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OCT 26 2018

DISTRICT II-ARTESIA O.C.D.

July 5, 2018

Devon Energy Production Company, LP
Well: Ko Lanta 9-4 Fed Com 528H (ST01)
County/Parish: Eddy County, NM

30.015-44865

LEAM MWD: (ST01) from 8,332' MD – 18,791' MD
Projection; 18,841' MD

This Borehole Survey taken between 06/16/18 and 07/03/18 had been conducted and calculated according to the highest professional standards and complies with all known State and Federal requirements.

Reviewed and Approved:

Date: July 5, 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 06/16/2018 through 07/03/2018, conduct or supervise the taking of MWD Survey from a depth of 8,332' MD to 18,841' 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 528H (ST01) 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 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 528H
Project:	Eddy County, NM (NAD-83)	TVD Reference:	3372.3' GE + 23.2' KB @ 3395.50usft
Site:	Ko Lanta 9-4 Fed Com	MD Reference:	3372.3' GE + 23.2' KB @ 3395.50usft
Well:	Ko Lanta 9-4 Fed Com 528H	North Reference:	Grid
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	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	Latitude:	32° 18' 48.2902 N
From:	Map	Easting:	713,851.39 usft	Longitude:	103° 46' 29.6811 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.30 °

Well	Ko Lanta 9-4 Fed Com 528H				
Well Position	+N/-S	0.00 usft	Northing:	478,201.88 usft	Latitude: 32° 18' 48.2900 N
	+E/-W	0.00 usft	Easting:	713,881.47 usft	Longitude: 103° 46' 29.3306 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft	Ground Level: 3,372.30 usft

Wellbore	ST01				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/26/2018	6.97	60.08	48,103

Design	ST01				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	8,214.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.65	

Survey Program	Date 7/5/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
149.00	8,214.00	Survey #1 (OH)	MWD+IFR1	OWSG MWD + IFR1	
8,332.00	18,791.00	Survey #1 (ST01)	LEAM MWD+HDGM	MWD+HDGM	
18,841.00	18,841.00	Survey #2 (ST01)	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	
149.00	0.50	345.40	149.00	0.63	-0.16	0.63	0.34	0.34	0.00	
240.00	0.60	347.40	239.99	1.48	-0.37	1.48	0.11	0.11	2.20	
332.00	0.70	344.30	331.99	2.49	-0.63	2.49	0.12	0.11	-3.37	
423.00	0.70	336.90	422.98	3.54	-0.99	3.54	0.10	0.00	-8.13	
480.00	0.70	328.00	479.98	4.15	-1.31	4.16	0.19	0.00	-15.61	
602.00	0.53	314.61	601.97	5.18	-2.11	5.19	0.18	-0.14	-10.98	
693.00	0.53	321.47	692.97	5.80	-2.67	5.82	0.07	0.00	7.54	
784.00	0.53	322.00	783.96	6.47	-3.19	6.48	0.01	0.00	0.58	

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 528H
Wellbore: ST01
Design: ST01

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 528H
TVD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
MD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
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)
876.00	0.44	345.37	875.96	7.14	-3.55	7.16	0.23	-0.10	25.40
966.00	0.26	335.00	965.96	7.66	-3.72	7.68	0.21	-0.20	-11.52
1,057.00	0.09	336.23	1,056.96	7.91	-3.84	7.94	0.19	-0.19	1.35
1,148.00	0.09	238.50	1,147.96	7.94	-3.92	7.97	0.15	0.00	-107.40
1,238.00	0.09	291.76	1,237.96	7.93	-4.05	7.96	0.09	0.00	59.18
1,329.00	0.09	169.95	1,328.96	7.89	-4.10	7.91	0.17	0.00	-133.86
1,420.00	0.26	243.07	1,419.96	7.72	-4.28	7.75	0.27	0.19	80.35
1,510.00	0.09	270.67	1,509.96	7.63	-4.53	7.66	0.21	-0.19	30.67
1,601.00	0.18	227.25	1,600.96	7.54	-4.71	7.56	0.14	0.10	-47.71
1,691.00	0.26	265.04	1,690.95	7.42	-5.01	7.45	0.18	0.09	41.99
1,785.00	0.18	245.00	1,784.95	7.34	-5.36	7.37	0.12	-0.09	-21.32
1,879.00	0.26	259.42	1,878.95	7.24	-5.70	7.27	0.10	0.09	15.34
1,973.00	0.26	225.32	1,972.95	7.05	-6.06	7.09	0.16	0.00	-36.28
2,068.00	0.53	219.34	2,067.95	6.56	-6.50	6.60	0.29	0.28	-6.29
2,163.00	0.35	230.94	2,162.95	6.04	-7.00	6.08	0.21	-0.19	12.21
2,258.00	0.26	261.53	2,257.95	5.82	-7.44	5.87	0.19	-0.09	32.20
2,352.00	0.35	261.70	2,351.94	5.75	-7.93	5.80	0.10	0.10	0.18
2,446.00	0.44	211.43	2,445.94	5.40	-8.41	5.45	0.37	0.10	-53.48
2,541.00	0.88	190.51	2,540.94	4.37	-8.73	4.42	0.52	0.46	-22.02
2,636.00	1.49	190.86	2,635.92	2.44	-9.09	2.50	0.64	0.64	0.37
2,730.00	2.55	193.85	2,729.86	-0.79	-9.83	-0.73	1.13	1.13	3.18
2,824.00	2.99	198.60	2,823.75	-5.14	-11.11	-5.08	0.53	0.47	5.05
2,919.00	3.52	197.72	2,918.59	-10.27	-12.79	-10.19	0.56	0.56	-0.93
3,013.00	4.57	193.15	3,012.36	-16.66	-14.52	-16.58	1.17	1.12	-4.86
3,107.00	5.10	192.80	3,106.02	-24.39	-16.29	-24.29	0.56	0.56	-0.37
3,202.00	5.89	194.38	3,200.59	-33.23	-18.44	-33.11	0.85	0.83	1.66
3,297.00	6.86	197.89	3,295.00	-43.35	-21.39	-43.21	1.10	1.02	3.69
3,392.00	7.74	198.77	3,389.23	-54.80	-25.19	-54.65	0.93	0.93	0.93
3,485.00	8.00	195.26	3,481.35	-66.98	-28.91	-66.80	0.59	0.28	-3.77
3,580.00	7.47	192.62	3,575.49	-79.38	-32.00	-79.18	0.67	-0.56	-2.78
3,674.00	6.33	192.80	3,668.80	-90.40	-34.49	-90.18	1.21	-1.21	0.19
3,769.00	6.68	192.80	3,763.19	-100.89	-36.87	-100.66	0.37	0.37	0.00
3,863.00	7.83	193.32	3,856.44	-112.45	-39.56	-112.21	1.23	1.22	0.55
3,957.00	8.27	192.62	3,949.51	-125.28	-42.51	-125.02	0.48	0.47	-0.74
4,052.00	7.39	191.04	4,043.62	-137.95	-45.17	-137.67	0.95	-0.93	-1.66
4,147.00	7.39	196.49	4,137.84	-149.80	-48.08	-149.50	0.74	0.00	5.74
4,241.00	7.47	198.95	4,231.05	-161.38	-51.78	-161.06	0.35	0.09	2.62
4,336.00	6.86	198.42	4,325.31	-172.60	-55.57	-172.26	0.65	-0.64	-0.56
4,430.00	7.39	197.89	4,418.58	-183.68	-59.20	-183.31	0.57	0.56	-0.56
4,525.00	7.47	198.07	4,512.78	-195.36	-63.00	-194.98	0.09	0.08	0.19
4,619.00	7.21	199.12	4,606.01	-206.75	-66.82	-206.33	0.31	-0.28	1.12
4,714.00	7.30	198.42	4,700.25	-218.11	-70.68	-217.67	0.13	0.09	-0.74
4,809.00	8.71	197.37	4,794.32	-230.70	-74.74	-230.24	1.49	1.48	-1.11

LEAM Drilling Services

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Well: Ko Lanta 9-4 Fed Com 528H
Wellbore: ST01
Design: ST01

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Survey

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4,904.00	8.97	198.42	4,888.19	-244.59	-79.23	-244.10	0.32	0.27	1.11
4,999.00	8.79	198.77	4,982.06	-258.49	-83.90	-257.97	0.20	-0.19	0.37
5,093.00	8.27	197.89	5,075.02	-271.72	-88.29	-271.18	0.57	-0.55	-0.94
5,187.00	7.74	198.42	5,168.10	-284.16	-92.37	-283.59	0.57	-0.56	0.56
5,281.00	7.39	198.60	5,261.28	-295.90	-96.30	-295.30	0.37	-0.37	0.19
5,375.00	6.95	198.60	5,354.55	-307.02	-100.04	-306.40	0.47	-0.47	0.00
5,470.00	7.03	196.80	5,448.84	-318.03	-103.55	-317.39	0.25	0.08	-1.89
5,564.00	6.86	197.02	5,542.15	-328.90	-106.86	-328.24	0.18	-0.18	0.23
5,658.00	6.42	197.37	5,635.52	-339.29	-110.07	-338.61	0.47	-0.47	0.37
5,753.00	7.03	193.50	5,729.87	-350.01	-113.01	-349.31	0.80	0.64	-4.07
5,847.00	7.21	192.62	5,823.14	-361.36	-115.64	-360.65	0.22	0.19	-0.94
5,941.00	7.03	194.73	5,916.42	-372.68	-118.40	-371.95	0.34	-0.19	2.24
6,036.00	6.95	197.37	6,010.71	-383.79	-121.59	-383.04	0.35	-0.08	2.78
6,129.00	7.30	198.60	6,102.99	-394.76	-125.15	-393.98	0.41	0.38	1.32
6,224.00	7.39	199.48	6,197.21	-406.24	-129.12	-405.44	0.15	0.09	0.93
6,319.00	7.30	200.88	6,291.43	-417.64	-133.30	-416.81	0.21	-0.09	1.47
6,413.00	6.86	202.46	6,384.72	-428.40	-137.58	-427.56	0.51	-0.47	1.68
6,507.00	7.21	198.25	6,478.01	-439.19	-141.57	-438.32	0.66	0.37	-4.48
6,601.00	7.12	195.43	6,571.28	-450.41	-144.97	-449.52	0.39	-0.10	-3.00
6,697.00	6.51	197.02	6,666.60	-461.35	-148.14	-460.44	0.67	-0.64	1.66
6,792.00	6.07	198.77	6,761.02	-471.26	-151.34	-470.32	0.51	-0.46	1.84
6,887.00	5.98	200.71	6,855.50	-480.64	-154.70	-479.69	0.23	-0.09	2.04
6,982.00	5.72	203.87	6,950.01	-489.60	-158.37	-488.62	0.44	-0.27	3.33
7,077.00	5.72	202.99	7,044.53	-498.29	-162.13	-497.29	0.09	0.00	-0.93
7,215.00	5.54	206.16	7,181.87	-510.60	-167.76	-509.56	0.26	-0.13	2.30
7,361.00	5.19	207.74	7,327.23	-522.77	-173.94	-521.69	0.26	-0.24	1.08
7,456.00	4.84	207.91	7,421.86	-530.11	-177.81	-529.01	0.37	-0.37	0.18
7,549.00	4.40	207.39	7,514.56	-536.75	-181.29	-535.63	0.48	-0.47	-0.56
7,644.00	3.69	205.80	7,609.32	-542.73	-184.30	-541.60	0.76	-0.75	-1.67
7,738.00	2.73	207.56	7,703.18	-547.44	-186.65	-546.29	1.03	-1.02	1.87
7,832.00	1.85	215.30	7,797.10	-550.66	-188.56	-549.50	0.99	-0.94	8.23
7,926.00	1.67	216.35	7,891.05	-553.01	-190.25	-551.83	0.19	-0.19	1.12
8,021.00	1.67	225.14	7,986.01	-555.10	-192.05	-553.91	0.27	0.00	9.25
8,098.00	1.85	226.20	8,062.98	-556.75	-193.74	-555.55	0.24	0.23	1.38
8,182.00	1.93	227.28	8,146.93	-558.65	-195.76	-557.44	0.10	0.10	1.29
8,214.00	1.76	226.75	8,178.92	-559.35	-196.52	-558.14	0.53	-0.53	-1.66
8,332.00	9.76	6.85	8,296.41	-550.63	-196.64	-549.42	9.46	6.78	118.73
8,427.00	24.18	8.08	8,387.03	-523.23	-192.93	-522.04	15.18	15.18	1.29
8,474.00	31.39	8.26	8,428.58	-501.56	-189.81	-500.39	15.34	15.34	0.38
8,522.00	35.61	3.16	8,468.61	-475.22	-187.24	-474.06	10.56	8.79	-10.63
8,569.00	38.95	359.29	8,506.01	-446.77	-186.67	-445.62	8.68	7.11	-8.23
8,616.00	41.50	358.76	8,541.89	-416.43	-187.19	-415.27	5.47	5.43	-1.13
8,663.00	43.70	359.47	8,576.48	-384.62	-187.68	-383.46	4.79	4.68	1.51

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 528H
 Wellbore: ST01
 Design: ST01

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 528H
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 Survey Calculation Method: Minimum Curvature
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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)
8,710.00	47.13	359.47	8,609.47	-351.15	-187.99	-350.00	7.30	7.30	0.00
8,757.00	51.00	359.29	8,640.26	-315.65	-188.38	-314.50	8.24	8.23	-0.38
8,804.00	53.82	358.76	8,668.93	-278.42	-189.01	-277.26	6.07	6.00	-1.13
8,851.00	56.37	359.64	8,695.82	-239.88	-189.55	-238.72	5.64	5.43	1.87
8,898.00	58.83	0.70	8,721.00	-200.20	-189.42	-199.04	5.57	5.23	2.26
8,945.00	61.64	1.40	8,744.33	-159.42	-188.67	-158.26	6.12	5.98	1.49
8,992.00	65.69	1.58	8,765.18	-117.32	-187.58	-116.17	8.62	8.62	0.38
9,039.00	70.35	1.23	8,782.77	-73.76	-186.51	-72.62	9.94	9.91	-0.74
9,087.00	75.10	1.93	8,797.02	-27.95	-185.24	-26.82	9.99	9.90	1.46
9,134.00	77.91	2.10	8,807.98	17.72	-183.64	18.84	5.99	5.98	0.36
9,182.00	80.64	1.05	8,816.91	64.85	-182.34	65.97	6.08	5.69	-2.19
9,214.00	83.36	0.87	8,821.37	96.53	-181.81	97.64	8.52	8.50	-0.56
9,258.00	85.47	0.35	8,825.65	140.32	-181.35	141.43	4.94	4.80	-1.18
9,353.00	90.31	2.10	8,829.15	235.20	-179.31	236.29	5.42	5.09	1.84
9,448.00	90.92	0.17	8,828.13	330.17	-177.43	331.25	2.13	0.64	-2.03
9,543.00	90.04	358.41	8,827.33	425.16	-178.61	426.24	2.07	-0.93	-1.85
9,638.00	87.93	358.24	8,829.01	520.10	-181.39	521.20	2.23	-2.22	-0.18
9,732.00	86.70	357.89	8,833.42	613.94	-184.56	615.05	1.36	-1.31	-0.37
9,827.00	86.97	358.76	8,838.66	708.75	-187.33	709.88	0.96	0.28	0.92
9,921.00	88.46	0.35	8,842.41	802.67	-188.06	803.80	2.32	1.59	1.69
10,016.00	88.90	1.75	8,844.60	897.63	-186.32	898.75	1.54	0.46	1.47
10,108.00	90.13	2.63	8,845.38	989.55	-182.80	990.65	1.64	1.34	0.96
10,199.00	90.57	2.63	8,844.82	1,080.45	-178.63	1,081.53	0.48	0.48	0.00
10,291.00	91.45	1.05	8,843.20	1,172.39	-175.67	1,173.44	1.97	0.96	-1.72
10,382.00	92.15	359.64	8,840.34	1,263.34	-175.12	1,264.39	1.73	0.77	-1.55
10,473.00	90.31	357.53	8,838.39	1,354.28	-177.37	1,355.34	3.08	-2.02	-2.32
10,565.00	90.04	357.01	8,838.11	1,446.18	-181.75	1,447.26	0.64	-0.29	-0.57
10,655.00	88.90	358.59	8,838.94	1,536.10	-185.21	1,537.20	2.16	-1.27	1.76
10,746.00	88.81	359.29	8,840.76	1,627.07	-186.89	1,628.18	0.78	-0.10	0.77
10,837.00	89.16	359.64	8,842.37	1,718.05	-187.74	1,719.16	0.54	0.38	0.38
10,927.00	88.72	0.52	8,844.03	1,808.03	-187.62	1,809.14	1.09	-0.49	0.98
11,018.00	87.49	359.64	8,847.04	1,898.98	-187.49	1,900.09	1.66	-1.35	-0.97
11,109.00	88.81	0.70	8,849.98	1,989.93	-187.22	1,991.04	1.86	1.45	1.16
11,199.00	90.40	1.58	8,850.60	2,079.91	-185.43	2,081.00	2.02	1.77	0.98
11,290.00	91.28	2.28	8,849.27	2,170.84	-182.36	2,171.92	1.24	0.97	0.77
11,380.00	91.36	1.23	8,847.19	2,260.78	-179.61	2,261.83	1.17	0.09	-1.17
11,475.00	90.66	0.17	8,845.52	2,355.75	-178.45	2,356.80	1.34	-0.74	-1.12
11,569.00	89.78	358.41	8,845.16	2,449.74	-179.61	2,450.79	2.09	-0.94	-1.87
11,664.00	91.19	359.47	8,844.35	2,544.72	-181.37	2,545.78	1.86	1.48	1.12
11,758.00	89.69	357.18	8,843.63	2,638.66	-184.12	2,639.74	2.91	-1.60	-2.44
11,852.00	87.49	355.78	8,845.95	2,732.45	-189.89	2,733.56	2.77	-2.34	-1.49
11,947.00	87.85	356.48	8,849.81	2,827.15	-196.29	2,828.30	0.83	0.38	0.74
12,042.00	87.76	358.06	8,853.45	2,921.97	-200.81	2,923.15	1.66	-0.09	1.66
12,137.00	87.67	358.76	8,857.23	3,016.86	-203.45	3,018.05	0.74	-0.09	0.74

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 528H
 Wellbore: ST01
 Design: ST01

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 528H
 TVD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
 MD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
 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)
12,231.00	88.20	358.76	8,860.62	3,110.78	-205.48	3,111.97	0.56	0.56	0.00
12,326.00	88.55	358.76	8,863.32	3,205.72	-207.53	3,206.92	0.37	0.37	0.00
12,420.00	87.49	358.20	8,866.56	3,299.63	-210.03	3,300.85	1.28	-1.13	-0.60
12,515.00	86.97	359.82	8,871.15	3,394.50	-211.67	3,395.73	1.79	-0.55	1.71
12,609.00	88.55	0.87	8,874.83	3,488.42	-211.10	3,489.64	2.02	1.68	1.12
12,704.00	89.43	359.64	8,876.50	3,583.40	-210.68	3,584.62	1.59	0.93	-1.29
12,798.00	90.22	1.75	8,876.79	3,677.39	-209.54	3,678.60	2.40	0.84	2.24
12,893.00	90.22	1.23	8,876.43	3,772.35	-207.07	3,773.55	0.55	0.00	-0.55
12,988.00	90.31	1.05	8,875.99	3,867.33	-205.18	3,868.52	0.21	0.09	-0.19
13,082.00	91.45	2.10	8,874.54	3,961.29	-202.59	3,962.45	1.65	1.21	1.12
13,178.00	88.90	1.05	8,874.25	4,057.24	-199.96	4,058.38	2.87	-2.66	-1.09
13,273.00	89.25	1.23	8,875.78	4,152.21	-198.07	4,153.34	0.41	0.37	0.19
13,368.00	88.46	359.64	8,877.68	4,247.18	-197.34	4,248.31	1.87	-0.83	-1.67
13,462.00	88.81	359.64	8,879.92	4,341.15	-197.94	4,342.28	0.37	0.37	0.00
13,555.00	89.34	359.99	8,881.42	4,434.14	-198.24	4,435.27	0.68	0.57	0.38
13,651.00	89.69	0.17	8,882.23	4,530.14	-198.10	4,531.26	0.41	0.36	0.19
13,746.00	89.96	359.64	8,882.52	4,625.14	-198.26	4,626.26	0.63	0.28	-0.56
13,840.00	89.60	359.12	8,882.89	4,719.13	-199.28	4,720.26	0.67	-0.38	-0.55
13,935.00	89.69	358.76	8,883.47	4,814.11	-201.03	4,815.25	0.39	0.09	-0.38
14,028.00	89.96	359.47	8,883.76	4,907.10	-202.47	4,908.24	0.82	0.29	0.76
14,123.00	89.43	358.94	8,884.26	5,002.09	-203.79	5,003.24	0.79	-0.56	-0.56
14,218.00	90.04	358.94	8,884.70	5,097.07	-205.55	5,098.23	0.64	0.64	0.00
14,313.00	90.40	358.94	8,884.34	5,192.05	-207.30	5,193.22	0.38	0.38	0.00
14,407.00	90.22	358.44	8,883.83	5,286.03	-209.45	5,287.21	0.57	-0.19	-0.53
14,501.00	90.84	358.76	8,882.96	5,379.99	-211.75	5,381.19	0.74	0.66	0.34
14,596.00	91.19	358.94	8,881.28	5,474.96	-213.65	5,476.16	0.41	0.37	0.19
14,690.00	90.84	0.17	8,879.61	5,568.94	-214.38	5,570.15	1.36	-0.37	1.31
14,785.00	91.36	0.70	8,877.79	5,663.92	-213.66	5,665.12	0.78	0.55	0.56
14,879.00	91.19	1.05	8,875.70	5,757.88	-212.23	5,759.07	0.41	-0.18	0.37
14,974.00	89.34	0.87	8,875.26	5,852.87	-210.64	5,854.04	1.96	-1.95	-0.19
15,068.00	88.72	0.70	8,876.85	5,946.84	-209.35	5,948.01	0.68	-0.66	-0.18
15,162.00	90.48	1.58	8,877.51	6,040.82	-207.48	6,041.97	2.09	1.87	0.94
15,257.00	91.01	1.23	8,876.27	6,135.78	-205.15	6,136.92	0.67	0.56	-0.37
15,351.00	90.75	1.75	8,874.83	6,229.74	-202.71	6,230.86	0.62	-0.28	0.55
15,445.00	90.31	1.05	8,873.96	6,323.70	-200.41	6,324.81	0.88	-0.47	-0.74
15,540.00	90.48	359.47	8,873.30	6,418.70	-199.98	6,419.80	1.67	0.18	-1.66
15,634.00	90.57	0.17	8,872.44	6,512.69	-200.27	6,513.80	0.75	0.10	0.74
15,728.00	90.40	358.76	8,871.65	6,606.68	-201.15	6,607.79	1.51	-0.18	-1.50
15,822.00	90.75	357.01	8,870.70	6,700.61	-204.62	6,701.74	1.90	0.37	-1.86
15,916.00	90.84	357.01	8,869.40	6,794.47	-209.52	6,795.63	0.10	0.10	0.00
16,010.00	91.36	357.18	8,867.59	6,888.34	-214.29	6,889.52	0.58	0.55	0.18
16,105.00	91.28	357.18	8,865.40	6,983.20	-218.96	6,984.40	0.08	-0.08	0.00
16,198.00	89.52	358.59	8,864.76	7,076.12	-222.39	7,077.35	2.42	-1.89	1.52

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 528H
Wellbore: ST01
Design: ST01

Local Co-ordinate Reference: Well Ko Lanta 9-4 Fed Com 528H
TVD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
MD Reference: 3372.3' GE + 23.2' KB @ 3395.50usft
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)
16,293.00	89.69	358.06	8,865.41	7,171.08	-225.17	7,172.32	0.59	0.18	-0.56
16,387.00	89.25	357.89	8,866.28	7,265.02	-228.49	7,266.28	0.50	-0.47	-0.18
16,481.00	89.87	358.59	8,867.00	7,358.97	-231.38	7,360.25	0.99	0.66	0.74
16,576.00	90.92	359.47	8,866.35	7,453.95	-232.98	7,455.24	1.44	1.11	0.93
16,670.00	90.92	358.76	8,864.84	7,547.93	-234.44	7,549.22	0.76	0.00	-0.76
16,765.00	90.57	359.12	8,863.60	7,642.90	-236.19	7,644.20	0.53	-0.37	0.38
16,859.00	90.66	358.76	8,862.59	7,736.88	-237.93	7,738.19	0.39	0.10	-0.38
16,954.00	91.01	0.87	8,861.21	7,831.86	-238.24	7,833.17	2.25	0.37	2.22
17,048.00	91.01	0.70	8,859.55	7,925.84	-236.95	7,927.14	0.18	0.00	-0.18
17,142.00	90.48	0.70	8,858.33	8,019.83	-235.80	8,021.12	0.56	-0.56	0.00
17,237.00	92.59	0.87	8,855.78	8,114.78	-234.50	8,116.06	2.23	2.22	0.18
17,332.00	93.30	1.58	8,850.90	8,209.63	-232.47	8,210.90	1.06	0.75	0.75
17,427.00	90.92	0.70	8,847.41	8,304.54	-230.59	8,305.79	2.67	-2.51	-0.93
17,522.00	90.31	359.47	8,846.39	8,399.53	-230.44	8,400.78	1.45	-0.64	-1.29
17,617.00	89.43	358.94	8,846.60	8,494.52	-231.76	8,495.78	1.08	-0.93	-0.56
17,711.00	88.99	358.76	8,847.90	8,588.49	-233.65	8,589.76	0.51	-0.47	-0.19
17,805.00	89.69	358.06	8,848.98	8,682.45	-236.26	8,683.73	1.05	0.74	-0.74
17,899.00	91.71	358.59	8,847.83	8,776.40	-239.00	8,777.69	2.22	2.15	0.56
17,994.00	92.24	358.94	8,844.56	8,871.32	-241.05	8,872.62	0.67	0.56	0.37
18,088.00	88.99	358.94	8,843.55	8,965.28	-242.79	8,966.60	3.46	-3.46	0.00
18,183.00	87.85	1.05	8,846.17	9,060.24	-242.80	9,061.55	2.52	-1.20	2.22
18,278.00	89.34	3.51	8,848.50	9,155.13	-239.02	9,156.42	3.03	1.57	2.59
18,372.00	91.45	2.63	8,847.85	9,248.98	-233.99	9,250.24	2.43	2.24	-0.94
18,467.00	91.54	2.10	8,845.37	9,343.87	-230.07	9,345.10	0.57	0.09	-0.56
18,562.00	92.24	359.99	8,842.24	9,438.80	-228.33	9,440.01	2.34	0.74	-2.22
18,656.00	92.24	357.89	8,838.56	9,532.70	-230.07	9,533.93	2.23	0.00	-2.23
18,751.00	92.24	357.71	8,834.85	9,627.56	-233.72	9,628.81	0.19	0.00	-0.19
18,791.00	91.63	357.53	8,833.50	9,667.50	-235.38	9,668.76	1.59	-1.53	-0.45
18,841.00	91.63	357.53	8,832.08	9,717.44	-237.53	9,718.71	0.00	0.00	0.00

Projection