



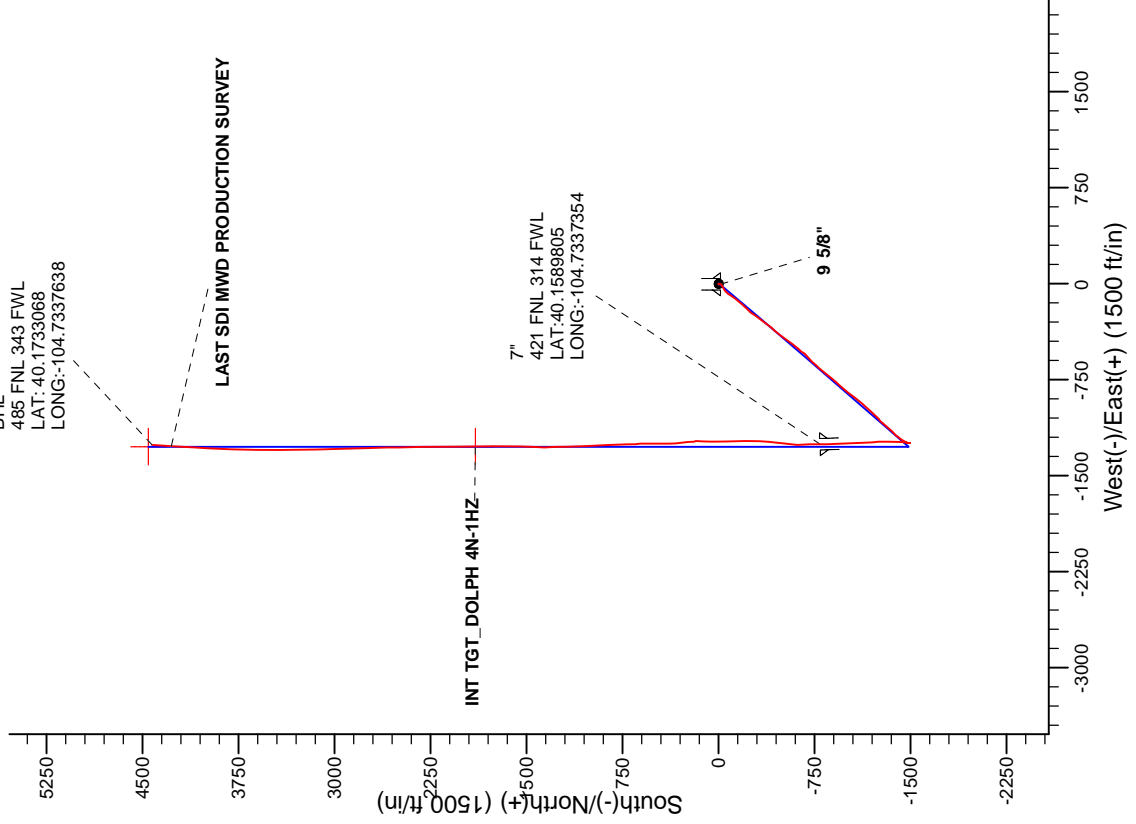
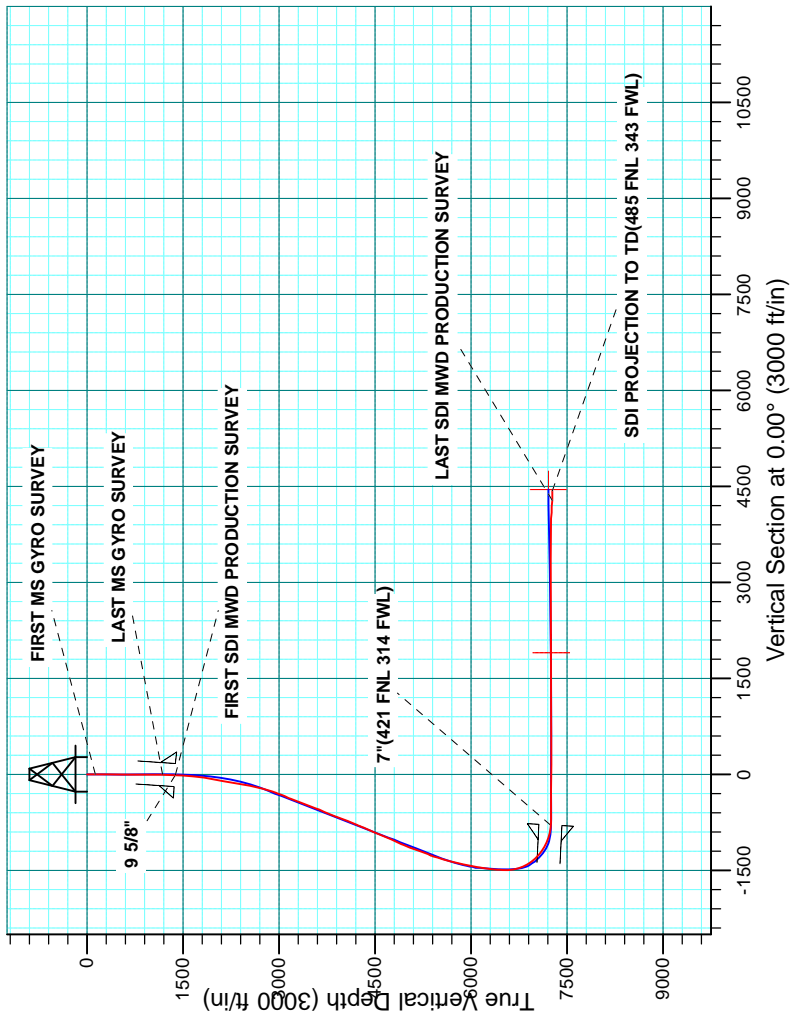
**Project:** COLORADO NORTHERN ZONE - 83  
**Site:** DOLPH 14-1HZ PAD  
**Well:** DOLPH 4N-1HZ  
**Wellbore:** OH  
**Design:** OH



WELL DETAILS: DOLPH 4N-1HZ			
GL 4899 & KB 25 @ 5024.00ft (HP 311)			
+N/S	+E/W	Northing	Longitude
0.00	0.00	1302486.27	-104.7292550
		Eastings	Latitude
		3215414.03	40.1611500

PROJECT DETAILS: COLORADO NORTHERN ZONE - 83	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	Colorado Northern Zone
Location:	SEC 1 T2N R66W
System Datum:	Mean Sea Level

CASING DETAILS	
TVD	Name
1377.84	9 5/8" 9.625
7245.27	7" 7.000





**Scientific Drilling**

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**DOLPH 14-1HZ PAD**

**DOLPH 4N-1HZ**

**OH**

**Design: OH**

## **Standard Survey Report**

**19 September, 2014**

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well DOLPH 4N-1HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Site:</b>	DOLPH 14-1HZ PAD	<b>MD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Well:</b>	DOLPH 4N-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<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		

<b>Site</b>	DOLPH 14-1HZ PAD, SEC 1 T2N R66W				
<b>Site Position:</b>		<b>Northing:</b>	1,302,486.80 usft	<b>Latitude:</b>	40.1611500
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,215,474.12 usft	<b>Longitude:</b>	-104.7290400
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b>	0.50 °

<b>Well</b>	DOLPH 4N-1HZ, 365 FSL 1569 FWL					
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,302,486.27 usft	<b>Latitude:</b>	40.1611500
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,215,414.03 usft	<b>Longitude:</b>	-104.7292550
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	0.00 ft	<b>Ground Level:</b>	4,999.00 ft

<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>
	BGGM2014	7/30/2014	8.49	66.75	52,578

<b>Design</b>	OH				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	0.00	

<b>Survey Program</b>	<b>Date</b>	9/19/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
25.00	1,182.00	Survey #1 MS GYRO SURVEY (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,381.00	13,280.00	Survey #2 SDI MWD PRODUCTION (OH)	SDI_MWD+CRUST_1.0	SDI MWD + Crustal anomaly, Version 1.0	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.48	209.28	125.00	-0.37	-0.20	-0.37	0.48	0.48	0.00	
<b>FIRST MS GYRO SURVEY</b>										
225.00	0.43	214.40	225.00	-1.04	-0.62	-1.04	0.06	-0.05	5.12	
325.00	0.49	220.71	324.99	-1.67	-1.11	-1.67	0.08	0.06	6.31	
425.00	0.59	227.67	424.99	-2.34	-1.77	-2.34	0.12	0.10	6.96	
525.00	0.51	229.80	524.98	-2.98	-2.49	-2.98	0.08	-0.08	2.13	
625.00	0.34	225.36	624.98	-3.47	-3.04	-3.47	0.17	-0.17	-4.44	
725.00	0.40	206.16	724.98	-4.00	-3.41	-4.00	0.14	0.06	-19.20	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well DOLPH 4N-1HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Site:</b>	DOLPH 14-1HZ PAD	<b>MD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Well:</b>	DOLPH 4N-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
825.00	0.40	181.84	824.98	-4.66	-3.57	-4.66	0.17	0.00	-24.32	
925.00	0.39	182.84	924.97	-5.35	-3.60	-5.35	0.01	-0.01	1.00	
1,025.00	0.29	172.64	1,024.97	-5.94	-3.59	-5.94	0.12	-0.10	-10.20	
1,125.00	0.28	135.73	1,124.97	-6.36	-3.38	-6.36	0.18	-0.01	-36.91	
1,182.00	0.30	103.34	1,181.97	-6.50	-3.14	-6.50	0.29	0.04	-56.82	
<b>LAST MS GYRO SURVEY</b>										
1,378.00	3.53	180.05	1,377.84	-12.65	-2.65	-12.65	1.77	1.65	39.14	
<b>9 5/8"</b>										
1,381.00	3.58	180.12	1,380.84	-12.83	-2.65	-12.83	1.77	1.76	2.39	
<b>FIRST SDI MWD PRODUCTION SURVEY</b>										
1,472.00	4.98	225.41	1,471.61	-18.45	-5.47	-18.45	3.89	1.54	49.77	
1,564.00	8.65	239.80	1,562.95	-24.74	-14.29	-24.74	4.37	3.99	15.64	
1,655.00	11.12	239.95	1,652.59	-32.57	-27.81	-32.57	2.71	2.71	0.16	
1,746.00	11.57	237.41	1,741.81	-41.88	-43.09	-41.88	0.74	0.49	-2.79	
1,838.00	12.23	227.34	1,831.84	-53.46	-58.03	-53.46	2.36	0.72	-10.95	
1,929.00	12.73	220.33	1,920.70	-67.63	-71.61	-67.63	1.75	0.55	-7.70	
2,020.00	13.88	216.96	2,009.25	-84.00	-84.66	-84.00	1.52	1.26	-3.70	
2,111.00	12.37	213.85	2,097.88	-100.82	-96.65	-100.82	1.83	-1.66	-3.42	
2,203.00	11.87	210.24	2,187.83	-117.17	-106.91	-117.17	0.99	-0.54	-3.92	
2,295.00	12.39	217.76	2,277.78	-133.15	-117.72	-133.15	1.81	0.57	8.17	
2,386.00	12.53	221.17	2,366.64	-148.30	-130.20	-148.30	0.82	0.15	3.75	
2,477.00	13.83	226.43	2,455.24	-163.23	-144.58	-163.23	1.94	1.43	5.78	
2,569.00	14.94	224.61	2,544.35	-179.25	-160.87	-179.25	1.30	1.21	-1.98	
2,661.00	15.32	221.75	2,633.17	-196.76	-177.29	-196.76	0.91	0.41	-3.11	
2,752.00	17.67	222.03	2,720.42	-215.99	-194.55	-215.99	2.58	2.58	0.31	
2,847.00	20.25	217.68	2,810.26	-239.72	-214.25	-239.72	3.09	2.72	-4.58	
2,941.00	23.04	216.40	2,897.62	-267.41	-235.12	-267.41	3.01	2.97	-1.36	
3,035.00	26.07	217.48	2,983.11	-298.61	-258.61	-298.61	3.26	3.22	1.15	
3,224.00	28.31	214.97	3,151.22	-368.30	-309.57	-368.30	1.33	1.19	-1.33	
3,318.00	26.41	217.35	3,234.70	-403.19	-335.03	-403.19	2.33	-2.02	2.53	
3,413.00	25.49	221.44	3,320.13	-435.31	-361.38	-435.31	2.12	-0.97	4.31	
3,507.00	27.45	220.37	3,404.27	-466.99	-388.80	-466.99	2.15	2.09	-1.14	
3,601.00	25.88	216.42	3,488.28	-500.00	-415.02	-500.00	2.52	-1.67	-4.20	
3,696.00	24.89	216.30	3,574.11	-532.80	-439.17	-532.80	1.04	-1.04	-0.13	
3,790.00	27.29	215.03	3,658.52	-566.39	-463.25	-566.39	2.62	2.55	-1.35	
3,884.00	27.82	218.18	3,741.87	-601.28	-489.18	-601.28	1.65	0.56	3.35	
4,073.00	27.00	223.47	3,909.67	-667.10	-545.97	-667.10	1.36	-0.43	2.80	
4,167.00	27.57	225.31	3,993.21	-697.88	-576.11	-697.88	1.08	0.61	1.96	
4,262.00	26.92	223.85	4,077.67	-728.85	-606.64	-728.85	0.98	-0.68	-1.54	
4,356.00	29.11	222.91	4,160.66	-760.95	-636.95	-760.95	2.38	2.33	-1.00	
4,450.00	32.29	221.53	4,241.47	-796.50	-669.18	-796.50	3.46	3.38	-1.47	
4,544.00	30.84	218.18	4,321.57	-834.24	-700.72	-834.24	2.42	-1.54	-3.56	
4,639.00	29.17	219.24	4,403.83	-871.32	-730.42	-871.32	1.84	-1.76	1.12	
4,733.00	27.34	220.85	4,486.63	-905.39	-759.03	-905.39	2.11	-1.95	1.71	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well DOLPH 4N-1HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Site:</b>	DOLPH 14-1HZ PAD	<b>MD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Well:</b>	DOLPH 4N-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,827.00	27.68	219.97	4,570.00	-938.45	-787.18	-938.45	0.56	0.36	-0.94
5,016.00	31.52	220.86	4,734.31	-1,009.49	-847.72	-1,009.49	2.04	2.03	0.47
5,110.00	30.82	217.60	4,814.74	-1,047.15	-878.49	-1,047.15	1.94	-0.74	-3.47
5,205.00	29.87	217.06	4,896.73	-1,085.31	-907.60	-1,085.31	1.04	-1.00	-0.57
5,299.00	26.78	219.84	4,979.47	-1,120.26	-935.28	-1,120.26	3.57	-3.29	2.96
5,393.00	27.34	222.61	5,063.18	-1,152.41	-963.46	-1,152.41	1.47	0.60	2.95
5,488.00	26.19	224.78	5,148.00	-1,183.35	-993.00	-1,183.35	1.59	-1.21	2.28
5,582.00	28.60	225.34	5,231.45	-1,213.89	-1,023.61	-1,213.89	2.58	2.56	0.60
5,677.00	29.35	223.82	5,314.56	-1,246.67	-1,055.91	-1,246.67	1.11	0.79	-1.60
5,771.00	23.02	220.24	5,398.88	-1,277.36	-1,083.76	-1,277.36	6.94	-6.73	-3.81
5,865.00	23.79	221.55	5,485.15	-1,305.58	-1,108.21	-1,305.58	0.99	0.82	1.39
5,960.00	23.79	221.94	5,572.07	-1,334.17	-1,133.73	-1,334.17	0.17	0.00	0.41
6,148.00	16.07	224.41	5,748.68	-1,381.03	-1,177.34	-1,381.03	4.13	-4.11	1.31
6,242.00	14.47	221.05	5,839.36	-1,399.19	-1,194.16	-1,399.19	1.94	-1.70	-3.57
6,337.00	13.64	221.16	5,931.52	-1,416.57	-1,209.33	-1,416.57	0.87	-0.87	0.12
6,431.00	12.39	211.25	6,023.11	-1,433.54	-1,221.86	-1,433.54	2.72	-1.33	-10.54
6,525.00	12.03	203.30	6,114.99	-1,451.16	-1,230.97	-1,451.16	1.83	-0.38	-8.46
6,620.00	9.02	201.52	6,208.38	-1,467.18	-1,237.61	-1,467.18	3.19	-3.17	-1.87
6,714.00	6.08	197.33	6,301.56	-1,478.79	-1,241.80	-1,478.79	3.18	-3.13	-4.46
6,808.00	4.78	202.20	6,395.14	-1,487.17	-1,244.76	-1,487.17	1.47	-1.38	5.18
6,903.00	2.15	145.83	6,489.98	-1,492.31	-1,245.26	-1,492.31	4.22	-2.77	-59.34
6,950.00	2.00	136.66	6,536.95	-1,493.64	-1,244.20	-1,493.64	0.77	-0.32	-19.51
6,997.00	1.53	45.47	6,583.93	-1,493.79	-1,243.19	-1,493.79	5.41	-1.00	-194.02
7,044.00	6.69	3.14	6,630.80	-1,490.62	-1,242.59	-1,490.62	12.03	10.98	-90.06
7,091.00	11.62	3.11	6,677.19	-1,483.15	-1,242.19	-1,483.15	10.49	10.49	-0.06
7,138.00	14.61	8.72	6,722.96	-1,472.57	-1,241.03	-1,472.57	6.91	6.36	11.94
7,185.00	18.49	6.21	6,768.00	-1,459.29	-1,239.32	-1,459.29	8.39	8.26	-5.34
7,232.00	22.92	6.67	6,811.96	-1,442.78	-1,237.45	-1,442.78	9.43	9.43	0.98
7,280.00	28.44	5.08	6,855.20	-1,422.10	-1,235.36	-1,422.10	11.59	11.50	-3.31
7,327.00	32.04	2.28	6,895.80	-1,398.49	-1,233.87	-1,398.49	8.22	7.66	-5.96
7,374.00	35.62	2.30	6,934.84	-1,372.35	-1,232.82	-1,372.35	7.62	7.62	0.04
7,421.00	39.61	1.08	6,972.06	-1,343.68	-1,231.99	-1,343.68	8.64	8.49	-2.60
7,469.00	43.96	358.19	7,007.84	-1,311.71	-1,232.23	-1,311.71	9.91	9.06	-6.02
7,516.00	47.47	356.72	7,040.66	-1,278.10	-1,233.73	-1,278.10	7.80	7.47	-3.13
7,563.00	50.85	355.32	7,071.39	-1,242.64	-1,236.21	-1,242.64	7.54	7.19	-2.98
7,610.00	53.63	356.53	7,100.17	-1,205.58	-1,238.85	-1,205.58	6.26	5.91	2.57
7,657.00	57.81	358.16	7,126.64	-1,166.80	-1,240.63	-1,166.80	9.34	8.89	3.47
7,704.00	62.38	358.16	7,150.06	-1,126.09	-1,241.94	-1,126.09	9.72	9.72	0.00
7,751.00	66.35	357.75	7,170.39	-1,083.75	-1,243.45	-1,083.75	8.48	8.45	-0.87
7,798.00	68.80	357.47	7,188.32	-1,040.34	-1,245.27	-1,040.34	5.24	5.21	-0.60
7,846.00	70.58	357.93	7,204.98	-995.37	-1,247.07	-995.37	3.82	3.71	0.96
7,893.00	74.29	357.06	7,219.16	-950.61	-1,249.03	-950.61	8.09	7.89	-1.85
7,940.00	76.10	358.63	7,231.17	-905.20	-1,250.74	-905.20	5.03	3.85	3.34

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well DOLPH 4N-1HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Site:</b>	DOLPH 14-1HZ PAD	<b>MD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Well:</b>	DOLPH 4N-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,006.00	85.26	359.59	7,241.85	-840.15	-1,251.74	-840.15	13.95	13.88	1.45	
8,056.00	86.90	359.13	7,245.27	-790.28	-1,252.30	-790.28	3.41	3.29	-0.91	
<b>7"(421 FNL 314 FWL)</b>										
8,138.00	89.60	358.39	7,247.77	-708.34	-1,254.07	-708.34	3.41	3.29	-0.91	
8,232.00	89.46	0.25	7,248.54	-614.36	-1,255.18	-614.36	1.98	-0.15	1.98	
8,326.00	89.63	5.52	7,249.28	-520.51	-1,250.45	-520.51	5.61	0.18	5.61	
8,421.00	89.63	8.19	7,249.90	-426.20	-1,239.12	-426.20	2.81	0.00	2.81	
8,609.00	89.16	358.53	7,251.89	-238.76	-1,228.11	-238.76	5.14	-0.25	-5.14	
8,704.00	89.90	359.17	7,252.67	-143.78	-1,230.02	-143.78	1.03	0.78	0.67	
8,798.00	89.39	357.02	7,253.25	-49.84	-1,233.14	-49.84	2.35	-0.54	-2.29	
8,893.00	90.67	3.78	7,253.20	45.10	-1,232.48	45.10	7.24	1.35	7.12	
8,987.00	90.30	0.07	7,252.40	139.03	-1,229.32	139.03	3.97	-0.39	-3.95	
9,082.00	89.06	353.25	7,252.94	233.81	-1,234.85	233.81	7.30	-1.31	-7.18	
9,176.00	90.10	354.80	7,253.62	327.29	-1,244.64	327.29	1.99	1.11	1.65	
9,270.00	90.67	358.88	7,252.99	421.12	-1,249.82	421.12	4.38	0.61	4.34	
9,365.00	91.44	359.85	7,251.24	516.10	-1,250.87	516.10	1.30	0.81	1.02	
9,459.00	89.90	359.42	7,250.14	610.09	-1,251.47	610.09	1.70	-1.64	-0.46	
9,553.00	89.83	358.18	7,250.37	704.07	-1,253.44	704.07	1.32	-0.07	-1.32	
9,648.00	89.43	357.68	7,250.98	799.00	-1,256.87	799.00	0.67	-0.42	-0.53	
9,742.00	89.30	357.68	7,252.02	892.92	-1,260.67	892.92	0.14	-0.14	0.00	
9,836.00	89.70	356.84	7,252.84	986.81	-1,265.17	986.81	0.99	0.43	-0.89	
9,930.00	90.47	357.76	7,252.70	1,080.70	-1,269.60	1,080.70	1.28	0.82	0.98	
10,024.00	90.97	358.02	7,251.52	1,174.63	-1,273.06	1,174.63	0.60	0.53	0.28	
10,119.00	90.84	359.34	7,250.02	1,269.59	-1,275.24	1,269.59	1.40	-0.14	1.39	
10,213.00	88.46	0.36	7,250.59	1,363.58	-1,275.49	1,363.58	2.75	-2.53	1.09	
10,307.00	87.92	1.43	7,253.56	1,457.52	-1,274.02	1,457.52	1.27	-0.57	1.14	
10,401.00	89.39	0.88	7,255.77	1,551.47	-1,272.13	1,551.47	1.67	1.56	-0.59	
10,496.00	90.64	359.97	7,255.74	1,646.47	-1,271.42	1,646.47	1.63	1.32	-0.96	
10,590.00	91.64	0.96	7,253.87	1,740.44	-1,270.66	1,740.44	1.50	1.06	1.05	
10,684.00	90.13	359.55	7,252.42	1,834.43	-1,270.24	1,834.43	2.20	-1.61	-1.50	
10,779.00	90.23	359.50	7,252.12	1,929.42	-1,271.03	1,929.42	0.12	0.11	-0.05	
10,873.00	89.73	0.09	7,252.16	2,023.42	-1,271.37	2,023.42	0.82	-0.53	0.63	
11,062.00	90.07	359.72	7,252.49	2,212.42	-1,271.68	2,212.42	0.27	0.18	-0.20	
11,156.00	89.40	358.09	7,252.92	2,306.40	-1,273.48	2,306.40	1.87	-0.71	-1.73	
11,345.00	92.31	358.37	7,250.10	2,495.27	-1,279.31	2,495.27	1.55	1.54	0.15	
11,439.00	90.80	359.21	7,247.55	2,589.21	-1,281.30	2,589.21	1.84	-1.61	0.89	
11,534.00	91.11	359.39	7,245.97	2,684.19	-1,282.46	2,684.19	0.38	0.33	0.19	
11,628.00	89.53	357.94	7,245.44	2,778.15	-1,284.65	2,778.15	2.28	-1.68	-1.54	
11,722.00	89.16	358.23	7,246.52	2,872.10	-1,287.79	2,872.10	0.50	-0.39	0.31	
11,816.00	90.07	359.61	7,247.15	2,966.07	-1,289.56	2,966.07	1.76	0.97	1.47	
11,903.00	89.83	358.93	7,247.22	3,053.07	-1,290.67	3,053.07	0.83	-0.28	-0.78	
11,997.00	89.80	358.64	7,247.53	3,147.04	-1,292.66	3,147.04	0.31	-0.03	-0.31	
12,092.00	89.83	358.89	7,247.84	3,242.02	-1,294.71	3,242.02	0.27	0.03	0.26	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well DOLPH 4N-1HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Site:</b>	DOLPH 14-1HZ PAD	<b>MD Reference:</b>	GL 4999 & KB 25 @ 5024.00ft (HP 311)
<b>Well:</b>	DOLPH 4N-1HZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Denver Sales

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,186.00	89.36	358.99	7,248.50	3,336.00	-1,296.45	3,336.00	0.51	-0.50	0.11	
12,280.00	89.66	0.19	7,249.30	3,429.99	-1,297.12	3,429.99	1.32	0.32	1.28	
12,374.00	89.09	359.41	7,250.33	3,523.99	-1,297.45	3,523.99	1.03	-0.61	-0.83	
12,469.00	88.96	359.83	7,251.95	3,618.97	-1,298.08	3,618.97	0.46	-0.14	0.44	
12,563.00	89.36	2.18	7,253.32	3,712.94	-1,296.43	3,712.94	2.54	0.43	2.50	
12,658.00	89.36	1.93	7,254.38	3,807.87	-1,293.02	3,807.87	0.26	0.00	-0.26	
12,752.00	89.03	2.73	7,255.71	3,901.79	-1,289.20	3,901.79	0.92	-0.35	0.85	
12,846.00	88.59	2.51	7,257.66	3,995.67	-1,284.91	3,995.67	0.52	-0.47	-0.23	
12,940.00	88.16	3.30	7,260.32	4,089.51	-1,280.15	4,089.51	0.96	-0.46	0.84	
13,034.00	87.58	3.68	7,263.82	4,183.27	-1,274.43	4,183.27	0.74	-0.62	0.40	
13,129.00	87.08	3.30	7,268.24	4,277.99	-1,268.65	4,277.99	0.66	-0.53	-0.40	
<b>LAST SDI MWD PRODUCTION SURVEY</b>										
13,280.00	87.08	3.30	7,275.93	4,428.54	-1,259.97	4,428.54	0.00	0.00	0.00	
<b>SDI PROJECTION TO TD(485 FNL 343 FWL)</b>										

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)		
1,378.00	1,377.84	9 5/8"	9.625	13.500		
8,056.00	7,245.27	7"(421 FNL 314 FWL)	7.000	8.750		

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
125.00	125.00	-0.37	-0.20	FIRST MS GYRO SURVEY	
1,182.00	1,181.97	-6.50	-3.14	LAST MS GYRO SURVEY	
1,381.00	1,380.84	-12.83	-2.65	FIRST SDI MWD PRODUCTION SURVEY	
13,129.00	7,268.24	4,277.99	-1,268.65	LAST SDI MWD PRODUCTION SURVEY	
13,280.00	7,275.93	4,428.54	-1,259.97	SDI PROJECTION TO TD(485 FNL 343 FWL)	

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