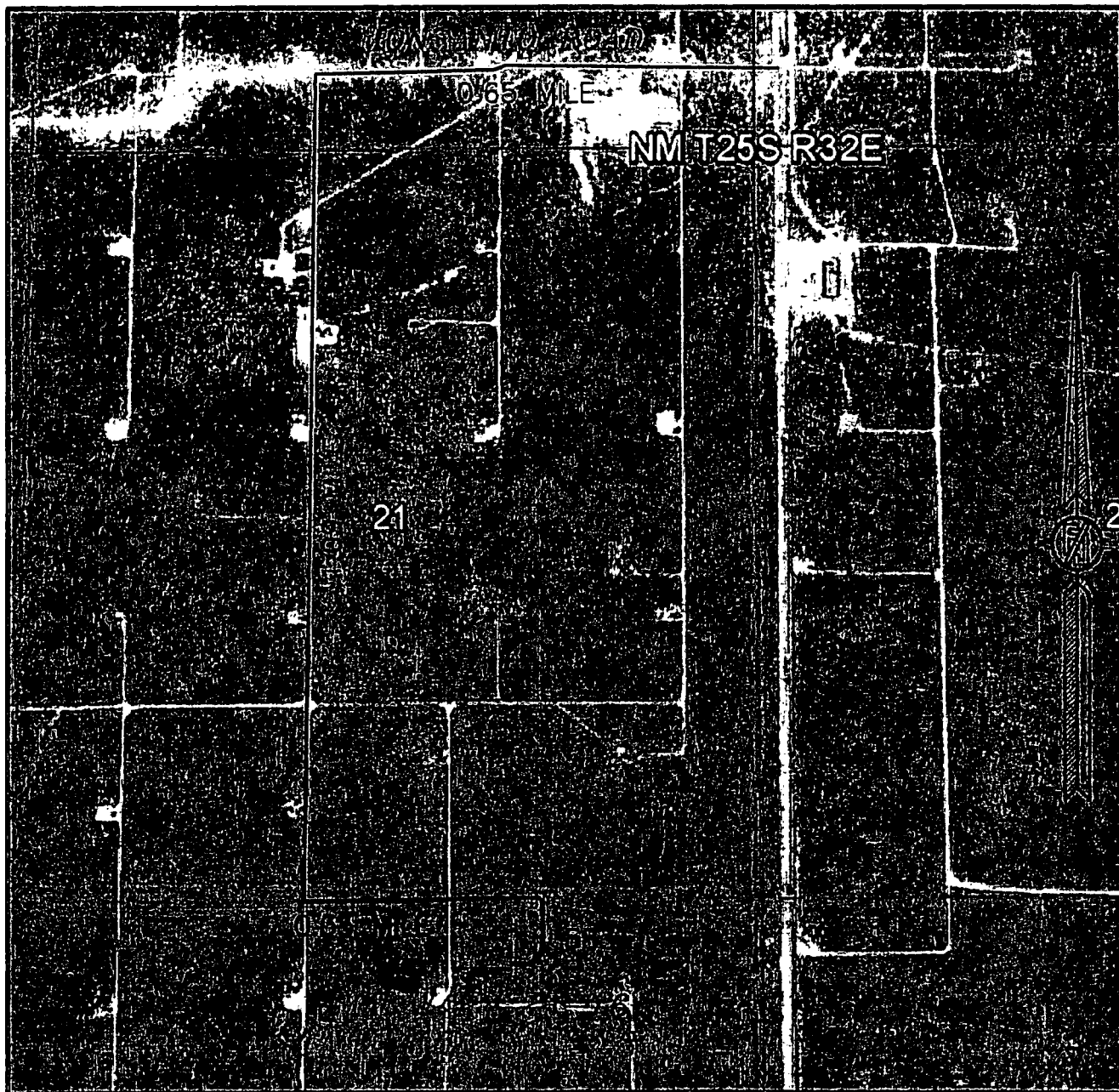
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MARWARI 28-16 STATE FED COM 236H
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SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

SURVEY NO. 5899D

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

SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2015

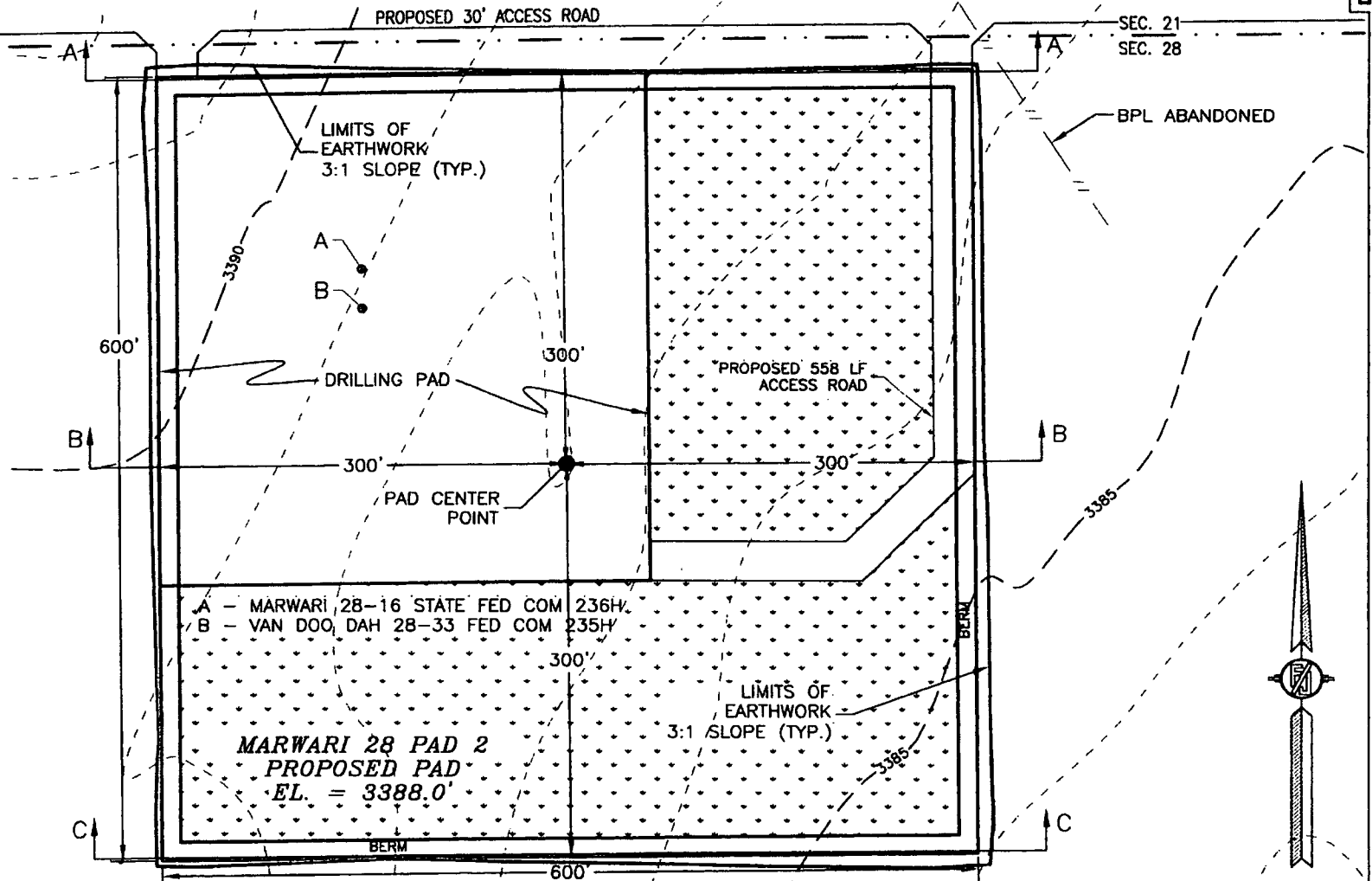
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LOCATED 175 FT. FROM THE NORTH LINE
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SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

SURVEY NO. 5899D

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

PLAN VIEW



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
MARWARI 28-16 STATE FED COM 236H
SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

OCTOBER 31, 2018

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

(575) 234-3341

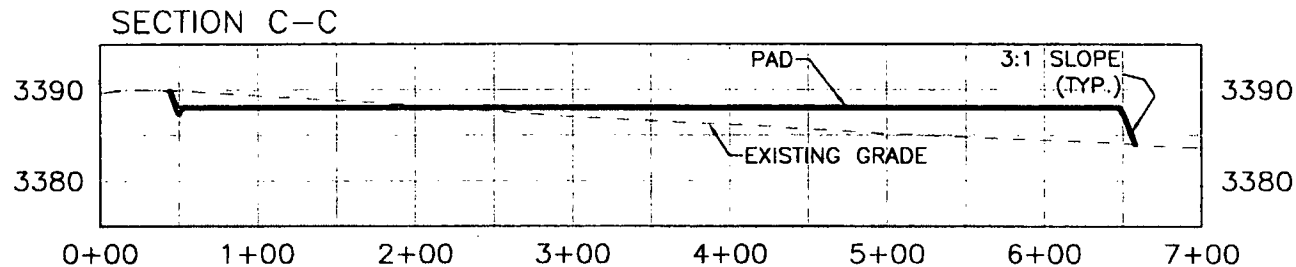
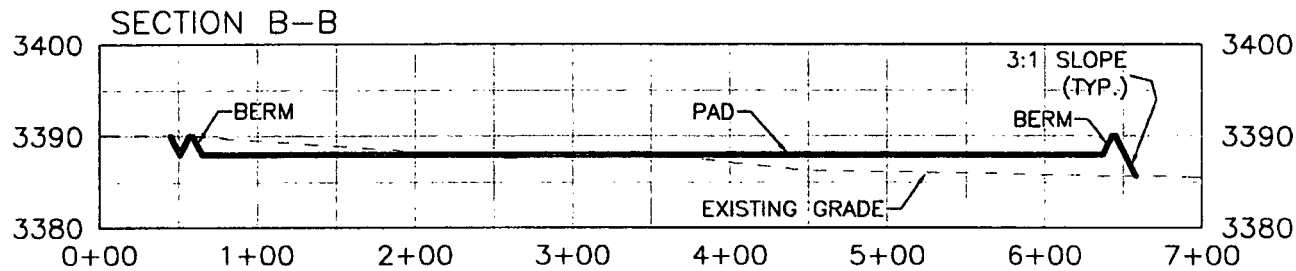
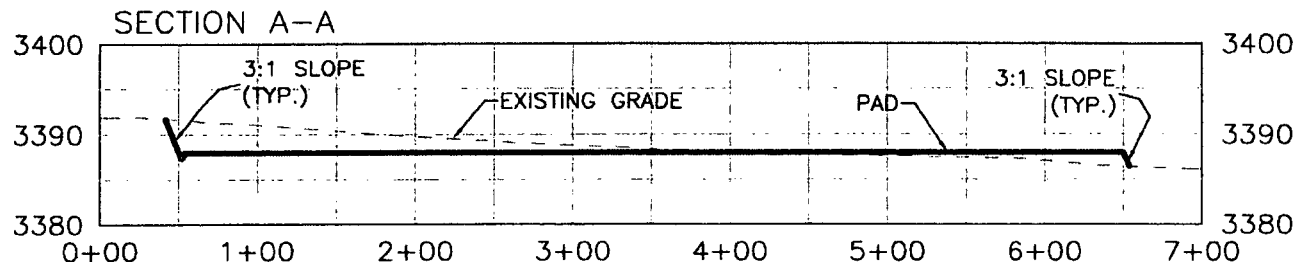
012 60 120 240
SCALE 1" = 120'

CUT	FILL	NET
4596 CU. YD	12824 CU. YD	8227 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

SHEET 1-2
SURVEY NO. 5899D

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
MARWARI 28-16 STATE FED COM 236H
SECTION 28, TOWNSHIP 25 SOUTH,
RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

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

CUT	FILL	NET
4596 CU. YD	12824 CU. YD	8227 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

OCTOBER 31, 2018
MADRON SURVEYING, INC. 301 SOUTH CANAL, CARLSBAD, NEW MEXICO
(575) 234-3341

SHEET 2-2
SURVEY NO. 5899D

ACCESS ROAD PLAT

ACCESS ROAD TO THE MARWARI 28 PAD 2
(MARWARI 28-16 STATE FED COM 236H & VAN DOO DAH 28-33 FED COM 235H)

DEVON ENERGY PRODUCTION COMPANY, L.P. CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. LEA COUNTY, STATE OF NEW MEXICO OCTOBER 31, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., LEA COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N88°24'36"E, A DISTANCE OF 1515.51 FEET;

THENCE S00°30'00"E A DISTANCE OF 303.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S45°00'00"W A DISTANCE OF 104.55 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S90°00'00"W A DISTANCE OF 150.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M. BEARS N67°08'30"W, A DISTANCE OF 1003.08 FEET;

SAID STRIP OF LAND BEING 558.22 FEET OR 33.83 RODS IN LENGTH, CONTAINING 0.384 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 558.22 L.F. 33.83 RODS 0.384 ACRES

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 31 DAY OF OCTOBER 2018

RECEIVED
12797
FILMON F. JARAMILLO, PLS. 12797
PROFESSIONAL SURVEYOR

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

GENERAL NOTES

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

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

SHEET: 2-2

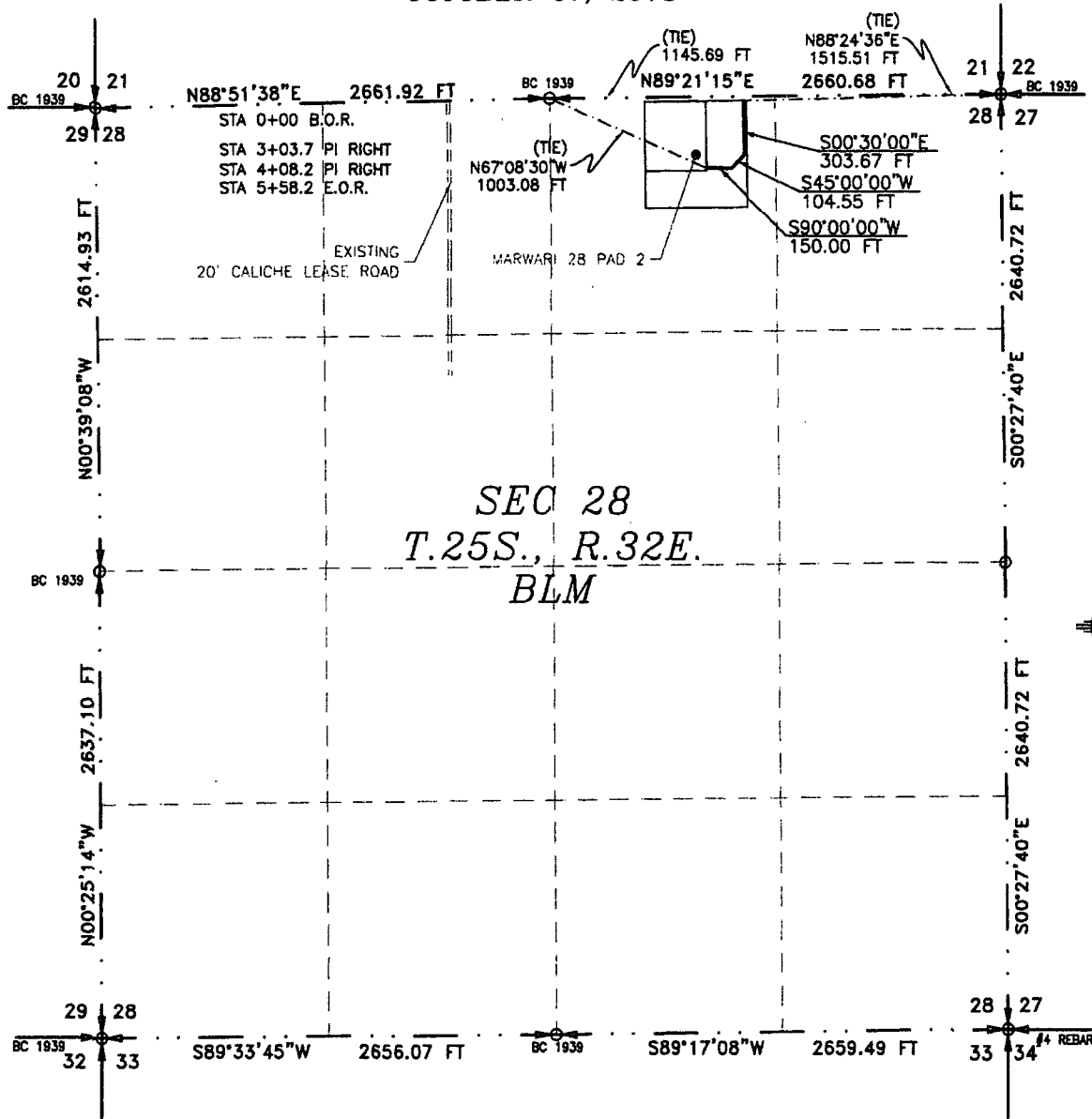
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO

SURVEY NO. 5899D

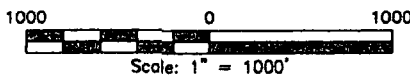
ACCESS ROAD PLAT

ACCESS ROAD TO THE MARWARI 28 PAD 2
(MARWARI 28-16 STATE FED COM 236H & VAN DOO DAH 28-33 FED COM 235H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 28, TOWNSHIP 25 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
OCTOBER 31, 2018



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. 301 SOUTH CANAL (575) 234-3341

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO THIS 31 DAY OF OCTOBER 2018

FILMON F. JARAMILLO, SURVEYOR NO. 12797

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

SURVEY NO. 5899D

CARLSBAD, NEW MEXICO

1. Geologic Formations

TVD of target	10,541	Pilot hole depth	N/A
MD at TD:	20,856	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	755		
Salado	1220		
Delaware	4600		
Lower Brushy	8379		
1st Bone Spring Lime	8627		
1Bone Spring Sand	9576		
2nd Bone Spring Lime	9819		
2nd Bone Spring Sand	10222		

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

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	815' 400'	13.375"	48	H40	STC	1.125	1	1.6
12.25"	0	4500'	9.625"	40	J55	LTC	1.125	1	1.6
12.25"	4,500'	5,200'	9.625"	40	HCK-55	LTC	1.125	1	1.6
8.75"	0	20,856'	5.5"	17	P110	BTC	1.125	1	1.6
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

	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

Devon Energy, Marwari 28-16 Fed 236H

Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft ³ / sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	632	14.8	1.33	6.32	6	Lead: Class C Cement + 0.125 lbs/sack Poly-F-Flake
Inter.	742	10.3	3.65	22.06	24	Lead: (50:50) Poz (Silica) 3 lbm/sk Kol-Seal, .125 lbm/sk Poly-E-Flake
	153	14.8	1.33	6.32	6	Tail: Class C Cement + 0.125 lbs/sack Poly-F-Flake
Prod.	801	9	3.27	13.5	21	Lead: Tuned Light Cement
	2001	14.5	1.2	5.31	25	Tail: (50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

Casing String	TOC	% Excess
13-3/8" Surface	0'	50%
9-5/8" Intermediate	0'	30%
5-1/2" Production	5000'	25%

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			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.

Y	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.
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Devon Energy, Marwari 28-16 Fed 236H

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	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 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 packoff, 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 Energy, Marwari 28-16 Fed 236H

	Devon's proposed wellhead manufactures will be EMC Technologies, Cactus Wellhead, or Cameron. 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.
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5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	815 900'	FW Gel	8.5-9.0	28-34	N/C
815	5,200	Saturated Brine	10.0-11.0	28-34	N/C
4,250	20,856	Cut Brine	8.5-9.3	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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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	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	KOP to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4942 psi
Abnormal Temperature	No

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

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

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe

Devon Energy

Project: Lea County, NM (NAD-83)
 Site: Marwari/Van Doo Dah
 Well: Marwari 28-16 State Fed Com 236H
 Wellbore: OH
 Design: Plan #1



Azimuths to Grid North
 True North: -0.35°
 Magnetic North: 6.38°
 Magnetic Field
 Strength: 47841.8nT
 Dip Angle: 69.77°
 Date: 10/31/2018
 Model: HDGM

PROJECT DETAILS: Lea County, NM (NAD-83)

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone
 Datum: 3389.3' GE + 32' KB @ 3421.30usft

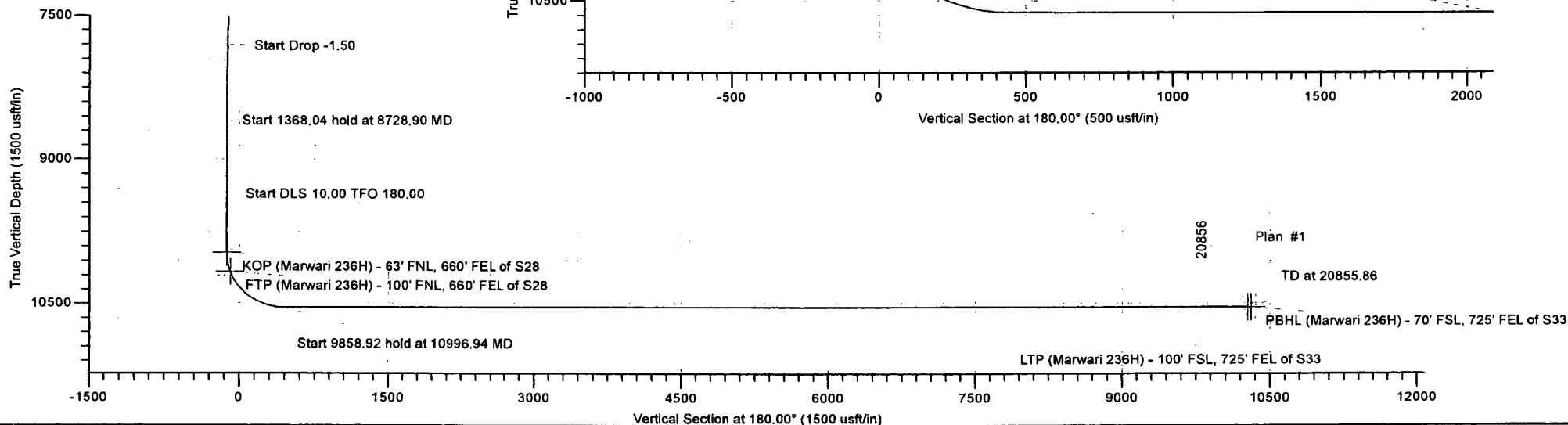
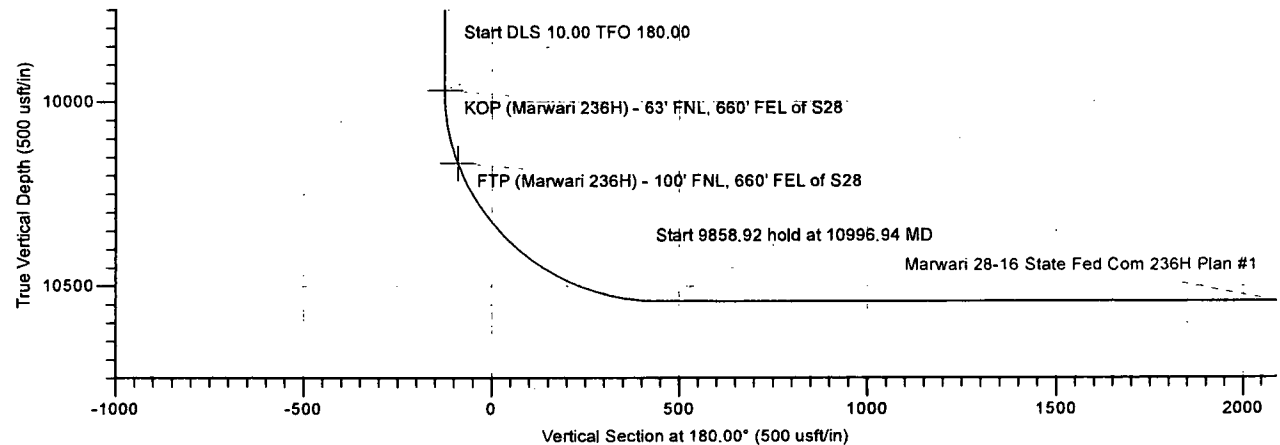
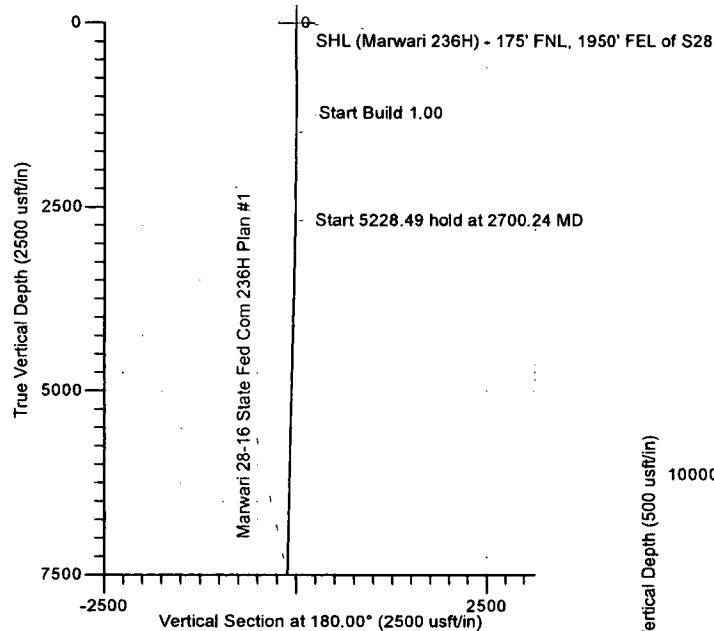
devon

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00
2700.24	12.00	84.47	2691.48	12.08	124.67	1.00	84.47	-12.08
7928.74	12.00	84.47	7805.68	116.95	1206.89	0.00	0.00	-116.95
8728.90	0.00	0.00	8600.00	125.00	1290.00	1.50	180.00	-125.00
10096.94	0.00	0.00	9968.04	125.00	1290.00	0.00	0.00	-125.00
10996.94	90.00	180.00	10541.00	-447.96	1290.00	10.00	180.00	447.96
20855.86	90.00	180.00	10541.00	-10306.88	1290.00	0.00	0.00	10306.88

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP	10166.53	89.52	1290.00	403805.35	745599.91	32° 6' 30.3188 N	103° 40' 25.0531 W
KOP	9968.04	125.00	1290.00	403840.83	745599.91	32° 6' 30.6699 N	103° 40' 25.0506 W
LTP	10541.00	-10274.80	1290.00	393441.03	745599.91	32° 4' 47.7575 N	103° 40' 25.7901 W
PBHL	10541.00	-10306.88	1290.00	393408.95	745599.91	32° 4' 47.4401 N	103° 40' 25.7923 W
SHL	0.00	0.00	0.00	403715.83	744309.91	32° 6' 29.5108 N	103° 40' 40.0573 W



LEAM DRILLING SERVICES
 2010 East Davis, Conroe, Texas 77301
 Phone: 936/756-7618, Fax: 936/756-7595

Plan: Plan #1 (Marwari 28-16 State Fed Com 236H/OH)
 Marwari/Van Doo Dah
 Created By: Dustin Ault
 Date: 10:11, November 01 2018
 Approved: _____
 Date: _____

Devon Energy

Project: Lea County, NM (NAD-83)
Site: Marwari/Van Doo Dah
Well: Marwari 28-16 State Fed Com 236H
Wellbore: OH
Design: Plan #1

PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level



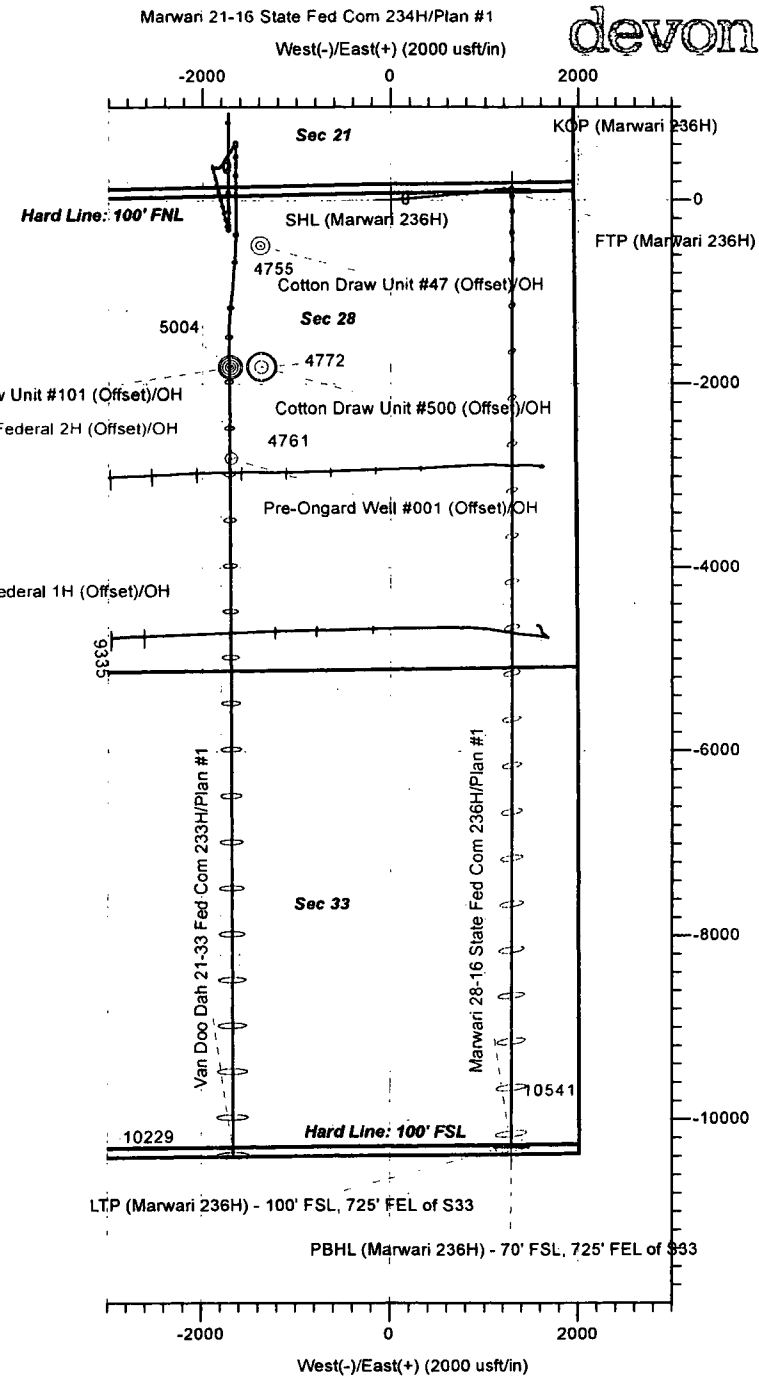
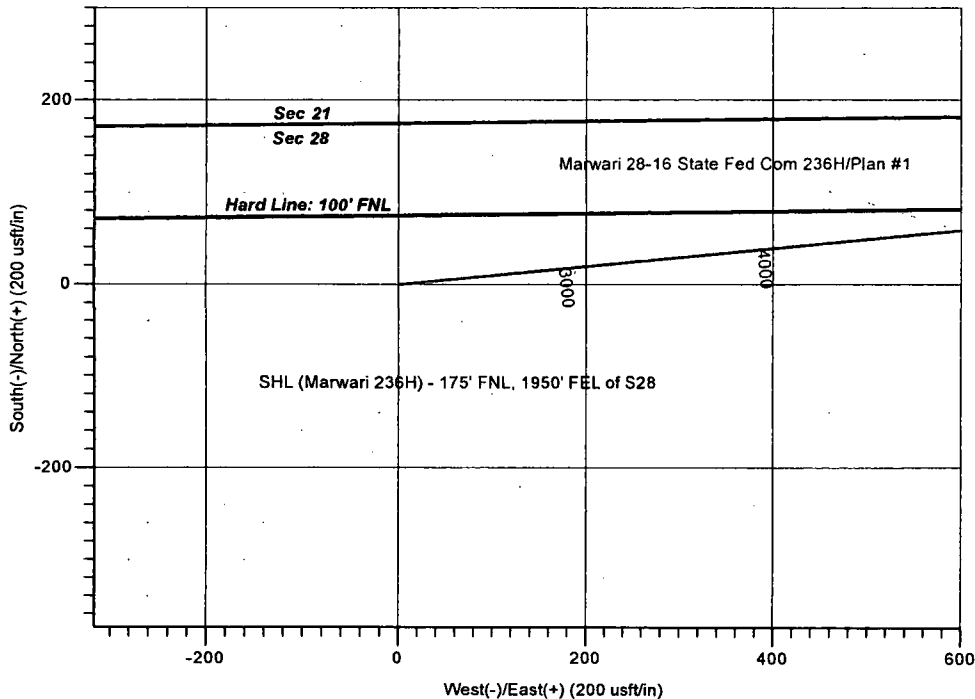
Azimuths to Grid North
True North: -0.35°
Magnetic North: 6.38°
Magnetic Field
Strength: 47841.8nT
Dip Angle: 69.77°
Date: 10/31/2018
Model: HDGM

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP (Marwari 236H)	10166.53	89.52	1290.00	403805.35	745599.91	32° 6' 30.3188 N	103° 40' 25.0531 W
KOP (Marwari 236H)	9968.04	125.00	1290.00	403840.83	745599.91	32° 6' 30.6699 N	103° 40' 25.0506 W
LTP (Marwari 236H)	10541.00	-10274.80	1290.00	393441.03	745599.91	32° 4' 47.7575 N	103° 40' 25.7901 W
PBHL (Marwari 236H)	10541.00	-10306.88	1290.00	393408.95	745599.91	32° 4' 47.4401 N	103° 40' 25.7923 W
SHL (Marwari 236H)	0.00	0.00	0.00	403715.83	744309.91	32° 6' 29.5108 N	103° 40' 40.0573 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSECT
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00
2700.24	12.00	84.47	2691.48	12.08	124.67	1.00	84.47	-12.08
7928.74	12.00	84.47	7805.68	116.95	1206.89	0.00	0.00	-116.95
8728.90	0.00	0.00	8600.00	125.00	1290.00	1.50	180.00	-125.00
10096.94	0.00	0.00	9968.04	125.00	1290.00	0.00	0.00	-125.00
10996.94	90.00	180.00	10541.00	-447.96	1290.00	10.00	180.00	447.96
20855.86	90.00	180.00	10541.00	-10306.88	1290.00	0.00	0.00	10306.88



LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7618, Fax: 936/756-7595

Plan: Plan #1 (Marwari 28-16 State Fed Com 236H/OH)
Marwari/Van Doo Dah
Created By: Dustin Ault
Date: 10/14, November 01 2018
Approved: _____
Date: _____

Devon Energy

Lea County, NM (NAD-83)

Marwari/Van Doo Dah

Marwari 28-16 State Fed Com 236H

OH

Plan: Plan #1

Standard Planning Report

01 November, 2018

LEAM Drilling Services

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Marwari 28-16 State Fed Com 236H
Company:	Devon Energy	TVD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Site:	Marwari/Van Doo Dah	North Reference:	Grid
Well:	Marwari 28-16 State Fed Com 236H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Lea County, NM (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		

Site	Marwari/Van Doo Dah		
Site Position:		Northing:	404,089.34 usft
From:	Map	Easting:	742,415.36 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 6' 33.3204 N
		Longitude:	103° 41' 2.0577 W
		Grid Convergence:	0.35 °

Well	Marwari 28-16 State Fed Com 236H		
Well Position	+N/-S	-373.51 usft	Northing: 403,715.83 usft
	+E/-W	1,894.55 usft	Easting: 744,309.91 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 6' 29.5108 N
		Longitude:	103° 40' 40.0573 W
		Ground Level:	3,389.30 usft

Wellbore	OH		
Magnetics:	Model Name	Sample Date	Declination
	HDGM	10/31/2018	6.73
			Dip Angle
			59.77
			Field Strength
			47,842 (nT)

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			180.00

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,700.24	12.00	84.47	2,691.48	12.08	124.67	1.00	1.00	0.00	84.47	
7,928.74	12.00	84.47	7,805.68	116.95	1,206.89	0.00	0.00	0.00	0.00	
8,728.90	0.00	0.00	8,600.00	125.00	1,290.00	1.50	-1.50	0.00	180.00	
10,096.94	0.00	0.00	9,968.04	125.00	1,290.00	0.00	0.00	0.00	0.00	
10,996.94	90.00	180.00	10,541.00	-447.96	1,290.00	10.00	10.00	-20.00	180.00	
20,855.86	90.00	180.00	10,541.00	-10,306.88	1,290.00	0.00	0.00	0.00	0.00	PBHL (Marwari 236H)

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Lea County, NM (NAD-83)
 Site: Marwari/Van Doo Dah
 Well: Marwari 28-16 State Fed Com 236H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
 TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (Marwari 236H) - 175' FNL, 1950' FEL of S28									
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
1,100.00	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	1.00	84.47	1,599.99	0.08	0.87	-0.08	1.00	1.00	0.00
1,700.00	2.00	84.47	1,699.96	0.34	3.47	-0.34	1.00	1.00	0.00
1,800.00	3.00	84.47	1,799.86	0.76	7.82	-0.76	1.00	1.00	0.00
1,900.00	4.00	84.47	1,899.68	1.35	13.89	-1.35	1.00	1.00	0.00
2,000.00	5.00	84.47	1,999.37	2.10	21.70	-2.10	1.00	1.00	0.00
2,100.00	6.00	84.47	2,098.90	3.03	31.24	-3.03	1.00	1.00	0.00
2,200.00	7.00	84.47	2,198.26	4.12	42.51	-4.12	1.00	1.00	0.00
2,300.00	8.00	84.47	2,297.40	5.38	55.50	-5.38	1.00	1.00	0.00
2,400.00	9.00	84.47	2,396.30	6.80	70.21	-6.80	1.00	1.00	0.00
2,500.00	10.00	84.47	2,494.93	8.40	86.64	-8.40	1.00	1.00	0.00
2,600.00	11.00	84.47	2,593.26	10.15	104.78	-10.15	1.00	1.00	0.00
2,700.24	12.00	84.47	2,691.48	12.08	124.67	-12.08	1.00	1.00	0.00
2,800.00	12.00	84.47	2,789.06	14.08	145.32	-14.08	0.00	0.00	0.00
2,900.00	12.00	84.47	2,886.87	16.09	166.02	-16.09	0.00	0.00	0.00
3,000.00	12.00	84.47	2,984.69	18.09	186.72	-18.09	0.00	0.00	0.00
3,100.00	12.00	84.47	3,082.50	20.10	207.41	-20.10	0.00	0.00	0.00
3,200.00	12.00	84.47	3,180.32	22.10	228.11	-22.10	0.00	0.00	0.00
3,300.00	12.00	84.47	3,278.13	24.11	248.81	-24.11	0.00	0.00	0.00
3,400.00	12.00	84.47	3,375.94	26.12	269.51	-26.12	0.00	0.00	0.00
3,500.00	12.00	84.47	3,473.76	28.12	290.21	-28.12	0.00	0.00	0.00
3,600.00	12.00	84.47	3,571.57	30.13	310.91	-30.13	0.00	0.00	0.00
3,700.00	12.00	84.47	3,669.39	32.13	331.61	-32.13	0.00	0.00	0.00
3,800.00	12.00	84.47	3,767.20	34.14	352.30	-34.14	0.00	0.00	0.00
3,900.00	12.00	84.47	3,865.01	36.14	373.00	-36.14	0.00	0.00	0.00
4,000.00	12.00	84.47	3,962.83	38.15	393.70	-38.15	0.00	0.00	0.00
4,100.00	12.00	84.47	4,060.64	40.15	414.40	-40.15	0.00	0.00	0.00
4,200.00	12.00	84.47	4,158.45	42.16	435.10	-42.16	0.00	0.00	0.00
4,300.00	12.00	84.47	4,256.27	44.17	455.80	-44.17	0.00	0.00	0.00
4,400.00	12.00	84.47	4,354.08	46.17	476.49	-46.17	0.00	0.00	0.00
4,500.00	12.00	84.47	4,451.90	48.18	497.19	-48.18	0.00	0.00	0.00
4,600.00	12.00	84.47	4,549.71	50.18	517.89	-50.18	0.00	0.00	0.00
4,700.00	12.00	84.47	4,647.52	52.19	538.59	-52.19	0.00	0.00	0.00
4,800.00	12.00	84.47	4,745.34	54.19	559.29	-54.19	0.00	0.00	0.00
4,900.00	12.00	84.47	4,843.15	56.20	579.99	-56.20	0.00	0.00	0.00
5,000.00	12.00	84.47	4,940.97	58.21	600.68	-58.21	0.00	0.00	0.00
5,100.00	12.00	84.47	5,038.78	60.21	621.38	-60.21	0.00	0.00	0.00
5,200.00	12.00	84.47	5,136.59	62.22	642.08	-62.22	0.00	0.00	0.00

LEAM Drilling Services

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Marwari 28-16 State Fed Com 236H
Company:	Devon Energy	TVD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Site:	Marwari/Van Doo Dah	North Reference:	Grid
Well:	Marwari 28-16 State Fed Com 236H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	12.00	84.47	5,234.41	64.22	662.78	-64.22	0.00	0.00	0.00
5,400.00	12.00	84.47	5,332.22	66.23	683.48	-66.23	0.00	0.00	0.00
5,500.00	12.00	84.47	5,430.03	68.23	704.18	-68.23	0.00	0.00	0.00
5,600.00	12.00	84.47	5,527.85	70.24	724.87	-70.24	0.00	0.00	0.00
5,700.00	12.00	84.47	5,625.66	72.25	745.57	-72.25	0.00	0.00	0.00
5,800.00	12.00	84.47	5,723.48	74.25	766.27	-74.25	0.00	0.00	0.00
5,900.00	12.00	84.47	5,821.29	76.26	786.97	-76.26	0.00	0.00	0.00
6,000.00	12.00	84.47	5,919.10	78.26	807.67	-78.26	0.00	0.00	0.00
6,100.00	12.00	84.47	6,016.92	80.27	828.37	-80.27	0.00	0.00	0.00
6,200.00	12.00	84.47	6,114.73	82.27	849.06	-82.27	0.00	0.00	0.00
6,300.00	12.00	84.47	6,212.55	84.28	869.76	-84.28	0.00	0.00	0.00
6,400.00	12.00	84.47	6,310.36	86.29	890.46	-86.29	0.00	0.00	0.00
6,500.00	12.00	84.47	6,408.17	88.29	911.16	-88.29	0.00	0.00	0.00
6,600.00	12.00	84.47	6,505.99	90.30	931.86	-90.30	0.00	0.00	0.00
6,700.00	12.00	84.47	6,603.80	92.30	952.56	-92.30	0.00	0.00	0.00
6,800.00	12.00	84.47	6,701.62	94.31	973.26	-94.31	0.00	0.00	0.00
6,900.00	12.00	84.47	6,799.43	96.31	993.95	-96.31	0.00	0.00	0.00
7,000.00	12.00	84.47	6,897.24	98.32	1,014.65	-98.32	0.00	0.00	0.00
7,100.00	12.00	84.47	6,995.06	100.32	1,035.35	-100.32	0.00	0.00	0.00
7,200.00	12.00	84.47	7,092.87	102.33	1,056.05	-102.33	0.00	0.00	0.00
7,300.00	12.00	84.47	7,190.68	104.34	1,076.75	-104.34	0.00	0.00	0.00
7,400.00	12.00	84.47	7,288.50	106.34	1,097.45	-106.34	0.00	0.00	0.00
7,500.00	12.00	84.47	7,386.31	108.35	1,118.14	-108.35	0.00	0.00	0.00
7,600.00	12.00	84.47	7,484.13	110.35	1,138.84	-110.35	0.00	0.00	0.00
7,700.00	12.00	84.47	7,581.94	112.36	1,159.54	-112.36	0.00	0.00	0.00
7,800.00	12.00	84.47	7,679.75	114.36	1,180.24	-114.36	0.00	0.00	0.00
7,900.00	12.00	84.47	7,777.57	116.37	1,200.94	-116.37	0.00	0.00	0.00
7,928.74	12.00	84.47	7,805.68	116.95	1,206.89	-116.95	0.00	0.00	0.00
8,000.00	10.93	84.47	7,875.52	118.31	1,220.99	-118.31	1.50	-1.50	0.00
8,100.00	9.43	84.47	7,973.94	120.02	1,238.58	-120.02	1.50	-1.50	0.00
8,200.00	7.93	84.47	8,072.79	121.47	1,253.61	-121.47	1.50	-1.50	0.00
8,300.00	6.43	84.47	8,172.00	122.68	1,266.06	-122.68	1.50	-1.50	0.00
8,400.00	4.93	84.47	8,271.51	123.64	1,275.91	-123.64	1.50	-1.50	0.00
8,500.00	3.43	84.47	8,371.24	124.34	1,283.18	-124.34	1.50	-1.50	0.00
8,600.00	1.93	84.47	8,471.12	124.79	1,287.84	-124.79	1.50	-1.50	0.00
8,700.00	0.43	84.47	8,571.10	124.99	1,289.89	-124.99	1.50	-1.50	0.00
8,728.90	0.00	0.00	8,600.00	125.00	1,290.00	-125.00	1.50	-1.50	0.00
8,800.00	0.00	0.00	8,671.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,771.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,000.00	0.00	0.00	8,871.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,100.00	0.00	0.00	8,971.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,071.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,171.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,271.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,371.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,471.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,571.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,671.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,771.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
10,000.00	0.00	0.00	9,871.10	125.00	1,290.00	-125.00	0.00	0.00	0.00
10,096.94	0.00	0.00	9,968.04	125.00	1,290.00	-125.00	0.00	0.00	0.00
KOP (Marwari 236H) - 63' FNL, 660' FEL of S28									
10,100.00	0.31	180.00	9,971.10	124.99	1,290.00	-124.99	10.00	10.00	0.00

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Lea County, NM (NAD-83)
 Site: Marwari/Van Doo Dah
 Well: Marwari 28-16 State Fed Com 236H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
 TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 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)
10,150.00	5.31	180.00	10,021.02	122.54	1,290.00	-122.54	10.00	10.00	0.00
10,200.00	10.31	180.00	10,070.55	115.76	1,290.00	-115.76	10.00	10.00	0.00
10,250.00	15.31	180.00	10,119.29	104.68	1,290.00	-104.68	10.00	10.00	0.00
10,299.63	20.27	180.00	10,166.53	89.52	1,290.00	-89.52	10.00	10.00	0.00
FTP (Marwari 236H) - 100' FNL, 660' FEL of S28									
10,300.00	20.31	180.00	10,166.88	89.39	1,290.00	-89.39	10.00	10.00	0.00
10,350.00	25.31	180.00	10,212.95	70.02	1,290.00	-70.02	10.00	10.00	0.00
10,400.00	30.31	180.00	10,257.17	46.70	1,290.00	-46.70	10.00	10.00	0.00
10,450.00	35.31	180.00	10,299.18	19.62	1,290.00	-19.62	10.00	10.00	0.00
10,500.00	40.31	180.00	10,338.67	-11.02	1,290.00	11.02	10.00	10.00	0.00
10,550.00	45.31	180.00	10,375.34	-44.99	1,290.00	44.99	10.00	10.00	0.00
10,600.00	50.31	180.00	10,408.91	-82.02	1,290.00	82.02	10.00	10.00	0.00
10,650.00	55.31	180.00	10,439.13	-121.83	1,290.00	121.83	10.00	10.00	0.00
10,700.00	60.31	180.00	10,465.76	-164.13	1,290.00	164.13	10.00	10.00	0.00
10,750.00	65.31	180.00	10,488.60	-208.59	1,290.00	208.59	10.00	10.00	0.00
10,800.00	70.31	180.00	10,507.48	-254.87	1,290.00	254.87	10.00	10.00	0.00
10,850.00	75.31	180.00	10,522.26	-302.62	1,290.00	302.62	10.00	10.00	0.00
10,900.00	80.31	180.00	10,532.82	-351.48	1,290.00	351.48	10.00	10.00	0.00
10,950.00	85.31	180.00	10,539.08	-401.07	1,290.00	401.07	10.00	10.00	0.00
10,996.94	90.00	180.00	10,541.00	-447.96	1,290.00	447.96	10.00	10.00	0.00
11,000.00	90.00	180.00	10,541.00	-451.02	1,290.00	451.02	0.00	0.00	0.00
11,100.00	90.00	180.00	10,541.00	-551.02	1,290.00	551.02	0.00	0.00	0.00
11,200.00	90.00	180.00	10,541.00	-651.02	1,290.00	651.02	0.00	0.00	0.00
11,300.00	90.00	180.00	10,541.00	-751.02	1,290.00	751.02	0.00	0.00	0.00
11,400.00	90.00	180.00	10,541.00	-851.02	1,290.00	851.02	0.00	0.00	0.00
11,500.00	90.00	180.00	10,541.00	-951.02	1,290.00	951.02	0.00	0.00	0.00
11,600.00	90.00	180.00	10,541.00	-1,051.02	1,290.00	1,051.02	0.00	0.00	0.00
11,700.00	90.00	180.00	10,541.00	-1,151.02	1,290.00	1,151.02	0.00	0.00	0.00
11,800.00	90.00	180.00	10,541.00	-1,251.02	1,290.00	1,251.02	0.00	0.00	0.00
11,900.00	90.00	180.00	10,541.00	-1,351.02	1,290.00	1,351.02	0.00	0.00	0.00
12,000.00	90.00	180.00	10,541.00	-1,451.02	1,290.00	1,451.02	0.00	0.00	0.00
12,100.00	90.00	180.00	10,541.00	-1,551.02	1,290.00	1,551.02	0.00	0.00	0.00
12,200.00	90.00	180.00	10,541.00	-1,651.02	1,290.00	1,651.02	0.00	0.00	0.00
12,300.00	90.00	180.00	10,541.00	-1,751.02	1,290.00	1,751.02	0.00	0.00	0.00
12,400.00	90.00	180.00	10,541.00	-1,851.02	1,290.00	1,851.02	0.00	0.00	0.00
12,500.00	90.00	180.00	10,541.00	-1,951.02	1,290.00	1,951.02	0.00	0.00	0.00
12,600.00	90.00	180.00	10,541.00	-2,051.02	1,290.00	2,051.02	0.00	0.00	0.00
12,700.00	90.00	180.00	10,541.00	-2,151.02	1,290.00	2,151.02	0.00	0.00	0.00
12,800.00	90.00	180.00	10,541.00	-2,251.02	1,290.00	2,251.02	0.00	0.00	0.00
12,900.00	90.00	180.00	10,541.00	-2,351.02	1,290.00	2,351.02	0.00	0.00	0.00
13,000.00	90.00	180.00	10,541.00	-2,451.02	1,290.00	2,451.02	0.00	0.00	0.00
13,100.00	90.00	180.00	10,541.00	-2,551.02	1,290.00	2,551.02	0.00	0.00	0.00
13,200.00	90.00	180.00	10,541.00	-2,651.02	1,290.00	2,651.02	0.00	0.00	0.00
13,300.00	90.00	180.00	10,541.00	-2,751.02	1,290.00	2,751.02	0.00	0.00	0.00
13,400.00	90.00	180.00	10,541.00	-2,851.02	1,290.00	2,851.02	0.00	0.00	0.00
13,500.00	90.00	180.00	10,541.00	-2,951.02	1,290.00	2,951.02	0.00	0.00	0.00
13,600.00	90.00	180.00	10,541.00	-3,051.02	1,290.00	3,051.02	0.00	0.00	0.00
13,700.00	90.00	180.00	10,541.00	-3,151.02	1,290.00	3,151.02	0.00	0.00	0.00
13,800.00	90.00	180.00	10,541.00	-3,251.02	1,290.00	3,251.02	0.00	0.00	0.00
13,900.00	90.00	180.00	10,541.00	-3,351.02	1,290.00	3,351.02	0.00	0.00	0.00
14,000.00	90.00	180.00	10,541.00	-3,451.02	1,290.00	3,451.02	0.00	0.00	0.00
14,100.00	90.00	180.00	10,541.00	-3,551.02	1,290.00	3,551.02	0.00	0.00	0.00
14,200.00	90.00	180.00	10,541.00	-3,651.02	1,290.00	3,651.02	0.00	0.00	0.00
14,300.00	90.00	180.00	10,541.00	-3,751.02	1,290.00	3,751.02	0.00	0.00	0.00

LEAM Drilling Services

Planning Report

Database: EDM 5000.1 Multi User Db
 Company: Devon Energy
 Project: Lea County, NM (NAD-83)
 Site: Marwari/Van Doo Dah
 Well: Marwari 28-16 State Fed Com 236H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
 TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
 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)
14,400.00	90.00	180.00	10,541.00	-3,851.02	1,290.00	3,851.02	0.00	0.00	0.00
14,500.00	90.00	180.00	10,541.00	-3,951.02	1,290.00	3,951.02	0.00	0.00	0.00
14,600.00	90.00	180.00	10,541.00	-4,051.02	1,290.00	4,051.02	0.00	0.00	0.00
14,700.00	90.00	180.00	10,541.00	-4,151.02	1,290.00	4,151.02	0.00	0.00	0.00
14,800.00	90.00	180.00	10,541.00	-4,251.02	1,290.00	4,251.02	0.00	0.00	0.00
14,900.00	90.00	180.00	10,541.00	-4,351.02	1,290.00	4,351.02	0.00	0.00	0.00
15,000.00	90.00	180.00	10,541.00	-4,451.02	1,290.00	4,451.02	0.00	0.00	0.00
15,100.00	90.00	180.00	10,541.00	-4,551.02	1,290.00	4,551.02	0.00	0.00	0.00
15,200.00	90.00	180.00	10,541.00	-4,651.02	1,290.00	4,651.02	0.00	0.00	0.00
15,300.00	90.00	180.00	10,541.00	-4,751.02	1,290.00	4,751.02	0.00	0.00	0.00
15,400.00	90.00	180.00	10,541.00	-4,851.02	1,290.00	4,851.02	0.00	0.00	0.00
15,500.00	90.00	180.00	10,541.00	-4,951.02	1,290.00	4,951.02	0.00	0.00	0.00
15,600.00	90.00	180.00	10,541.00	-5,051.02	1,290.00	5,051.02	0.00	0.00	0.00
15,700.00	90.00	180.00	10,541.00	-5,151.02	1,290.00	5,151.02	0.00	0.00	0.00
15,800.00	90.00	180.00	10,541.00	-5,251.02	1,290.00	5,251.02	0.00	0.00	0.00
15,900.00	90.00	180.00	10,541.00	-5,351.02	1,290.00	5,351.02	0.00	0.00	0.00
16,000.00	90.00	180.00	10,541.00	-5,451.02	1,290.00	5,451.02	0.00	0.00	0.00
16,100.00	90.00	180.00	10,541.00	-5,551.02	1,290.00	5,551.02	0.00	0.00	0.00
16,200.00	90.00	180.00	10,541.00	-5,651.02	1,290.00	5,651.02	0.00	0.00	0.00
16,300.00	90.00	180.00	10,541.00	-5,751.02	1,290.00	5,751.02	0.00	0.00	0.00
16,400.00	90.00	180.00	10,541.00	-5,851.02	1,290.00	5,851.02	0.00	0.00	0.00
16,500.00	90.00	180.00	10,541.00	-5,951.02	1,290.00	5,951.02	0.00	0.00	0.00
16,600.00	90.00	180.00	10,541.00	-6,051.02	1,290.00	6,051.02	0.00	0.00	0.00
16,700.00	90.00	180.00	10,541.00	-6,151.02	1,290.00	6,151.02	0.00	0.00	0.00
16,800.00	90.00	180.00	10,541.00	-6,251.02	1,290.00	6,251.02	0.00	0.00	0.00
16,900.00	90.00	180.00	10,541.00	-6,351.02	1,290.00	6,351.02	0.00	0.00	0.00
17,000.00	90.00	180.00	10,541.00	-6,451.02	1,290.00	6,451.02	0.00	0.00	0.00
17,100.00	90.00	180.00	10,541.00	-6,551.02	1,290.00	6,551.02	0.00	0.00	0.00
17,200.00	90.00	180.00	10,541.00	-6,651.02	1,290.00	6,651.02	0.00	0.00	0.00
17,300.00	90.00	180.00	10,541.00	-6,751.02	1,290.00	6,751.02	0.00	0.00	0.00
17,400.00	90.00	180.00	10,541.00	-6,851.02	1,290.00	6,851.02	0.00	0.00	0.00
17,500.00	90.00	180.00	10,541.00	-6,951.02	1,290.00	6,951.02	0.00	0.00	0.00
17,600.00	90.00	180.00	10,541.00	-7,051.02	1,290.00	7,051.02	0.00	0.00	0.00
17,700.00	90.00	180.00	10,541.00	-7,151.02	1,290.00	7,151.02	0.00	0.00	0.00
17,800.00	90.00	180.00	10,541.00	-7,251.02	1,290.00	7,251.02	0.00	0.00	0.00
17,900.00	90.00	180.00	10,541.00	-7,351.02	1,290.00	7,351.02	0.00	0.00	0.00
18,000.00	90.00	180.00	10,541.00	-7,451.02	1,290.00	7,451.02	0.00	0.00	0.00
18,100.00	90.00	180.00	10,541.00	-7,551.02	1,290.00	7,551.02	0.00	0.00	0.00
18,200.00	90.00	180.00	10,541.00	-7,651.02	1,290.00	7,651.02	0.00	0.00	0.00
18,300.00	90.00	180.00	10,541.00	-7,751.02	1,290.00	7,751.02	0.00	0.00	0.00
18,400.00	90.00	180.00	10,541.00	-7,851.02	1,290.00	7,851.02	0.00	0.00	0.00
18,500.00	90.00	180.00	10,541.00	-7,951.02	1,290.00	7,951.02	0.00	0.00	0.00
18,600.00	90.00	180.00	10,541.00	-8,051.02	1,290.00	8,051.02	0.00	0.00	0.00
18,700.00	90.00	180.00	10,541.00	-8,151.02	1,290.00	8,151.02	0.00	0.00	0.00
18,800.00	90.00	180.00	10,541.00	-8,251.02	1,290.00	8,251.02	0.00	0.00	0.00
18,900.00	90.00	180.00	10,541.00	-8,351.02	1,290.00	8,351.02	0.00	0.00	0.00
19,000.00	90.00	180.00	10,541.00	-8,451.02	1,290.00	8,451.02	0.00	0.00	0.00
19,100.00	90.00	180.00	10,541.00	-8,551.02	1,290.00	8,551.02	0.00	0.00	0.00
19,200.00	90.00	180.00	10,541.00	-8,651.02	1,290.00	8,651.02	0.00	0.00	0.00
19,300.00	90.00	180.00	10,541.00	-8,751.02	1,290.00	8,751.02	0.00	0.00	0.00
19,400.00	90.00	180.00	10,541.00	-8,851.02	1,290.00	8,851.02	0.00	0.00	0.00
19,500.00	90.00	180.00	10,541.00	-8,951.02	1,290.00	8,951.02	0.00	0.00	0.00
19,600.00	90.00	180.00	10,541.00	-9,051.02	1,290.00	9,051.02	0.00	0.00	0.00
19,700.00	90.00	180.00	10,541.00	-9,151.02	1,290.00	9,151.02	0.00	0.00	0.00

LEAM Drilling Services

Planning Report

Database:	EDM 5000.1 Multi User Db	Local Co-ordinate Reference:	Well Marwari 28-16 State Fed Com 236H
Company:	Devon Energy	TVD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Site:	Marwari/Van Doo Dah	North Reference:	Grid
Well:	Marwari 28-16 State Fed Com 236H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,800.00	90.00	180.00	10,541.00	-9,251.02	1,290.00	9,251.02	0.00	0.00	0.00
19,900.00	90.00	180.00	10,541.00	-9,351.02	1,290.00	9,351.02	0.00	0.00	0.00
20,000.00	90.00	180.00	10,541.00	-9,451.02	1,290.00	9,451.02	0.00	0.00	0.00
20,100.00	90.00	180.00	10,541.00	-9,551.02	1,290.00	9,551.02	0.00	0.00	0.00
20,200.00	90.00	180.00	10,541.00	-9,651.02	1,290.00	9,651.02	0.00	0.00	0.00
20,300.00	90.00	180.00	10,541.00	-9,751.02	1,290.00	9,751.02	0.00	0.00	0.00
20,400.00	90.00	180.00	10,541.00	-9,851.02	1,290.00	9,851.02	0.00	0.00	0.00
20,500.00	90.00	180.00	10,541.00	-9,951.02	1,290.00	9,951.02	0.00	0.00	0.00
20,600.00	90.00	180.00	10,541.00	-10,051.02	1,290.00	10,051.02	0.00	0.00	0.00
20,700.00	90.00	180.00	10,541.00	-10,151.02	1,290.00	10,151.02	0.00	0.00	0.00
20,800.00	90.00	180.00	10,541.00	-10,251.02	1,290.00	10,251.02	0.00	0.00	0.00
LTP (Marwari 236H) - 100' FSL, 725' FEL of S33									
20,855.86	90.00	180.00	10,541.00	-10,306.88	1,290.00	10,306.88	0.00	0.00	0.00
PBHL (Marwari 236H) - 70' FSL, 725' FEL of S33									

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
SHL (Marwari 236H) - 17 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	403,715.83	744,309.91	32° 6' 29.5108 N	103° 40' 40.0573 W
KOP (Marwari 236H) - 6 - plan hits target center - Point	0.00	0.00	9,968.04	125.00	1,290.00	403,840.83	745,599.91	32° 6' 30.6699 N	103° 40' 25.0506 W
FTP (Marwari 236H) - 1C - plan hits target center - Point	0.00	0.00	10,166.53	89.52	1,290.00	403,805.35	745,599.91	32° 6' 30.3188 N	103° 40' 25.0531 W
LTP (Marwari 236H) - 1C - plan misses target center by 23.78usft at 20800.00usft MD (10541.00 TVD, -10251.02 N, 1290.00 E) - Point	0.00	0.00	10,541.00	-10,274.80	1,290.00	393,441.03	745,599.91	32° 4' 47.7575 N	103° 40' 25.7901 W
PBHL (Marwari 236H) - - plan hits target center - Point	0.00	0.00	10,541.00	-10,306.88	1,290.00	393,408.95	745,599.91	32° 4' 47.4401 N	103° 40' 25.7923 W

Devon Energy

Lea County, NM (NAD-83)

Marwari/Van Doo Dah

Marwari 28-16 State Fed Com 236H

OH

Plan #1

Anticollision Report

01 November, 2018

LEAM Drilling Services

Anticollision Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Marwari 28-16 State Fed Com 236H
Project:	Lea County, NM (NAD-83)	TVD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Reference Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Marwari 28-16 State Fed Com 236H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at:	2.00 sigma
Reference Wellbore:	OH	Database:	EDM 5000.1 Multi User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.00usft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 2,174.65 usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic
Casing Method:	Not applied

Survey Tool Program	Date	11/1/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	20,855.86	Plan #1 (OH)	LEAM MWD+HDGM	MWD+HDGM

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						
Marwari/Van Doo Dah						
Cotton Draw Unit #101 (Offset) - OH - OH						Out of range
Cotton Draw Unit #47 (Offset) - OH - OH	1,500.00	1,493.73	1,467.72	1,440.27	53.475	CC
Cotton Draw Unit #47 (Offset) - OH - OH	1,600.00	1,593.73	1,468.56	1,438.82	49.367	ES
Cotton Draw Unit #47 (Offset) - OH - OH	4,800.00	4,739.80	2,017.25	1,908.22	18.502	SF
Cotton Draw Unit #500 (Offset) - OH - OH						Out of range
Marwari 21-16 State Fed Com 234H - OH - Plan #1	1,500.00	1,501.00	1,931.02	1,924.57	299.450	CC, ES
Marwari 21-16 State Fed Com 234H - OH - Plan #1	3,300.00	3,279.13	2,171.65	2,157.17	149.933	SF
Pre-Ongard Well #001 (Offset) - OH - OH						Out of range
Sol 28 Federal 1H (Offset) - OH - OH	15,227.25	9,716.60	1,146.11	1,095.46	22.627	CC, ES
Sol 28 Federal 1H (Offset) - OH - OH	15,400.00	9,686.00	1,158.53	1,107.01	22.486	SF
Sol 28 Federal 2H (Offset) - OH - OH	13,423.79	9,679.36	1,229.11	1,191.12	32.350	CC, ES
Sol 28 Federal 2H (Offset) - OH - OH	13,800.00	9,668.00	1,285.41	1,244.24	31.225	SF
Van Doo Dah 21-33 Fed Com 233H - OH - Plan #1	1,500.00	1,500.90	1,925.22	1,918.77	298.562	CC, ES
Van Doo Dah 21-33 Fed Com 233H - OH - Plan #1	3,400.00	3,603.29	2,167.35	2,152.06	141.719	SF

Offset Design												
Marwari/Van Doo Dah - Cotton Draw Unit #47 (Offset) - OH - OH												
Survey Program: 335-INC-ONLY												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	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
0.00	0.00	0.00	0.00	0.00	0.00	-109.69	-494.54	-1,381.89	1,467.73			
100.00	100.00	93.70	93.70	0.08	0.76	-109.69	-494.54	-1,381.89	1,467.72	1,466.89	0.83	1,761.785
200.00	200.00	193.70	193.70	0.30	1.56	-109.69	-494.54	-1,381.89	1,467.72	1,465.85	1.87	786.815
300.00	300.00	293.70	293.70	0.53	2.37	-109.69	-494.54	-1,381.89	1,467.72	1,464.82	2.90	506.512
400.00	400.00	393.70	393.70	0.75	3.73	-109.69	-494.54	-1,381.89	1,467.72	1,463.24	4.48	327.369
500.00	500.00	493.70	493.70	0.98	5.48	-109.69	-494.54	-1,381.89	1,467.72	1,461.26	6.46	227.258
600.00	600.00	593.70	593.70	1.20	7.23	-109.69	-494.54	-1,381.89	1,467.72	1,459.29	8.43	174.036
700.00	700.00	693.70	693.70	1.43	8.98	-109.69	-494.54	-1,381.89	1,467.72	1,457.31	10.41	141.013
800.00	800.00	793.70	793.70	1.65	10.75	-109.69	-494.54	-1,381.89	1,467.72	1,455.32	12.40	118.401
900.00	900.00	893.70	893.70	1.87	12.59	-109.69	-494.54	-1,381.89	1,467.72	1,453.25	14.46	101.474
1,000.00	1,000.00	993.70	993.70	2.10	14.43	-109.69	-494.54	-1,381.89	1,467.72	1,451.19	16.53	88.782
1,100.00	1,100.00	1,093.70	1,093.70	2.32	16.28	-109.69	-494.54	-1,381.89	1,467.72	1,449.12	18.60	78.911
1,200.00	1,200.00	1,193.70	1,193.70	2.55	18.12	-109.69	-494.54	-1,381.89	1,467.72	1,447.05	20.67	71.016
1,300.00	1,300.00	1,293.73	1,293.70	2.77	20.05	-109.69	-494.54	-1,381.89	1,467.72	1,444.90	22.82	64.320

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Marwari/Van Doo Dah - Cotton Draw Unit #47 (Offset) - OH - OH													Offset Site Error:	0.00 usft
Survey Program: 335-INC-ONLY													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)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
1,400.00	1,400.00	1,393.73	1,393.70	3.00	22.13	-109.69	-494.54	-1,381.89	1,467.72	1,442.59	25.13	58.398		
1,500.00	1,500.00	1,493.73	1,493.70	3.22	24.22	-109.69	-494.54	-1,381.89	1,467.72	1,440.27	27.45	53.475 CC		
1,600.00	1,599.99	1,593.73	1,593.69	3.44	26.31	165.85	-494.54	-1,381.89	1,468.56	1,438.82	29.75	49.367 ES		
1,700.00	1,699.96	1,693.69	1,693.66	3.64	28.40	165.87	-494.54	-1,381.89	1,471.10	1,439.06	32.04	45.917		
1,800.00	1,799.86	1,793.60	1,793.56	3.84	30.49	165.90	-494.54	-1,381.89	1,475.33	1,441.00	34.33	42.974		
1,900.00	1,899.66	1,893.52	1,893.38	4.06	32.63	165.94	-494.54	-1,381.89	1,481.26	1,444.58	36.68	40.385		
2,000.00	1,999.37	1,993.21	1,993.07	4.28	34.79	166.00	-494.54	-1,381.89	1,488.87	1,449.82	39.05	38.129		
2,100.00	2,098.90	2,092.75	2,092.60	4.50	36.94	166.06	-494.54	-1,381.89	1,498.17	1,456.76	41.42	36.173		
2,200.00	2,198.26	2,192.10	2,191.96	4.74	39.09	166.14	-494.54	-1,381.89	1,509.17	1,465.38	43.78	34.468		
2,300.00	2,297.40	2,291.25	2,291.10	4.98	41.24	166.23	-494.54	-1,381.89	1,521.85	1,475.69	46.15	32.975		
2,400.00	2,396.30	2,390.15	2,390.00	5.24	43.38	166.33	-494.54	-1,381.89	1,536.21	1,487.70	48.52	31.664		
2,500.00	2,494.93	2,490.00	2,489.73	5.51	45.54	166.43	-494.54	-1,381.89	1,552.27	1,501.36	50.90	30.494		
2,600.00	2,593.26	2,587.23	2,586.96	5.80	47.60	166.55	-494.54	-1,381.89	1,570.00	1,516.81	53.19	29.516		
2,700.00	2,691.25	2,685.22	2,684.95	6.11	49.67	166.67	-494.54	-1,381.89	1,589.42	1,533.92	55.50	28.639		
2,800.00	2,789.06	2,783.03	2,782.76	6.44	51.74	166.84	-494.54	-1,381.89	1,609.68	1,551.88	57.80	27.848		
2,900.00	2,886.87	2,880.90	2,880.57	6.77	53.83	167.00	-494.54	-1,381.89	1,629.96	1,569.82	60.13	27.105		
3,000.00	2,984.69	2,978.72	2,978.39	7.11	56.05	167.17	-494.54	-1,381.89	1,650.25	1,587.65	62.60	26.363		
3,100.00	3,082.50	3,076.53	3,076.20	7.46	58.27	167.32	-494.54	-1,381.89	1,670.55	1,605.49	65.06	25.677		
3,200.00	3,180.32	3,174.34	3,174.02	7.82	60.49	167.48	-494.54	-1,381.89	1,690.87	1,623.34	67.53	25.040		
3,300.00	3,278.13	3,272.25	3,271.83	8.18	62.75	167.63	-494.54	-1,381.89	1,711.20	1,641.17	70.03	24.435		
3,400.00	3,375.94	3,370.06	3,369.64	8.54	65.06	167.78	-494.54	-1,381.89	1,731.53	1,658.94	72.59	23.853		
3,500.00	3,473.76	3,467.88	3,467.46	8.91	67.38	167.92	-494.54	-1,381.89	1,751.88	1,676.73	75.16	23.310		
3,600.00	3,571.57	3,565.69	3,565.27	9.28	69.69	168.06	-494.54	-1,381.89	1,772.24	1,694.52	77.72	22.803		
3,700.00	3,669.39	3,663.50	3,663.09	9.66	72.00	168.20	-494.54	-1,381.89	1,792.61	1,712.33	80.29	22.328		
3,800.00	3,767.20	3,761.32	3,760.90	10.04	74.32	168.33	-494.54	-1,381.89	1,812.99	1,730.14	82.85	21.882		
3,900.00	3,865.01	3,859.29	3,858.71	10.42	76.65	168.46	-494.54	-1,381.89	1,833.38	1,747.94	85.44	21.459		
4,000.00	3,962.83	3,957.10	3,956.53	10.80	78.98	168.59	-494.54	-1,381.89	1,853.78	1,765.76	88.02	21.061		
4,100.00	4,060.64	4,054.92	4,054.34	11.19	81.31	168.72	-494.54	-1,381.89	1,874.18	1,783.58	90.61	20.685		
4,200.00	4,158.45	4,152.73	4,152.15	11.58	83.64	168.84	-494.54	-1,381.89	1,894.60	1,801.40	93.19	20.330		
4,300.00	4,256.27	4,250.55	4,249.97	11.96	85.97	168.96	-494.54	-1,381.89	1,915.02	1,819.24	95.78	19.994		
4,400.00	4,354.08	4,348.36	4,347.78	12.36	88.30	169.08	-494.54	-1,381.89	1,935.45	1,837.08	98.37	19.676		
4,500.00	4,451.90	4,446.18	4,445.60	12.75	90.65	169.19	-494.54	-1,381.89	1,955.89	1,854.91	100.98	19.370		
4,600.00	4,549.71	4,544.17	4,543.41	13.14	93.07	169.31	-494.54	-1,381.89	1,976.34	1,872.68	103.66	19.066		
4,700.00	4,647.52	4,641.99	4,641.22	13.53	95.50	169.42	-494.54	-1,381.89	1,996.79	1,890.44	106.34	18.777		
4,800.00	4,745.34	4,739.80	4,739.04	13.93	97.92	169.53	-494.54	-1,381.89	2,017.25	1,908.22	109.03	18.502 SF		
4,900.00	4,843.15	4,750.00	4,749.13	14.32	98.18	169.54	-494.54	-1,381.89	2,039.60	1,930.22	109.39	18.646		
5,000.00	4,940.97	4,750.00	4,749.13	14.72	98.18	169.54	-494.54	-1,381.89	2,066.53	1,957.29	109.24	18.917		
5,100.00	5,038.78	4,750.00	4,749.13	15.12	98.18	169.54	-494.54	-1,381.89	2,097.89	1,989.01	108.88	19.268		
5,200.00	5,136.59	4,750.00	4,749.13	15.52	98.18	169.54	-494.54	-1,381.89	2,133.48	2,025.16	108.32	19.697		
5,300.00	5,234.41	4,750.00	4,749.13	15.92	98.18	169.54	-494.54	-1,381.89	2,173.09	2,065.52	107.57	20.201		

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Marwari/Van Doo Dah - Marwari 21-16 State Fed Com 234H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-LEAM MWD+HDGM													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (")	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)	+E/-W (usft)						
0.00	0.00	1.00	1.00	0.00	0.00	-78.85	373.51	-1,894.55	1,931.02					
100.00	100.00	101.00	101.00	0.08	0.08	-78.85	373.51	-1,894.55	1,931.02	1,930.86	0.16	N/A		
200.00	200.00	201.00	201.00	0.30	0.30	-78.85	373.51	-1,894.55	1,931.02	1,930.41	0.60	3,193.766		
300.00	300.00	301.00	301.00	0.53	0.53	-78.85	373.51	-1,894.55	1,931.02	1,929.96	1.05	1,831.819		
400.00	400.00	401.00	401.00	0.75	0.75	-78.85	373.51	-1,894.55	1,931.02	1,929.51	1.50	1,284.190		
500.00	500.00	501.00	501.00	0.98	0.98	-78.85	373.51	-1,894.55	1,931.02	1,929.06	1.95	988.634		
600.00	600.00	601.00	601.00	1.20	1.20	-78.85	373.51	-1,894.55	1,931.02	1,928.62	2.40	803.670		
700.00	700.00	701.00	701.00	1.43	1.43	-78.85	373.51	-1,894.55	1,931.02	1,928.17	2.85	677.008		
800.00	800.00	801.00	801.00	1.65	1.65	-78.85	373.51	-1,894.55	1,931.02	1,927.72	3.30	584.836		
900.00	900.00	901.00	901.00	1.87	1.88	-78.85	373.51	-1,894.55	1,931.02	1,927.27	3.75	514.753		
1,000.00	1,000.00	1,001.00	1,001.00	2.10	2.10	-78.85	373.51	-1,894.55	1,931.02	1,926.82	4.20	459.670		
1,100.00	1,100.00	1,101.00	1,101.00	2.32	2.33	-78.85	373.51	-1,894.55	1,931.02	1,926.37	4.65	415.236		
1,200.00	1,200.00	1,201.00	1,201.00	2.55	2.55	-78.85	373.51	-1,894.55	1,931.02	1,925.92	5.10	378.635		
1,300.00	1,300.00	1,301.00	1,301.00	2.77	2.78	-78.85	373.51	-1,894.55	1,931.02	1,925.47	5.55	347.964		
1,400.00	1,400.00	1,401.00	1,401.00	3.00	3.00	-78.85	373.51	-1,894.55	1,931.02	1,925.02	6.00	321.890		
1,500.00	1,500.00	1,501.00	1,501.00	3.22	3.23	-78.85	373.51	-1,894.55	1,931.02	1,924.57	6.45	299.450 CC, ES		
1,600.00	1,599.99	1,600.99	1,600.99	3.44	3.45	-163.32	373.51	-1,894.55	1,931.85	1,924.97	6.89	280.582		
1,700.00	1,699.96	1,700.96	1,700.96	3.64	3.67	-163.33	373.51	-1,894.55	1,934.36	1,927.05	7.31	264.565		
1,800.00	1,799.86	1,800.86	1,800.86	3.84	3.90	-163.36	373.51	-1,894.55	1,938.54	1,930.80	7.74	250.437		
1,900.00	1,899.68	1,900.68	1,900.68	4.06	4.12	-163.39	373.51	-1,894.55	1,944.39	1,936.22	8.17	237.924		
2,000.00	1,999.37	2,000.37	2,000.37	4.28	4.35	-163.44	373.51	-1,894.55	1,951.91	1,943.31	8.61	226.798		
2,100.00	2,098.90	2,099.90	2,099.90	4.50	4.57	-163.49	373.51	-1,894.55	1,961.10	1,952.06	9.04	216.868		
2,200.00	2,198.26	2,199.26	2,199.26	4.74	4.79	-163.55	373.51	-1,894.55	1,971.96	1,962.48	9.48	207.976		
2,300.00	2,297.40	2,298.40	2,298.40	4.98	5.02	-163.62	373.51	-1,894.55	1,984.49	1,974.57	9.92	199.986		
2,400.00	2,396.30	2,397.30	2,397.30	5.24	5.24	-163.70	373.51	-1,894.55	1,998.69	1,988.32	10.37	192.787		
2,500.00	2,494.93	2,495.93	2,495.93	5.51	5.46	-163.79	373.51	-1,894.55	2,014.55	2,003.74	10.81	186.282		
2,600.00	2,593.26	2,594.26	2,594.26	5.80	5.68	-163.88	373.51	-1,894.55	2,032.08	2,020.81	11.26	180.390		
2,700.00	2,691.25	2,692.25	2,692.25	6.11	5.90	-163.98	373.51	-1,894.55	2,051.26	2,039.55	11.72	175.042		
2,800.00	2,789.06	2,790.06	2,790.06	6.44	6.12	-164.14	373.51	-1,894.55	2,071.29	2,059.12	12.17	170.136		
2,900.00	2,886.87	2,887.87	2,887.87	6.77	6.34	-164.30	373.51	-1,894.55	2,091.34	2,078.71	12.63	165.564		
3,000.00	2,984.69	2,985.69	2,985.69	7.11	6.56	-164.45	373.51	-1,894.55	2,111.40	2,098.30	13.09	161.280		
3,100.00	3,082.50	3,083.50	3,083.50	7.46	6.78	-164.60	373.51	-1,894.55	2,131.47	2,117.91	13.55	157.261		
3,200.00	3,180.32	3,181.32	3,181.32	7.82	7.00	-164.75	373.51	-1,894.55	2,151.55	2,137.54	14.02	153.485		
3,300.00	3,278.13	3,279.13	3,279.13	8.18	7.22	-164.89	373.51	-1,894.55	2,171.65	2,157.17	14.48	149.933 SF		

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design: Marwari/Van Doo Dah - Sol 28 Federal 1H (Offset) - OH - OH													Offset Site Error:
Survey Program: 100- VES GyroFlex V2, 8924-MWD-ISCWVA, 13795-Project													Offset Well Error:
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,400.00	10,541.00	9,827.27	9,414.21	55.66	15.79	14.33	-4,668.26	1,003.85	2,154.01	2,106.61	47.40	45.444	
13,500.00	10,541.00	9,821.79	9,413.89	57.04	15.66	14.06	-4,668.93	1,009.28	2,070.32	2,022.83	47.49	43.594	
13,600.00	10,541.00	9,812.00	9,413.21	58.43	15.42	13.59	-4,670.11	1,018.98	1,988.12	1,940.65	47.47	41.881	
13,700.00	10,541.00	9,812.00	9,413.21	59.83	15.42	13.59	-4,670.11	1,018.98	1,907.57	1,859.83	47.74	39.960	
13,800.00	10,541.00	9,812.00	9,413.21	61.25	15.42	13.59	-4,670.11	1,018.98	1,828.93	1,780.91	48.02	38.086	
13,900.00	10,541.00	9,812.00	9,413.21	62.67	15.42	13.59	-4,670.11	1,018.98	1,752.48	1,704.16	48.32	36.268	
14,000.00	10,541.00	9,812.00	9,413.21	64.11	15.42	13.59	-4,670.11	1,018.98	1,678.50	1,629.86	48.64	34.511	
14,100.00	10,541.00	9,812.00	9,413.21	65.55	15.42	13.59	-4,670.11	1,018.98	1,607.34	1,558.38	48.97	32.826	
14,200.00	10,541.00	9,812.00	9,413.21	67.00	15.42	13.59	-4,670.11	1,018.98	1,539.39	1,490.09	49.30	31.222	
14,300.00	10,541.00	9,777.64	9,410.16	68.46	14.59	11.90	-4,674.36	1,052.93	1,474.23	1,425.63	48.60	30.333	
14,400.00	10,541.00	9,771.65	9,409.53	69.93	14.44	11.61	-4,675.13	1,058.84	1,413.72	1,364.96	48.77	28.988	
14,500.00	10,541.00	9,765.53	9,408.85	71.41	14.30	11.31	-4,675.93	1,064.87	1,357.83	1,308.90	48.94	27.747	
14,600.00	10,541.00	9,759.27	9,408.13	72.89	14.14	11.00	-4,676.75	1,071.04	1,307.15	1,258.05	49.10	26.620	
14,700.00	10,541.00	9,752.86	9,407.36	74.38	13.99	10.68	-4,677.60	1,077.34	1,262.31	1,213.04	49.27	25.621	
14,800.00	10,541.00	9,746.32	9,406.53	75.88	13.83	10.36	-4,678.48	1,083.77	1,223.93	1,174.50	49.44	24.758	
14,900.00	10,541.00	9,739.62	9,405.66	77.38	13.67	10.03	-4,679.39	1,090.35	1,192.66	1,143.04	49.62	24.038	
15,000.00	10,541.00	9,732.77	9,404.72	78.89	13.51	9.69	-4,680.33	1,097.07	1,169.04	1,119.21	49.83	23.459	
15,100.00	10,541.00	9,725.76	9,403.72	80.40	13.34	9.34	-4,681.31	1,103.94	1,153.56	1,103.44	50.12	23.015	
15,200.00	10,541.00	9,718.59	9,402.66	81.91	13.16	8.99	-4,682.32	1,110.96	1,146.54	1,096.02	50.52	22.694	
15,227.25	10,541.00	9,716.60	9,402.36	82.33	13.12	8.89	-4,682.60	1,112.90	1,146.11	1,095.46	50.65	22.627 CC, ES	
15,300.00	10,541.00	9,686.00	9,397.32	83.43	12.38	7.38	-4,687.05	1,142.76	1,148.65	1,097.86	50.79	22.616	
15,400.00	10,541.00	9,686.00	9,397.32	84.96	12.38	7.38	-4,687.05	1,142.76	1,158.53	1,107.01	51.52	22.486 SF	
15,500.00	10,541.00	9,686.00	9,397.32	86.49	12.38	7.38	-4,687.05	1,142.76	1,176.86	1,124.60	52.26	22.518	
15,600.00	10,541.00	9,686.00	9,397.32	88.02	12.38	7.38	-4,687.05	1,142.76	1,203.24	1,150.29	52.95	22.724	
15,700.00	10,541.00	9,686.00	9,397.32	89.56	12.38	7.38	-4,687.05	1,142.76	1,237.17	1,183.62	53.54	23.105	
15,800.00	10,541.00	9,686.00	9,397.32	91.10	12.38	7.38	-4,687.05	1,142.76	1,278.04	1,224.01	54.03	23.655	
15,900.00	10,541.00	9,670.73	9,394.42	92.64	12.02	6.62	-4,689.37	1,157.56	1,324.97	1,270.62	54.35	24.379	
16,000.00	10,541.00	9,664.81	9,393.19	94.19	11.88	6.33	-4,690.30	1,163.28	1,377.60	1,323.00	54.60	25.230	
16,100.00	10,541.00	9,654.00	9,390.80	95.74	11.62	5.81	-4,692.03	1,173.68	1,435.23	1,380.48	54.76	26.212	
16,200.00	10,541.00	9,654.00	9,390.80	97.29	11.62	5.81	-4,692.03	1,173.68	1,497.23	1,442.38	54.85	27.298	
16,300.00	10,541.00	9,654.00	9,390.80	98.84	11.62	5.81	-4,692.03	1,173.68	1,563.17	1,508.29	54.88	28.485	
16,400.00	10,541.00	9,642.58	9,388.06	100.40	11.36	5.25	-4,693.88	1,184.61	1,632.44	1,577.60	54.85	29.764	
16,500.00	10,541.00	9,637.55	9,386.77	101.96	11.24	5.01	-4,694.69	1,189.41	1,704.76	1,649.98	54.79	31.117	
16,600.00	10,541.00	9,623.00	9,382.81	103.52	10.91	4.31	-4,697.02	1,203.21	1,779.80	1,725.11	54.69	32.544	
16,700.00	10,541.00	9,623.00	9,382.81	105.09	10.91	4.31	-4,697.02	1,203.21	1,857.01	1,802.43	54.58	34.023	
16,800.00	10,541.00	9,623.00	9,382.81	106.65	10.91	4.31	-4,697.02	1,203.21	1,936.31	1,881.85	54.46	35.553	
16,900.00	10,541.00	9,612.47	9,379.77	108.22	10.67	3.81	-4,698.71	1,213.14	2,017.40	1,963.08	54.32	37.136	
17,000.00	10,541.00	9,602.70	9,376.89	109.79	10.44	3.34	-4,700.27	1,222.35	2,100.05	2,045.87	54.18	38.762	

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

LEA Drilling Service

Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Marwari/Van Doo Dah - Sol 28 Federal 2H (Offset) - OH - OH													Offset Site Error:
Survey Program: 100- VES GyroFlex V2, 8841-MWD-ISCWSA, 13840-Project													Offset Well Error:
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,700.00	10,541.00	9,700.00	9,322.91	35.88	12.31	9.75	-2,874.16	1,081.77	2,116.84	2,076.39	40.45	52.334	
11,800.00	10,541.00	9,700.00	9,322.91	36.74	12.31	9.75	-2,874.16	1,081.77	2,036.27	1,995.95	40.31	50.509	
11,900.00	10,541.00	9,700.00	9,322.91	37.66	12.31	9.75	-2,874.16	1,081.77	1,957.49	1,917.32	40.16	48.737	
12,000.00	10,541.00	9,700.00	9,322.91	38.63	12.31	9.75	-2,874.16	1,081.77	1,880.72	1,840.73	40.00	47.024	
12,100.00	10,541.00	9,700.00	9,322.91	39.64	12.31	9.75	-2,874.16	1,081.77	1,806.24	1,766.43	39.81	45.376	
12,200.00	10,541.00	9,700.00	9,322.91	40.70	12.31	9.75	-2,874.16	1,081.77	1,734.32	1,694.72	39.60	43.800	
12,300.00	10,541.00	9,700.00	9,322.91	41.80	12.31	9.75	-2,874.16	1,081.77	1,665.30	1,625.94	39.37	42.304	
12,400.00	10,541.00	9,700.00	9,322.91	42.93	12.31	9.75	-2,874.16	1,081.77	1,599.57	1,560.45	39.11	40.895	
12,500.00	10,541.00	9,700.00	9,322.91	44.09	12.31	9.75	-2,874.16	1,081.77	1,537.52	1,498.68	38.84	39.582	
12,600.00	10,541.00	9,689.60	9,321.52	45.29	12.06	9.27	-2,874.48	1,092.07	1,479.55	1,441.18	38.37	38.560	
12,700.00	10,541.00	9,688.42	9,321.36	46.51	12.03	9.21	-2,874.51	1,093.24	1,426.31	1,388.24	38.07	37.467	
12,800.00	10,541.00	9,687.23	9,321.19	47.75	12.01	9.16	-2,874.55	1,094.41	1,378.28	1,340.50	37.78	36.482	
12,900.00	10,541.00	9,686.02	9,321.01	49.02	11.98	9.10	-2,874.59	1,095.61	1,336.02	1,298.50	37.52	35.605	
13,000.00	10,541.00	9,684.79	9,320.83	50.31	11.95	9.04	-2,874.63	1,096.83	1,300.09	1,262.76	37.33	34.831	
13,100.00	10,541.00	9,683.54	9,320.65	51.63	11.92	8.98	-2,874.67	1,098.06	1,271.03	1,233.80	37.22	34.148	
13,200.00	10,541.00	9,682.27	9,320.46	52.96	11.89	8.92	-2,874.71	1,099.32	1,249.31	1,212.06	37.25	33.539	
13,300.00	10,541.00	9,680.98	9,320.27	54.30	11.86	8.86	-2,874.76	1,100.59	1,235.32	1,197.87	37.45	32.983	
13,400.00	10,541.00	9,679.67	9,320.07	55.66	11.83	8.80	-2,874.80	1,101.89	1,229.34	1,191.48	37.86	32.467	
13,423.79	10,541.00	9,679.36	9,320.02	55.99	11.82	8.79	-2,874.81	1,102.20	1,229.11	1,191.12	37.99	32.350 CC, ES	
13,500.00	10,541.00	9,678.34	9,319.87	57.04	11.79	8.74	-2,874.85	1,103.20	1,231.47	1,192.98	38.49	31.997	
13,600.00	10,541.00	9,668.00	9,318.21	58.43	11.55	8.26	-2,875.21	1,113.40	1,241.75	1,202.50	39.25	31.638	
13,700.00	10,541.00	9,668.00	9,318.21	59.83	11.55	8.26	-2,875.21	1,113.40	1,259.80	1,219.62	40.18	31.352	
13,800.00	10,541.00	9,668.00	9,318.21	61.25	11.55	8.26	-2,875.21	1,113.40	1,285.41	1,244.24	41.17	31.225 SF	
13,900.00	10,541.00	9,668.00	9,318.21	62.67	11.55	8.26	-2,875.21	1,113.40	1,318.12	1,275.97	42.14	31.277	
14,000.00	10,541.00	9,668.00	9,318.21	64.11	11.55	8.26	-2,875.21	1,113.40	1,357.42	1,314.35	43.07	31.516	
14,100.00	10,541.00	9,668.00	9,318.21	65.55	11.55	8.26	-2,875.21	1,113.40	1,402.77	1,358.84	43.92	31.936	
14,200.00	10,541.00	9,668.00	9,318.21	67.00	11.55	8.26	-2,875.21	1,113.40	1,453.59	1,408.90	44.69	32.525	
14,300.00	10,541.00	9,668.00	9,318.21	68.46	11.55	8.26	-2,875.21	1,113.40	1,509.33	1,463.96	45.37	33.267	
14,400.00	10,541.00	9,668.00	9,318.21	69.93	11.55	8.26	-2,875.21	1,113.40	1,569.47	1,523.51	45.96	34.148	
14,500.00	10,541.00	9,668.00	9,318.21	71.41	11.55	8.26	-2,875.21	1,113.40	1,633.53	1,587.05	46.47	35.151	
14,600.00	10,541.00	9,668.00	9,318.21	72.89	11.55	8.26	-2,875.21	1,113.40	1,701.05	1,654.14	46.91	36.262	
14,700.00	10,541.00	9,668.00	9,318.21	74.38	11.55	8.26	-2,875.21	1,113.40	1,771.65	1,724.36	47.28	37.468	
14,800.00	10,541.00	9,668.00	9,318.21	75.88	11.55	8.26	-2,875.21	1,113.40	1,844.96	1,797.36	47.60	38.757	
14,900.00	10,541.00	9,668.00	9,318.21	77.38	11.55	8.26	-2,875.21	1,113.40	1,920.69	1,872.82	47.88	40.119	
15,000.00	10,541.00	9,668.00	9,318.21	78.89	11.55	8.26	-2,875.21	1,113.40	1,998.55	1,950.45	48.11	41.544	
15,100.00	10,541.00	9,656.51	9,316.20	80.40	11.28	7.73	-2,875.62	1,124.71	2,078.22	2,030.02	48.20	43.117	
15,200.00	10,541.00	9,655.20	9,315.96	81.91	11.24	7.66	-2,875.67	1,125.99	2,159.65	2,111.30	48.35	44.665	

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

LEAM Drilling Services

Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Offset Design Marwari/Van Doo Dah - Van Doo Dah 21-33 Fed Com 233H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-LEAM MWD+HDGM													Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.90	0.90	0.00	0.00	-79.72	343.45	-1,894.34	1,925.22					
100.00	100.00	100.90	100.90	0.08	0.08	-79.72	343.45	-1,894.34	1,925.22	1,925.07	0.15	N/A		
200.00	200.00	200.90	200.90	0.30	0.30	-79.72	343.45	-1,894.34	1,925.22	1,924.62	0.60	3,185.366		
300.00	300.00	300.90	300.90	0.53	0.53	-79.72	343.45	-1,894.34	1,925.22	1,924.17	1.05	1,826.711		
400.00	400.00	400.90	400.90	0.75	0.75	-79.72	343.45	-1,894.34	1,925.22	1,923.72	1.50	1,280.528		
500.00	500.00	500.90	500.90	0.98	0.98	-79.72	343.45	-1,894.34	1,925.22	1,923.27	1.95	985.781		
600.00	600.00	600.90	600.90	1.20	1.20	-79.72	343.45	-1,894.34	1,925.22	1,922.82	2.40	801.333		
700.00	700.00	700.90	700.90	1.43	1.43	-79.72	343.45	-1,894.34	1,925.22	1,922.37	2.85	675.030		
800.00	800.00	800.90	800.90	1.65	1.65	-79.72	343.45	-1,894.34	1,925.22	1,921.92	3.30	583.120		
900.00	900.00	900.90	900.90	1.87	1.88	-79.72	343.45	-1,894.34	1,925.22	1,921.47	3.75	513.239		
1,000.00	1,000.00	1,000.90	1,000.90	2.10	2.10	-79.72	343.45	-1,894.34	1,925.22	1,921.02	4.20	458.315		
1,100.00	1,100.00	1,100.90	1,100.90	2.32	2.33	-79.72	343.45	-1,894.34	1,925.22	1,920.57	4.65	414.010		
1,200.00	1,200.00	1,200.90	1,200.90	2.55	2.55	-79.72	343.45	-1,894.34	1,925.22	1,920.12	5.10	377.516		
1,300.00	1,300.00	1,300.90	1,300.90	2.77	2.78	-79.72	343.45	-1,894.34	1,925.22	1,919.67	5.55	346.934		
1,400.00	1,400.00	1,400.90	1,400.90	3.00	3.00	-79.72	343.45	-1,894.34	1,925.22	1,919.22	6.00	320.936		
1,500.00	1,500.00	1,500.90	1,500.90	3.22	3.23	-79.72	343.45	-1,894.34	1,925.22	1,918.77	6.45	298.562 CC, ES		
1,600.00	1,599.99	1,600.89	1,600.89	3.44	3.45	-164.19	343.45	-1,894.34	1,926.06	1,919.18	6.88	279.750		
1,700.00	1,699.96	1,700.86	1,700.86	3.64	3.67	-164.21	343.45	-1,894.34	1,926.58	1,921.27	7.31	263.782		
1,800.00	1,799.86	1,800.76	1,800.76	3.84	3.90	-164.23	343.45	-1,894.34	1,932.78	1,925.04	7.74	249.700		
1,900.00	1,899.68	1,900.58	1,900.58	4.06	4.12	-164.27	343.45	-1,894.34	1,938.66	1,930.48	8.17	237.229		
2,000.00	1,999.37	2,000.27	2,000.27	4.28	4.35	-164.31	343.45	-1,894.34	1,946.21	1,937.60	8.61	226.143		
2,100.00	2,098.90	2,099.80	2,099.80	4.50	4.57	-164.36	343.45	-1,894.34	1,955.44	1,946.40	9.04	216.251		
2,200.00	2,198.26	2,199.16	2,199.16	4.74	4.79	-164.42	343.45	-1,894.34	1,966.35	1,956.87	9.48	207.394		
2,300.00	2,297.40	2,298.30	2,298.30	4.98	5.02	-164.49	343.45	-1,894.34	1,978.93	1,969.01	9.92	199.438		
2,400.00	2,396.30	2,397.20	2,397.20	5.24	5.24	-164.56	343.45	-1,894.34	1,993.19	1,982.82	10.37	192.272		
2,500.00	2,494.93	2,495.83	2,495.83	5.51	5.46	-164.64	343.45	-1,894.34	2,009.11	1,998.30	10.81	185.800		
2,600.00	2,593.26	2,594.16	2,594.16	5.80	5.68	-164.73	343.45	-1,894.34	2,026.71	2,015.45	11.26	179.939		
2,700.00	2,691.25	2,692.15	2,692.15	6.11	5.90	-164.83	343.45	-1,894.34	2,045.98	2,034.26	11.72	174.622		
2,800.00	2,789.06	2,789.96	2,789.96	6.44	6.12	-164.98	343.45	-1,894.34	2,066.08	2,053.91	12.17	169.745		
2,900.00	2,886.87	2,887.77	2,887.77	6.77	6.34	-165.13	343.45	-1,894.34	2,086.20	2,073.57	12.63	165.201		
3,000.00	2,984.69	2,985.59	2,985.59	7.11	6.56	-165.27	343.45	-1,894.34	2,106.34	2,093.25	13.09	160.942		
3,100.00	3,082.50	3,131.70	3,131.69	7.46	6.87	-165.48	343.45	-1,892.83	2,125.54	2,111.90	13.64	155.847		
3,200.00	3,180.32	3,287.60	3,287.48	7.82	7.18	-165.67	343.45	-1,887.12	2,142.14	2,127.95	14.19	150.965		
3,300.00	3,278.13	3,444.87	3,444.43	8.18	7.50	-165.85	343.45	-1,877.08	2,156.09	2,141.35	14.74	146.256		
3,400.00	3,375.94	3,603.29	3,602.18	8.54	7.84	-166.01	343.45	-1,862.61	2,167.35	2,152.06	15.29	141.719 SF		

LEAM Drilling Services

Anticollision Report

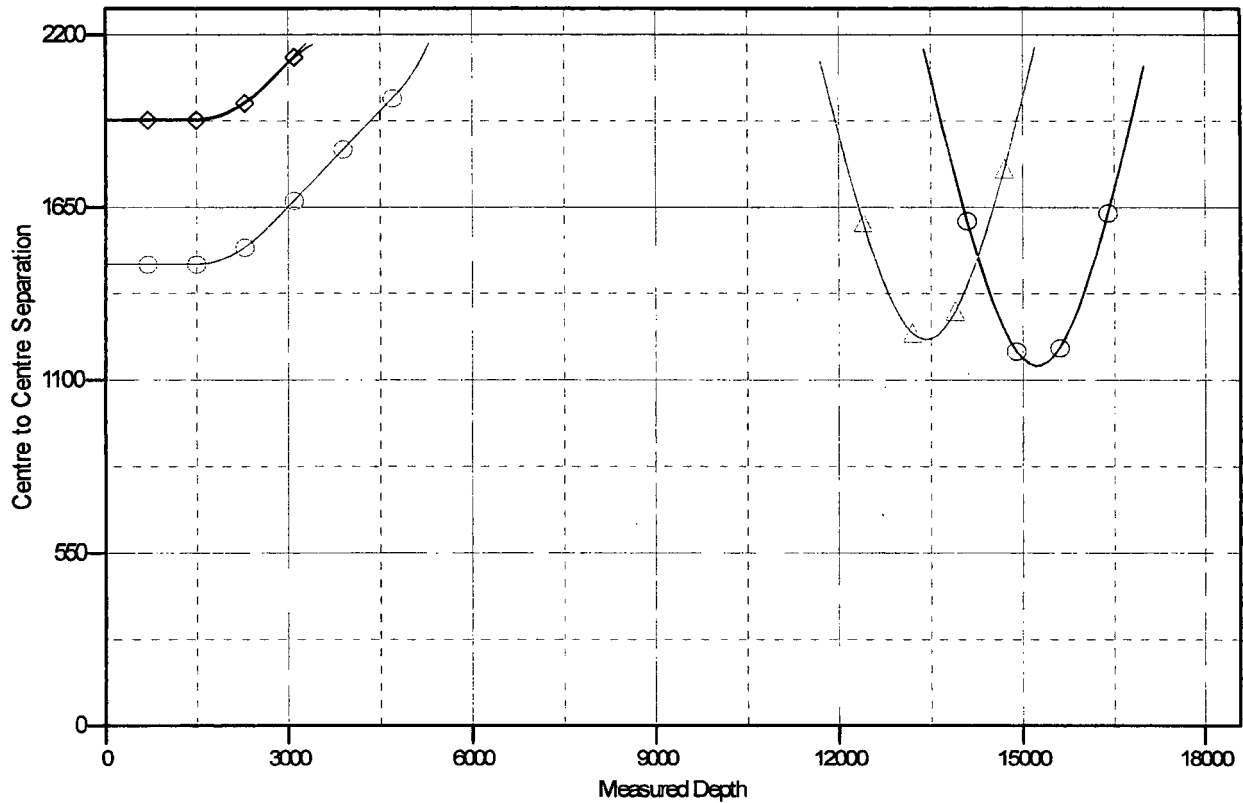
Company: Devon Energy
Project: Lea County, NM (NAD-83)
Reference Site: Marwari/Van Doo Dah
Site Error: 0.00 usft
Reference Well: Marwari 28-16 State Fed Com 236H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well Marwari 28-16 State Fed Com 236H
TVD Reference: 3389.3' GE + 32' KB @ 3421.30usft
MD Reference: 3389.3' GE + 32' KB @ 3421.30usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Multi User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to 3389.3' GE + 32' KB @ 3421.30usft
 Offset Depths are relative to Offset Datum
 Central Meridian is 104° 19' 60.0000 W

Coordinates are relative to: Marwari 28-16 State Fed Com 236H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.35°

Ladder Plot



LEGEND

Cotton Draw Unit#47 (Offset, OH, OH V0) Sol28 Federal 1H (Offset, OH, OH V0) Sol28 Federal 2H (Offset, OH, OH V0)
 Marwari 21-16 State Fed Com 234H, OH, Plan #1 V0 Van Doo Dah 21-33 Fed Com 233H, OH, Plan #1 V0

LEAM Drilling Services

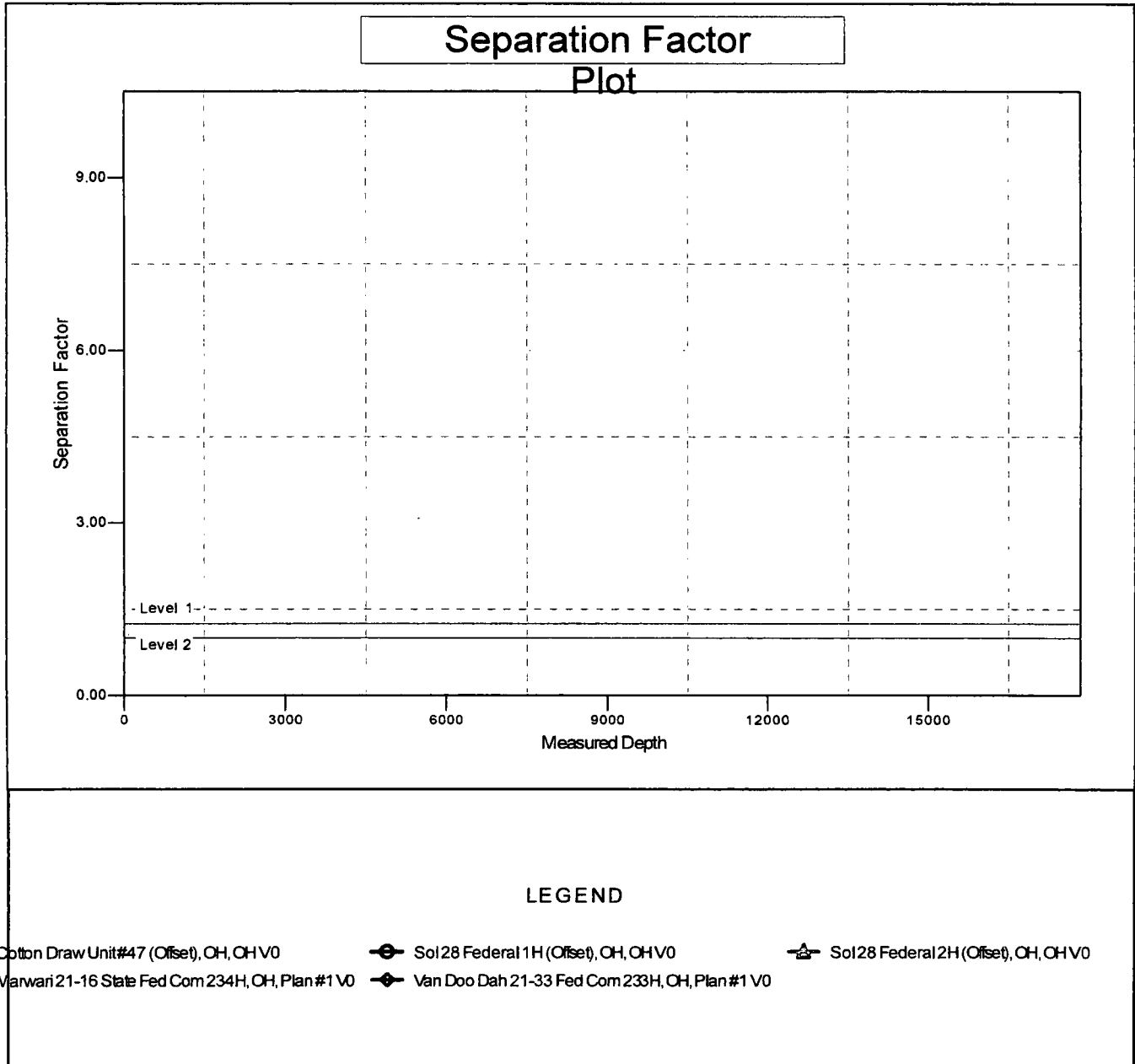
Anticollision Report

Company: Devon Energy
Project: Lea County, NM (NAD-83)
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Coordinates are relative to: Marwari 28-16 State Fed Com 236H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.35°



COMPANY Devon Energy
FIELD Lea County, NM (NAD-83)
SITE Maraver/Van Doo Dah
WELL Maraver 26-16 State Fed Com 216H
WELLPATH OH
DESIGN Plan #1
DEPTH/LWT (feet)

WELL INFO
MAP DATUM North American Datum 1983
MAP SYSTEM US State Plane 1983
MAP ZONE New Mexico Eastern Zone
WELL/LAT -103.677794
WELL/EV MAI 744309.91
WELL/NS MAP 403715.83
CONVERGENCE 0.35
MAGMODEL HDGM
DECLINATION 6.73
NORTH REF Grid
GROUND ELEV 3889.3
KB ELEV 3421.3
VS AZI 180

SURVEY PROGRAM
1 0.00 -10855.86 PLAN #1 : LEAM MWD-HDGM

SURVEY LIST																				
Measured Data	Indication	Azimuth	Course Length	True Vertical	SnobSea	TVD	SS/TVD	Local N/S	Local E/W	X	Y	Northing	Latitude	Longitude	DOLG	Severn	Bund Rate	Turn Rate	Vertical Section	
0.00	0.00	0.00	0.00	0.00	3421.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	0.00	0.00	3521.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	0.00	0.00	3621.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	0.00	0.00	3721.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	0.00	0.00	3821.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	0.00	0.00	3921.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	0.00	0.00	4021.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	0.00	0.00	4121.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	0.00	0.00	4221.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	0.00	0.00	4321.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1000.00	0.00	0.00	0.00	0.00	4421.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1100.00	0.00	0.00	0.00	0.00	4521.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1200.00	0.00	0.00	0.00	0.00	4621.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1300.00	0.00	0.00	0.00	0.00	4721.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1400.00	0.00	0.00	0.00	0.00	4821.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1500.00	0.00	0.00	0.00	0.00	4921.30	0.00	0.00	0.00	0.00	744309.91	403715.83	32.108197	-103.677794	0.00	0.00	0.00	0.00	0.00	0.00	
1600.00	1.00	84.47	100.00	100.00	1569.96	1721.34	0.34	0.34	0.34	3.47	744313.38	403716.17	32.108198	-103.677782	1.00	1.00	1.00	0.00	0.00	-0.34
1700.00	2.00	84.47	100.00	100.00	1799.86	1821.44	0.76	0.76	0.76	7.82	744317.73	403716.59	32.108199	-103.677768	1.00	1.00	1.00	0.00	0.00	-0.76
1800.00	3.00	84.47	100.00	100.00	1999.37	1942.19	1.13	1.13	1.13	11.89	744322.80	403717.18	32.108201	-103.677749	1.00	1.00	1.00	0.00	0.00	-1.13
1900.00	4.00	84.47	100.00	100.00	2199.50	2042.40	1.50	1.50	1.50	15.70	744327.86	403717.77	32.108203	-103.677730	1.00	1.00	1.00	0.00	0.00	-1.50
2000.00	5.00	84.47	100.00	100.00	2399.50	2192.40	1.87	1.87	1.87	19.51	744332.91	403718.36	32.108205	-103.677693	1.00	1.00	1.00	0.00	0.00	-1.87
2100.00	6.00	84.47	100.00	100.00	2599.50	2342.40	2.25	2.25	2.25	23.26	744337.96	403718.95	32.108207	-103.677656	1.00	1.00	1.00	0.00	0.00	-2.25
2200.00	7.00	84.47	100.00	100.00	2799.50	2492.40	2.63	2.63	2.63	27.01	744343.01	403719.54	32.108209	-103.677619	1.00	1.00	1.00	0.00	0.00	-2.63
2300.00	8.00	84.47	100.00	100.00	2999.50	2642.40	3.00	3.00	3.00	30.76	744348.06	403720.13	32.108211	-103.677582	1.00	1.00	1.00	0.00	0.00	-3.00
2400.00	9.00	84.47	100.00	100.00	3199.50	2792.40	3.38	3.38	3.38	34.51	744353.11	403720.72	32.108213	-103.677545	1.00	1.00	1.00	0.00	0.00	-3.38
2500.00	10.00	84.47	100.00	100.00	3399.50	2942.40	3.75	3.75	3.75	38.26	744358.16	403721.31	32.108215	-103.677508	1.00	1.00	1.00	0.00	0.00	-3.75
2600.00	11.00	84.47	100.00	100.00	3599.50	3092.40	4.13	4.13	4.13	42.01	744363.21	403721.90	32.108217	-103.677471	1.00	1.00	1.00	0.00	0.00	-4.13
2700.24	12.00	84.47	100.24	2691.49	729.82	12.08	12.08	12.08	12.08	124.67	744368.26	403722.49	32.108219	-103.677434	1.00	1.00	1.00	0.00	0.00	-12.08
2800.00	12.00	84.47	99.76	2788.06	632.24	14.08	14.08	14.08	14.08	146.32	744373.31	403723.08	32.108221	-103.677397	1.00	1.00	1.00	0.00	0.00	-14.08
2900.00	12.00	84.47	100.00	2886.87	534.43	16.09	16.09	16.09	16.09	168.02	744378.36	403723.67	32.108223	-103.677360	1.00	1.00	1.00	0.00	0.00	-16.09
3000.00	12.00	84.47	100.00	2986.69	436.61	18.09	18.09	18.09	18.09	189.72	744383.41	403724.26	32.108225	-103.677323	1.00	1.00	1.00	0.00	0.00	-18.09
3100.00	12.00	84.47	100.00	3086.50	338.80	20.10	20.10	20.10	20.10	211.46	744388.46	403724.85	32.108227	-103.677286	1.00	1.00	1.00	0.00	0.00	-20.10
3200.00	12.00	84.47	100.00	3186.32	240.98	22.10	22.10	22.10	22.10	233.21	744393.51	403725.44	32.108229	-103.677249	1.00	1.00	1.00	0.00	0.00	-22.10
3300.00	12.00	84.47	100.00	3286.13	143.17	24.11	24.11	24.11	24.11	254.96	744398.56	403726.03	32.108231	-103.677212	1.00	1.00	1.00	0.00	0.00	-24.11
3400.00	12.00	84.47	100.00	3385.94	45.36	26.12	26.12	26.12	26.12	276.71	744403.61	403726.62	32.108233	-103.677175	1.00	1.00	1.00	0.00	0.00	-26.12
3500.00	12.00	84.47	100.00	3485.76	-52.46	28.12	28.12	28.12	28.12	298.46	744408.66	403727.21	32.108235	-103.677138	1.00	1.00	1.00	0.00	0.00	-28.12
3600.00	12.00	84.47	100.00	3585.57	-150.27	30.13	30.13	30.13	30.13	320.21	744413.71	403727.80	32.108237	-103.677101	1.00	1.00	1.00	0.00	0.00	-30.13
3700.00	12.00	84.47	100.00	3685.39	-248.09	32.13	32.13	32.13	32.13	341.96	744418.76	403728.39	32.108239	-103.677064	1.00	1.00	1.00	0.00	0.00	-32.13
3800.00	12.00	84.47	100.00	3785.20	-345.90	34.14	34.14	34.14	34.14	363.70	744423.81	403728.98	32.108241	-103.677027	1.00	1.00	1.00	0.00	0.00	-34.14
3900.00	12.00	84.47	100.00	3885.01	-443.71	36.14	36.14	36.14	36.14	385.45	744428.86	403729.57	32.108243	-103.676990	1.00	1.00	1.00	0.00	0.00	-36.14
4000.00	12.00	84.47	100.00	3984.83	-541.53	38.15	38.15	38.15	38.15	407.20	744433.91	403730.16	32.108245	-103.676953	1.00	1.00	1.00	0.00	0.00	-38.15
4100.00	12.00	84.47	100.00	4084.64	-639.34	40.16	40.16	40.16	40.16	428.95	744438.96	403730.75	32.108247	-103.676916	1.00	1.00	1.00	0.00	0.00	-40.16
4200.00	12.00	84.47	100.00	4184.45	-737.15	42.16	42.16	42.16	42.16	450.70	744444.01	403731.34	32.108249	-103.676879	1.00	1.00	1.00	0.00	0.00	-42.16
4300.00	12.00	84.47	100.00	4284.26	-834.97	44.17	44.17	44.17	44.17	472.45	744449.06	403731.93	32.108251	-103.676842	1.00	1.00	1.00	0.00	0.00	-44.17
4400.00	12.00	84.47	100.00	4384.08	-932.78	46.17	46.17	46.17	46.17	494.20	744454.11	403732.52	32.108253	-103.676805	1.00	1.00	1.00	0.00	0.00	-46.17
4500.00	12.00	84.47	100.00	4483.90	-1030.60	48.18	48.18	48.18	48.18	515.95	744459.16	403733.11	32.108255	-103.676768	1.00	1.00	1.00	0.00	0.00	-48.18
4600.00	12.00	84.47	100.00	4583.72	-1128.41	50.18	50.18	50.18	50.18	537.70	744464.21	403733.70	32.108257	-103.676731	1.00	1.00	1.00	0.00	0.00	-50.18
4700.00	12.00	84.47	100.00	4683.52	-1226.22	52.19	52.19	52.19	52.19	559.45	744469.26	403734.29	32.108259	-103.676694	1.00	1.00	1.00	0.00	0.00	-52.19
4800.00	12.00	84.47	100.00	4783.34	-1324.04	54.20	54.20	54.20	54.20	581.20	744474.31	403734.88	32.108261	-103.676657	1.00	1.00	1.00	0.00	0.00	-54.20
4900.00	12.00	84.47	100.00	4883.15	-1421.85	56.20														

6900.00	12.00	84.47	100.00	6796.43	-3378.13	96.31	993.95	745303.86	403812.14	32.108446	-103.674582	0.00	0.00	-96.31
7000.00	12.00	84.47	100.00	6897.26	-3475.94	98.32	1014.65	745344.56	403814.15	32.108451	-103.674515	0.00	0.00	-98.32
7100.00	12.00	84.47	100.00	6995.06	-3573.76	100.33	1035.35	745354.26	403816.35	32.108456	-103.674488	0.00	0.00	-100.33
7200.00	12.00	84.47	100.00	7092.87	-3671.57	102.33	1056.05	745365.96	403818.16	32.108461	-103.674381	0.00	0.00	-102.33
7300.00	12.00	84.47	100.00	7190.69	-3769.39	104.34	1076.75	745386.96	403820.17	32.108466	-103.674314	0.00	0.00	-104.34
7400.00	12.00	84.47	100.00	7288.50	-3867.20	106.34	1097.45	745407.56	403822.17	32.108471	-103.674247	0.00	0.00	-106.34
7500.00	12.00	84.47	100.00	7386.31	-3965.01	108.35	1118.14	745428.05	403824.18	32.108477	-103.674181	0.00	0.00	-108.35
7600.00	12.00	84.47	100.00	7484.13	-4062.83	110.35	1138.84	745448.75	403826.18	32.108482	-103.674114	0.00	0.00	-110.35
7700.00	12.00	84.47	100.00	7581.94	-4160.64	112.36	1159.54	745469.45	403828.19	32.108487	-103.674047	0.00	0.00	-112.36
7800.00	12.00	84.47	100.00	7679.75	-4258.45	114.36	1180.24	745490.15	403830.19	32.108492	-103.673980	0.00	0.00	-114.36
7900.00	12.00	84.47	100.00	7777.57	-4356.27	116.37	1200.94	745510.85	403832.20	32.108497	-103.673913	0.00	0.00	-116.37
7923.74	12.00	84.47	78.74	7905.68	-4384.38	116.95	1206.89	745516.80	403833.78	32.108499	-103.673864	0.00	0.00	-116.95
8000.00	10.93	84.47	71.26	7975.55	-4434.72	118.81	1220.99	745520.80	403834.14	32.108499	-103.673868	1.50	-1.50	-118.81
8100.00	9.43	84.47	100.00	7973.54	-4532.84	120.02	1238.59	745528.50	403835.85	32.108507	-103.673791	1.50	-1.50	-120.02
8200.00	7.53	84.47	100.00	8072.79	-4631.49	121.68	1253.61	745535.52	403837.00	32.108510	-103.673703	1.50	-1.50	-121.68
8300.00	6.43	84.47	100.00	8172.00	-4730.70	122.68	1266.06	745537.97	403838.51	32.108514	-103.673619	1.50	-1.50	-122.68
8400.00	4.93	84.47	100.00	8271.51	-4830.21	123.64	1275.92	745539.68	403839.47	32.108516	-103.673617	1.50	-1.50	-123.64
8500.00	3.43	84.47	100.00	8371.24	-4930.94	124.99	1283.18	745539.75	403840.62	32.108518	-103.673627	1.50	-1.50	-124.99
8600.00	1.93	84.47	100.00	8471.13	-5049.83	124.99	1283.89	745539.91	403840.82	32.108519	-103.673625	1.50	-1.50	-124.99
8700.00	0.43	84.47	100.00	8571.10	-5149.80	125.00	1289.58	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
8728.90	0.00	0.00	78.90	8670.00	-5178.70	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	1.50	-1.50	-125.00
8800.00	0.00	0.00	100.00	8771.10	-5249.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
8900.00	0.00	0.00	100.00	8871.10	-5349.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9000.00	0.00	0.00	100.00	8971.10	-5449.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9100.00	0.00	0.00	100.00	9071.10	-5549.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9200.00	0.00	0.00	100.00	9171.10	-5649.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9300.00	0.00	0.00	100.00	9271.10	-5749.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9400.00	0.00	0.00	100.00	9371.10	-5849.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9500.00	0.00	0.00	100.00	9471.10	-5949.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9600.00	0.00	0.00	100.00	9571.10	-6049.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9700.00	0.00	0.00	100.00	9671.10	-6149.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9800.00	0.00	0.00	100.00	9771.10	-6249.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
9900.00	0.00	0.00	100.00	9871.10	-6349.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
10000.00	0.00	0.00	100.00	9971.10	-6449.80	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
10096.94	0.00	0.00	96.94	9964.04	-6546.74	125.00	1290.00	745539.91	403840.83	32.108519	-103.673625	0.00	0.00	-125.00
10100.00	0.31	180.00	3.06	9971.10	-6549.80	124.99	1290.00	745539.91	403840.82	32.108519	-103.673625	10.00	10.00	-124.99
10150.00	5.31	180.00	50.00	10022.02	-6599.72	122.55	1290.00	745539.91	403838.38	32.108519	-103.673625	10.00	0.00	-122.55
10200.00	10.31	180.00	50.00	10129.55	-6697.93	115.76	1290.00	745539.91	403831.59	32.108494	-103.673625	10.00	10.00	-115.76
10250.00	15.31	180.00	50.00	10191.29	-6697.93	108.68	1290.00	745539.91	403827.51	32.108464	-103.673625	10.00	10.00	-108.68
10300.00	20.31	180.00	50.00	10166.88	-6745.58	89.39	1290.00	745539.91	403805.52	32.108422	-103.673626	10.00	10.00	-89.39
10350.00	25.31	180.00	50.00	10121.95	-6791.65	70.02	1290.00	745539.91	403805.52	32.108422	-103.673626	10.00	10.00	-70.02
10400.00	30.31	180.00	50.00	10057.17	-6835.87	46.70	1290.00	745539.91	403765.53	32.108304	-103.673627	10.00	10.00	-46.70
10450.00	35.31	180.00	50.00	10099.18	-6877.88	19.82	1290.00	745539.91	403735.45	32.108320	-103.673627	10.00	0.00	-19.82
10500.00	40.31	180.00	50.00	10038.67	-6917.37	-11.02	1290.00	745539.91	403704.81	32.108357	-103.673628	10.00	0.00	-11.02
10550.00	45.31	180.00	50.00	10075.34	-6954.04	-44.49	1290.00	745539.91	403670.85	32.108052	-103.673628	10.00	0.00	-44.49
10600.00	50.31	180.00	50.00	10048.91	-6987.61	-82.02	1290.00	745539.91	403633.81	32.107750	-103.673628	10.00	0.00	-82.02
10650.00	55.31	180.00	50.00	10069.13	-7017.81	-121.03	1290.00	745539.91	403591.00	32.107744	-103.673628	10.00	10.00	-121.03
10700.00	60.31	180.00	50.00	10049.46	-7044.46	-164.13	1290.00	745539.91	403551.70	32.107725	-103.673631	10.00	10.00	-164.13
10750.00	65.31	180.00	50.00	10048.60	-7067.30	-208.39	1290.00	745539.91	403507.24	32.107602	-103.673632	10.00	10.00	-208.39
10800.00	70.31	180.00	50.00	10050.48	-7086.18	-254.87	1290.00	745539.91	403460.96	32.107476	-103.673633	10.00	10.00	-254.87
10850.00	75.31	180.00	50.00	10052.26	-7100.96	-302.42	1290.00	745539.91	403413.21	32.107344	-103.673634	10.00	10.00	-302.42
10900.00	80.31	180.00	50.00	10053.82	-7111.52	-351.48	1290.00	745539.91	403374.76	32.107073	-103.673635	10.00	10.00	-351.48
10950.00	85.31	180.00	50.00	10054.08	-7117.78	-401.07	1290.00	745539.91	403267.87	32.106944	-103.673636	10.00	10.00	-401.07
10996.94	90.00	180.00	46.94	10054.100	-7119.70	-447.96	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-447.96
11000.00	90.00	180.00	3.06	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11100.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11200.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11300.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11400.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11500.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11600.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11700.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11800.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
11900.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
12000.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
12100.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
12200.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00	-453.02
12300.00	90.00	180.00	100.00	10054.100	-7119.70	-453.02	1290.00	745539.91	403164.81	32.106936	-103.673637	0.00	0.00</	

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PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company, LP
LEASE NO.:	NMLC062300
WELL NAME & NO.:	Marwari 28-16 State Fed Com 236H
SURFACE HOLE FOOTAGE:	175'/N & 1950'/E
BOTTOM HOLE FOOTAGE:	330'/N & 1980'/E
LOCATION:	Section 28, T25S, R32E, NMPM
COUNTY:	Lea County, New Mexico

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

All previous COAs still apply except for the following:

A. CASING

1. The 13 3/8 inch surface casing shall be set at approximately **900** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
Excess calculates to 24% - additional cement might be required.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the **9 5/8** inch intermediate casing is:

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

MHH 11062018

GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

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

☒ Lea County

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

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.