



December 26, 2018

Devon Energy Production Company, LP
Well: Marwari 28-16 State Fed Com 236H
County/Parish: Lea County, NM

HOBBS OCD
JUN 25 2019
RECEIVED

LEAM MWD: (OH) from 0' MD – 20,784' MD
Projection; 20,843' MD

This Borehole Survey taken between 12/04/18 and 12/23/18 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: December 26, 2018



Survey Certification Form

State of New Mexico

Lea County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 12/04/2018 through 12/23/2018, conduct or supervise the taking of MWD Survey from a depth of 0' MD to 20,843' MD; that the data is true, correct, complete and within the limitations of the tools as set forth by LEAM Drilling Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of Devon Energy Production Company, LP for the Marwari 28-16 State Fed Com 236H in Lea County, New Mexico; and that I reviewed this report and find that it conforms to the principals and procedures as set forth by LEAM Drilling Services.

A handwritten signature in black ink, appearing to be 'RWR', is written over a horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator

Devon Energy

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



Azimuths to Grid North
 True North: -0.35°
 Magnetic North: 6.37°

Magnetic Field
 Strength: 47847.3nT
 Dip Angle: 59.75°
 Date: 10/31/2018
 Model: HDGM

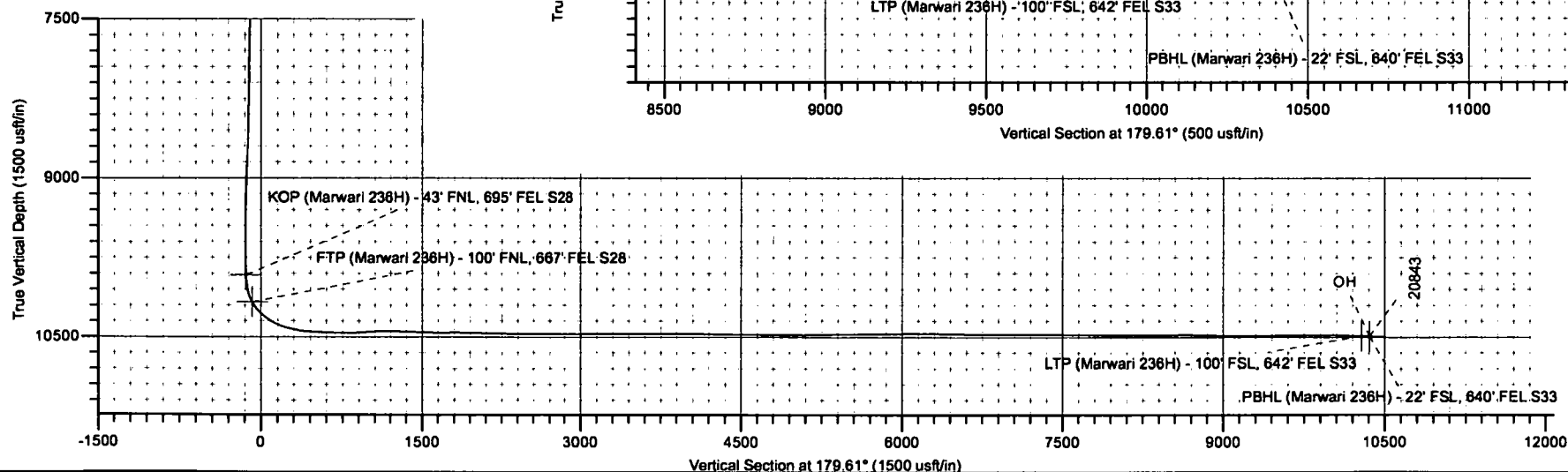
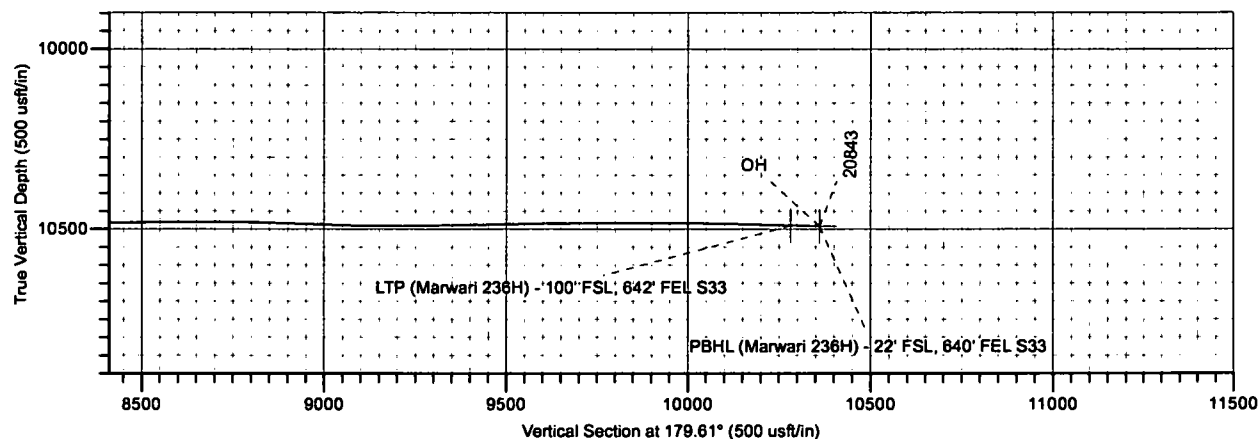
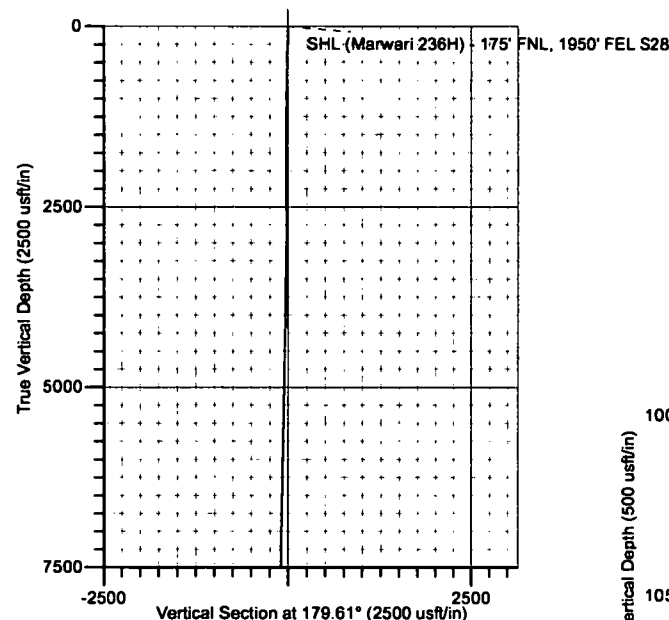
PROJECT DETAILS: Lea County, NM (NAD-83)

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



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP	10169.76	89.45	1282.88	403805.27	745592.79	32° 6' 30.3185 N	103° 40' 25.1359 W
KOP	9915.94	144.74	1248.75	403860.56	745558.66	32° 6' 30.8677 N	103° 40' 25.5287 W
LTP	10489.61	-10274.06	1372.60	393441.76	745682.51	32° 4' 47.7598 N	103° 40' 24.8300 W
PBHL	10491.95	-10352.45	1375.15	393363.37	745685.06	32° 4' 46.9839 N	103° 40' 24.8059 W
SHL	0.00	0.00	0.00	403715.82	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

Design: OH (Marwari 28-16 State Fed Com 236H/OH)
 Marwari/Van Doo Dah
 Created By: Dustin Ault
 Date: 13:48, January 08 2019
 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: OH

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



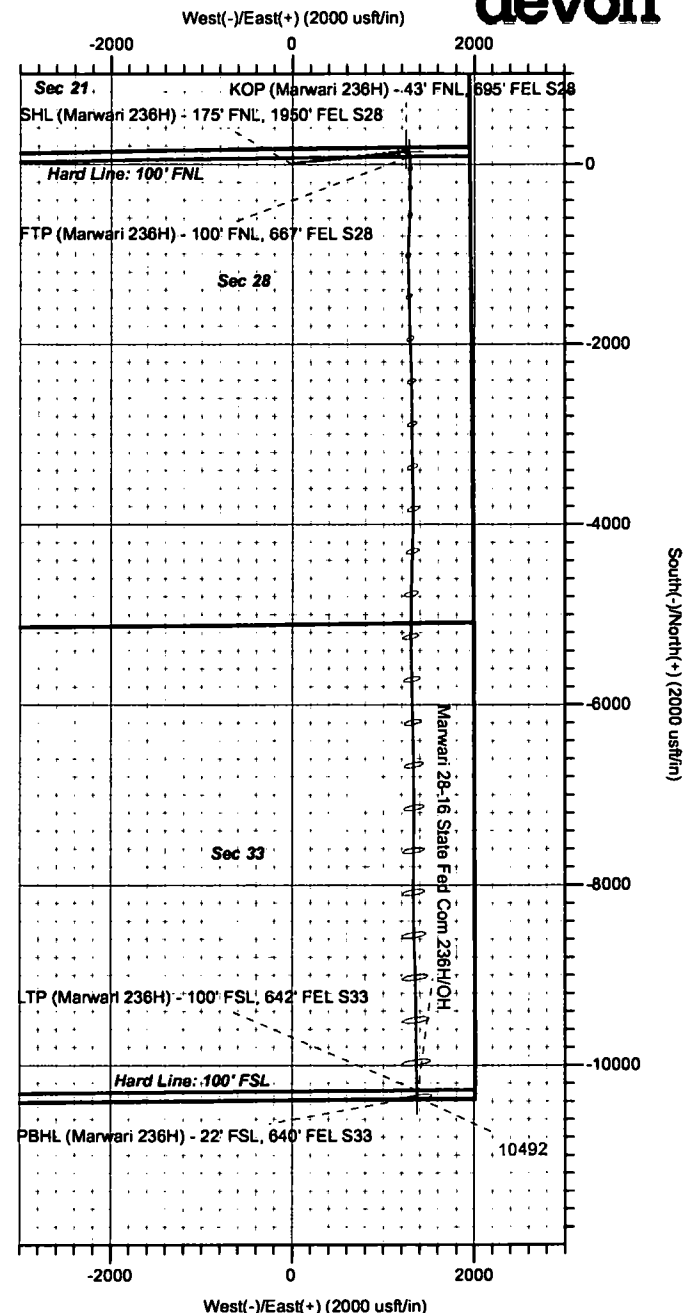
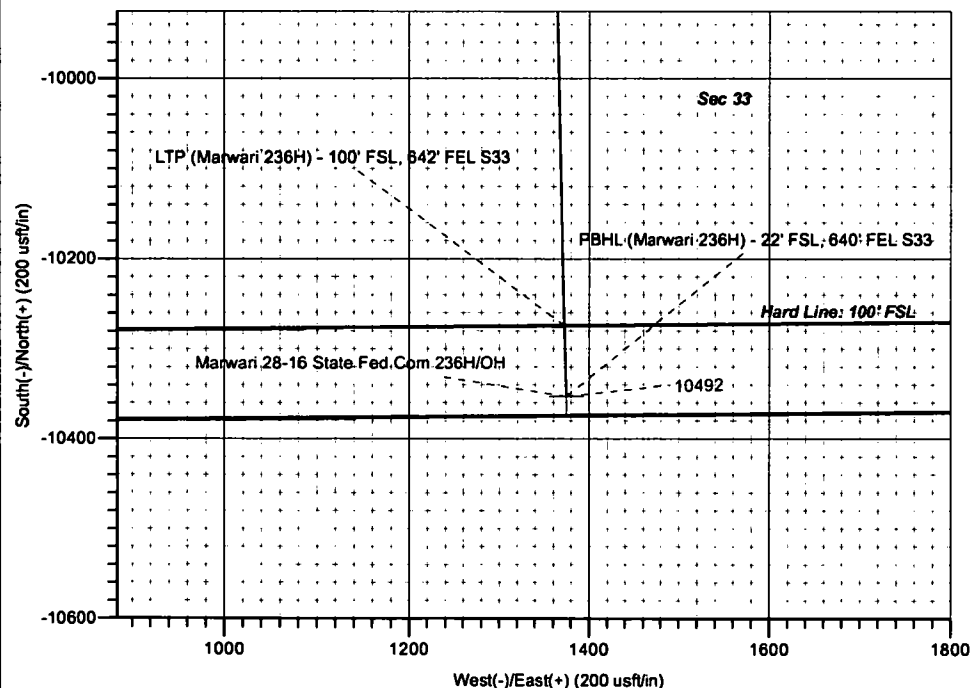
Azimuths to Grid North
 True North: -0.35°
 Magnetic North: 6.37°

Magnetic Field
 Strength: 47847.3nT
 Dip Angle: 59.75°
 Date: 10/31/2018
 Model: HDGM

devon

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Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
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PBHL	10491.95	-10352.45	1375.15	393363.37	745685.06	32° 4' 46.9839 N	103° 40' 24.8059 W
SHL	0.00	0.00	0.00	403715.82	744309.91	32° 6' 29.5108 N	103° 40' 40.0573 W



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

Design: OH (Marwari 28-16 State Fed Com 236H/OH)
 Marwari/Van Doo Dah
 Created By: Dustin Ault
 Date: 13:51, January 08 2019
 Approved: _____
 Date: _____

LEAM Drilling Services

Survey 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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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

Well	Marwari 28-16 State Fed Com 236H				
Well Position	+N/-S	0.00 usft	Northing:	403,715.82 usft	Latitude: 32° 6' 29.5108 N
	+E/-W	0.00 usft	Easting:	744,309.91 usft	Longitude: 103° 40' 40.0573 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level: 3,389.30 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/31/2018	6.72	59.75	47,847

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00		179.61

Survey Program	Date	1/9/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
141.00	20,784.00	Survey #1 (OH)	LEAM MWD+HDGM	MWD+HDGM	
20,843.00	20,843.00	Survey #2 (OH)	Project	Projection	

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	
141.00	0.70	21.15	141.00	0.80	0.31	-0.80	0.50	0.50	0.00	
242.00	0.97	23.61	241.99	2.16	0.88	-2.16	0.27	0.27	2.44	
334.00	1.32	29.76	333.97	3.80	1.71	-3.78	0.40	0.38	6.68	
426.00	1.41	30.99	425.94	5.69	2.82	-5.67	0.10	0.10	1.34	
517.00	1.49	38.02	516.91	7.58	4.13	-7.55	0.21	0.09	7.73	
608.00	1.58	41.71	607.88	9.45	5.69	-9.41	0.15	0.10	4.05	
699.00	1.49	48.04	698.85	11.17	7.41	-11.12	0.21	-0.10	6.96	
789.00	1.67	52.26	788.81	12.76	9.31	-12.70	0.24	0.20	4.69	
879.00	1.49	47.69	878.78	14.35	11.22	-14.27	0.24	-0.20	-5.08	

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Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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)
902.00	1.41	49.97	901.77	14.73	11.65	-14.65	0.43	-0.35	9.91
1,063.00	1.14	57.53	1,062.73	16.87	14.52	-16.77	0.20	-0.17	4.70
1,155.00	1.06	62.10	1,154.71	17.76	16.05	-17.65	0.13	-0.09	4.97
1,247.00	0.88	52.43	1,246.70	18.58	17.36	-18.47	0.26	-0.20	-10.51
1,338.00	0.70	45.05	1,337.69	19.40	18.30	-19.28	0.23	-0.20	-8.11
1,429.00	0.62	60.70	1,428.69	20.04	19.13	-19.91	0.22	-0.09	17.20
1,519.00	0.44	56.65	1,518.68	20.47	19.84	-20.33	0.20	-0.20	-4.50
1,612.00	0.53	73.53	1,611.68	20.78	20.55	-20.64	0.18	0.10	18.15
1,704.00	0.44	51.03	1,703.68	21.13	21.23	-20.98	0.23	-0.10	-24.46
1,798.00	0.44	89.88	1,797.67	21.35	21.88	-21.21	0.31	0.00	41.33
1,893.00	0.44	75.99	1,892.67	21.44	22.59	-21.29	0.11	0.00	-14.62
1,987.00	0.44	118.53	1,986.67	21.36	23.26	-21.20	0.34	0.00	45.26
2,082.00	0.44	121.87	2,081.67	20.99	23.89	-20.83	0.03	0.00	3.52
2,176.00	0.62	144.02	2,175.66	20.39	24.50	-20.22	0.29	0.19	23.56
2,272.00	0.53	148.59	2,271.66	19.59	25.03	-19.42	0.11	-0.09	4.76
2,366.00	0.44	123.98	2,365.65	19.02	25.56	-18.84	0.24	-0.10	-26.18
2,461.00	0.44	116.24	2,460.65	18.65	26.19	-18.47	0.06	0.00	-8.15
2,556.00	0.88	105.70	2,555.64	18.29	27.22	-18.11	0.48	0.46	-11.09
2,651.00	1.06	109.04	2,650.63	17.81	28.75	-17.61	0.20	0.19	3.52
2,745.00	1.32	104.64	2,744.61	17.25	30.62	-17.04	0.29	0.28	-4.68
2,840.00	1.67	102.53	2,839.58	16.68	33.03	-16.45	0.37	0.37	-2.22
2,935.00	2.37	83.90	2,934.52	16.58	36.34	-16.34	1.00	0.74	-19.61
3,030.00	3.87	71.95	3,029.38	17.79	41.34	-17.50	1.71	1.58	-12.58
3,126.00	4.84	73.53	3,125.10	19.94	48.30	-19.61	1.02	1.01	1.65
3,221.00	5.63	77.04	3,219.70	22.12	56.69	-21.73	0.90	0.83	3.69
3,315.00	6.42	78.63	3,313.18	24.19	66.33	-23.74	0.86	0.84	1.69
3,410.00	6.95	80.38	3,407.54	26.20	77.21	-25.67	0.60	0.56	1.84
3,504.00	8.09	80.03	3,500.73	28.29	89.33	-27.68	1.21	1.21	-0.37
3,599.00	8.79	84.08	3,594.70	30.20	103.13	-29.50	0.97	0.74	4.26
3,694.00	8.97	88.47	3,688.56	31.15	117.76	-30.34	0.74	0.19	4.62
3,788.00	9.41	89.00	3,781.35	31.48	132.76	-30.57	0.48	0.47	0.56
3,883.00	10.11	87.06	3,874.98	32.04	148.86	-31.02	0.81	0.74	-2.04
3,977.00	11.70	84.95	3,967.28	33.30	166.59	-32.17	1.74	1.69	-2.24
4,071.00	12.84	83.20	4,059.13	35.38	186.46	-34.11	1.28	1.21	-1.86
4,166.00	12.05	81.44	4,151.90	38.10	206.74	-36.69	0.92	-0.83	-1.85
4,261.00	11.17	84.08	4,244.95	40.53	225.70	-38.99	1.08	-0.93	2.78
4,355.00	11.43	88.47	4,337.13	41.72	244.07	-40.05	0.96	0.28	4.67
4,449.00	11.78	88.82	4,429.21	42.16	262.98	-40.37	0.38	0.37	0.37
4,544.00	11.70	87.42	4,522.22	42.79	282.29	-40.87	0.31	-0.08	-1.47
4,638.00	10.46	85.66	4,614.47	43.87	300.32	-41.82	1.37	-1.32	-1.87
4,733.00	10.90	84.95	4,707.82	45.31	317.87	-43.15	0.48	0.46	-0.75
4,829.00	12.05	84.60	4,801.90	47.05	336.89	-44.76	1.20	1.20	-0.36
4,923.00	12.05	84.95	4,893.83	48.84	356.43	-46.41	0.08	0.00	0.37

LEAM Drilling Services

Survey 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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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)	
5,018.00	11.61	85.48	4,986.81	50.47	375.84	-47.91	0.48	-0.46	0.56	
5,111.00	11.78	84.95	5,077.88	52.04	394.62	-49.35	0.22	0.18	-0.57	
5,207.00	12.22	83.37	5,171.78	54.08	414.48	-51.25	0.57	0.46	-1.65	
5,246.00	12.22	83.55	5,209.90	55.02	422.68	-52.14	0.10	0.00	0.46	
5,397.00	12.40	83.90	5,357.43	58.54	454.68	-55.44	0.13	0.12	0.23	
5,492.00	11.70	82.84	5,450.34	60.82	474.38	-57.59	0.77	-0.74	-1.12	
5,587.00	12.31	84.43	5,543.26	63.00	494.01	-59.64	0.73	0.64	1.67	
5,682.00	12.13	84.43	5,636.11	64.95	514.03	-61.45	0.19	-0.19	0.00	
5,778.00	12.49	83.02	5,729.90	67.20	534.37	-63.56	0.49	0.38	-1.47	
5,873.00	12.40	81.97	5,822.67	69.87	554.67	-66.09	0.26	-0.09	-1.11	
5,968.00	13.01	81.79	5,915.34	72.82	575.35	-68.90	0.64	0.64	-0.19	
6,064.00	13.45	81.61	6,008.79	75.99	597.09	-71.93	0.46	0.46	-0.19	
6,158.00	13.89	81.26	6,100.13	79.30	619.06	-75.09	0.48	0.47	-0.37	
6,253.00	13.89	80.91	6,192.35	82.84	641.59	-78.47	0.09	0.00	-0.37	
6,348.00	13.81	85.48	6,284.59	85.53	664.15	-81.01	1.15	-0.08	4.81	
6,443.00	13.81	85.83	6,376.85	87.25	686.76	-82.57	0.09	0.00	0.37	
6,538.00	13.54	86.01	6,469.15	88.85	709.17	-84.02	0.29	-0.28	0.19	
6,633.00	13.54	86.54	6,561.51	90.29	731.36	-85.31	0.13	0.00	0.56	
6,728.00	12.75	86.18	6,654.02	91.66	752.92	-86.54	0.84	-0.83	-0.38	
6,822.00	13.01	85.66	6,745.66	93.15	773.82	-87.88	0.30	0.28	-0.55	
6,916.00	11.34	86.54	6,837.54	94.51	793.60	-89.11	1.79	-1.78	0.94	
7,011.00	10.82	85.48	6,930.77	95.78	811.81	-90.25	0.59	-0.55	-1.12	
7,106.00	10.99	85.13	7,024.05	97.25	829.72	-91.60	0.19	0.18	-0.37	
7,201.00	10.38	86.18	7,117.41	98.59	847.28	-92.82	0.67	-0.64	1.11	
7,295.00	10.55	83.90	7,209.84	100.07	864.29	-94.18	0.48	0.18	-2.43	
7,389.00	12.05	83.90	7,302.02	102.03	882.60	-96.02	1.60	1.60	0.00	
7,484.00	11.96	85.83	7,394.94	103.79	902.28	-97.65	0.43	-0.09	2.03	
7,578.00	11.61	86.18	7,486.96	105.13	921.43	-98.86	0.38	-0.37	0.37	
7,672.00	10.29	83.72	7,579.25	106.68	939.22	-100.29	1.49	-1.40	-2.62	
7,767.00	10.82	82.84	7,672.64	108.72	956.50	-102.21	0.58	0.56	-0.93	
7,862.00	10.48	83.02	7,766.00	110.88	973.92	-104.25	0.36	-0.36	0.19	
7,957.00	10.46	85.83	7,859.42	112.56	991.10	-105.81	0.54	-0.02	2.96	
8,052.00	11.43	86.71	7,952.69	113.73	1,009.10	-106.86	1.04	1.02	0.93	
8,146.00	10.99	87.42	8,044.90	114.66	1,027.35	-107.67	0.49	-0.47	0.76	
8,240.00	10.46	89.17	8,137.26	115.19	1,044.83	-108.08	0.66	-0.56	1.86	
8,334.00	10.46	85.83	8,229.69	115.94	1,061.87	-108.71	0.64	0.00	-3.55	
8,429.00	9.67	84.08	8,323.23	117.39	1,078.41	-110.04	0.89	-0.83	-1.84	
8,523.00	9.50	80.21	8,415.92	119.52	1,093.91	-112.07	0.71	-0.18	-4.12	
8,617.00	8.71	79.68	8,508.73	122.11	1,108.55	-114.56	0.85	-0.84	-0.56	
8,712.00	9.41	77.40	8,602.55	125.10	1,123.21	-117.45	0.83	0.74	-2.40	
8,806.00	10.29	75.81	8,695.16	128.83	1,138.85	-121.08	0.98	0.94	-1.69	
8,901.00	8.97	76.34	8,788.82	132.66	1,154.27	-124.80	1.39	-1.39	0.56	
8,995.00	7.65	77.57	8,881.83	135.74	1,167.50	-127.79	1.42	-1.40	1.31	

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Marwari 28-16 State Fed Com 236H
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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)	
9,089.00	6.95	75.11	8,975.07	138.55	1,179.11	-130.52	0.82	-0.74	-2.62	
9,183.00	7.65	74.93	9,068.31	141.63	1,190.65	-133.53	0.75	0.74	-0.19	
9,278.00	5.28	67.20	9,162.70	144.97	1,200.78	-136.80	2.65	-2.49	-8.14	
9,372.00	4.92	75.46	9,256.33	147.66	1,208.67	-139.43	0.87	-0.38	8.79	
9,466.00	4.48	71.07	9,350.01	149.86	1,216.05	-141.58	0.60	-0.47	-4.67	
9,559.00	3.87	80.38	9,442.77	151.57	1,222.58	-143.24	0.98	-0.66	10.01	
9,654.00	4.66	99.02	9,537.51	151.50	1,229.55	-143.12	1.67	0.83	19.62	
9,749.00	2.99	111.50	9,632.29	149.98	1,235.67	-141.57	1.95	-1.76	13.14	
9,844.00	2.81	114.31	9,727.17	148.12	1,240.10	-139.67	0.24	-0.19	2.96	
9,938.00	2.81	115.01	9,821.06	146.19	1,244.28	-137.72	0.04	0.00	0.74	
10,033.00	2.90	101.30	9,915.94	144.74	1,248.75	-136.24	0.72	0.09	-14.43	
10,128.00	9.15	137.69	10,010.40	138.67	1,256.20	-130.12	7.40	6.58	38.31	
10,175.00	14.86	147.53	10,056.35	130.82	1,261.96	-122.23	12.86	12.15	20.94	
10,222.00	20.66	151.75	10,101.10	118.42	1,269.12	-109.78	12.63	12.34	8.98	
10,269.00	26.20	153.86	10,144.20	101.79	1,277.63	-93.09	11.92	11.79	4.49	
10,317.00	31.39	163.00	10,186.28	80.30	1,285.96	-71.54	14.15	10.81	19.04	
10,364.00	36.32	171.09	10,225.31	54.81	1,291.70	-46.02	14.19	10.49	17.21	
10,410.00	41.77	177.90	10,261.04	26.01	1,294.37	-17.20	15.06	11.85	14.80	
10,457.00	47.92	180.40	10,294.35	-7.11	1,294.83	15.93	13.61	13.09	5.32	
10,505.00	54.43	180.05	10,324.43	-44.49	1,294.69	53.30	13.57	13.56	-0.73	
10,552.00	58.74	180.05	10,350.31	-83.71	1,294.65	92.52	9.17	9.17	0.00	
10,599.00	63.93	179.88	10,372.85	-124.94	1,294.68	133.74	11.05	11.04	-0.36	
10,646.00	67.80	180.05	10,392.06	-167.82	1,294.70	176.63	8.24	8.23	0.36	
10,693.00	72.11	180.58	10,408.17	-211.96	1,294.46	220.77	9.23	9.17	1.13	
10,740.00	74.78	180.58	10,421.56	-257.01	1,294.00	265.81	5.68	5.68	0.00	
10,789.00	78.17	180.40	10,433.01	-304.64	1,293.59	313.44	6.93	6.92	-0.37	
10,836.00	81.00	179.30	10,441.51	-350.86	1,293.72	359.66	6.45	6.02	-2.34	
10,883.00	84.68	178.65	10,447.37	-397.48	1,294.55	406.28	7.95	7.83	-1.38	
10,955.00	86.70	180.58	10,452.78	-469.26	1,295.03	478.07	3.87	2.81	2.68	
11,046.00	86.97	181.99	10,457.80	-560.10	1,293.00	568.89	1.58	0.30	1.55	
11,138.00	88.90	182.86	10,461.12	-651.95	1,289.11	660.71	2.30	2.10	0.95	
11,229.00	89.16	183.39	10,462.66	-742.80	1,284.15	751.53	0.65	0.29	0.58	
11,319.00	92.07	183.92	10,461.69	-832.60	1,278.41	841.29	3.29	3.23	0.59	
11,410.00	94.94	181.99	10,456.13	-923.30	1,273.73	931.95	3.80	3.15	-2.12	
11,500.00	93.12	179.35	10,449.80	-1,013.06	1,272.68	1,021.70	3.56	-2.02	-2.93	
11,593.00	91.54	178.65	10,446.02	-1,105.96	1,274.30	1,114.61	1.86	-1.70	-0.75	
11,684.00	88.20	178.47	10,446.23	-1,196.92	1,276.59	1,205.58	3.68	-3.67	-0.20	
11,776.00	88.11	178.65	10,449.19	-1,288.85	1,278.90	1,297.52	0.22	-0.10	0.20	
11,867.00	86.88	178.29	10,453.17	-1,379.72	1,281.32	1,388.41	1.41	-1.35	-0.40	
11,957.00	88.11	179.35	10,457.10	-1,469.62	1,283.18	1,478.32	1.80	1.37	1.18	
12,050.00	88.11	179.00	10,460.17	-1,562.56	1,284.51	1,571.26	0.38	0.00	-0.38	
12,142.00	90.22	178.29	10,461.51	-1,654.52	1,286.69	1,663.24	2.42	2.29	-0.77	
12,237.00	90.84	178.65	10,460.63	-1,749.48	1,289.23	1,758.21	0.75	0.65	0.38	
12,331.00	88.81	177.77	10,460.92	-1,843.42	1,292.16	1,852.18	2.35	-2.16	-0.94	

LEAM Drilling Services

Survey 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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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)
12,426.00	88.46	177.77	10,463.18	-1,938.33	1,295.86	1,947.10	0.37	-0.37	0.00
12,520.00	87.32	177.42	10,466.64	-2,032.18	1,299.80	2,040.98	1.27	-1.21	-0.37
12,615.00	89.69	178.12	10,469.12	-2,127.07	1,303.49	2,135.89	2.60	2.49	0.74
12,710.00	89.34	178.47	10,469.92	-2,222.02	1,306.32	2,230.86	0.52	-0.37	0.37
12,804.00	88.99	179.00	10,471.29	-2,315.99	1,308.39	2,324.84	0.68	-0.37	0.56
12,899.00	89.78	178.82	10,472.31	-2,410.96	1,310.20	2,419.83	0.85	0.83	-0.19
12,993.00	88.99	178.65	10,473.32	-2,504.93	1,312.28	2,513.81	0.86	-0.84	-0.18
13,088.00	89.78	179.35	10,474.34	-2,599.91	1,313.93	2,608.80	1.11	0.83	0.74
13,181.00	89.52	179.35	10,474.91	-2,692.90	1,314.99	2,701.79	0.28	-0.28	0.00
13,277.00	89.43	179.00	10,475.79	-2,788.89	1,316.37	2,797.79	0.38	-0.09	-0.36
13,372.00	90.40	179.70	10,475.93	-2,883.88	1,317.45	2,892.78	1.26	1.02	0.74
13,467.00	90.40	179.70	10,475.27	-2,978.88	1,317.95	2,987.78	0.00	0.00	0.00
13,562.00	90.57	179.70	10,474.46	-3,073.87	1,318.44	3,082.78	0.18	0.18	0.00
13,657.00	90.13	179.52	10,473.88	-3,168.87	1,319.09	3,177.78	0.50	-0.46	-0.19
13,752.00	90.57	179.35	10,473.30	-3,263.86	1,320.03	3,272.77	0.50	0.46	-0.18
13,847.00	91.10	179.17	10,471.92	-3,358.85	1,321.25	3,367.76	0.59	0.56	-0.19
13,941.00	90.48	179.17	10,470.62	-3,452.83	1,322.62	3,461.75	0.66	-0.66	0.00
14,036.00	89.34	178.33	10,470.77	-3,547.80	1,324.69	3,556.74	1.49	-1.20	-0.88
14,130.00	90.13	178.15	10,471.21	-3,641.75	1,327.58	3,650.71	0.86	0.84	-0.19
14,223.00	91.10	179.38	10,470.21	-3,734.72	1,329.58	3,743.69	1.68	1.04	1.32
14,315.00	89.87	180.96	10,469.43	-3,826.72	1,329.31	3,835.68	2.18	-1.34	1.72
14,407.00	89.43	180.96	10,469.99	-3,918.70	1,327.77	3,927.65	0.48	-0.48	0.00
14,501.00	89.25	180.96	10,471.07	-4,012.68	1,326.19	4,021.62	0.19	-0.19	0.00
14,596.00	89.78	180.96	10,471.88	-4,107.67	1,324.60	4,116.59	0.56	0.56	0.00
14,690.00	88.81	181.51	10,473.04	-4,201.63	1,322.57	4,210.54	1.19	-1.03	0.59
14,784.00	87.41	180.63	10,476.14	-4,295.56	1,320.82	4,304.45	1.76	-1.49	-0.94
14,878.00	88.90	181.51	10,479.16	-4,389.50	1,319.06	4,398.37	1.84	1.59	0.94
14,973.00	89.87	181.51	10,480.18	-4,484.46	1,316.56	4,493.31	1.02	1.02	0.00
15,067.00	89.34	181.86	10,480.83	-4,578.41	1,313.80	4,587.25	0.68	-0.56	0.37
15,162.00	89.25	182.04	10,482.00	-4,673.35	1,310.56	4,682.16	0.21	-0.09	0.19
15,257.00	89.52	181.16	10,483.02	-4,768.31	1,307.91	4,777.10	0.97	0.28	-0.93
15,352.00	90.92	180.28	10,482.65	-4,863.29	1,306.72	4,872.08	1.74	1.47	-0.93
15,447.00	90.75	180.46	10,481.27	-4,958.28	1,306.11	4,967.06	0.26	-0.18	0.19
15,542.00	91.54	180.63	10,479.37	-5,053.26	1,305.20	5,062.03	0.85	0.83	0.18
15,637.00	90.04	180.28	10,478.06	-5,148.24	1,304.45	5,157.00	1.62	-1.58	-0.37
15,732.00	90.04	180.28	10,477.99	-5,243.24	1,303.98	5,252.00	0.00	0.00	0.00
15,827.00	90.66	179.05	10,477.41	-5,338.24	1,304.54	5,346.99	1.45	0.65	-1.29
15,922.00	90.31	178.70	10,476.61	-5,433.22	1,306.40	5,441.98	0.52	-0.37	-0.37
16,017.00	90.48	178.52	10,475.96	-5,528.18	1,308.71	5,536.96	0.26	0.18	-0.19
16,112.00	90.40	178.70	10,475.23	-5,623.15	1,311.01	5,631.95	0.21	-0.08	0.19
16,207.00	89.52	178.52	10,475.29	-5,718.13	1,313.32	5,726.93	0.95	-0.93	-0.19
16,302.00	91.54	178.53	10,474.41	-5,813.08	1,315.76	5,821.91	2.13	2.13	0.01
16,397.00	91.10	178.18	10,472.22	-5,908.02	1,318.49	5,916.86	0.59	-0.46	-0.37

LEAM Drilling Services

Survey 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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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)
16,491.00	91.28	177.82	10,470.27	-6,001.94	1,321.77	6,010.80	0.43	0.19	-0.38
16,587.00	89.96	178.35	10,469.23	-6,097.88	1,324.98	6,106.76	1.48	-1.38	0.55
16,682.00	89.96	178.18	10,469.30	-6,192.84	1,327.85	6,201.73	0.18	0.00	-0.18
16,777.00	89.25	179.23	10,469.96	-6,287.81	1,330.00	6,296.72	1.33	-0.75	1.11
16,872.00	88.20	178.88	10,472.07	-6,382.77	1,331.57	6,391.69	1.17	-1.11	-0.37
16,967.00	88.81	178.88	10,474.55	-6,477.72	1,333.42	6,486.65	0.64	0.64	0.00
17,062.00	88.81	178.88	10,476.52	-6,572.68	1,335.28	6,581.62	0.00	0.00	0.00
17,157.00	88.55	178.70	10,478.71	-6,667.63	1,337.28	6,676.58	0.33	-0.27	-0.19
17,252.00	89.78	179.05	10,480.09	-6,762.60	1,339.15	6,771.56	1.35	1.29	0.37
17,347.00	90.57	180.46	10,479.80	-6,857.60	1,339.56	6,866.56	1.70	0.83	1.48
17,442.00	90.48	180.11	10,478.93	-6,952.59	1,339.08	6,961.55	0.38	-0.09	-0.37
17,537.00	90.66	180.11	10,477.99	-7,047.59	1,338.90	7,056.54	0.19	0.19	0.00
17,631.00	90.31	180.11	10,477.19	-7,141.59	1,338.72	7,150.53	0.37	-0.37	0.00
17,726.00	91.63	180.64	10,475.58	-7,236.57	1,338.10	7,245.51	1.50	1.39	0.56
17,821.00	88.99	180.11	10,475.07	-7,331.56	1,337.48	7,340.49	2.83	-2.78	-0.56
17,916.00	89.43	180.64	10,476.38	-7,426.54	1,336.85	7,435.47	0.73	0.46	0.56
18,010.00	89.16	180.46	10,477.54	-7,520.53	1,335.95	7,529.45	0.35	-0.29	-0.19
18,104.00	89.96	180.64	10,478.26	-7,614.52	1,335.05	7,623.44	0.87	0.85	0.19
18,199.00	88.90	180.29	10,479.20	-7,709.51	1,334.28	7,718.42	1.18	-1.12	-0.37
18,285.00	88.90	180.76	10,480.85	-7,795.50	1,333.49	7,804.39	0.55	0.00	0.55
18,380.00	88.64	180.58	10,482.89	-7,890.47	1,332.38	7,899.35	0.33	-0.27	-0.19
18,474.00	89.52	180.23	10,484.40	-7,984.45	1,331.72	7,993.33	1.01	0.94	-0.37
18,569.00	90.57	179.88	10,484.33	-8,079.45	1,331.63	8,088.33	1.17	1.11	-0.37
18,664.00	90.40	179.35	10,483.52	-8,174.44	1,332.26	8,183.32	0.59	-0.18	-0.56
18,758.00	89.16	178.82	10,483.88	-8,268.43	1,333.76	8,277.32	1.43	-1.32	-0.56
18,853.00	91.19	179.17	10,483.59	-8,363.41	1,335.43	8,372.30	2.17	2.14	0.37
18,947.00	90.92	178.82	10,481.86	-8,457.38	1,337.08	8,466.28	0.47	-0.29	-0.37
19,041.00	90.48	178.82	10,480.72	-8,551.35	1,339.01	8,560.27	0.47	-0.47	0.00
19,135.00	90.13	178.47	10,480.22	-8,645.32	1,341.24	8,654.25	0.53	-0.37	-0.37
19,230.00	89.52	178.47	10,480.51	-8,740.29	1,343.77	8,749.23	0.64	-0.64	0.00
19,325.00	88.99	178.12	10,481.74	-8,835.24	1,346.60	8,844.20	0.67	-0.56	-0.37
19,419.00	88.02	177.24	10,484.19	-8,929.13	1,350.40	8,938.11	1.39	-1.03	-0.94
19,513.00	86.70	178.12	10,488.52	-9,022.95	1,354.21	9,031.96	1.69	-1.40	0.94
19,606.00	89.25	177.94	10,491.81	-9,115.83	1,357.40	9,124.85	2.75	2.74	-0.19
19,701.00	91.01	179.52	10,491.59	-9,210.80	1,359.51	9,219.84	2.49	1.85	1.66
19,796.00	90.66	179.52	10,490.21	-9,305.78	1,360.30	9,314.83	0.37	-0.37	0.00
19,890.00	91.36	180.05	10,488.55	-9,399.77	1,360.65	9,408.81	0.93	0.74	0.56
19,985.00	91.01	179.88	10,486.59	-9,494.75	1,360.71	9,503.79	0.41	-0.37	-0.18
20,080.00	90.92	179.70	10,484.99	-9,589.73	1,361.06	9,598.77	0.21	-0.09	-0.19
20,174.00	90.92	179.52	10,483.48	-9,683.72	1,361.70	9,692.76	0.19	0.00	-0.19
20,269.00	90.22	179.35	10,482.53	-9,778.71	1,362.64	9,787.76	0.76	-0.74	-0.18
20,361.00	89.78	179.00	10,482.53	-9,870.70	1,363.96	9,879.75	0.61	-0.48	-0.38
20,456.00	89.25	178.65	10,483.34	-9,965.67	1,365.91	9,974.74	0.67	-0.56	-0.37

LEAM Drilling Services

Survey 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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,550.00	89.25	179.00	10,484.57	-10,059.65	1,367.84	10,068.72	0.37	0.00	0.37
20,644.00	88.64	178.82	10,486.30	-10,153.61	1,369.62	10,162.70	0.68	-0.65	-0.19
20,738.00	88.29	178.47	10,488.82	-10,247.55	1,371.85	10,256.65	0.53	-0.37	-0.37
20,784.00	88.29	178.12	10,490.19	-10,293.51	1,373.21	10,302.62	0.76	0.00	-0.76
20,843.00	88.29	178.12	10,491.95	-10,352.45	1,375.15	10,361.57	0.00	0.00	0.00
Projection									

Devon Energy

Lea County, NM (NAD-83)

Marwari/Van Doo Dah

Marwari 28-16 State Fed Com 236H

OH

Design: OH

Survey Report - Geographic

08 January, 2019

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,158.00	13.89	81.26	6,100.13	79.30	619.06	403,795.12	744,928.97	32° 6' 30.2582 N	103° 40' 32.8544 W
6,253.00	13.89	80.91	6,192.35	82.84	641.59	403,798.66	744,951.50	32° 6' 30.2918 N	103° 40' 32.5922 W
6,348.00	13.81	85.48	6,284.59	85.53	664.15	403,801.35	744,974.06	32° 6' 30.3171 N	103° 40' 32.3297 W
6,443.00	13.81	85.83	6,376.85	87.25	686.76	403,803.07	744,996.67	32° 6' 30.3327 N	103° 40' 32.0667 W
6,538.00	13.54	86.01	6,469.15	88.85	709.17	403,804.67	745,019.07	32° 6' 30.3472 N	103° 40' 31.8061 W
6,633.00	13.54	86.54	6,561.51	90.29	731.36	403,806.11	745,041.27	32° 6' 30.3602 N	103° 40' 31.5479 W
6,728.00	12.75	86.18	6,654.02	91.66	752.92	403,807.48	745,062.83	32° 6' 30.3724 N	103° 40' 31.2972 W
6,822.00	13.01	85.66	6,745.66	93.15	773.82	403,808.98	745,083.73	32° 6' 30.3859 N	103° 40' 31.0541 W
6,916.00	11.34	86.54	6,837.54	94.51	793.60	403,810.33	745,103.50	32° 6' 30.3982 N	103° 40' 30.8240 W
7,011.00	10.82	85.48	6,930.77	95.78	811.81	403,811.60	745,121.72	32° 6' 30.4096 N	103° 40' 30.6122 W
7,106.00	10.99	85.13	7,024.05	97.25	829.72	403,813.07	745,139.63	32° 6' 30.4231 N	103° 40' 30.4039 W
7,201.00	10.38	86.18	7,117.41	98.59	847.28	403,814.41	745,157.19	32° 6' 30.4353 N	103° 40' 30.1996 W
7,295.00	10.55	83.90	7,209.84	100.07	864.29	403,815.89	745,174.20	32° 6' 30.4489 N	103° 40' 30.0018 W
7,389.00	12.05	83.90	7,302.02	102.03	882.60	403,817.85	745,192.51	32° 6' 30.4671 N	103° 40' 29.7887 W
7,484.00	11.96	85.83	7,394.94	103.79	902.28	403,819.62	745,212.19	32° 6' 30.4835 N	103° 40' 29.5598 W
7,578.00	11.61	86.18	7,486.96	105.13	921.43	403,820.95	745,231.34	32° 6' 30.4955 N	103° 40' 29.3370 W
7,672.00	10.29	83.72	7,579.25	106.68	939.22	403,822.50	745,249.12	32° 6' 30.5098 N	103° 40' 29.1302 W
7,767.00	10.82	82.84	7,672.64	108.72	956.50	403,824.54	745,266.41	32° 6' 30.5289 N	103° 40' 28.9291 W
7,862.00	10.48	83.02	7,766.00	110.88	973.92	403,826.70	745,283.83	32° 6' 30.5493 N	103° 40' 28.7264 W
7,957.00	10.46	85.83	7,859.42	112.56	991.10	403,828.38	745,301.01	32° 6' 30.5648 N	103° 40' 28.5266 W
8,052.00	11.43	86.71	7,952.69	113.73	1,009.10	403,829.55	745,319.00	32° 6' 30.5753 N	103° 40' 28.3172 W
8,146.00	10.99	87.42	8,044.90	114.66	1,027.35	403,830.49	745,337.25	32° 6' 30.5835 N	103° 40' 28.1050 W
8,240.00	10.46	89.17	8,137.26	115.19	1,044.83	403,831.01	745,354.74	32° 6' 30.5876 N	103° 40' 27.9017 W
8,334.00	10.46	85.83	8,229.69	115.94	1,061.87	403,831.76	745,371.78	32° 6' 30.5939 N	103° 40' 27.7035 W
8,429.00	9.67	84.08	8,323.23	117.39	1,078.41	403,833.21	745,388.32	32° 6' 30.6073 N	103° 40' 27.5111 W
8,523.00	9.50	80.21	8,415.92	119.52	1,093.91	403,835.34	745,403.81	32° 6' 30.6275 N	103° 40' 27.3308 W
8,617.00	8.71	79.68	8,508.73	122.11	1,108.55	403,837.94	745,418.46	32° 6' 30.6522 N	103° 40' 27.1603 W
8,712.00	9.41	77.40	8,602.55	125.10	1,123.21	403,840.92	745,433.12	32° 6' 30.6809 N	103° 40' 26.9897 W
8,806.00	10.29	75.81	8,695.16	128.83	1,138.85	403,844.65	745,448.76	32° 6' 30.7169 N	103° 40' 26.8076 W
8,901.00	8.97	76.34	8,788.82	132.66	1,154.27	403,848.48	745,464.18	32° 6' 30.7538 N	103° 40' 26.6280 W
8,995.00	7.65	77.57	8,881.83	135.74	1,167.50	403,851.56	745,477.41	32° 6' 30.7835 N	103° 40' 26.4740 W
9,089.00	6.95	75.11	8,975.07	138.55	1,179.11	403,854.37	745,489.02	32° 6' 30.8106 N	103° 40' 26.3388 W
9,183.00	7.65	74.93	9,068.31	141.63	1,190.65	403,857.46	745,500.55	32° 6' 30.8404 N	103° 40' 26.2045 W
9,278.00	5.28	67.20	9,162.70	144.97	1,200.78	403,860.79	745,510.69	32° 6' 30.8729 N	103° 40' 26.0864 W
9,372.00	4.92	75.46	9,256.33	147.66	1,208.67	403,863.48	745,518.58	32° 6' 30.8990 N	103° 40' 25.9945 W
9,466.00	4.48	71.07	9,350.01	149.86	1,216.05	403,865.68	745,525.96	32° 6' 30.9203 N	103° 40' 25.9086 W
9,559.00	3.87	80.38	9,442.77	151.57	1,222.58	403,867.39	745,532.49	32° 6' 30.9368 N	103° 40' 25.8325 W
9,654.00	4.66	99.02	9,537.51	151.50	1,229.55	403,867.32	745,539.46	32° 6' 30.9357 N	103° 40' 25.7515 W
9,749.00	2.99	111.50	9,632.29	149.98	1,235.67	403,865.81	745,545.58	32° 6' 30.9203 N	103° 40' 25.6805 W
9,844.00	2.81	114.31	9,727.17	148.12	1,240.10	403,863.94	745,550.00	32° 6' 30.9016 N	103° 40' 25.6291 W
9,938.00	2.81	115.01	9,821.06	146.19	1,244.28	403,862.02	745,554.19	32° 6' 30.8823 N	103° 40' 25.5806 W
10,033.00	2.90	101.30	9,915.94	144.74	1,248.75	403,860.56	745,558.66	32° 6' 30.8677 N	103° 40' 25.5287 W
KOP (Marwari 236H) - 43' FNL, 695' FEL S28									
10,106.48	7.62	134.74	9,989.10	140.94	1,254.04	403,856.77	745,563.94	32° 6' 30.8298 N	103° 40' 25.4676 W
KOP (Marwari 236H) - 50' FNL, 660' FEL of S28									
10,128.00	9.15	137.69	10,010.40	138.67	1,256.20	403,854.50	745,566.11	32° 6' 30.8072 N	103° 40' 25.4425 W
10,175.00	14.86	147.53	10,056.35	130.82	1,261.98	403,846.64	745,571.86	32° 6' 30.7291 N	103° 40' 25.3762 W
10,222.00	20.66	151.75	10,101.10	118.42	1,269.12	403,834.24	745,579.03	32° 6' 30.6060 N	103° 40' 25.2937 W
10,269.00	26.20	153.86	10,144.20	101.79	1,277.63	403,817.61	745,587.53	32° 6' 30.4409 N	103° 40' 25.1961 W
10,297.87	29.25	159.71	10,169.76	89.45	1,282.88	403,805.27	745,592.79	32° 6' 30.3184 N	103° 40' 25.1359 W
FTP (Marwari 236H) - 100' FNL, 667' FEL S28									
10,317.00	31.39	163.00	10,186.28	80.30	1,285.96	403,796.12	745,595.87	32° 6' 30.2277 N	103° 40' 25.1007 W
10,323.41	32.03	164.23	10,191.72	77.07	1,286.91	403,792.89	745,596.82	32° 6' 30.1957 N	103° 40' 25.0899 W
FTP (Marwari 236H) - 100' FNL, 660' FEL of S28									

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

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

Well	Marwari 28-16 State Fed Com 236H					
Well Position	+N/-S	0.00 usft	Northing:	403,715.82 usft	Latitude:	32° 6' 29.5108 N
	+E/-W	0.00 usft	Easting:	744,309.91 usft	Longitude:	103° 40' 40.0573 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,389.30 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/31/2018	6.72	59.75	47,847

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	179.61	

Survey Program	Date	1/8/2019		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
141.00	20,784.00	Survey #1 (OH)	LEAM MWD+HDGM	MWD+HDGM
20,843.00	20,843.00	Survey #2 (OH)	Project	Projection

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	403,715.82	744,309.91	32° 6' 29.5108 N	103° 40' 40.0573 W
SHL (Marwari 236H) - 175' FNL, 1950' FEL S28									
141.00	0.70	21.15	141.00	0.80	0.31	403,716.62	744,310.22	32° 6' 29.5187 N	103° 40' 40.0537 W
242.00	0.97	23.61	241.99	2.16	0.88	403,717.98	744,310.78	32° 6' 29.5321 N	103° 40' 40.0470 W
334.00	1.32	29.76	333.97	3.80	1.71	403,719.62	744,311.62	32° 6' 29.5482 N	103° 40' 40.0371 W
426.00	1.41	30.99	425.94	5.69	2.82	403,721.51	744,312.73	32° 6' 29.5669 N	103° 40' 40.0241 W
517.00	1.49	38.02	516.91	7.58	4.13	403,723.40	744,314.03	32° 6' 29.5855 N	103° 40' 40.0088 W
608.00	1.58	41.71	607.88	9.45	5.69	403,725.27	744,315.60	32° 6' 29.6039 N	103° 40' 39.9905 W
699.00	1.49	48.04	698.85	11.17	7.41	403,727.00	744,317.31	32° 6' 29.6209 N	103° 40' 39.9704 W
789.00	1.67	52.26	788.81	12.76	9.31	403,728.58	744,319.22	32° 6' 29.6365 N	103° 40' 39.9482 W
879.00	1.49	47.69	878.78	14.35	11.22	403,730.17	744,321.12	32° 6' 29.6521 N	103° 40' 39.9259 W

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
902.00	1.41	49.97	901.77	14.73	11.65	403,730.55	744,321.56	32° 6' 29.6558 N	103° 40' 39.9208 W
1,063.00	1.14	57.53	1,062.73	16.87	14.52	403,732.69	744,324.43	32° 6' 29.6768 N	103° 40' 39.8873 W
1,155.00	1.06	62.10	1,154.71	17.76	16.05	403,733.58	744,325.95	32° 6' 29.6855 N	103° 40' 39.8695 W
1,247.00	0.88	52.43	1,246.70	18.58	17.36	403,734.41	744,327.26	32° 6' 29.6936 N	103° 40' 39.8542 W
1,338.00	0.70	45.05	1,337.69	19.40	18.30	403,735.23	744,328.21	32° 6' 29.7017 N	103° 40' 39.8431 W
1,429.00	0.62	60.70	1,428.69	20.04	19.13	403,735.86	744,329.03	32° 6' 29.7079 N	103° 40' 39.8335 W
1,519.00	0.44	56.65	1,518.68	20.47	19.84	403,736.29	744,329.75	32° 6' 29.7121 N	103° 40' 39.8252 W
1,612.00	0.53	73.53	1,611.68	20.78	20.55	403,736.61	744,330.46	32° 6' 29.7152 N	103° 40' 39.8169 W
1,704.00	0.44	51.03	1,703.68	21.13	21.23	403,736.95	744,331.14	32° 6' 29.7185 N	103° 40' 39.8090 W
1,798.00	0.44	89.88	1,797.67	21.35	21.88	403,737.18	744,331.78	32° 6' 29.7208 N	103° 40' 39.8015 W
1,893.00	0.44	75.99	1,892.67	21.44	22.59	403,737.27	744,332.50	32° 6' 29.7216 N	103° 40' 39.7931 W
1,987.00	0.44	118.53	1,986.67	21.36	23.26	403,737.18	744,333.17	32° 6' 29.7207 N	103° 40' 39.7854 W
2,082.00	0.44	121.87	2,081.67	20.99	23.89	403,736.81	744,333.80	32° 6' 29.7170 N	103° 40' 39.7781 W
2,176.00	0.62	144.02	2,175.66	20.39	24.50	403,736.21	744,334.40	32° 6' 29.7111 N	103° 40' 39.7711 W
2,272.00	0.53	148.59	2,271.66	19.59	25.03	403,735.41	744,334.94	32° 6' 29.7031 N	103° 40' 39.7649 W
2,366.00	0.44	123.98	2,365.65	19.02	25.56	403,734.84	744,335.47	32° 6' 29.6974 N	103° 40' 39.7588 W
2,461.00	0.44	116.24	2,460.65	18.65	26.19	403,734.47	744,336.10	32° 6' 29.6938 N	103° 40' 39.7515 W
2,556.00	0.88	105.70	2,555.64	18.29	27.22	403,734.12	744,337.13	32° 6' 29.6902 N	103° 40' 39.7396 W
2,651.00	1.06	109.04	2,650.63	17.81	28.75	403,733.63	744,338.66	32° 6' 29.6853 N	103° 40' 39.7218 W
2,745.00	1.32	104.64	2,744.61	17.25	30.62	403,733.07	744,340.53	32° 6' 29.6796 N	103° 40' 39.7001 W
2,840.00	1.67	102.53	2,839.58	16.68	33.03	403,732.50	744,342.94	32° 6' 29.6738 N	103° 40' 39.6721 W
2,935.00	2.37	83.90	2,934.52	16.58	36.34	403,732.41	744,346.24	32° 6' 29.6727 N	103° 40' 39.6337 W
3,030.00	3.87	71.95	3,029.38	17.79	41.34	403,733.61	744,351.24	32° 6' 29.6843 N	103° 40' 39.5755 W
3,126.00	4.84	73.53	3,125.10	19.94	48.30	403,735.76	744,358.21	32° 6' 29.7052 N	103° 40' 39.4944 W
3,221.00	5.63	77.04	3,219.70	22.12	56.69	403,737.94	744,366.59	32° 6' 29.7262 N	103° 40' 39.3967 W
3,315.00	6.42	78.63	3,313.18	24.19	66.33	403,740.01	744,376.24	32° 6' 29.7461 N	103° 40' 39.2844 W
3,410.00	6.95	80.38	3,407.54	26.20	77.21	403,742.02	744,387.11	32° 6' 29.7654 N	103° 40' 39.1579 W
3,504.00	8.09	80.03	3,500.73	28.29	89.33	403,744.11	744,399.23	32° 6' 29.7854 N	103° 40' 39.0168 W
3,599.00	8.79	84.08	3,594.70	30.20	103.13	403,746.02	744,413.04	32° 6' 29.8034 N	103° 40' 38.8562 W
3,694.00	8.97	88.47	3,688.56	31.15	117.76	403,746.97	744,427.66	32° 6' 29.8119 N	103° 40' 38.6861 W
3,788.00	9.41	89.00	3,781.35	31.48	132.76	403,747.30	744,442.67	32° 6' 29.8142 N	103° 40' 38.5116 W
3,883.00	10.11	87.06	3,874.98	32.04	148.86	403,747.86	744,458.76	32° 6' 29.8188 N	103° 40' 38.3244 W
3,977.00	11.70	84.95	3,967.28	33.30	166.59	403,749.12	744,476.50	32° 6' 29.8303 N	103° 40' 38.1181 W
4,071.00	12.84	83.20	4,059.13	35.38	186.46	403,751.20	744,496.36	32° 6' 29.8496 N	103° 40' 37.8870 W
4,166.00	12.05	81.44	4,151.90	38.10	206.74	403,753.92	744,516.65	32° 6' 29.8754 N	103° 40' 37.6510 W
4,261.00	11.17	84.08	4,244.95	40.53	225.70	403,756.35	744,535.61	32° 6' 29.8982 N	103° 40' 37.4304 W
4,355.00	11.43	88.47	4,337.13	41.72	244.07	403,757.54	744,553.98	32° 6' 29.9089 N	103° 40' 37.2167 W
4,449.00	11.78	88.82	4,429.21	42.16	262.98	403,757.98	744,572.88	32° 6' 29.9121 N	103° 40' 36.9969 W
4,544.00	11.70	87.42	4,522.22	42.79	282.29	403,758.62	744,592.20	32° 6' 29.9172 N	103° 40' 36.7723 W
4,638.00	10.46	85.66	4,614.47	43.87	300.32	403,759.69	744,610.23	32° 6' 29.9268 N	103° 40' 36.5626 W
4,733.00	10.90	84.95	4,707.82	45.31	317.87	403,761.13	744,627.78	32° 6' 29.9400 N	103° 40' 36.3585 W
4,829.00	12.05	84.60	4,801.90	47.05	336.89	403,762.88	744,646.79	32° 6' 29.9561 N	103° 40' 36.1373 W
4,923.00	12.05	84.95	4,893.83	48.84	356.43	403,764.66	744,666.34	32° 6' 29.9726 N	103° 40' 35.9099 W
5,018.00	11.61	85.48	4,986.81	50.47	375.84	403,766.29	744,685.74	32° 6' 29.9875 N	103° 40' 35.6842 W
5,111.00	11.78	84.95	5,077.88	52.04	394.62	403,767.86	744,704.53	32° 6' 30.0020 N	103° 40' 35.4657 W
5,207.00	12.22	83.37	5,171.78	54.08	414.48	403,769.90	744,724.38	32° 6' 30.0209 N	103° 40' 35.2347 W
5,246.00	12.22	83.55	5,209.90	55.02	422.68	403,770.84	744,732.58	32° 6' 30.0297 N	103° 40' 35.1393 W
5,397.00	12.40	83.90	5,357.43	58.54	454.68	403,774.36	744,764.59	32° 6' 30.0626 N	103° 40' 34.7670 W
5,492.00	11.70	82.84	5,450.34	60.82	474.38	403,776.64	744,784.28	32° 6' 30.0840 N	103° 40' 34.5378 W
5,587.00	12.31	84.43	5,543.26	63.00	494.01	403,778.82	744,803.92	32° 6' 30.1044 N	103° 40' 34.3093 W
5,682.00	12.13	84.43	5,636.11	64.95	514.03	403,780.78	744,823.93	32° 6' 30.1226 N	103° 40' 34.0765 W
5,778.00	12.49	83.02	5,729.90	67.20	534.37	403,783.02	744,844.28	32° 6' 30.1435 N	103° 40' 33.8398 W
5,873.00	12.40	81.97	5,822.67	69.87	554.67	403,785.69	744,864.57	32° 6' 30.1687 N	103° 40' 33.6037 W
5,968.00	13.01	81.79	5,915.34	72.82	575.35	403,788.64	744,885.26	32° 6' 30.1967 N	103° 40' 33.3630 W
6,064.00	13.45	81.61	6,008.79	75.99	597.09	403,791.81	744,907.00	32° 6' 30.2268 N	103° 40' 33.1100 W

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,364.00	36.32	171.09	10,225.31	54.81	1,291.70	403,770.63	745,601.61	32° 6' 29.9752 N	103° 40' 25.0358 W
10,410.00	41.77	177.90	10,261.04	26.01	1,294.37	403,741.83	745,604.28	32° 6' 29.6900 N	103° 40' 25.0068 W
10,457.00	47.92	180.40	10,294.35	-7.11	1,294.83	403,708.71	745,604.73	32° 6' 29.3622 N	103° 40' 25.0038 W
10,505.00	54.43	180.05	10,324.43	-44.49	1,294.69	403,671.33	745,604.59	32° 6' 28.9924 N	103° 40' 25.0082 W
10,552.00	58.74	180.05	10,350.31	-83.71	1,294.65	403,632.11	745,604.56	32° 6' 28.6042 N	103° 40' 25.0113 W
10,599.00	63.93	179.88	10,372.85	-124.94	1,294.68	403,590.89	745,604.58	32° 6' 28.1963 N	103° 40' 25.0140 W
10,646.00	67.80	180.05	10,392.06	-167.82	1,294.70	403,548.00	745,604.61	32° 6' 27.7719 N	103° 40' 25.0167 W
10,693.00	72.11	180.58	10,408.17	-211.96	1,294.46	403,503.86	745,604.36	32° 6' 27.3351 N	103° 40' 25.0227 W
10,740.00	74.78	180.58	10,421.56	-257.01	1,294.00	403,458.82	745,603.91	32° 6' 26.8894 N	103° 40' 25.0312 W
10,789.00	78.17	180.40	10,433.01	-304.64	1,293.59	403,411.18	745,603.50	32° 6' 26.4181 N	103° 40' 25.0393 W
10,836.00	81.00	179.30	10,441.51	-350.86	1,293.72	403,364.96	745,603.62	32° 6' 25.9607 N	103° 40' 25.0412 W
10,883.00	84.68	178.65	10,447.37	-397.48	1,294.55	403,318.35	745,604.46	32° 6' 25.4994 N	103° 40' 25.0348 W
10,955.00	86.70	180.58	10,452.78	-469.26	1,295.03	403,246.56	745,604.94	32° 6' 24.7889 N	103° 40' 25.0343 W
11,046.00	86.97	181.99	10,457.80	-560.10	1,293.00	403,155.72	745,602.90	32° 6' 23.8902 N	103° 40' 25.0645 W
11,138.00	88.90	182.86	10,461.12	-651.95	1,289.11	403,063.87	745,599.01	32° 6' 22.9815 N	103° 40' 25.1162 W
11,229.00	89.16	183.39	10,462.66	-742.80	1,284.15	402,973.02	745,594.05	32° 6' 22.0828 N	103° 40' 25.1804 W
11,319.00	92.07	183.92	10,461.69	-832.60	1,278.41	402,883.22	745,588.32	32° 6' 21.1945 N	103° 40' 25.2535 W
11,410.00	94.94	181.99	10,456.13	-923.30	1,273.73	402,792.52	745,583.63	32° 6' 20.2973 N	103° 40' 25.3144 W
11,500.00	93.12	179.35	10,449.80	-1,013.06	1,272.68	402,702.76	745,582.58	32° 6' 19.4091 N	103° 40' 25.3329 W
11,593.00	91.54	178.65	10,446.02	-1,105.96	1,274.30	402,609.86	745,584.21	32° 6' 18.4897 N	103° 40' 25.3207 W
11,684.00	88.20	178.47	10,446.23	-1,196.92	1,276.59	402,518.90	745,586.49	32° 6' 17.5894 N	103° 40' 25.3006 W
11,776.00	88.11	178.65	10,449.19	-1,288.85	1,278.90	402,426.98	745,588.80	32° 6' 16.6797 N	103° 40' 25.2802 W
11,867.00	86.88	178.29	10,453.17	-1,379.72	1,281.32	402,336.10	745,591.23	32° 6' 15.7802 N	103° 40' 25.2585 W
11,957.00	88.11	179.35	10,457.10	-1,469.62	1,283.18	402,246.20	745,593.08	32° 6' 14.8906 N	103° 40' 25.2434 W
12,050.00	88.11	179.00	10,460.17	-1,562.56	1,284.51	402,153.27	745,594.42	32° 6' 13.9708 N	103° 40' 25.2344 W
12,142.00	90.22	178.29	10,461.51	-1,654.52	1,286.69	402,061.31	745,596.60	32° 6' 13.0607 N	103° 40' 25.2157 W
12,237.00	90.84	178.65	10,460.63	-1,749.48	1,289.23	401,966.35	745,599.13	32° 6' 12.1208 N	103° 40' 25.1929 W
12,331.00	88.81	177.77	10,460.92	-1,843.42	1,292.16	401,872.40	745,602.07	32° 6' 11.1910 N	103° 40' 25.1655 W
12,426.00	88.46	177.77	10,463.18	-1,938.33	1,295.86	401,777.50	745,605.76	32° 6' 10.2516 N	103° 40' 25.1293 W
12,520.00	87.32	177.42	10,466.64	-2,032.18	1,299.80	401,683.64	745,609.71	32° 6' 9.3227 N	103° 40' 25.0901 W
12,615.00	89.69	178.12	10,469.12	-2,127.07	1,303.49	401,588.76	745,613.40	32° 6' 8.3835 N	103° 40' 25.0539 W
12,710.00	89.34	178.47	10,469.92	-2,222.02	1,308.32	401,493.80	745,616.23	32° 6' 7.4437 N	103° 40' 25.0278 W
12,804.00	88.99	179.00	10,471.29	-2,315.99	1,308.39	401,399.84	745,618.30	32° 6' 6.5137 N	103° 40' 25.0104 W
12,899.00	89.78	178.82	10,472.31	-2,410.96	1,310.20	401,304.86	745,620.11	32° 6' 5.5737 N	103° 40' 24.9961 W
12,993.00	88.99	178.65	10,473.32	-2,504.93	1,312.28	401,210.89	745,622.18	32° 6' 4.6437 N	103° 40' 24.9787 W
13,088.00	89.78	179.35	10,474.34	-2,599.91	1,313.93	401,115.91	745,623.84	32° 6' 3.7038 N	103° 40' 24.9662 W
13,181.00	89.52	179.35	10,474.91	-2,692.90	1,314.99	401,022.92	745,624.90	32° 6' 2.7835 N	103° 40' 24.9605 W
13,277.00	89.43	179.00	10,475.79	-2,788.89	1,316.37	400,926.93	745,626.28	32° 6' 1.8336 N	103° 40' 24.9513 W
13,372.00	90.40	179.70	10,475.93	-2,883.88	1,317.45	400,831.94	745,627.36	32° 6' 0.8935 N	103° 40' 24.9455 W
13,467.00	90.40	179.70	10,475.27	-2,978.88	1,317.95	400,736.94	745,627.85	32° 5' 59.9534 N	103° 40' 24.9465 W
13,562.00	90.57	179.70	10,474.46	-3,073.87	1,318.44	400,641.95	745,628.35	32° 5' 59.0133 N	103° 40' 24.9475 W
13,657.00	90.13	179.52	10,473.88	-3,168.87	1,319.09	400,546.95	745,629.00	32° 5' 58.0733 N	103° 40' 24.9467 W
13,752.00	90.57	179.35	10,473.30	-3,263.86	1,320.03	400,451.96	745,629.93	32° 5' 57.1332 N	103° 40' 24.9426 W
13,847.00	91.10	179.17	10,471.92	-3,358.85	1,321.25	400,356.98	745,631.16	32° 5' 56.1932 N	103° 40' 24.9351 W
13,941.00	90.48	179.17	10,470.62	-3,452.83	1,322.62	400,263.00	745,632.52	32° 5' 55.2631 N	103° 40' 24.9259 W
14,036.00	89.34	178.33	10,470.77	-3,547.80	1,324.69	400,168.02	745,634.60	32° 5' 54.3232 N	103° 40' 24.9086 W
14,130.00	90.13	178.15	10,471.21	-3,641.75	1,327.58	400,074.07	745,637.48	32° 5' 53.3933 N	103° 40' 24.8817 W
14,223.00	91.10	179.38	10,470.21	-3,734.72	1,329.58	399,981.10	745,639.49	32° 5' 52.4732 N	103° 40' 24.8650 W
14,315.00	89.87	180.96	10,469.43	-3,826.72	1,329.31	399,889.11	745,639.21	32° 5' 51.5629 N	103° 40' 24.8747 W
14,407.00	89.43	180.96	10,469.99	-3,918.70	1,327.77	399,797.12	745,637.67	32° 5' 50.6527 N	103° 40' 24.8992 W
14,501.00	89.25	180.96	10,471.07	-4,012.68	1,326.19	399,703.14	745,636.10	32° 5' 49.7228 N	103° 40' 24.9242 W
14,596.00	89.78	180.96	10,471.88	-4,107.67	1,324.60	399,608.16	745,634.51	32° 5' 48.7830 N	103° 40' 24.9495 W
14,690.00	88.81	181.51	10,473.04	-4,201.63	1,322.57	399,514.19	745,632.48	32° 5' 47.8532 N	103° 40' 24.9797 W
14,784.00	87.41	180.63	10,476.14	-4,295.56	1,320.82	399,420.26	745,630.73	32° 5' 46.9238 N	103° 40' 25.0068 W
14,878.00	88.90	181.51	10,479.16	-4,389.50	1,319.06	399,326.33	745,628.97	32° 5' 45.9944 N	103° 40' 25.0338 W

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,973.00	89.87	181.51	10,480.18	-4,484.46	1,316.56	399,231.37	745,626.47	32° 5' 45.0549 N	103° 40' 25.0697 W
15,067.00	89.34	181.86	10,480.83	-4,578.41	1,313.80	399,137.41	745,623.70	32° 5' 44.1253 N	103° 40' 25.1085 W
15,162.00	89.25	182.04	10,482.00	-4,673.35	1,310.56	399,042.47	745,620.47	32° 5' 43.1860 N	103° 40' 25.1528 W
15,257.00	89.52	181.16	10,483.02	-4,768.31	1,307.91	398,947.52	745,617.82	32° 5' 42.2466 N	103° 40' 25.1904 W
15,352.00	90.92	180.28	10,482.65	-4,863.29	1,306.72	398,852.53	745,616.63	32° 5' 41.3067 N	103° 40' 25.2111 W
15,447.00	90.75	180.46	10,481.27	-4,958.28	1,306.11	398,757.54	745,616.01	32° 5' 40.3667 N	103° 40' 25.2249 W
15,542.00	91.54	180.63	10,479.37	-5,053.26	1,305.20	398,662.56	745,615.11	32° 5' 39.4269 N	103° 40' 25.2422 W
15,637.00	90.04	180.28	10,478.06	-5,148.24	1,304.45	398,567.58	745,614.35	32° 5' 38.4870 N	103° 40' 25.2577 W
15,732.00	90.04	180.28	10,477.99	-5,243.24	1,303.98	398,472.58	745,613.89	32° 5' 37.5470 N	103° 40' 25.2699 W
15,827.00	90.66	179.05	10,477.41	-5,338.24	1,304.54	398,377.58	745,614.45	32° 5' 36.6069 N	103° 40' 25.2702 W
15,922.00	90.31	178.70	10,476.61	-5,433.22	1,306.40	398,282.61	745,616.31	32° 5' 35.6670 N	103° 40' 25.2552 W
16,017.00	90.48	178.52	10,475.96	-5,528.18	1,308.71	398,187.64	745,618.61	32° 5' 34.7270 N	103° 40' 25.2352 W
16,112.00	90.40	178.70	10,475.23	-5,623.15	1,311.01	398,092.67	745,620.92	32° 5' 33.7871 N	103° 40' 25.2152 W
16,207.00	89.52	178.52	10,475.29	-5,718.13	1,313.32	397,997.70	745,623.22	32° 5' 32.8472 N	103° 40' 25.1951 W
16,302.00	91.54	178.53	10,474.41	-5,813.08	1,315.76	397,902.74	745,625.67	32° 5' 31.9074 N	103° 40' 25.1735 W
16,397.00	91.10	178.18	10,472.22	-5,908.02	1,318.49	397,807.80	745,628.40	32° 5' 30.9678 N	103° 40' 25.1485 W
16,491.00	91.28	177.82	10,470.27	-6,001.94	1,321.77	397,713.88	745,631.67	32° 5' 30.0381 N	103° 40' 25.1171 W
16,587.00	89.96	178.35	10,469.23	-6,097.88	1,324.98	397,617.94	745,634.88	32° 5' 29.0886 N	103° 40' 25.0866 W
16,682.00	89.96	178.18	10,469.30	-6,192.84	1,327.85	397,522.98	745,637.76	32° 5' 28.1487 N	103° 40' 25.0599 W
16,777.00	89.25	179.23	10,469.96	-6,287.81	1,330.00	397,428.01	745,639.91	32° 5' 27.2088 N	103° 40' 25.0417 W
16,872.00	88.20	178.88	10,472.07	-6,382.77	1,331.57	397,333.05	745,641.47	32° 5' 26.2690 N	103° 40' 25.0303 W
16,967.00	88.81	178.88	10,474.55	-6,477.72	1,333.42	397,238.10	745,643.33	32° 5' 25.3293 N	103° 40' 25.0154 W
17,062.00	88.81	178.88	10,476.52	-6,572.68	1,335.28	397,143.14	745,645.19	32° 5' 24.3895 N	103° 40' 25.0006 W
17,157.00	88.55	178.70	10,478.71	-6,667.63	1,337.28	397,048.19	745,647.19	32° 5' 23.4498 N	103° 40' 24.9841 W
17,252.00	89.78	179.05	10,480.09	-6,762.60	1,339.15	396,953.22	745,649.06	32° 5' 22.5099 N	103° 40' 24.9691 W
17,347.00	90.57	180.46	10,479.80	-6,857.60	1,339.56	396,858.22	745,649.46	32° 5' 21.5698 N	103° 40' 24.9712 W
17,442.00	90.48	180.11	10,478.93	-6,952.59	1,339.08	396,763.23	745,648.99	32° 5' 20.6298 N	103° 40' 24.9834 W
17,537.00	90.66	180.11	10,477.99	-7,047.59	1,338.90	396,668.23	745,648.81	32° 5' 19.6898 N	103° 40' 24.9923 W
17,631.00	90.31	180.11	10,477.19	-7,141.59	1,338.72	396,574.24	745,648.63	32° 5' 18.7596 N	103° 40' 25.0011 W
17,726.00	91.63	180.64	10,475.58	-7,236.57	1,338.10	396,479.25	745,648.00	32° 5' 17.8198 N	103° 40' 25.0150 W
17,821.00	88.99	180.11	10,475.07	-7,331.56	1,337.48	396,384.27	745,647.38	32° 5' 16.8798 N	103° 40' 25.0290 W
17,916.00	89.43	180.64	10,476.38	-7,426.54	1,336.85	396,289.28	745,646.76	32° 5' 15.9399 N	103° 40' 25.0430 W
18,010.00	89.16	180.46	10,477.54	-7,520.53	1,335.95	396,195.29	745,645.86	32° 5' 15.0099 N	103° 40' 25.0602 W
18,104.00	89.96	180.64	10,478.26	-7,614.52	1,335.05	396,101.30	745,644.96	32° 5' 14.0798 N	103° 40' 25.0773 W
18,199.00	88.90	180.29	10,479.20	-7,709.51	1,334.28	396,006.31	745,644.19	32° 5' 13.1399 N	103° 40' 25.0931 W
18,285.00	88.90	180.76	10,480.85	-7,795.50	1,333.49	395,920.33	745,643.40	32° 5' 12.2891 N	103° 40' 25.1083 W
18,380.00	88.64	180.58	10,482.89	-7,890.47	1,332.38	395,825.35	745,642.29	32° 5' 11.3494 N	103° 40' 25.1280 W
18,474.00	89.52	180.23	10,484.40	-7,984.45	1,331.72	395,731.37	745,641.62	32° 5' 10.4194 N	103° 40' 25.1424 W
18,569.00	90.57	179.88	10,484.33	-8,079.45	1,331.63	395,636.37	745,641.53	32° 5' 9.4793 N	103° 40' 25.1502 W
18,664.00	90.40	179.35	10,483.52	-8,174.44	1,332.26	395,541.38	745,642.17	32° 5' 8.5393 N	103° 40' 25.1495 W
18,758.00	89.16	178.82	10,483.88	-8,268.43	1,333.76	395,447.39	745,643.67	32° 5' 7.6091 N	103° 40' 25.1388 W
18,853.00	91.19	179.17	10,483.59	-8,363.41	1,335.43	395,352.41	745,645.34	32° 5' 6.6691 N	103° 40' 25.1262 W
18,947.00	90.92	178.82	10,481.86	-8,457.38	1,337.08	395,258.44	745,646.99	32° 5' 5.7391 N	103° 40' 25.1137 W
19,041.00	90.48	178.82	10,480.72	-8,551.35	1,339.01	395,164.47	745,648.92	32° 5' 4.8091 N	103° 40' 25.0979 W
19,135.00	90.13	178.47	10,480.22	-8,645.32	1,341.24	395,070.50	745,651.14	32° 5' 3.8791 N	103° 40' 25.0787 W
19,230.00	89.52	178.47	10,480.51	-8,740.29	1,343.77	394,975.53	745,653.68	32° 5' 2.9392 N	103° 40' 25.0560 W
19,325.00	88.99	178.12	10,481.74	-8,835.24	1,346.60	394,880.58	745,656.51	32° 5' 1.9994 N	103° 40' 25.0299 W
19,419.00	88.02	177.24	10,484.19	-8,929.13	1,350.40	394,786.70	745,660.31	32° 5' 1.0701 N	103° 40' 24.9923 W
19,513.00	86.70	178.12	10,488.52	-9,022.95	1,354.21	394,692.87	745,664.11	32° 5' 0.1415 N	103° 40' 24.9548 W
19,606.00	89.25	177.94	10,491.81	-9,115.83	1,357.40	394,600.00	745,667.31	32° 4' 59.2222 N	103° 40' 24.9243 W
19,701.00	91.01	179.52	10,491.59	-9,210.80	1,359.51	394,505.03	745,669.41	32° 4' 58.2823 N	103° 40' 24.9066 W
19,796.00	90.66	179.52	10,490.21	-9,305.78	1,360.30	394,410.04	745,670.21	32° 4' 57.3423 N	103° 40' 24.9041 W
19,890.00	91.36	180.05	10,488.55	-9,399.77	1,360.65	394,316.06	745,670.56	32° 4' 56.4122 N	103° 40' 24.9067 W
19,985.00	91.01	179.88	10,486.59	-9,494.75	1,360.71	394,221.08	745,670.62	32° 4' 55.4723 N	103° 40' 24.9127 W
20,080.00	90.92	179.70	10,484.99	-9,589.73	1,361.06	394,126.09	745,670.97	32° 4' 54.5324 N	103° 40' 24.9154 W

LEAM Drilling Services

Survey Report - Geographic

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
Site:	Marwari/Van Doo Dah	MD Reference:	3389.3' GE + 32' KB @ 3421.30usft
Well:	Marwari 28-16 State Fed Com 236H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,174.00	90.92	179.52	10,483.48	-9,683.72	1,361.70	394,032.10	745,671.61	32° 4' 53.6023 N	103° 40' 24.9147 W
20,269.00	90.22	179.35	10,482.53	-9,778.71	1,362.64	393,937.11	745,672.54	32° 4' 52.6622 N	103° 40' 24.9106 W
20,361.00	89.78	179.00	10,482.53	-9,870.70	1,363.96	393,845.12	745,673.87	32° 4' 51.7518 N	103° 40' 24.9017 W
20,456.00	89.25	178.65	10,483.34	-9,965.67	1,365.91	393,750.15	745,675.82	32° 4' 50.8119 N	103° 40' 24.8858 W
20,550.00	89.25	179.00	10,484.57	-10,059.65	1,367.84	393,656.18	745,677.74	32° 4' 49.8818 N	103° 40' 24.8701 W
20,644.00	88.64	178.82	10,486.30	-10,153.61	1,369.62	393,562.21	745,679.53	32° 4' 48.9519 N	103° 40' 24.8560 W
20,738.00	88.29	178.47	10,488.82	-10,247.55	1,371.85	393,468.27	745,681.75	32° 4' 48.0222 N	103° 40' 24.8368 W
20,763.04	88.29	178.28	10,489.56	-10,272.57	1,372.56	393,443.25	745,682.46	32° 4' 47.7746 N	103° 40' 24.8304 W
LTP (Marwari 236H) - 100' FSL, 660' FEL S33									
20,764.53	88.29	178.27	10,489.61	-10,274.06	1,372.60	393,441.76	745,682.51	32° 4' 47.7598 N	103° 40' 24.8299 W
LTP (Marwari 236H) - 100' FSL, 642' FEL S33									
20,767.40	88.29	178.25	10,489.69	-10,276.92	1,372.69	393,438.90	745,682.60	32° 4' 47.7315 N	103° 40' 24.8291 W
LTP (Marwari 236H) - 100' FSL, 660' FEL of S33									
20,784.00	88.29	178.12	10,490.19	-10,293.51	1,373.21	393,422.31	745,683.12	32° 4' 47.5673 N	103° 40' 24.8242 W
20,842.91	88.29	178.12	10,491.95	-10,352.36	1,375.15	393,363.46	745,685.05	32° 4' 46.9848 N	103° 40' 24.8059 W
PBHL (Marwari 236H) - 20' FSL, 660' FEL S33									
20,843.00	88.29	178.12	10,491.95	-10,352.45	1,375.15	393,363.37	745,685.06	32° 4' 46.9839 N	103° 40' 24.8059 W
PBHL (Marwari 236H) - 22' FSL, 640' FEL S33 - PBHL (Marwari 236H) - 20' FSL, 660' FEL of S33									