



NM OIL CONSERVATION

ARTESIA DISTRICT

NOV 13 2018

RECEIVED

May 30, 2018

Devon Energy Production Company, LP
Well: Ko Lanta 9-4 Fed Com 518H
County/Parish: Eddy County, NM

30-015-44864

LEAM MWD: (OH) from 0' MD – 18,596' MD
Projection; 18,653' MD

This Borehole Survey taken between 05/07/18 and 05/26/18 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Survey does not go
to total depth of
18670'

Date: May 30, 2018



Survey Certification Form

State of New Mexico

Eddy County

I, Randy W. Rakowitz, certify that; I am employed by LEAM Drilling Services, that I did on the day(s) of 05/07/2018 through 05/26/2018, conduct or supervise the taking of MWD Survey from a depth of 0' MD to 18,653' 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 Ko Lanta 9-4 fed Com 518H in Eddy 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 read 'Randy W. Rakowitz', is written over a solid horizontal line.

Randy W. Rakowitz
MWD Operations Coordinator

LEAM Drilling Services

Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well Ko Lanta 9-4 Fed Com 518H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3371.8' GE + 23.2' KB @ 3395.00usft
Well:	Ko Lanta 9-4 Fed Com 518H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Multi User Db

Project	Eddy 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	Ko Lanta 9-4 Fed Com		
Site Position:		Northing:	478,201.74 usft
From:	Map	Easting:	713,851.39 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 18' 48.2902 N
		Longitude:	103° 46' 29.6811 W
		Grid Convergence:	0.30 °

Well	Ko Lanta 9-4 Fed Com 518H		
Well Position	+N/-S	0.00 usft	Northing: 478,201.74 usft
	+E/-W	0.00 usft	Easting: 713,851.39 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 18' 48.2902 N
		Longitude:	103° 46' 29.6811 W
		Ground Level:	3,371.80 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	HDGM	3/26/2018	(°) 6.97
		Dip Angle	(°) 60.08
		Field Strength	(nT) 48,103

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	(°) 359.65

Survey Program	Date 5/30/2018		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
149.00	18,596.00	Survey #1 (OH)	MWD+IFR1
18,653.00	18,653.00	Survey #2 (OH)	Project
			Description
			OWSG MWD + IFR1
			Projection

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	0.60	48.80	149.00	0.51	0.59	0.51	0.40	0.40	0.00
240.00	0.50	39.30	239.99	1.13	1.20	1.13	0.15	-0.11	-10.44
332.00	0.40	16.80	331.99	1.75	1.54	1.74	0.22	-0.11	-24.46
423.00	0.30	328.70	422.99	2.26	1.51	2.25	0.33	-0.11	-52.86
480.00	0.40	315.50	479.99	2.53	1.30	2.52	0.22	0.18	-23.16
609.00	0.40	241.00	608.99	2.63	0.59	2.63	0.38	0.00	-57.75
700.00	0.30	233.10	699.98	2.34	0.12	2.34	0.12	-0.11	-8.68
791.00	0.26	290.53	790.98	2.27	-0.27	2.27	0.30	-0.04	63.11
883.00	0.35	321.64	882.98	2.56	-0.64	2.56	0.20	0.10	33.82

LEAM Drilling Services

Survey Report

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 Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
974.00	0.70	219.87	973.98	2.35	-1.17	2.36	0.93	0.38	-111.84
1,064.00	1.06	245.88	1,063.97	1.59	-2.28	1.60	0.59	0.40	28.90
1,155.00	1.58	232.00	1,154.94	0.47	-4.03	0.50	0.67	0.57	-15.25
1,246.00	2.29	222.86	1,245.89	-1.63	-6.26	-1.60	0.85	0.78	-10.04
1,337.00	3.25	220.22	1,336.78	-4.94	-9.16	-4.88	1.06	1.05	-2.90
1,428.00	4.13	226.37	1,427.60	-9.17	-13.20	-9.09	1.06	0.97	6.76
1,518.00	4.48	228.30	1,517.34	-13.74	-18.17	-13.63	0.42	0.39	2.14
1,609.00	4.57	227.95	1,608.06	-18.53	-23.52	-18.39	0.10	0.10	-0.38
1,699.00	5.10	234.98	1,697.74	-23.23	-29.45	-23.05	0.88	0.59	7.81
1,793.00	5.98	235.51	1,791.30	-28.40	-36.91	-28.18	0.94	0.94	0.56
1,886.00	6.77	235.86	1,883.72	-34.22	-45.44	-33.94	0.85	0.85	0.38
1,981.00	7.39	235.86	1,978.00	-40.79	-55.13	-40.45	0.65	0.65	0.00
2,076.00	8.09	237.62	2,072.13	-47.80	-65.83	-47.40	0.78	0.74	1.85
2,171.00	8.88	233.75	2,166.09	-55.72	-77.39	-55.24	1.03	0.83	-4.07
2,266.00	9.58	231.82	2,259.86	-64.94	-89.52	-64.39	0.81	0.74	-2.03
2,359.00	9.76	232.87	2,351.54	-74.48	-101.89	-73.86	0.27	0.19	1.13
2,454.00	9.32	232.52	2,445.23	-84.02	-114.41	-83.32	0.47	-0.46	-0.37
2,549.00	8.97	232.52	2,539.02	-93.21	-126.40	-92.44	0.37	-0.37	0.00
2,643.00	8.79	234.11	2,631.89	-101.88	-138.03	-101.03	0.32	-0.19	1.69
2,737.00	8.44	234.46	2,724.83	-110.10	-149.46	-109.18	0.38	-0.37	0.37
2,831.00	8.88	234.28	2,817.76	-118.34	-160.96	-117.36	0.47	0.47	-0.19
2,926.00	9.67	232.70	2,911.52	-127.46	-173.26	-126.40	0.87	0.83	-1.66
3,021.00	9.58	232.00	3,005.18	-137.16	-185.84	-136.02	0.16	-0.09	-0.74
3,115.00	9.06	230.94	3,097.94	-146.64	-197.75	-145.43	0.58	-0.55	-1.13
3,209.00	8.88	232.00	3,190.79	-155.77	-209.22	-154.49	0.26	-0.19	1.13
3,304.00	9.15	230.94	3,284.61	-165.05	-220.86	-163.69	0.33	0.28	-1.12
3,399.00	8.71	230.24	3,378.46	-174.41	-232.25	-172.98	0.48	-0.46	-0.74
3,493.00	9.06	227.43	3,471.34	-183.97	-243.18	-182.48	0.59	0.37	-2.99
3,587.00	9.50	228.48	3,564.11	-194.11	-254.43	-192.56	0.50	0.47	1.12
3,682.00	9.50	229.70	3,657.80	-204.38	-266.28	-202.75	0.21	0.00	1.28
3,776.00	9.23	225.84	3,750.55	-214.65	-277.61	-212.95	0.73	-0.29	-4.11
3,871.00	9.06	231.29	3,844.34	-224.64	-288.91	-222.87	0.93	-0.18	5.74
3,965.00	8.97	232.52	3,937.18	-233.72	-300.50	-231.88	0.23	-0.10	1.31
4,059.00	8.09	228.13	4,030.14	-242.60	-311.24	-240.69	1.16	-0.94	-4.67
4,154.00	7.39	229.89	4,124.28	-251.00	-320.89	-249.03	0.78	-0.74	1.85
4,248.00	7.83	231.64	4,217.45	-258.86	-330.54	-256.84	0.53	0.47	1.86
4,343.00	9.23	236.39	4,311.40	-267.10	-341.96	-265.00	1.65	1.47	5.00
4,438.00	10.11	238.68	4,405.05	-275.65	-355.43	-273.47	1.01	0.93	2.41
4,532.00	9.76	239.20	4,497.64	-284.02	-369.32	-281.76	0.38	-0.37	0.55
4,627.00	10.02	234.81	4,591.23	-292.90	-382.99	-290.56	0.84	0.27	-4.62
4,721.00	10.38	230.06	4,683.74	-303.05	-396.16	-300.63	0.97	0.38	-5.05
4,816.00	10.29	232.17	4,777.20	-313.75	-409.43	-311.25	0.41	-0.09	2.22
4,911.00	10.11	231.12	4,870.70	-324.19	-422.62	-321.60	0.27	-0.19	-1.11

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Wellbore: OH
Design: OH

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
5,006.00	10.29	231.82	4,964.20	-334.67	-435.78	-332.00	0.23	0.19	0.74
5,100.00	8.97	232.35	5,056.87	-344.34	-448.18	-341.59	1.41	-1.40	0.56
5,195.00	8.18	233.05	5,150.81	-352.92	-459.45	-350.11	0.84	-0.83	0.74
5,289.00	8.00	231.64	5,243.87	-361.00	-469.92	-358.12	0.28	-0.19	-1.50
5,383.00	7.83	231.12	5,336.98	-369.08	-480.04	-366.14	0.20	-0.18	-0.55
5,477.00	7.91	231.47	5,430.09	-377.13	-490.08	-374.13	0.10	0.09	0.37
5,572.00	7.65	232.70	5,524.22	-385.03	-500.22	-381.97	0.32	-0.27	1.29
5,666.00	8.35	236.04	5,617.30	-392.64	-510.86	-389.51	0.89	0.74	3.55
5,760.00	8.18	237.97	5,710.33	-400.00	-522.19	-396.80	0.35	-0.18	2.05
5,854.00	7.65	236.39	5,803.43	-407.01	-533.07	-403.74	0.61	-0.56	-1.68
5,949.00	8.09	237.45	5,897.54	-414.10	-543.97	-410.77	0.49	0.46	1.12
6,043.00	8.27	237.62	5,990.58	-421.28	-555.26	-417.88	0.19	0.19	0.18
6,074.00	7.91	236.74	6,021.27	-423.65	-558.92	-420.22	1.23	-1.16	-2.84
6,138.00	7.12	235.02	6,084.72	-428.33	-565.86	-424.87	1.28	-1.23	-2.69
6,232.00	8.35	234.50	6,177.87	-435.64	-576.19	-432.11	1.31	1.31	-0.55
6,326.00	10.73	232.21	6,270.56	-444.97	-588.66	-441.36	2.56	2.53	-2.44
6,420.00	11.52	231.33	6,362.79	-456.19	-602.90	-452.50	0.86	0.84	-0.94
6,515.00	11.34	231.68	6,455.91	-467.91	-617.64	-464.13	0.20	-0.19	0.37
6,610.00	10.55	232.21	6,549.18	-479.03	-631.84	-475.16	0.84	-0.83	0.56
6,705.00	10.29	232.56	6,642.61	-489.52	-645.45	-485.57	0.28	-0.27	0.37
6,801.00	10.29	231.86	6,737.07	-500.03	-659.00	-495.99	0.13	0.00	-0.73
6,896.00	8.53	231.86	6,830.79	-509.62	-671.22	-505.51	1.85	-1.85	0.00
6,990.00	7.39	229.05	6,923.88	-517.89	-681.27	-513.72	1.28	-1.21	-2.99
7,084.00	7.39	229.57	7,017.10	-525.77	-690.43	-521.54	0.07	0.00	0.55
7,179.00	6.68	229.93	7,111.38	-533.29	-699.31	-529.01	0.75	-0.75	0.38
7,273.00	6.86	229.40	7,204.73	-540.46	-707.76	-536.13	0.20	0.19	-0.56
7,367.00	6.16	226.24	7,298.12	-547.60	-715.66	-543.22	0.84	-0.74	-3.36
7,462.00	5.10	229.40	7,392.66	-553.88	-722.55	-549.45	1.16	-1.12	3.33
7,556.00	4.66	229.22	7,486.32	-559.09	-728.62	-554.63	0.47	-0.47	-0.19
7,650.00	3.17	232.56	7,580.10	-563.16	-733.57	-558.67	1.60	-1.59	3.55
7,744.00	1.76	230.45	7,674.01	-565.66	-736.75	-561.15	1.50	-1.50	-2.24
7,839.00	0.70	228.17	7,768.99	-566.98	-738.30	-562.46	1.12	-1.12	-2.40
7,933.00	0.62	229.40	7,862.98	-567.69	-739.12	-563.17	0.09	-0.09	1.31
8,028.00	0.70	229.05	7,957.97	-568.41	-739.95	-563.88	0.08	0.08	-0.37
8,053.00	0.79	229.40	7,982.97	-568.62	-740.19	-564.09	0.36	0.36	1.40
8,119.00	1.76	332.23	8,048.96	-568.02	-741.01	-563.48	3.16	1.47	155.80
8,215.00	13.01	356.31	8,144.02	-555.89	-742.40	-551.35	11.90	11.72	25.08
8,309.00	21.81	355.08	8,233.63	-527.88	-744.58	-523.32	9.37	9.36	-1.31
8,405.00	28.05	353.15	8,320.64	-487.66	-748.81	-483.08	6.55	6.50	-2.01
8,499.00	38.16	353.85	8,399.28	-436.71	-754.57	-432.09	10.76	10.76	0.74
8,594.00	50.65	356.31	8,467.02	-370.61	-760.10	-365.96	13.27	13.15	2.59
8,641.00	57.33	359.48	8,494.64	-332.65	-761.45	-327.99	15.22	14.21	6.74
8,689.00	61.73	2.47	8,518.98	-291.30	-760.72	-286.65	10.62	9.17	6.23

LEAM Drilling Services

Survey Report

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 Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
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8,736.00	65.16	2.99	8,539.99	-249.31	-758.72	-244.67	7.36	7.30	1.11
8,783.00	68.50	3.52	8,558.48	-206.18	-756.26	-201.55	7.18	7.11	1.13
8,830.00	72.28	2.99	8,574.25	-161.98	-753.75	-157.38	8.11	8.04	-1.13
8,878.00	75.27	2.64	8,587.66	-115.96	-751.49	-111.36	6.27	6.23	-0.73
8,925.00	78.26	2.29	8,598.42	-70.25	-749.52	-65.67	6.40	6.36	-0.74
8,974.00	84.06	0.88	8,605.95	-21.87	-748.19	-17.30	12.17	11.84	-2.88
9,023.00	87.49	0.71	8,609.55	26.98	-747.51	31.55	7.01	7.00	-0.35
9,055.00	89.08	0.53	8,610.51	58.96	-747.16	63.53	5.00	4.97	-0.56
9,149.00	91.54	1.06	8,610.00	152.94	-745.86	157.50	2.68	2.62	0.56
9,243.00	93.39	0.36	8,605.96	246.85	-744.70	251.39	2.10	1.97	-0.74
9,339.00	91.28	359.13	8,602.05	342.76	-745.12	347.30	2.54	-2.20	-1.28
9,433.00	93.12	359.48	8,598.44	436.68	-746.26	441.23	1.99	1.96	0.37
9,528.00	93.21	359.30	8,593.20	531.53	-747.27	536.08	0.21	0.09	-0.19
9,623.00	91.19	0.00	8,589.55	626.45	-747.85	631.01	2.25	-2.13	0.74
9,718.00	89.43	0.53	8,589.04	721.44	-747.41	726.00	1.93	-1.85	0.56
9,813.00	88.99	0.53	8,590.35	816.43	-746.53	820.98	0.46	-0.46	0.00
9,908.00	88.72	0.00	8,592.24	911.41	-746.09	915.95	0.63	-0.28	-0.56
10,002.00	88.55	359.83	8,594.48	1,005.38	-746.23	1,009.92	0.26	-0.18	-0.18
10,097.00	89.25	359.13	8,596.31	1,100.36	-747.10	1,104.90	1.04	0.74	-0.74
10,192.00	89.16	358.95	8,597.63	1,195.34	-748.69	1,199.89	0.21	-0.09	-0.19
10,287.00	88.72	359.65	8,599.38	1,290.31	-749.85	1,294.87	0.87	-0.46	0.74
10,381.00	89.25	359.48	8,601.05	1,384.30	-750.56	1,388.85	0.59	0.56	-0.18
10,476.00	89.52	0.00	8,602.07	1,479.29	-750.99	1,483.85	0.62	0.28	0.55
10,572.00	91.54	0.53	8,601.18	1,575.28	-750.55	1,579.83	2.18	2.10	0.55
10,664.00	91.45	0.53	8,598.78	1,667.24	-749.70	1,671.79	0.10	-0.10	0.00
10,755.00	91.36	0.53	8,596.55	1,758.21	-748.86	1,762.75	0.10	-0.10	0.00
10,846.00	90.84	0.18	8,594.80	1,849.19	-748.29	1,853.73	0.69	-0.57	-0.38
10,937.00	90.22	0.18	8,593.96	1,940.19	-748.01	1,944.72	0.68	-0.68	0.00
11,029.00	90.40	0.00	8,593.46	2,032.19	-747.86	2,036.72	0.28	0.20	-0.20
11,121.00	90.40	0.18	8,592.82	2,124.18	-747.72	2,128.71	0.20	0.00	0.20
11,211.00	90.40	0.00	8,592.19	2,214.18	-747.58	2,218.71	0.20	0.00	-0.20
11,302.00	89.96	359.30	8,591.91	2,305.18	-748.13	2,309.71	0.91	-0.48	-0.77
11,393.00	89.96	0.36	8,591.97	2,396.18	-748.40	2,400.70	1.16	0.00	1.16
11,484.00	87.85	359.65	8,593.71	2,487.16	-748.39	2,491.68	2.45	-2.32	-0.78
11,574.00	87.41	359.13	8,597.43	2,577.07	-749.35	2,581.60	0.76	-0.49	-0.58
11,666.00	88.11	359.13	8,601.03	2,668.99	-750.75	2,673.53	0.76	0.76	0.00
11,755.00	87.85	359.13	8,604.16	2,757.93	-752.10	2,762.47	0.29	-0.29	0.00
11,846.00	89.60	358.95	8,606.19	2,848.89	-753.62	2,853.44	1.93	1.92	-0.20
11,936.00	89.60	358.77	8,606.82	2,938.87	-755.41	2,943.43	0.20	0.00	-0.20
12,030.00	90.13	358.42	8,607.04	3,032.84	-757.72	3,037.41	0.68	0.56	-0.37
12,125.00	90.31	357.90	8,606.67	3,127.79	-760.77	3,132.38	0.58	0.19	-0.55
12,219.00	90.13	358.77	8,606.31	3,221.75	-763.50	3,226.35	0.95	-0.19	0.93
12,314.00	90.04	359.13	8,606.17	3,316.73	-765.24	3,321.34	0.39	-0.09	0.38
12,409.00	90.04	359.48	8,606.10	3,411.72	-766.39	3,416.34	0.37	0.00	0.37

LEAM Drilling Services

Survey Report

Company: Devon Energy
 Project: Eddy County, NM (NAD-83)
 Site: Ko Lanta 9-4 Fed Com
 Well: Ko Lanta 9-4 Fed Com 518H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
 TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
12,504.00	89.69	359.48	8,606.33	3,506.72	-767.25	3,511.34	0.37	-0.37	0.00
12,599.00	90.31	359.83	8,606.33	3,601.72	-767.83	3,606.34	0.75	0.65	0.37
12,694.00	90.04	0.71	8,606.04	3,696.71	-767.38	3,701.33	0.97	-0.28	0.93
12,789.00	91.36	0.18	8,604.88	3,791.70	-766.64	3,796.31	1.50	1.39	-0.56
12,882.00	89.60	0.71	8,604.10	3,884.69	-765.92	3,889.30	1.98	-1.89	0.57
12,978.00	89.25	1.06	8,605.06	3,980.67	-764.44	3,985.27	0.52	-0.36	0.36
13,072.00	89.43	1.41	8,606.14	4,074.65	-762.41	4,079.23	0.42	0.19	0.37
13,166.00	89.60	0.36	8,606.94	4,168.63	-760.96	4,173.20	1.13	0.18	-1.12
13,260.00	89.43	0.00	8,607.74	4,262.63	-760.66	4,267.19	0.42	-0.18	-0.38
13,355.00	89.60	0.00	8,608.54	4,357.62	-760.66	4,362.19	0.18	0.18	0.00
13,450.00	89.69	0.00	8,609.13	4,452.62	-760.66	4,457.18	0.09	0.09	0.00
13,544.00	89.60	359.30	8,609.71	4,546.62	-761.24	4,551.18	0.75	-0.10	-0.74
13,639.00	89.69	358.95	8,610.30	4,641.60	-762.69	4,646.18	0.38	0.09	-0.37
13,734.00	89.69	358.95	8,610.81	4,736.59	-764.43	4,741.17	0.00	0.00	0.00
13,829.00	89.78	358.95	8,611.25	4,831.57	-766.17	4,836.16	0.09	0.09	0.00
13,923.00	90.31	358.95	8,611.18	4,925.55	-767.89	4,930.15	0.56	0.56	0.00
14,017.00	90.48	358.60	8,610.53	5,019.53	-769.90	5,024.14	0.41	0.18	-0.37
14,111.00	90.57	358.42	8,609.67	5,113.49	-772.35	5,118.12	0.21	0.10	-0.19
14,205.00	90.92	358.42	8,608.45	5,207.45	-774.94	5,212.09	0.37	0.37	0.00
14,300.00	90.22	358.60	8,607.50	5,302.41	-777.41	5,307.06	0.76	-0.74	0.19
14,394.00	90.57	358.95	8,606.85	5,396.39	-779.42	5,401.05	0.53	0.37	0.37
14,489.00	90.04	359.48	8,606.35	5,491.38	-780.72	5,496.04	0.79	-0.56	0.56
14,584.00	88.99	0.36	8,607.15	5,586.37	-780.85	5,591.04	1.44	-1.11	0.93
14,678.00	88.81	0.00	8,608.96	5,680.35	-780.56	5,685.02	0.43	-0.19	-0.38
14,733.00	89.25	359.83	8,609.89	5,735.35	-780.64	5,740.01	0.86	0.80	-0.31
14,867.00	88.99	359.48	8,611.95	5,869.33	-781.44	5,873.99	0.33	-0.19	-0.26
14,962.00	88.72	359.13	8,613.84	5,964.30	-782.60	5,968.97	0.47	-0.28	-0.37
15,057.00	90.57	0.00	8,614.43	6,059.29	-783.32	6,063.96	2.15	1.95	0.92
15,151.00	91.28	0.18	8,612.92	6,153.28	-783.17	6,157.95	0.78	0.76	0.19
15,246.00	90.66	1.06	8,611.31	6,248.26	-782.14	6,252.92	1.13	-0.65	0.93
15,340.00	91.10	1.23	8,609.86	6,342.23	-780.26	6,346.88	0.50	0.47	0.18
15,435.00	88.72	0.36	8,610.01	6,437.21	-778.95	6,441.85	2.67	-2.51	-0.92
15,530.00	88.37	0.00	8,612.43	6,532.18	-778.65	6,536.81	0.53	-0.37	-0.38
15,625.00	89.16	0.18	8,614.47	6,627.16	-778.50	6,631.79	0.85	0.83	0.19
15,720.00	89.43	0.36	8,615.64	6,722.15	-778.05	6,726.78	0.34	0.28	0.19
15,815.00	90.13	359.65	8,616.01	6,817.15	-778.04	6,821.77	1.05	0.74	-0.75
15,910.00	89.43	358.77	8,616.37	6,912.13	-779.35	6,916.77	1.18	-0.74	-0.93
16,005.00	90.40	358.77	8,616.51	7,007.11	-781.39	7,011.75	1.02	1.02	0.00
16,100.00	90.40	358.42	8,615.85	7,102.08	-783.72	7,106.74	0.37	0.00	-0.37
16,195.00	89.78	358.07	8,615.70	7,197.04	-786.63	7,201.71	0.75	-0.65	-0.37
16,289.00	89.87	359.30	8,615.99	7,291.01	-788.79	7,295.69	1.31	0.10	1.31
16,383.00	91.28	359.83	8,615.04	7,385.00	-789.50	7,389.68	1.60	1.50	0.56
16,478.00	92.15	359.65	8,612.20	7,479.95	-789.93	7,484.64	0.94	0.92	-0.19

LEAM Drilling Services

Survey Report

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Project: Eddy County, NM (NAD-83)
Site: Ko Lanta 9-4 Fed Com
Well: Ko Lanta 9-4 Fed Com 518H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 518H
TVD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
MD Reference: 3371.8' GE + 23.2' KB @ 3395.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
16,573.00	92.51	359.83	8,608.34	7,574.87	-790.36	7,579.56	0.42	0.38	0.19
16,668.00	91.80	1.94	8,604.77	7,669.79	-788.90	7,674.47	2.34	-0.75	2.22
16,762.00	91.80	2.11	8,601.81	7,763.68	-785.58	7,768.34	0.18	0.00	0.18
16,856.00	90.75	0.88	8,599.72	7,857.63	-783.12	7,862.26	1.72	-1.12	-1.31
16,951.00	87.14	1.23	8,601.47	7,952.58	-781.38	7,957.20	3.82	-3.80	0.37
17,045.00	86.53	0.88	8,606.66	8,046.42	-779.65	8,051.03	0.75	-0.65	-0.37
17,139.00	88.90	359.48	8,610.41	8,140.33	-779.35	8,144.94	2.93	2.52	-1.49
17,234.00	90.92	359.13	8,610.56	8,235.32	-780.51	8,239.94	2.16	2.13	-0.37
17,328.00	90.66	0.18	8,609.26	8,329.31	-781.07	8,333.93	1.15	-0.28	1.12
17,423.00	89.08	358.95	8,609.48	8,424.30	-781.79	8,428.92	2.11	-1.66	-1.29
17,517.00	89.34	359.13	8,610.77	8,518.28	-783.37	8,522.91	0.34	0.28	0.19
17,612.00	88.99	359.30	8,612.16	8,613.26	-784.67	8,617.89	0.41	-0.37	0.18
17,707.00	89.16	359.48	8,613.69	8,708.24	-785.68	8,712.88	0.26	0.18	0.19
17,801.00	89.25	359.65	8,614.99	8,802.23	-786.39	8,806.87	0.20	0.10	0.18
17,896.00	88.90	359.13	8,616.53	8,897.21	-787.41	8,901.86	0.66	-0.37	-0.55
17,990.00	89.87	359.65	8,617.54	8,991.20	-788.41	8,995.85	1.17	1.03	0.55
18,085.00	91.36	0.00	8,616.52	9,086.19	-788.70	9,090.84	1.61	1.57	0.37
18,180.00	91.36	0.18	8,614.26	9,181.16	-788.55	9,185.81	0.19	0.00	0.19
18,275.00	91.63	0.71	8,611.78	9,276.13	-787.81	9,280.77	0.63	0.28	0.56
18,369.00	91.19	0.53	8,609.47	9,370.09	-786.79	9,374.73	0.51	-0.47	-0.19
18,464.00	91.36	0.53	8,607.36	9,465.07	-785.91	9,469.69	0.18	0.18	0.00
18,560.00	91.54	0.36	8,604.93	9,561.03	-785.17	9,565.65	0.26	0.19	-0.18
18,596.00	91.19	0.00	8,604.07	9,597.02	-785.06	9,601.64	1.39	-0.97	-1.00
18,653.00	91.19	0.00	8,602.89	9,654.01	-785.06	9,658.63	0.00	0.00	0.00
Projection									