

# **8 NORTH LLC**

**Weld County**

**Sec 29-T12N-R61W**

**DARLENE EAST 29N-20-11C**

**ORIGINAL WELLBORE**

**Survey: Survey #1**

## **Standard Survey Report**

**26 March, 2021**

## Survey Report

<b>Company:</b>	8 NORTH LLC	<b>Local Co-ordinate Reference:</b>	Well DARLENE EAST 29N-20-11C
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB 25' @ 5272.00usft
<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

<b>Project</b>	Weld County		
<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>	Colorado Northern Zone		

Site		Sec 29-T12N-R61W					
Site Position:		Northing:	1,599,841.88	usft	Latitude:	40.973129°N	
From:	Lat/Long	Easting:	3,348,207.53	usft	Longitude:	104.239047°W	
Position Uncertainty:	0.00	usft	Slot Radius:	13.200	in	Grid Convergence:	0.81 °

Well		DARLENE EAST 29N-20-11C				
Well Position	+N/-S	0.00 usft	Northing:	1,600,228.39 usft	Latitude:	40.974057°N
	+E/-W	0.00 usft	Easting:	3,351,591.86 usft	Longitude:	104.226773°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,247.00 usft

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	8/28/2017	7.94	67.39	52,716.58278544

<b>Design</b>	WB #1 - PATTERSON 346				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<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	8.33	

<b>Survey Program</b>	<b>Date</b>	3/26/2021			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
160.00	17,387.00	Survey #1 (ORIGINAL WELLBORE)	MWD OWSG	OWSG MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
160.00	0.62	108.03	160.00	-0.27	0.82	-0.15	0.39	0.39	0.00	
252.00	1.50	113.23	251.98	-0.90	2.40	-0.54	0.96	0.96	5.65	
343.00	2.30	119.44	342.93	-2.26	5.09	-1.50	0.91	0.88	6.82	
437.00	3.31	123.94	436.82	-4.71	8.98	-3.36	1.10	1.07	4.79	
531.00	4.60	122.44	530.59	-8.24	14.41	-6.07	1.38	1.37	-1.60	
626.00	6.81	121.12	625.11	-13.20	22.45	-9.81	2.33	2.33	-1.39	
720.00	9.01	119.84	718.21	-19.74	33.61	-14.67	2.35	2.34	-1.36	
815.00	9.90	117.73	811.92	-27.24	47.29	-20.11	1.01	0.94	-2.22	
909.00	12.11	116.23	904.19	-35.36	63.29	-25.82	2.37	2.35	-1.60	

# Survey Report

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<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB 25' @ 5272.00usft
<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,003.00	14.98	115.04	995.56	-44.86	83.15	-32.35	3.07	3.05	-1.27
1,098.00	17.81	114.24	1,086.69	-56.03	107.52	-39.87	2.99	2.98	-0.84
1,192.00	20.42	114.51	1,175.50	-68.74	135.56	-48.38	2.78	2.78	0.29
1,286.00	19.62	114.95	1,263.82	-82.20	164.79	-57.46	0.87	-0.85	0.47
1,381.00	18.38	115.43	1,353.64	-95.36	192.77	-66.43	1.32	-1.31	0.51
1,475.00	19.09	114.42	1,442.66	-108.07	220.16	-75.05	0.83	0.76	-1.07
1,561.00	17.99	115.43	1,524.20	-119.59	244.96	-82.86	1.33	-1.28	1.17
1,662.00	18.12	114.95	1,620.23	-132.91	273.28	-91.94	0.20	0.13	-0.48
1,757.00	17.10	114.73	1,710.77	-144.99	299.36	-100.11	1.08	-1.07	-0.23
1,851.00	16.70	114.51	1,800.71	-156.37	324.20	-107.77	0.43	-0.43	-0.23
1,945.00	16.70	113.94	1,890.75	-167.46	348.84	-115.17	0.17	0.00	-0.61
2,040.00	16.22	115.43	1,981.85	-178.69	373.29	-122.75	0.67	-0.51	1.57
2,134.00	16.79	113.94	2,071.98	-189.84	397.56	-130.26	0.76	0.61	-1.59
2,228.00	16.70	113.85	2,162.00	-200.81	422.32	-137.53	0.10	-0.10	-0.10
2,323.00	16.22	114.42	2,253.10	-211.81	446.89	-144.86	0.53	-0.51	0.60
2,417.00	16.22	111.73	2,343.36	-222.10	471.04	-151.54	0.80	0.00	-2.86
2,511.00	16.08	120.02	2,433.66	-233.48	494.51	-159.40	2.46	-0.15	8.82
2,605.00	15.91	118.52	2,524.03	-246.14	517.10	-168.66	0.48	-0.18	-1.60
2,700.00	15.11	117.73	2,615.57	-258.12	539.50	-177.27	0.87	-0.84	-0.83
2,794.00	15.69	124.25	2,706.20	-270.98	560.85	-186.89	1.94	0.62	6.94
2,889.00	16.70	123.94	2,797.43	-285.83	582.80	-198.41	1.07	1.06	-0.33
2,983.00	16.39	123.94	2,887.53	-300.77	605.00	-209.98	0.33	-0.33	0.00
3,078.00	16.22	119.62	2,978.72	-314.81	627.66	-220.60	1.29	-0.18	-4.55
3,172.00	15.69	119.44	3,069.09	-327.55	650.14	-229.94	0.57	-0.56	-0.19
3,267.00	17.50	116.54	3,160.14	-340.25	674.11	-239.03	2.09	1.91	-3.05
3,361.00	17.19	115.92	3,249.86	-352.63	699.24	-247.65	0.38	-0.33	-0.66
3,456.00	17.10	115.61	3,340.64	-364.81	724.46	-256.04	0.14	-0.09	-0.33
3,552.00	17.10	115.13	3,432.40	-376.90	749.97	-264.31	0.15	0.00	-0.50
3,647.00	16.79	114.73	3,523.27	-388.57	775.08	-272.23	0.35	-0.33	-0.42
3,742.00	16.62	114.24	3,614.26	-399.89	799.93	-279.83	0.23	-0.18	-0.52
3,836.00	16.48	113.72	3,704.37	-410.77	824.39	-287.05	0.22	-0.15	-0.55
3,931.00	15.69	113.32	3,795.65	-421.28	848.53	-293.95	0.84	-0.83	-0.42
4,026.00	14.58	112.53	3,887.35	-430.95	871.37	-300.21	1.19	-1.17	-0.83
4,120.00	15.82	116.14	3,978.06	-441.13	893.80	-307.03	1.66	1.32	3.84
4,214.00	14.89	115.35	4,068.71	-451.94	916.22	-314.49	1.01	-0.99	-0.84
4,309.00	14.89	114.11	4,160.52	-462.15	938.39	-321.38	0.34	0.00	-1.31
4,403.00	17.28	114.95	4,250.83	-472.98	962.07	-328.66	2.55	2.54	0.89
4,497.00	17.59	114.73	4,340.51	-484.81	987.63	-336.66	0.34	0.33	-0.23
4,592.00	17.28	113.72	4,431.15	-496.49	1,013.59	-344.46	0.46	-0.33	-1.06
4,687.00	16.48	113.23	4,522.05	-507.48	1,038.89	-351.67	0.86	-0.84	-0.52

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<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,781.00	15.91	112.22	4,612.32	-517.61	1,063.07	-358.20	0.68	-0.61	-1.07
4,876.00	15.60	114.73	4,703.76	-527.88	1,086.73	-364.93	0.79	-0.33	2.64
4,970.00	14.89	113.94	4,794.45	-538.07	1,109.24	-371.75	0.79	-0.76	-0.84
5,064.00	16.39	120.55	4,884.97	-549.71	1,131.71	-380.02	2.48	1.60	7.03
5,159.00	15.60	118.92	4,976.29	-562.70	1,154.43	-389.58	0.96	-0.83	-1.72
5,253.00	15.38	120.24	5,066.88	-575.09	1,176.26	-398.68	0.44	-0.23	1.40
5,348.00	16.79	117.42	5,158.16	-587.76	1,199.33	-407.87	1.70	1.48	-2.97
5,442.00	14.72	117.24	5,248.62	-599.48	1,222.00	-416.18	2.20	-2.20	-0.19
5,537.00	12.68	116.84	5,340.92	-609.71	1,242.04	-423.40	2.15	-2.15	-0.42
5,632.00	13.08	118.21	5,433.53	-619.50	1,260.81	-430.37	0.53	0.42	1.44
5,726.00	11.18	118.83	5,525.42	-628.92	1,278.17	-437.18	2.03	-2.02	0.66
5,821.00	9.90	117.55	5,618.82	-637.14	1,293.48	-443.10	1.37	-1.35	-1.35
5,916.00	8.62	115.61	5,712.58	-644.00	1,307.14	-447.90	1.39	-1.35	-2.04
6,010.00	7.60	111.51	5,805.64	-649.32	1,319.28	-451.41	1.25	-1.09	-4.36
6,105.00	6.81	107.72	5,899.89	-653.34	1,330.49	-453.76	0.97	-0.83	-3.99
6,200.00	4.82	114.73	5,994.39	-656.72	1,339.48	-455.81	2.22	-2.09	7.38
6,295.00	2.92	107.72	6,089.17	-659.13	1,345.41	-457.33	2.06	-2.00	-7.38
6,389.00	2.12	29.94	6,183.11	-658.35	1,348.56	-456.10	3.43	-0.85	-82.74
6,483.00	1.90	35.94	6,277.05	-655.58	1,350.34	-453.11	0.32	-0.23	6.38
6,577.00	1.81	29.33	6,371.00	-653.03	1,351.98	-450.34	0.25	-0.10	-7.03
6,671.00	1.10	356.22	6,464.97	-650.83	1,352.65	-448.07	1.14	-0.76	-35.22
6,695.00	1.02	3.05	6,488.97	-650.39	1,352.65	-447.63	0.62	-0.33	28.46
6,789.00	12.02	358.11	6,582.21	-639.74	1,352.37	-437.14	11.71	11.70	-5.26
6,883.00	23.51	358.03	6,671.58	-611.12	1,351.40	-408.96	12.22	12.22	-0.09
6,978.00	32.92	358.82	6,755.20	-566.27	1,350.21	-364.76	9.91	9.91	0.83
7,072.00	37.61	358.11	6,831.93	-512.04	1,348.74	-311.31	5.01	4.99	-0.76
7,167.00	41.89	359.44	6,904.95	-451.32	1,347.47	-251.42	4.59	4.51	1.40
7,261.00	50.99	359.44	6,969.66	-383.28	1,346.81	-184.19	9.68	9.68	0.00
7,356.00	57.58	359.74	7,025.09	-306.19	1,346.26	-107.99	6.94	6.94	0.32
7,450.00	66.02	0.93	7,069.47	-223.43	1,346.78	-26.02	9.05	8.98	1.27
7,545.00	68.32	0.32	7,106.33	-135.88	1,347.73	60.74	2.49	2.42	-0.64
7,639.00	77.82	2.52	7,133.67	-46.09	1,350.00	149.91	10.35	10.11	2.34
7,734.00	86.08	4.64	7,146.97	47.70	1,355.89	243.56	8.97	8.69	2.23
7,828.00	91.78	2.12	7,148.72	141.47	1,361.42	337.15	6.63	6.06	-2.68
7,923.00	91.12	359.52	7,146.32	236.43	1,362.78	431.30	2.82	-0.69	-2.74
8,016.00	89.40	359.35	7,145.89	329.42	1,361.87	523.18	1.86	-1.85	-0.18
8,111.00	89.79	359.04	7,146.57	424.40	1,360.53	616.97	0.52	0.41	-0.33
8,206.00	89.40	357.41	7,147.24	519.35	1,357.59	710.49	1.76	-0.41	-1.72
8,300.00	88.69	359.04	7,148.80	613.29	1,354.68	803.02	1.89	-0.76	1.73
8,395.00	89.22	357.72	7,150.54	708.23	1,351.99	896.57	1.50	0.56	-1.39

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<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB 25' @ 5272.00usft
<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,490.00	89.62	357.72	7,151.50	803.15	1,348.21	989.94	0.42	0.42	0.00
8,585.00	90.01	359.92	7,151.80	898.13	1,346.26	1,083.63	2.35	0.41	2.32
8,679.00	90.10	359.13	7,151.71	992.12	1,345.48	1,176.52	0.85	0.10	-0.84
8,774.00	90.19	358.03	7,151.47	1,087.09	1,343.12	1,270.15	1.16	0.09	-1.16
8,869.00	90.72	0.54	7,150.72	1,182.07	1,341.94	1,363.96	2.70	0.56	2.64
8,963.00	90.10	358.82	7,150.05	1,276.07	1,341.41	1,456.88	1.94	-0.66	-1.83
9,057.00	90.01	358.51	7,149.96	1,370.04	1,339.22	1,549.55	0.34	-0.10	-0.33
9,152.00	89.09	0.32	7,150.70	1,465.03	1,338.25	1,643.39	2.14	-0.97	1.91
9,246.00	89.48	0.93	7,151.88	1,559.01	1,339.28	1,736.54	0.77	0.41	0.65
9,340.00	89.22	0.32	7,152.94	1,653.00	1,340.30	1,829.68	0.71	-0.28	-0.65
9,434.00	90.59	1.33	7,153.10	1,746.99	1,341.66	1,922.88	1.81	1.46	1.07
9,529.00	90.41	1.11	7,152.27	1,841.96	1,343.68	2,017.14	0.30	-0.19	-0.23
9,624.00	89.48	359.04	7,152.36	1,936.96	1,343.80	2,111.15	2.39	-0.98	-2.18
9,718.00	90.41	0.45	7,152.45	2,030.95	1,343.39	2,204.10	1.80	0.99	1.50
9,813.00	89.79	359.13	7,152.28	2,125.95	1,343.04	2,298.04	1.54	-0.65	-1.39
9,908.00	90.72	359.74	7,151.86	2,220.94	1,342.10	2,391.90	1.17	0.98	0.64
10,002.00	90.28	359.44	7,151.04	2,314.94	1,341.43	2,484.80	0.57	-0.47	-0.32
10,097.00	91.91	0.32	7,149.23	2,409.91	1,341.23	2,578.75	1.95	1.72	0.93
10,191.00	89.40	358.03	7,148.15	2,503.88	1,339.88	2,671.53	3.61	-2.67	-2.44
10,285.00	89.62	357.41	7,148.96	2,597.81	1,336.14	2,763.92	0.70	0.23	-0.66
10,380.00	89.09	358.95	7,150.02	2,692.75	1,333.12	2,857.43	1.71	-0.56	1.62
10,475.00	89.88	0.71	7,150.88	2,787.74	1,332.84	2,951.38	2.03	0.83	1.85
10,570.00	90.41	0.54	7,150.64	2,882.73	1,333.87	3,045.52	0.59	0.56	-0.18
10,664.00	90.59	0.23	7,149.82	2,976.73	1,334.51	3,138.62	0.38	0.19	-0.33
10,759.00	91.21	359.35	7,148.33	3,071.71	1,334.16	3,232.55	1.13	0.65	-0.93
10,853.00	90.50	1.42	7,146.92	3,165.70	1,334.79	3,325.63	2.33	-0.76	2.20
11,043.00	89.70	1.02	7,146.59	3,355.65	1,338.83	3,514.17	0.47	-0.42	-0.21
11,137.00	90.41	0.71	7,146.50	3,449.64	1,340.25	3,607.37	0.82	0.76	-0.33
11,232.00	89.09	1.11	7,146.92	3,544.62	1,341.76	3,701.57	1.45	-1.39	0.42
11,327.00	89.40	0.71	7,148.17	3,639.60	1,343.27	3,795.77	0.53	0.33	-0.42
11,422.00	88.82	1.02	7,149.64	3,734.58	1,344.70	3,889.96	0.69	-0.61	0.33
11,516.00	89.00	359.92	7,151.43	3,828.56	1,345.48	3,983.05	1.19	0.19	-1.17
11,611.00	89.48	359.44	7,152.69	3,923.55	1,344.94	4,076.97	0.71	0.51	-0.51
11,705.00	89.79	359.35	7,153.29	4,017.54	1,343.95	4,169.82	0.34	0.33	-0.10
11,800.00	90.50	358.25	7,153.05	4,112.52	1,341.96	4,263.51	1.38	0.75	-1.16
11,893.00	90.01	359.44	7,152.64	4,205.50	1,340.09	4,355.24	1.38	-0.53	1.28
11,987.00	88.60	0.54	7,153.78	4,299.49	1,340.07	4,448.23	1.90	-1.50	1.17
12,082.00	88.60	359.44	7,156.10	4,394.46	1,340.06	4,542.20	1.16	0.00	-1.16
12,176.00	90.19	1.42	7,157.09	4,488.44	1,340.76	4,635.30	2.70	1.69	2.11
12,271.00	90.72	1.42	7,156.34	4,583.41	1,343.11	4,729.60	0.56	0.56	0.00

## Survey Report

<b>Company:</b>	8 NORTH LLC	<b>Local Co-ordinate Reference:</b>	Well DARLENE EAST 29N-20-11C
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB 25' @ 5272.00usft
<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,365.00	88.60	0.45	7,156.89	4,677.39	1,344.65	4,822.81	2.48	-2.26	-1.03
12,459.00	89.09	359.92	7,158.79	4,771.37	1,344.95	4,915.85	0.77	0.52	-0.56
12,553.00	90.28	0.23	7,159.30	4,865.36	1,345.08	5,008.87	1.31	1.27	0.33
12,648.00	91.30	359.61	7,157.99	4,960.35	1,344.94	5,102.84	1.26	1.07	-0.65
12,743.00	91.21	1.64	7,155.91	5,055.32	1,345.98	5,196.95	2.14	-0.09	2.14
12,837.00	89.48	1.24	7,155.35	5,149.28	1,348.34	5,290.27	1.89	-1.84	-0.43
12,932.00	89.88	0.01	7,155.88	5,244.28	1,349.38	5,384.41	1.36	0.42	-1.29
13,026.00	90.28	358.95	7,155.75	5,338.27	1,348.52	5,477.29	1.21	0.43	-1.13
13,120.00	90.72	0.71	7,154.93	5,432.26	1,348.25	5,570.25	1.93	0.47	1.87
13,215.00	90.99	0.23	7,153.51	5,527.25	1,349.02	5,664.35	0.58	0.28	-0.51
13,309.00	91.60	359.92	7,151.39	5,621.22	1,349.15	5,757.35	0.73	0.65	-0.33
13,404.00	91.52	2.04	7,148.80	5,716.17	1,350.77	5,851.53	2.23	-0.08	2.23
13,497.00	89.62	0.54	7,147.87	5,809.13	1,352.86	5,943.82	2.60	-2.04	-1.61
13,591.00	89.70	0.23	7,148.43	5,903.13	1,353.50	6,036.91	0.34	0.09	-0.33
13,685.00	90.19	0.45	7,148.52	5,997.13	1,354.05	6,130.00	0.57	0.52	0.23
13,780.00	90.50	359.21	7,147.95	6,092.12	1,353.77	6,223.96	1.35	0.33	-1.31
13,874.00	89.09	359.21	7,148.29	6,186.11	1,352.48	6,316.77	1.50	-1.50	0.00
13,968.00	89.22	358.64	7,149.67	6,280.08	1,350.71	6,409.49	0.62	0.14	-0.61
14,062.00	89.00	359.44	7,151.13	6,374.06	1,349.14	6,502.25	0.88	-0.23	0.85
14,157.00	89.79	0.01	7,152.14	6,469.05	1,348.68	6,596.17	1.03	0.83	0.60
14,251.00	89.88	0.93	7,152.41	6,563.05	1,349.45	6,689.29	0.98	0.10	0.98
14,344.00	89.79	0.23	7,152.67	6,656.04	1,350.39	6,781.44	0.76	-0.10	-0.75
14,439.00	89.40	1.02	7,153.35	6,751.03	1,351.43	6,875.58	0.93	-0.41	0.83
14,533.00	89.88	0.63	7,153.94	6,845.02	1,352.78	6,968.77	0.66	0.51	-0.41
14,627.00	90.28	0.45	7,153.80	6,939.02	1,353.67	7,061.91	0.47	0.43	-0.19
14,721.00	90.41	359.83	7,153.24	7,033.01	1,353.90	7,154.94	0.67	0.14	-0.66
14,815.00	89.88	1.64	7,153.00	7,127.00	1,355.11	7,248.12	2.01	-0.56	1.93
15,004.00	90.72	0.01	7,152.01	7,315.97	1,357.83	7,435.49	0.97	0.44	-0.86
15,192.00	89.31	1.11	7,151.96	7,503.95	1,359.66	7,621.76	0.95	-0.75	0.59
15,381.00	90.50	0.01	7,152.28	7,692.94	1,361.51	7,809.02	0.86	0.63	-0.58
15,476.00	89.31	1.11	7,152.43	7,787.93	1,362.44	7,903.14	1.71	-1.25	1.16
15,571.00	89.79	0.23	7,153.18	7,882.92	1,363.55	7,997.29	1.06	0.51	-0.93
15,665.00	90.19	359.35	7,153.20	7,976.92	1,363.21	8,090.25	1.03	0.43	-0.94
15,759.00	90.01	1.33	7,153.03	8,070.91	1,363.76	8,183.33	2.12	-0.19	2.11
15,948.00	89.40	2.12	7,154.00	8,259.82	1,369.45	8,371.07	0.53	-0.32	0.42
16,042.00	89.48	0.93	7,154.92	8,353.78	1,371.95	8,464.40	1.27	0.09	-1.27
16,137.00	90.41	359.74	7,155.01	8,448.78	1,372.51	8,558.48	1.59	0.98	-1.25
16,325.00	89.79	0.54	7,154.69	8,636.77	1,372.97	8,744.56	0.54	-0.33	0.43
16,420.00	90.81	0.54	7,154.19	8,731.77	1,373.86	8,838.68	1.07	1.07	0.00
16,514.00	88.91	1.73	7,154.42	8,825.74	1,375.73	8,931.94	2.38	-2.02	1.27

## Survey Report

<b>Company:</b>	8 NORTH LLC	<b>Local Co-ordinate Reference:</b>	Well DARLENE EAST 29N-20-11C
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB 25' @ 5272.00usft
<b>Site:</b>	Sec 29-T12N-R61W	<b>MD Reference:</b>	KB 25' @ 5272.00usft
<b>Well:</b>	DARLENE EAST 29N-20-11C	<b>North Reference:</b>	True
<b>Wellbore:</b>	ORIGINAL WELLBORE	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	WB #1 - PATTERSON 346	<b>Database:</b>	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
16,608.00	89.40	1.11	7,155.80	8,919.70	1,378.06	9,025.24	0.84	0.52	-0.66	
16,702.00	90.72	1.55	7,155.71	9,013.68	1,380.24	9,118.54	1.48	1.40	0.47	
16,798.00	88.38	4.15	7,156.46	9,109.54	1,385.01	9,214.08	3.64	-2.44	2.71	
16,892.00	88.91	2.61	7,158.68	9,203.35	1,390.55	9,307.70	1.73	0.56	-1.64	
16,986.00	89.70	3.05	7,159.82	9,297.22	1,395.19	9,401.26	0.96	0.84	0.47	
17,080.00	90.59	3.14	7,159.59	9,391.08	1,400.27	9,494.87	0.95	0.95	0.10	
17,175.00	91.52	2.43	7,157.84	9,485.95	1,404.88	9,589.41	1.23	0.98	-0.75	
17,269.00	92.49	1.33	7,154.55	9,579.84	1,407.96	9,682.75	1.56	1.03	-1.17	
LAST SURVEY @ 17269' MD										
17,387.00	92.49	1.33	7,149.42	9,697.70	1,410.70	9,799.77	0.00	0.00	0.00	
EXTRAPOLATION TO TD @ 17387' MD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
17,269.00	7,154.55	9,579.84	1,407.96	LAST SURVEY @ 17269' MD	
17,387.00	7,149.42	9,697.70	1,410.70	EXTRAPOLATION TO TD @ 17387' MD	

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