

# DEVON ENERGY

Project: Eddy County, NM (NAD-83)  
 Site: Lone Tree Draw "13" State  
 Well: 4H  
 Wellbore: OH  
 Design: OH



Azimuths to Grid North  
 True North: -0.10°  
 Magnetic North: 7.58°

Magnetic Field  
 Strength: 48561.3snT  
 Dip Angle: 60.30°  
 Date: 12/22/2012  
 Model: IGRF2010

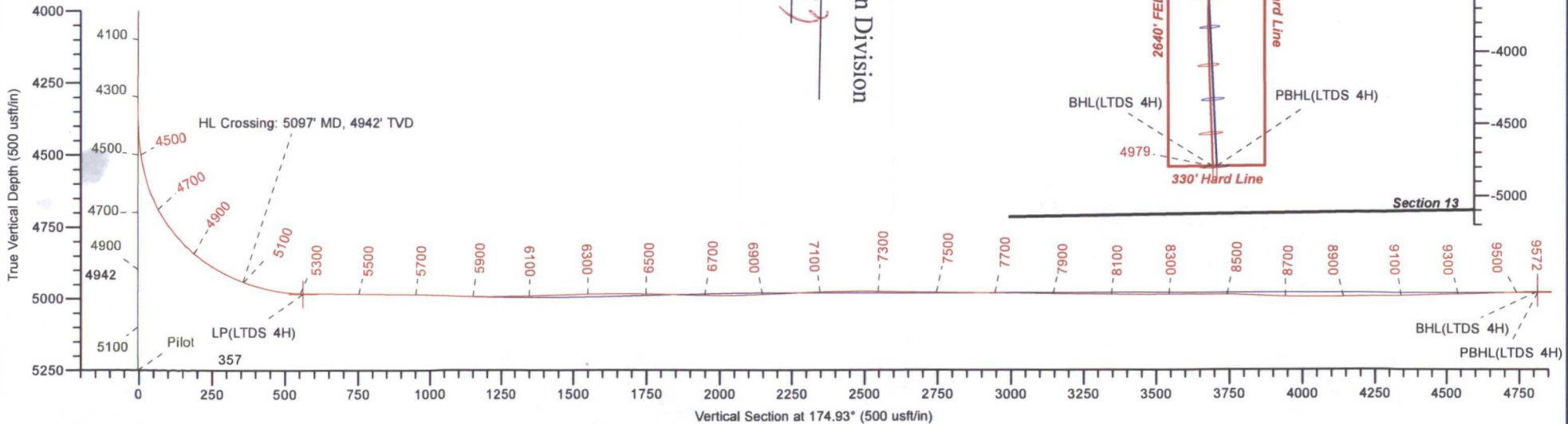
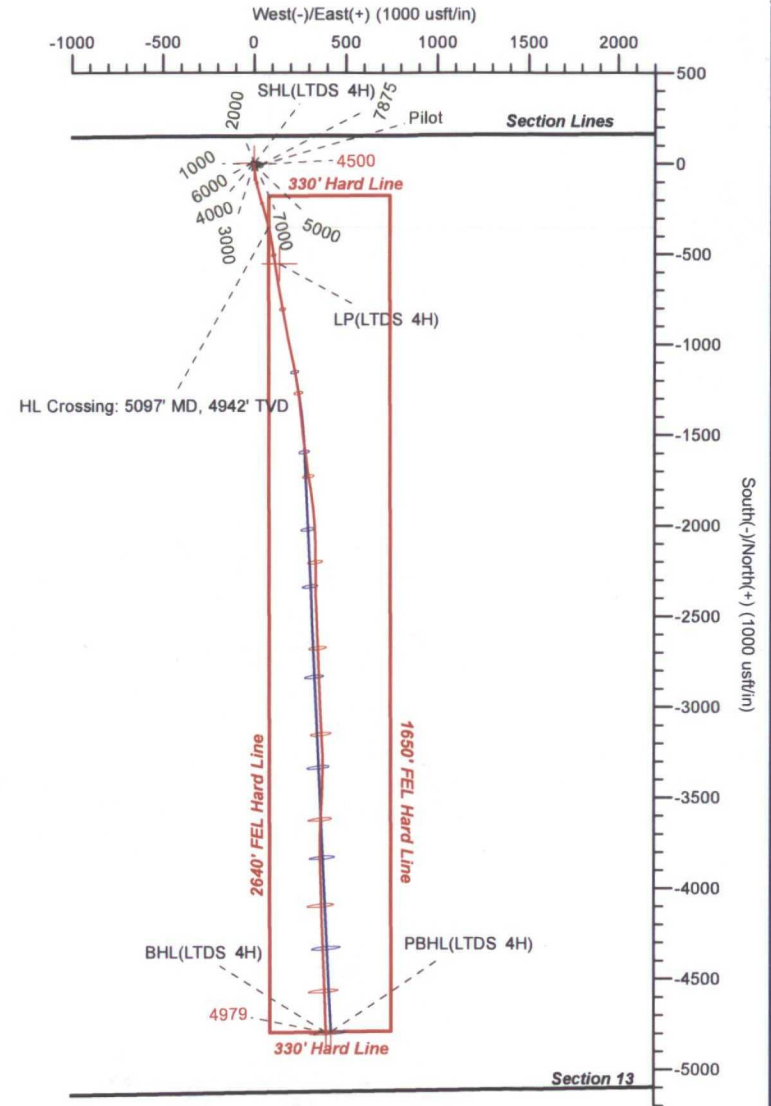


### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL(LTDS 4H)	0.00	0.00	0.00	541019.24	600275.2332° 29' 13.843 N	04° 8' 31.873 W	
BHL(LTDS 4H)	4979.02	-4795.82	398.89	536223.42	600674.1232° 28' 26.379 N	04° 8' 27.316 W	
PBHL(LTDS 4H)	4982.00	-4793.77	425.03	536225.47	600700.2632° 28' 26.399 N	04° 8' 27.011 W	
LP(LTDS 4H)	4985.00	-551.15	141.27	540468.09	600416.50 32° 29' 8.387 N	04° 8' 30.235 W	

### CASING DETAILS

TVD	MD	Name	Size
2583.94	584.00	9 5/8"	9-5/8
344.99	345.00	13 3/8"	13-3/8



Oil Conservation Division  
 Case No. \_\_\_\_\_  
 Exhibit No. 13



**LEAM DRILLING SYSTEMS LLC**  
 2010 East Davis, Conroe, Texas 77301  
 Phone: 936/756-7577, Fax 936/756-7595

Design: OH (4H/OH)  
 Lone Tree Draw "13" State  
 Created By: Tyler Carlson Date: 9:36, January 02 2013  
 Date: \_\_\_\_\_  
 Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# LEAM Drilling Systems LLC

## Survey Report

<b>Company:</b> DEVON ENERGY	<b>Local Co-ordinate Reference:</b> Well 4H
<b>Project:</b> Eddy County, NM (NAD-83)	<b>TVD Reference:</b> GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b> Lone Tree Draw "13" State	<b>MD Reference:</b> GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b> 4H	<b>North Reference:</b> Grid
<b>Wellbore:</b> OH	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> OH	<b>Database:</b> EDM 5000.1 Single User Db

<b>Project</b> Eddy County, NM (NAD-83)		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b> Mean Sea Level	
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> New Mexico Eastern Zone		

<b>Site</b> Lone Tree Draw "13" State					
<b>Site Position:</b>		<b>Northing:</b>	541,005.87 usft	<b>Latitude:</b>	32° 29' 13.750 N
<b>From:</b> Map		<b>Easting:</b>	598,047.12 usft	<b>Longitude:</b>	104° 8' 57.887 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.10 °

<b>Well</b> 4H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	541,019.24 usft	<b>Latitude:</b> 32° 29' 13.843 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	600,275.23 usft	<b>Longitude:</b> 104° 8' 31.873 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b> 3,177.00 usft

<b>Wellbore</b> OH					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	12/22/12	(°) 7.68	(°) 60.30	(nT) 48,561

<b>Design</b> OH					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b>	4,321.00		
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	174.93	

<b>Survey Program</b> Date 01/02/13					
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
17.80	4,321.00	Survey #1 (Pilot)	NS-GYRO-MS	North sensing gyrocompassing m/s	
4,369.00	9,518.00	Survey #1 (OH)	LEAM MWD	MWD - Standard	
9,572.00	9,572.00	Survey #2 (OH)	Project	Projection	

<b>Survey</b>										
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	
<b>SHL(LTDS 4H)</b>										
17.80	0.46	35.04	17.80	0.06	0.04	-0.05	2.58	2.58	0.00	
111.35	0.47	67.20	111.35	0.51	0.61	-0.46	0.28	0.01	34.38	
204.90	0.49	99.36	204.89	0.60	1.36	-0.48	0.28	0.02	34.38	
298.45	0.47	92.26	298.44	0.52	2.14	-0.33	0.07	-0.02	-7.59	
345.00	0.46	88.77	344.99	0.51	2.52	-0.29	0.06	-0.01	-7.51	
<b>13 3/8"</b>										

# LEAM Drilling Systems LLC

## Survey Report

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<b>Project:</b>	Eddy County, NM (NAD-83)	<b>TVD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b>	Lone Tree Draw "13" State	<b>MD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b>	4H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single 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)	
392.00	0.46	85.16	391.99	0.53	2.89	-0.28	0.06	-0.01	-7.67	
485.55	0.47	97.11	485.53	0.52	3.65	-0.19	0.10	0.01	12.77	
579.10	0.48	109.06	579.08	0.34	4.40	0.05	0.11	0.01	12.77	
672.65	0.49	27.27	672.63	0.57	4.95	-0.13	0.68	0.01	-87.43	
766.20	0.49	305.48	766.18	1.16	4.81	-0.73	0.69	0.00	-87.43	
859.75	0.60	227.27	859.72	1.06	4.13	-0.69	0.74	0.12	-83.60	
953.30	0.71	149.06	953.27	0.23	4.06	0.13	0.89	0.12	-83.60	
1,046.85	0.47	144.78	1,046.81	-0.58	4.58	0.98	0.26	-0.26	-4.58	
1,140.40	0.23	140.50	1,140.36	-1.04	4.92	1.47	0.26	-0.26	-4.58	
1,233.95	0.22	127.63	1,233.91	-1.29	5.19	1.75	0.05	-0.01	-13.76	
1,327.50	0.20	114.76	1,327.46	-1.47	5.48	1.95	0.05	-0.02	-13.76	
1,421.05	0.30	126.62	1,421.01	-1.69	5.82	2.19	0.12	0.11	12.68	
1,514.60	0.39	138.47	1,514.56	-2.07	6.23	2.61	0.12	0.10	12.67	
1,608.15	0.35	159.82	1,608.11	-2.58	6.54	3.15	0.15	-0.04	22.82	
1,701.70	0.31	181.16	1,701.65	-3.10	6.63	3.67	0.14	-0.04	22.81	
1,795.25	0.28	229.00	1,795.20	-3.50	6.45	4.06	0.26	-0.03	51.14	
1,888.80	0.26	276.84	1,888.75	-3.63	6.07	4.15	0.23	-0.02	51.14	
1,982.35	0.30	279.94	1,982.30	-3.56	5.62	4.04	0.05	0.04	3.31	
2,075.90	0.35	279.63	2,075.85	-3.47	5.10	3.91	0.05	0.05	-0.33	
2,169.45	0.42	280.82	2,169.40	-3.36	4.48	3.74	0.08	0.07	1.27	
2,263.00	0.49	288.01	2,262.94	-3.17	3.76	3.49	0.10	0.07	7.69	
2,356.55	0.44	291.71	2,356.49	-2.91	3.05	3.17	0.06	-0.05	3.96	
2,450.10	0.38	303.42	2,450.04	-2.61	2.45	2.82	0.11	-0.06	12.52	
2,543.65	0.33	282.74	2,543.59	-2.38	1.93	2.54	0.15	-0.05	-22.11	
2,584.00	0.30	274.66	2,583.94	-2.34	1.71	2.49	0.13	-0.07	-20.02	
<b>9 5/8"</b>										
2,637.20	0.28	262.05	2,637.14	-2.35	1.44	2.47	0.13	-0.04	-23.71	
2,730.75	0.39	282.63	2,730.68	-2.31	0.91	2.38	0.17	0.12	22.00	
2,824.30	0.49	303.20	2,824.23	-2.02	0.26	2.04	0.20	0.11	21.99	
2,917.85	0.64	281.50	2,917.78	-1.70	-0.59	1.64	0.28	0.16	-23.20	
3,011.40	0.80	259.80	3,011.32	-1.71	-1.74	1.55	0.33	0.17	-23.20	
3,104.95	0.62	246.14	3,104.86	-2.03	-2.85	1.77	0.26	-0.19	-14.60	
3,198.50	0.44	232.48	3,198.41	-2.46	-3.59	2.13	0.23	-0.19	-14.60	
3,292.05	0.55	312.28	3,291.96	-2.37	-4.21	1.99	0.68	0.12	85.30	
3,385.60	0.66	32.07	3,385.50	-1.61	-4.26	1.23	0.83	0.12	85.29	
3,479.15	0.44	37.38	3,479.05	-0.87	-3.75	0.54	0.24	-0.24	5.68	
3,572.70	0.22	42.69	3,572.60	-0.45	-3.41	0.15	0.24	-0.24	5.68	
3,666.25	0.19	47.81	3,666.15	-0.22	-3.18	-0.06	0.04	-0.03	5.47	
3,759.80	0.17	52.93	3,759.70	-0.03	-2.95	-0.23	0.03	-0.02	5.47	
3,853.35	0.17	17.84	3,853.25	0.19	-2.80	-0.43	0.11	0.00	-37.51	
3,946.90	0.17	344.74	3,946.79	0.45	-2.79	-0.70	0.10	0.00	-35.38	
4,040.45	0.22	336.65	4,040.34	0.75	-2.90	-1.00	0.06	0.05	-8.65	
4,134.00	0.26	326.56	4,133.89	1.09	-3.09	-1.36	0.06	0.04	-10.79	
4,227.55	0.27	317.04	4,227.44	1.43	-3.36	-1.72	0.05	0.01	-10.18	

# LEAM Drilling Systems LLC

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<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single 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)	
4,321.10	0.28	303.52	4,320.99	1.72	-3.70	-2.04	0.07	0.01	-14.45	
4,369.00	0.18	260.18	4,368.89	1.77	-3.87	-2.10	0.40	-0.21	-90.48	
4,433.00	4.75	122.19	4,432.82	0.34	-1.72	-0.49	7.63	7.14	-215.61	
4,464.00	6.68	165.43	4,463.68	-2.09	-0.18	2.07	14.75	6.23	139.48	
4,496.00	8.09	178.97	4,495.41	-6.14	0.33	6.15	6.97	4.41	42.31	
4,528.00	10.02	176.15	4,527.01	-11.17	0.55	11.18	6.19	6.03	-8.81	
4,560.00	12.31	175.63	4,558.41	-17.35	1.00	17.37	7.16	7.16	-1.63	
4,592.00	15.56	173.69	4,589.46	-25.02	1.73	25.08	10.26	10.16	-6.06	
4,624.00	19.64	172.29	4,619.96	-34.62	2.93	34.74	12.82	12.75	-4.38	
4,655.00	23.39	173.34	4,648.79	-45.90	4.34	46.10	12.16	12.10	3.39	
4,687.00	26.73	171.58	4,677.78	-59.33	6.13	59.64	10.69	10.44	-5.50	
4,718.00	30.25	170.71	4,705.02	-73.94	8.41	74.39	11.43	11.35	-2.81	
4,751.00	33.06	168.95	4,733.10	-90.98	11.48	91.64	8.96	8.52	-5.33	
4,782.00	36.23	166.66	4,758.61	-108.20	15.22	109.12	11.05	10.23	-7.39	
4,814.00	40.19	165.96	4,783.75	-127.42	19.90	128.68	12.45	12.38	-2.19	
4,846.00	44.05	165.43	4,807.48	-148.21	25.21	149.86	12.11	12.06	-1.66	
4,878.00	47.66	165.26	4,829.76	-170.43	31.02	172.50	11.29	11.28	-0.53	
4,910.00	51.18	164.55	4,850.57	-193.89	37.35	196.43	11.13	11.00	-2.22	
4,942.00	54.43	164.73	4,869.92	-218.46	44.10	221.50	10.17	10.16	0.56	
4,973.00	57.68	163.85	4,887.22	-243.22	51.07	246.77	10.74	10.48	-2.84	
5,005.00	60.94	164.55	4,903.55	-269.69	58.56	273.81	10.36	10.19	2.19	
5,037.00	63.93	164.55	4,918.36	-297.03	66.11	301.71	9.34	9.34	0.00	
5,068.00	66.65	164.73	4,931.32	-324.18	73.57	329.41	8.79	8.77	0.58	
5,097.66	69.43	165.57	4,942.41	-350.77	80.62	356.52	9.75	9.39	2.84	
<b>HL Crossing: 5097' MD, 4942' TVD</b>										
5,099.00	69.56	165.61	4,942.88	-351.99	80.93	357.76	9.75	9.39	2.78	
5,131.00	72.11	166.84	4,953.38	-381.34	88.12	387.63	8.76	7.97	3.84	
5,163.00	74.30	168.60	4,962.63	-411.27	94.64	418.02	8.63	6.84	5.50	
5,195.00	77.03	170.35	4,970.55	-441.75	100.30	448.88	10.04	8.53	5.47	
5,227.00	80.72	171.23	4,976.72	-472.74	105.32	480.19	11.84	11.53	2.75	
5,259.00	84.33	172.29	4,980.89	-504.13	109.86	511.87	11.75	11.28	3.31	
5,291.00	88.11	172.64	4,983.00	-535.78	114.05	543.76	11.86	11.81	1.09	
5,309.00	89.43	172.29	4,983.38	-553.62	116.41	561.74	7.59	7.33	-1.94	
5,310.23	89.45	172.26	4,983.40	-554.84	116.58	562.97	2.90	1.52	-2.47	
<b>LP(LTDS 4H)</b>										
5,373.00	90.40	170.71	4,983.48	-616.92	125.87	625.62	2.90	1.52	-2.47	
5,468.00	88.72	169.83	4,984.21	-710.54	141.92	720.30	2.00	-1.77	-0.93	
5,562.00	89.52	169.65	4,985.65	-803.03	158.66	813.90	0.87	0.85	-0.19	
5,655.00	89.52	169.83	4,986.43	-894.54	175.23	906.52	0.19	0.00	0.19	
5,751.00	88.20	167.72	4,988.34	-988.68	193.91	1,001.94	2.59	-1.38	-2.20	
5,846.00	87.32	168.07	4,992.05	-1,081.49	213.82	1,096.15	1.00	-0.93	0.37	
5,939.00	89.52	169.30	4,994.62	-1,172.64	232.06	1,188.55	2.71	2.37	1.32	
6,034.00	91.54	171.76	4,993.74	-1,266.33	247.68	1,283.26	3.35	2.13	2.59	

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Survey										
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6,125.00	91.63	175.45	4,991.22	-1,356.71	257.81	1,374.18	4.05	0.10	4.05	
6,218.00	91.54	173.34	4,988.65	-1,449.23	266.89	1,467.14	2.27	-0.10	-2.27	
6,311.00	91.45	173.17	4,986.22	-1,541.55	277.81	1,560.07	0.21	-0.10	-0.18	
6,404.00	90.04	172.64	4,985.01	-1,633.83	289.30	1,653.00	1.62	-1.52	-0.57	
6,497.00	88.90	170.88	4,985.87	-1,725.86	302.63	1,745.85	2.25	-1.23	-1.89	
6,590.00	88.29	171.58	4,988.15	-1,817.75	316.80	1,838.62	1.00	-0.66	0.75	
6,684.00	88.29	174.04	4,990.96	-1,910.96	328.56	1,932.51	2.62	0.00	2.62	
6,780.00	90.31	176.68	4,992.13	-2,006.62	336.32	2,028.49	3.46	2.10	2.75	
6,875.00	92.86	179.14	4,989.50	-2,101.51	339.79	2,123.31	3.73	2.68	2.59	
6,971.00	93.47	179.67	4,984.20	-2,197.36	340.78	2,218.87	0.84	0.64	0.55	
7,065.00	92.07	179.67	4,979.66	-2,291.24	341.32	2,312.43	1.49	-1.49	0.00	
7,161.00	91.01	179.67	4,977.08	-2,387.21	341.88	2,408.07	1.10	-1.10	0.00	
7,256.00	89.43	177.03	4,976.72	-2,482.15	344.61	2,502.89	3.24	-1.66	-2.78	
7,350.00	89.43	176.68	4,977.65	-2,576.01	349.77	2,596.83	0.37	0.00	-0.37	
7,445.00	89.52	177.21	4,978.52	-2,670.87	354.83	2,691.77	0.57	0.09	0.56	
7,541.00	88.90	177.91	4,979.85	-2,766.77	358.92	2,787.66	0.97	-0.65	0.73	
7,636.00	89.52	178.79	4,981.16	-2,861.72	361.65	2,882.48	1.13	0.65	0.93	
7,730.00	88.64	178.44	4,982.66	-2,955.68	363.92	2,976.27	1.01	-0.94	-0.37	
7,825.00	89.25	176.86	4,984.41	-3,050.58	367.82	3,071.14	1.78	0.64	-1.66	
7,920.00	89.34	176.51	4,985.58	-3,145.41	373.31	3,166.09	0.38	0.09	-0.37	
8,014.00	88.55	177.38	4,987.31	-3,239.26	378.32	3,260.02	1.25	-0.84	0.93	
8,109.00	88.99	179.85	4,989.35	-3,334.21	380.62	3,354.79	2.64	0.46	2.60	
8,204.00	90.48	182.13	4,989.79	-3,429.18	378.97	3,449.25	2.87	1.57	2.40	
8,297.00	90.57	183.36	4,988.94	-3,522.07	374.52	3,541.38	1.33	0.10	1.32	
8,393.00	90.48	183.36	4,988.06	-3,617.90	368.89	3,636.34	0.09	-0.09	0.00	
8,488.00	88.81	181.25	4,988.65	-3,712.81	365.07	3,730.55	2.83	-1.76	-2.22	
8,583.00	87.41	178.79	4,991.78	-3,807.75	365.04	3,825.11	2.98	-1.47	-2.59	
8,678.00	88.02	177.91	4,995.57	-3,902.64	367.77	3,919.87	1.13	0.64	-0.93	
8,773.00	89.69	178.26	4,997.47	-3,997.56	370.95	4,014.70	1.80	1.76	0.37	
8,868.00	90.66	178.44	4,997.18	-4,092.52	373.68	4,109.53	1.04	1.02	0.19	
8,963.00	91.71	178.62	4,995.21	-4,187.47	376.12	4,204.32	1.12	1.11	0.19	
9,057.00	91.10	177.21	4,992.91	-4,281.37	379.54	4,298.16	1.63	-0.65	-1.50	
9,152.00	91.45	177.91	4,990.80	-4,376.26	383.58	4,393.04	0.82	0.37	0.74	
9,246.00	91.63	177.91	4,988.27	-4,470.17	387.01	4,486.88	0.19	0.19	0.00	
9,341.00	91.63	177.91	4,985.57	-4,565.06	390.47	4,581.71	0.00	0.00	0.00	
9,435.00	91.71	177.91	4,982.83	-4,658.96	393.90	4,675.54	0.09	0.09	0.00	
9,518.00	91.54	177.91	4,980.47	-4,741.87	396.92	4,758.40	0.20	-0.20	0.00	
9,570.83	91.54	177.91	4,979.05	-4,794.64	398.85	4,811.13	0.00	0.00	0.00	
<b>PBHL(LTDS 4H)</b>										
9,572.00	91.54	177.91	4,979.02	-4,795.82	398.89	4,812.31	0.00	0.00	0.00	

# LEAM Drilling Systems LLC

## Survey Report

<b>Company:</b>	DEVON ENERGY	<b>Local Co-ordinate Reference:</b>	Well 4H
<b>Project:</b>	Eddy County, NM (NAD-83)	<b>TVD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b>	Lone Tree Draw "13" State	<b>MD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b>	4H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL(LTDS 4H) - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	541,019.24	600,275.23	32° 29' 13.843 N	104° 8' 31.873 W
BHL(LTDS 4H) - actual wellpath hits target center - Point	0.00	0.00	4,979.02	-4,795.82	398.89	536,223.42	600,674.12	32° 28' 26.379 N	104° 8' 27.316 W
PBHL(LTDS 4H) - actual wellpath misses target center by 26.36usft at 9570.83usft MD (4979.05 TVD, -4794.64 N, 398.85 E) - Point	0.00	0.00	4,982.00	-4,793.77	425.03	536,225.47	600,700.27	32° 28' 26.399 N	104° 8' 27.011 W
LP(LTDS 4H) - actual wellpath misses target center by 25.02usft at 5309.91usft MD (4983.39 TVD, -554.52 N, 116.53 E) - Point	0.00	0.00	4,985.00	-551.15	141.27	540,468.09	600,416.51	32° 29' 8.387 N	104° 8' 30.235 W

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
345.00	344.99	13 3/8"	13-3/8	17-1/2		
2,584.00	2,583.94	9 5/8"	9-5/8	12-1/4		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,097.66	4,942.41	-350.77	80.62	HL Crossing: 5097' MD, 4942' TVD	

Checked By: _____	Approved By: _____	Date: _____
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# LEAM Drilling Systems LLC

## Survey Report - Geographic

<b>Company:</b> DEVON ENERGY	<b>Local Co-ordinate Reference:</b> Well 4H
<b>Project:</b> Eddy County, NM (NAD-83)	<b>TVD Reference:</b> GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b> Lone Tree Draw "13" State	<b>MD Reference:</b> GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b> 4H	<b>North Reference:</b> Grid
<b>Wellbore:</b> OH	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> OH	<b>Database:</b> EDM 5000.1 Single User Db

<b>Project</b> Eddy County, NM (NAD-83)		
<b>Map System:</b> US State Plane 1983	<b>System Datum:</b> Mean Sea Level	
<b>Geo Datum:</b> North American Datum 1983		
<b>Map Zone:</b> New Mexico Eastern Zone		

<b>Site</b> Lone Tree Draw "13" State					
<b>Site Position:</b>		<b>Northing:</b>	541,005.87 usft	<b>Latitude:</b>	32° 29' 13.750 N
<b>From:</b> Map		<b>Easting:</b>	598,047.12 usft	<b>Longitude:</b>	104° 8' 57.887 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.10 °

<b>Well</b> 4H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	541,019.24 usft	<b>Latitude:</b>
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	600,275.23 usft	<b>Longitude:</b>
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>
					3,177.00 usft

<b>Wellbore</b> OH					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/22/12	7.68	60.30	48,561

<b>Design</b> OH					
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	4,321.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	174.93	

<b>Survey Program</b> Date 01/02/13					
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
17.80	4,321.00	Survey #1 (Pilot)	NS-GYRO-MS	North sensing gyrocompassing m/s	
4,369.00	9,518.00	Survey #1 (OH)	LEAM MWD	MWD - Standard	
9,572.00	9,572.00	Survey #2 (OH)	Project	Projection	

<b>Survey</b>										
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	541,019.24	600,275.23	32° 29' 13.843 N	104° 8' 31.873 W	
<b>SHL(LTDS 4H)</b>										
17.80	0.46	35.04	17.80	0.06	0.04	541,019.30	600,275.27	32° 29' 13.844 N	104° 8' 31.872 W	
111.35	0.47	67.20	111.35	0.51	0.61	541,019.76	600,275.84	32° 29' 13.849 N	104° 8' 31.866 W	
204.90	0.49	99.36	204.89	0.60	1.36	541,019.84	600,276.59	32° 29' 13.849 N	104° 8' 31.857 W	
298.45	0.47	92.26	298.44	0.52	2.14	541,019.76	600,277.37	32° 29' 13.849 N	104° 8' 31.848 W	
345.00	0.46	88.77	344.99	0.51	2.52	541,019.76	600,277.75	32° 29' 13.849 N	104° 8' 31.843 W	
<b>13 3/8"</b>										
392.00	0.46	85.16	391.99	0.53	2.89	541,019.78	600,278.13	32° 29' 13.849 N	104° 8' 31.839 W	
485.55	0.47	97.11	485.53	0.52	3.65	541,019.76	600,278.88	32° 29' 13.849 N	104° 8' 31.830 W	

# LEAM Drilling Systems LLC

## Survey Report - Geographic

<b>Company:</b>	DEVON ENERGY	<b>Local Co-ordinate Reference:</b>	Well 4H
<b>Project:</b>	Eddy County, NM (NAD-83)	<b>TVD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b>	Lone Tree Draw "13" State	<b>MD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b>	4H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single 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
579.10	0.48	109.06	579.08	0.34	4.40	541,019.59	600,279.63	32° 29' 13.847 N	104° 8' 31.821 W
672.65	0.49	27.27	672.63	0.57	4.95	541,019.81	600,280.19	32° 29' 13.849 N	104° 8' 31.815 W
766.20	0.49	305.48	766.18	1.16	4.81	541,020.40	600,280.05	32° 29' 13.855 N	104° 8' 31.816 W
859.75	0.60	227.27	859.72	1.06	4.13	541,020.30	600,279.36	32° 29' 13.854 N	104° 8' 31.824 W
953.30	0.71	149.06	953.27	0.23	4.06	541,019.47	600,279.30	32° 29' 13.846 N	104° 8' 31.825 W
1,046.85	0.47	144.78	1,046.81	-0.58	4.58	541,018.66	600,279.82	32° 29' 13.838 N	104° 8' 31.819 W
1,140.40	0.23	140.50	1,140.36	-1.04	4.92	541,018.20	600,280.16	32° 29' 13.833 N	104° 8' 31.815 W
1,233.95	0.22	127.63	1,233.91	-1.29	5.19	541,017.95	600,280.42	32° 29' 13.831 N	104° 8' 31.812 W
1,327.50	0.20	114.76	1,327.46	-1.47	5.48	541,017.77	600,280.71	32° 29' 13.829 N	104° 8' 31.809 W
1,421.05	0.30	126.62	1,421.01	-1.69	5.82	541,017.56	600,281.05	32° 29' 13.827 N	104° 8' 31.805 W
1,514.60	0.39	138.47	1,514.56	-2.07	6.23	541,017.17	600,281.46	32° 29' 13.823 N	104° 8' 31.800 W
1,608.15	0.35	159.82	1,608.11	-2.58	6.54	541,016.66	600,281.77	32° 29' 13.818 N	104° 8' 31.796 W
1,701.70	0.31	181.16	1,701.65	-3.10	6.63	541,016.14	600,281.87	32° 29' 13.813 N	104° 8' 31.795 W
1,795.25	0.28	229.00	1,795.20	-3.50	6.45	541,015.74	600,281.69	32° 29' 13.809 N	104° 8' 31.797 W
1,888.80	0.26	276.84	1,888.75	-3.63	6.07	541,015.62	600,281.30	32° 29' 13.807 N	104° 8' 31.802 W
1,982.35	0.30	279.94	1,982.30	-3.56	5.62	541,015.68	600,280.85	32° 29' 13.808 N	104° 8' 31.807 W
2,075.90	0.35	279.63	2,075.85	-3.47	5.10	541,015.77	600,280.33	32° 29' 13.809 N	104° 8' 31.813 W
2,169.45	0.42	280.82	2,169.40	-3.36	4.48	541,015.89	600,279.71	32° 29' 13.810 N	104° 8' 31.820 W
2,263.00	0.49	288.01	2,262.94	-3.17	3.76	541,016.07	600,278.99	32° 29' 13.812 N	104° 8' 31.829 W
2,356.55	0.44	291.71	2,356.49	-2.91	3.05	541,016.33	600,278.28	32° 29' 13.815 N	104° 8' 31.837 W
2,450.10	0.38	303.42	2,450.04	-2.61	2.45	541,016.63	600,277.69	32° 29' 13.818 N	104° 8' 31.844 W
2,543.65	0.33	282.74	2,543.59	-2.38	1.93	541,016.86	600,277.17	32° 29' 13.820 N	104° 8' 31.850 W
2,584.00	0.30	274.66	2,583.94	-2.34	1.71	541,016.90	600,276.95	32° 29' 13.820 N	104° 8' 31.853 W
<b>9 5/8"</b>									
2,637.20	0.28	262.05	2,637.14	-2.35	1.44	541,016.89	600,276.68	32° 29' 13.820 N	104° 8' 31.856 W
2,730.75	0.39	282.63	2,730.68	-2.31	0.91	541,016.93	600,276.14	32° 29' 13.821 N	104° 8' 31.862 W
2,824.30	0.49	303.20	2,824.23	-2.02	0.26	541,017.22	600,275.49	32° 29' 13.823 N	104° 8' 31.870 W
2,917.85	0.64	281.50	2,917.78	-1.70	-0.59	541,017.54	600,274.65	32° 29' 13.827 N	104° 8' 31.880 W
3,011.40	0.80	259.80	3,011.32	-1.71	-1.74	541,017.53	600,273.49	32° 29' 13.827 N	104° 8' 31.893 W
3,104.95	0.62	246.14	3,104.86	-2.03	-2.85	541,017.21	600,272.39	32° 29' 13.823 N	104° 8' 31.906 W
3,198.50	0.44	232.48	3,198.41	-2.46	-3.59	541,016.79	600,271.64	32° 29' 13.819 N	104° 8' 31.915 W
3,292.05	0.55	312.28	3,291.96	-2.37	-4.21	541,016.87	600,271.02	32° 29' 13.820 N	104° 8' 31.922 W
3,385.60	0.66	32.07	3,385.50	-1.61	-4.26	541,017.63	600,270.98	32° 29' 13.828 N	104° 8' 31.922 W
3,479.15	0.44	37.38	3,479.05	-0.87	-3.75	541,018.37	600,271.48	32° 29' 13.835 N	104° 8' 31.917 W
3,572.70	0.22	42.69	3,572.60	-0.45	-3.41	541,018.79	600,271.82	32° 29' 13.839 N	104° 8' 31.913 W
3,666.25	0.19	47.81	3,666.15	-0.22	-3.18	541,019.02	600,272.06	32° 29' 13.841 N	104° 8' 31.910 W
3,759.80	0.17	52.93	3,759.70	-0.03	-2.95	541,019.21	600,272.28	32° 29' 13.843 N	104° 8' 31.907 W
3,853.35	0.17	17.84	3,853.25	0.19	-2.80	541,019.43	600,272.44	32° 29' 13.845 N	104° 8' 31.905 W
3,946.90	0.17	344.74	3,946.79	0.45	-2.79	541,019.69	600,272.44	32° 29' 13.848 N	104° 8' 31.905 W
4,040.45	0.22	336.65	4,040.34	0.75	-2.90	541,019.99	600,272.33	32° 29' 13.851 N	104° 8' 31.907 W
4,134.00	0.26	326.56	4,133.89	1.09	-3.09	541,020.33	600,272.15	32° 29' 13.854 N	104° 8' 31.909 W
4,227.55	0.27	317.04	4,227.44	1.43	-3.36	541,020.67	600,271.88	32° 29' 13.858 N	104° 8' 31.912 W
4,321.10	0.28	303.52	4,320.99	1.72	-3.70	541,020.96	600,271.54	32° 29' 13.861 N	104° 8' 31.916 W
4,369.00	0.18	260.18	4,368.89	1.77	-3.87	541,021.01	600,271.37	32° 29' 13.861 N	104° 8' 31.918 W
4,433.00	4.75	122.19	4,432.82	0.34	-1.72	541,019.58	600,273.51	32° 29' 13.847 N	104° 8' 31.893 W
4,464.00	6.68	165.43	4,463.68	-2.09	-0.18	541,017.15	600,275.05	32° 29' 13.823 N	104° 8' 31.875 W
4,496.00	8.09	178.97	4,495.41	-6.14	0.33	541,013.10	600,275.56	32° 29' 13.783 N	104° 8' 31.869 W
4,528.00	10.02	176.15	4,527.01	-11.17	0.55	541,008.07	600,275.79	32° 29' 13.733 N	104° 8' 31.866 W
4,560.00	12.31	175.63	4,558.41	-17.35	1.00	541,001.89	600,276.23	32° 29' 13.672 N	104° 8' 31.861 W
4,592.00	15.56	173.69	4,589.46	-25.02	1.73	540,994.22	600,276.97	32° 29' 13.596 N	104° 8' 31.853 W
4,624.00	19.64	172.29	4,619.96	-34.62	2.93	540,984.62	600,278.16	32° 29' 13.501 N	104° 8' 31.839 W
4,655.00	23.39	173.34	4,648.79	-45.90	4.34	540,973.34	600,279.57	32° 29' 13.389 N	104° 8' 31.823 W
4,687.00	26.73	171.58	4,677.78	-59.33	6.13	540,959.91	600,281.36	32° 29' 13.256 N	104° 8' 31.802 W
4,718.00	30.25	170.71	4,705.02	-73.94	8.41	540,945.30	600,283.65	32° 29' 13.112 N	104° 8' 31.776 W
4,751.00	33.06	168.95	4,733.10	-90.98	11.48	540,928.26	600,286.71	32° 29' 12.943 N	104° 8' 31.741 W



# LEAM Drilling Systems LLC

## Survey Report - Geographic

<b>Company:</b>	DEVON ENERGY	<b>Local Co-ordinate Reference:</b>	Well 4H
<b>Project:</b>	Eddy County, NM (NAD-83)	<b>TVD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b>	Lone Tree Draw "13" State	<b>MD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b>	4H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single 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	
4,782.00	36.23	166.66	4,758.61	-108.20	15.22	540,911.04	600,290.45	32° 29' 12.773 N	104° 8' 31.697 W	
4,814.00	40.19	165.96	4,783.75	-127.42	19.90	540,891.82	600,295.14	32° 29' 12.582 N	104° 8' 31.643 W	
4,846.00	44.05	165.43	4,807.48	-148.21	25.21	540,871.03	600,300.44	32° 29' 12.376 N	104° 8' 31.581 W	
4,878.00	47.66	165.26	4,829.76	-170.43	31.02	540,848.82	600,306.25	32° 29' 12.156 N	104° 8' 31.514 W	
4,910.00	51.18	164.55	4,850.57	-193.89	37.35	540,825.36	600,312.58	32° 29' 11.924 N	104° 8' 31.441 W	
4,942.00	54.43	164.73	4,869.92	-218.46	44.10	540,800.78	600,319.34	32° 29' 11.681 N	104° 8' 31.362 W	
4,973.00	57.68	163.85	4,887.22	-243.22	51.07	540,776.03	600,326.30	32° 29' 11.436 N	104° 8' 31.282 W	
5,005.00	60.94	164.55	4,903.55	-269.69	58.56	540,749.55	600,333.79	32° 29' 11.174 N	104° 8' 31.195 W	
5,037.00	63.93	164.55	4,918.36	-297.03	66.11	540,722.21	600,341.35	32° 29' 10.903 N	104° 8' 31.107 W	
5,068.00	66.65	164.73	4,931.32	-324.18	73.57	540,695.06	600,348.80	32° 29' 10.634 N	104° 8' 31.020 W	
5,097.66	69.43	165.57	4,942.41	-350.77	80.62	540,668.47	600,355.85	32° 29' 10.371 N	104° 8' 30.939 W	
<b>HL Crossing: 5097' MD, 4942' TVD</b>										
5,099.00	69.56	165.61	4,942.88	-351.99	80.93	540,667.26	600,356.16	32° 29' 10.359 N	104° 8' 30.935 W	
5,131.00	72.11	166.84	4,953.38	-381.34	88.12	540,637.90	600,363.36	32° 29' 10.068 N	104° 8' 30.852 W	
5,163.00	74.30	168.60	4,962.63	-411.27	94.64	540,607.97	600,369.87	32° 29' 9.772 N	104° 8' 30.776 W	
5,195.00	77.03	170.35	4,970.55	-441.75	100.30	540,577.49	600,375.53	32° 29' 9.470 N	104° 8' 30.711 W	
5,227.00	80.72	171.23	4,976.72	-472.74	105.32	540,546.50	600,380.55	32° 29' 9.164 N	104° 8' 30.653 W	
5,259.00	84.33	172.29	4,980.89	-504.13	109.86	540,515.11	600,385.10	32° 29' 8.853 N	104° 8' 30.601 W	
5,291.00	88.11	172.64	4,983.00	-535.78	114.05	540,483.46	600,389.28	32° 29' 8.540 N	104° 8' 30.552 W	
5,309.00	89.43	172.29	4,983.38	-553.62	116.41	540,465.62	600,391.64	32° 29' 8.363 N	104° 8' 30.525 W	
5,310.23	89.45	172.26	4,983.40	-554.84	116.58	540,464.40	600,391.81	32° 29' 8.351 N	104° 8' 30.523 W	
<b>LP(LTDS 4H)</b>										
5,373.00	90.40	170.71	4,983.48	-616.92	125.87	540,402.33	600,401.10	32° 29' 7.736 N	104° 8' 30.416 W	
5,468.00	88.72	169.83	4,984.21	-710.54	141.92	540,308.70	600,417.16	32° 29' 6.810 N	104° 8' 30.231 W	
5,562.00	89.52	169.65	4,985.65	-803.03	158.66	540,216.21	600,433.90	32° 29' 5.894 N	104° 8' 30.037 W	
5,655.00	89.52	169.83	4,986.43	-894.54	175.23	540,124.70	600,450.46	32° 29' 4.988 N	104° 8' 29.846 W	
5,751.00	88.20	167.72	4,988.34	-988.68	193.91	540,030.57	600,469.14	32° 29' 4.057 N	104° 8' 29.629 W	
5,846.00	87.32	168.07	4,992.05	-1,081.49	213.82	539,937.75	600,489.05	32° 29' 3.138 N	104° 8' 29.399 W	
5,939.00	89.52	169.30	4,994.62	-1,172.64	232.06	539,846.60	600,507.29	32° 29' 2.235 N	104° 8' 29.188 W	
6,034.00	91.54	171.76	4,993.74	-1,266.33	247.68	539,752.91	600,522.92	32° 29' 1.308 N	104° 8' 29.007 W	
6,125.00	91.63	175.45	4,991.22	-1,356.71	257.81	539,662.53	600,533.05	32° 29' 0.413 N	104° 8' 28.891 W	
6,218.00	91.54	173.34	4,988.65	-1,449.23	266.89	539,570.01	600,542.13	32° 28' 59.498 N	104° 8' 28.787 W	
6,311.00	91.45	173.17	4,986.22	-1,541.55	277.81	539,477.69	600,553.05	32° 28' 58.584 N	104° 8' 28.661 W	
6,404.00	90.04	172.64	4,985.01	-1,633.83	289.30	539,385.41	600,564.53	32° 28' 57.671 N	104° 8' 28.529 W	
6,497.00	88.90	170.88	4,985.87	-1,725.86	302.63	539,293.38	600,577.86	32° 28' 56.760 N	104° 8' 28.376 W	
6,590.00	88.29	171.58	4,988.15	-1,817.75	316.80	539,201.50	600,592.03	32° 28' 55.850 N	104° 8' 28.212 W	
6,684.00	88.29	174.04	4,990.96	-1,910.96	328.56	539,108.28	600,603.79	32° 28' 54.928 N	104° 8' 28.077 W	
6,780.00	90.31	176.68	4,992.13	-2,006.62	336.32	539,012.62	600,611.56	32° 28' 53.981 N	104° 8' 27.988 W	
6,875.00	92.86	179.14	4,989.50	-2,101.51	339.79	538,917.73	600,615.02	32° 28' 53.042 N	104° 8' 27.950 W	
6,971.00	93.47	179.67	4,984.20	-2,197.36	340.78	538,821.89	600,616.02	32° 28' 52.093 N	104° 8' 27.940 W	
7,065.00	92.07	179.67	4,979.66	-2,291.24	341.32	538,728.00	600,616.56	32° 28' 51.164 N	104° 8' 27.936 W	
7,161.00	91.01	179.67	4,977.08	-2,387.21	341.88	538,632.04	600,617.11	32° 28' 50.215 N	104° 8' 27.931 W	
7,256.00	89.43	177.03	4,976.72	-2,482.15	344.61	538,537.09	600,619.84	32° 28' 49.275 N	104° 8' 27.901 W	
7,350.00	89.43	176.68	4,977.65	-2,576.01	349.77	538,443.23	600,625.00	32° 28' 48.346 N	104° 8' 27.843 W	
7,445.00	89.52	177.21	4,978.52	-2,670.87	354.83	538,348.37	600,630.06	32° 28' 47.407 N	104° 8' 27.786 W	
7,541.00	88.90	177.91	4,979.85	-2,766.77	358.92	538,252.47	600,634.15	32° 28' 46.458 N	104° 8' 27.740 W	
7,636.00	89.52	178.79	4,981.16	-2,861.72	361.65	538,157.52	600,636.89	32° 28' 45.519 N	104° 8' 27.710 W	
7,730.00	88.64	178.44	4,982.66	-2,955.68	363.92	538,063.56	600,639.16	32° 28' 44.589 N	104° 8' 27.686 W	
7,825.00	89.25	176.86	4,984.41	-3,050.58	367.82	537,968.66	600,643.05	32° 28' 43.650 N	104° 8' 27.642 W	
7,920.00	89.34	176.51	4,985.58	-3,145.41	373.31	537,873.83	600,648.55	32° 28' 42.711 N	104° 8' 27.580 W	
8,014.00	88.55	177.38	4,987.31	-3,239.26	378.32	537,779.98	600,653.55	32° 28' 41.782 N	104° 8' 27.524 W	
8,109.00	88.99	179.85	4,989.35	-3,334.21	380.62	537,685.04	600,655.85	32° 28' 40.843 N	104° 8' 27.499 W	
8,204.00	90.48	182.13	4,989.79	-3,429.18	378.97	537,590.06	600,654.21	32° 28' 39.903 N	104° 8' 27.520 W	
8,297.00	90.57	183.36	4,988.94	-3,522.07	374.52	537,497.17	600,649.75	32° 28' 38.984 N	104° 8' 27.574 W	
8,393.00	90.48	183.36	4,988.06	-3,617.90	368.89	537,401.34	600,644.13	32° 28' 38.036 N	104° 8' 27.642 W	

# LEAM Drilling Systems LLC

## Survey Report - Geographic

<b>Company:</b>	DEVON ENERGY	<b>Local Co-ordinate Reference:</b>	Well 4H
<b>Project:</b>	Eddy County, NM (NAD-83)	<b>TVD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Site:</b>	Lone Tree Draw "13" State	<b>MD Reference:</b>	GE: 3177' + KB: 28' @ 3205.00usft (Cactus 105)
<b>Well:</b>	4H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single 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
8,488.00	88.81	181.25	4,988.65	-3,712.81	365.07	537,306.43	600,640.31	32° 28' 37.096 N	104° 8' 27.688 W
8,583.00	87.41	178.79	4,991.78	-3,807.75	365.04	537,211.49	600,640.27	32° 28' 36.157 N	104° 8' 27.691 W
8,678.00	88.02	177.91	4,995.57	-3,902.64	367.77	537,116.61	600,643.01	32° 28' 35.218 N	104° 8' 27.661 W
8,773.00	89.69	178.26	4,997.47	-3,997.56	370.95	537,021.68	600,646.18	32° 28' 34.279 N	104° 8' 27.626 W
8,868.00	90.66	178.44	4,997.18	-4,092.52	373.68	536,926.72	600,648.92	32° 28' 33.339 N	104° 8' 27.596 W
8,963.00	91.71	178.62	4,995.21	-4,187.47	376.12	536,831.78	600,651.35	32° 28' 32.399 N	104° 8' 27.569 W
9,057.00	91.10	177.21	4,992.91	-4,281.37	379.54	536,737.87	600,654.77	32° 28' 31.470 N	104° 8' 27.532 W
9,152.00	91.45	177.91	4,990.80	-4,376.26	383.58	536,642.98	600,658.82	32° 28' 30.531 N	104° 8' 27.486 W
9,246.00	91.63	177.91	4,988.27	-4,470.17	387.01	536,549.08	600,662.24	32° 28' 29.602 N	104° 8' 27.448 W
9,341.00	91.63	177.91	4,985.57	-4,565.06	390.47	536,454.18	600,665.71	32° 28' 28.662 N	104° 8' 27.410 W
9,435.00	91.71	177.91	4,982.83	-4,658.96	393.90	536,360.28	600,669.13	32° 28' 27.733 N	104° 8' 27.372 W
9,518.00	91.54	177.91	4,980.47	-4,741.87	396.92	536,277.37	600,672.16	32° 28' 26.913 N	104° 8' 27.338 W
9,570.83	91.54	177.91	4,979.05	-4,794.64	398.85	536,224.60	600,674.08	32° 28' 26.390 N	104° 8' 27.317 W
<b>PBHL(LTDS 4H)</b>									
9,572.00	91.54	177.91	4,979.02	-4,795.82	398.89	536,223.42	600,674.13	32° 28' 26.379 N	104° 8' 27.316 W

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL(LTDS 4H) - hit/miss target - Shape	0.00	0.00	0.00	0.00	0.00	541,019.24	600,275.23	32° 29' 13.843 N	104° 8' 31.873 W
- actual wellpath hits target center - Point									
BHL(LTDS 4H) - actual wellpath hits target center - Point	0.00	0.00	4,979.02	-4,795.82	398.89	536,223.42	600,674.12	32° 28' 26.379 N	104° 8' 27.316 W
- actual wellpath hits target center - Point									
PBHL(LTDS 4H) - actual wellpath misses target center by 26.36usft at 9570.83usft MD (4979.05 TVD, -4794.64 N, 398.85 E) - Point	0.00	0.00	4,982.00	-4,793.77	425.03	536,225.47	600,700.27	32° 28' 26.399 N	104° 8' 27.011 W
- actual wellpath misses target center by 25.02usft at 5309.91usft MD (4983.39 TVD, -554.52 N, 116.53 E) - Point									
LP(LTDS 4H) - actual wellpath misses target center by 25.02usft at 5309.91usft MD (4983.39 TVD, -554.52 N, 116.53 E) - Point	0.00	0.00	4,985.00	-551.15	141.27	540,468.09	600,416.51	32° 29' 8.387 N	104° 8' 30.235 W

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
345.00	344.99	13 3/8"	13-3/8	17-1/2		
2,584.00	2,583.94	9 5/8"	9-5/8	12-1/4		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,097.66	4,942.41	-350.77	80.62	HL Crossing: 5097' MD, 4942' TVD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_