



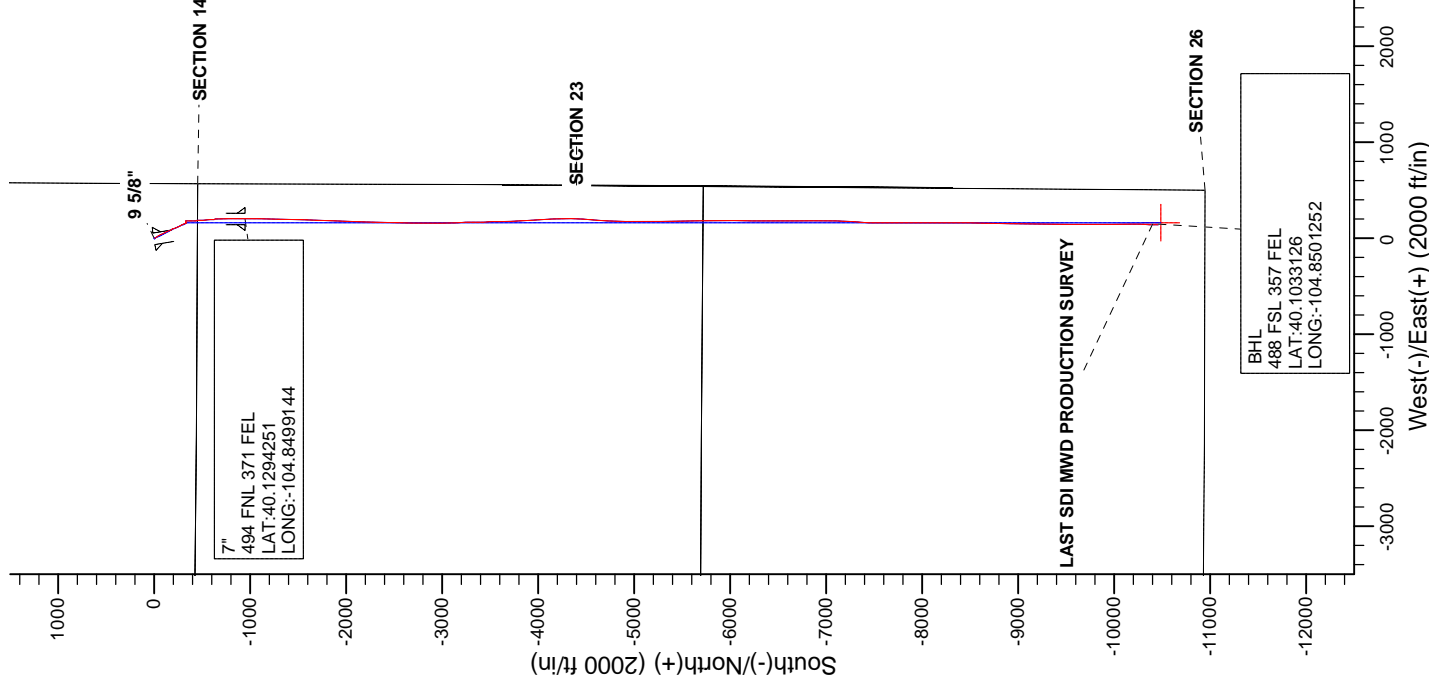
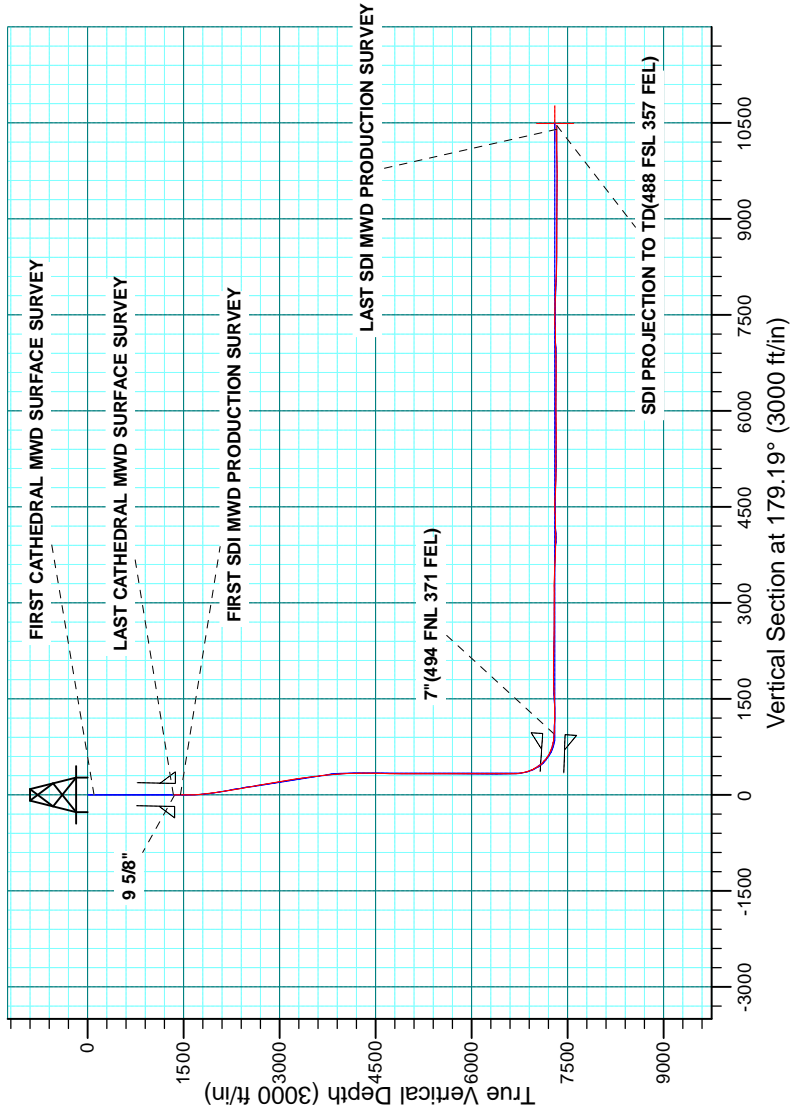
Project: COLORADO NORTHERN ZONE - 83  
Site: BARCLAY 16-14HZ PAD  
Well: BARCLAY 16N-26HZ  
Wellbore: OH  
Design: OH



WELL DETAILS: BARCLAY 16N-26HZ				
GL 4908 & KB 25 @ 4833.00ft (HP 311)				
+N/-S 0.00	+E/-W 0.00	Northing 1291606.65	Easting 3181562.24	Latitude 40.1320289 Longitude -104.8506560

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: SECTION 14 T2N R67W	
System Datum: Mean Sea Level	

CASING DETAILS		
TVD	MD	Name
1364.89	1365.00	9 5/8"
7287.67	7678.00	7"



Survey: Survey #2 SDI MWD PRODUCTION (BARCLAY 16N-26HZ/OH)
Created By: R. Scott Date: 10:39, March 31 2015

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BARCLAY 16N-26HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Site:</b>	BARCLAY 16-14HZ PAD	<b>MD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Well:</b>	BARCLAY 16N-26HZ	<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		

Site		BARCLAY 16-14HZ PAD, SECTION 14 T2N R67W			
Site Position:		Northing:	1,291,606.81 usft	Latitude:	40.1320300
From:	Lat/Long	Easting:	3,181,532.32 usft	Longitude:	-104.8507630
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.42 °

Well	BARCLAY 16N-26HZ, 451 FSL 576 FEL					
Well Position	+N/-S	0.00 ft	Northing:	1,291,606.65 usft	Latitude:	40.1320290
	+E/-W	0.00 ft	Easting:	3,181,562.24 usft	Longitude:	-104.8506560
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,908.00 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	2/25/2015	8.50	66.68	52,473

<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	179.19	

<b>Survey Program</b>	<b>Date</b>	3/31/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
19.00	1,339.00	Survey #1 CATHEDRAL MWD SURFACE	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,447.00	17,196.00	Survey #2 SDI MWD PRODUCTION (OH)	MWD+IFR	MWD + IFR correction	

<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	
19.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00	0.00	0.00	
102.00	0.20	222.20	102.00	-0.11	-0.10	0.11	0.24	0.24	0.00	
<b>FIRST CATHEDRAL MWD SURFACE SURVEY</b>										
181.00	0.40	225.30	181.00	-0.40	-0.39	0.40	0.25	0.25	3.92	
271.00	0.30	226.60	271.00	-0.79	-0.78	0.78	0.11	-0.11	1.44	
351.00	0.40	249.40	351.00	-1.03	-1.19	1.01	0.21	0.13	28.50	
431.00	0.50	239.80	430.99	-1.30	-1.76	1.28	0.16	0.13	-12.00	
511.00	0.70	174.90	510.99	-1.96	-2.02	1.94	0.83	0.25	-81.13	
591.00	1.00	148.60	590.98	-3.05	-1.61	3.02	0.61	0.38	-32.88	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BARCLAY 16N-26HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Site:</b>	BARCLAY 16-14HZ PAD	<b>MD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Well:</b>	BARCLAY 16N-26HZ	<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)
671.00	1.00	133.30	670.97	-4.12	-0.74	4.11	0.33	0.00	-19.13
751.00	0.90	109.90	750.96	-4.81	0.36	4.82	0.50	-0.13	-29.25
831.00	1.00	130.60	830.95	-5.48	1.48	5.50	0.44	0.13	25.88
911.00	0.50	47.30	910.94	-5.70	2.27	5.73	1.33	-0.63	-104.13
991.00	0.90	335.00	990.94	-4.89	2.26	4.93	1.11	0.50	-90.38
1,071.00	0.70	329.60	1,070.93	-3.90	1.75	3.93	0.27	-0.25	-6.75
1,151.00	0.80	339.50	1,150.92	-2.96	1.31	2.98	0.20	0.13	12.38
1,231.00	0.90	344.40	1,230.91	-1.83	0.94	1.84	0.15	0.13	6.13
1,311.00	1.30	352.40	1,310.90	-0.33	0.65	0.33	0.53	0.50	10.00
1,339.00	1.30	348.50	1,338.89	0.30	0.55	-0.29	0.32	0.00	-13.93
LAST CATHEDRAL MWD SURFACE SURVEY									
1,365.00	1.28	350.81	1,364.89	0.88	0.44	-0.87	0.21	-0.07	8.89
9 5/8"									
1,447.00	1.24	358.48	1,446.87	2.67	0.27	-2.67	0.21	-0.05	9.35
FIRST SDI MWD PRODUCTION SURVEY									
1,541.00	0.93	142.17	1,540.86	3.08	0.71	-3.07	2.20	-0.33	152.86
1,636.00	3.11	146.33	1,635.79	0.33	2.61	-0.29	2.30	2.29	4.38
1,730.00	5.61	146.03	1,729.51	-5.60	6.60	5.70	2.66	2.66	-0.32
1,824.00	7.65	145.29	1,822.88	-14.56	12.73	14.74	2.17	2.17	-0.79
1,918.00	9.20	148.59	1,915.86	-26.12	20.21	26.40	1.73	1.65	3.51
2,013.00	10.32	151.66	2,009.49	-40.09	28.20	40.48	1.30	1.18	3.23
2,107.00	9.46	152.60	2,102.09	-54.36	35.76	54.86	0.93	-0.91	1.00
2,201.00	9.91	152.14	2,194.75	-68.37	43.09	68.97	0.49	0.48	-0.49
2,295.00	11.97	153.21	2,287.04	-84.22	51.26	84.94	2.20	2.19	1.14
2,390.00	11.33	153.65	2,380.08	-101.38	59.85	102.22	0.68	-0.67	0.46
2,484.00	10.13	152.25	2,472.43	-116.97	67.79	117.92	1.31	-1.28	-1.49
2,578.00	10.16	158.93	2,564.97	-132.02	74.62	133.07	1.25	0.03	7.11
2,673.00	9.37	156.53	2,658.59	-146.93	80.72	148.06	0.94	-0.83	-2.53
2,767.00	10.47	157.53	2,751.18	-161.84	87.03	163.06	1.18	1.17	1.06
2,862.00	10.00	156.30	2,844.67	-177.37	93.64	178.69	0.55	-0.49	-1.29
2,956.00	11.22	157.98	2,937.06	-193.33	100.35	194.73	1.34	1.30	1.79
3,050.00	10.56	159.15	3,029.37	-209.85	106.85	211.35	0.74	-0.70	1.24
3,144.00	9.65	160.07	3,121.91	-225.31	112.60	226.89	0.98	-0.97	0.98
3,239.00	10.24	154.11	3,215.49	-240.39	119.00	242.06	1.25	0.62	-6.27
3,333.00	8.83	153.27	3,308.19	-254.35	125.89	256.11	1.51	-1.50	-0.89
3,427.00	8.03	151.22	3,401.17	-266.55	132.30	268.40	0.91	-0.85	-2.18
3,521.00	9.31	156.94	3,494.10	-279.30	138.44	281.24	1.64	1.36	6.09
3,615.00	8.26	154.99	3,586.99	-292.42	144.27	294.44	1.16	-1.12	-2.07
3,710.00	7.00	156.36	3,681.15	-303.91	149.48	306.00	1.34	-1.33	1.44
3,804.00	5.77	157.83	3,774.56	-313.53	153.56	315.68	1.32	-1.31	1.56
3,898.00	5.32	160.12	3,868.12	-322.00	156.82	324.20	0.53	-0.48	2.44
3,992.00	4.06	154.00	3,961.81	-329.09	159.76	331.33	1.44	-1.34	-6.51
4,086.00	3.55	153.51	4,055.60	-334.69	162.52	336.96	0.54	-0.54	-0.52
4,181.00	3.18	151.38	4,150.44	-339.63	165.10	341.94	0.41	-0.39	-2.24

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<b>Site:</b>	BARCLAY 16-14HZ PAD	<b>MD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Well:</b>	BARCLAY 16N-26HZ	<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)
4,275.00	1.49	176.13	4,244.36	-343.14	166.43	345.47	2.05	-1.80	26.33
4,369.00	1.41	17.51	4,338.35	-343.26	166.86	345.59	3.03	-0.09	-168.75
4,557.00	1.51	4.85	4,526.29	-338.58	167.76	340.93	0.18	0.05	-6.73
4,651.00	1.74	6.50	4,620.25	-335.93	168.03	338.28	0.25	0.24	1.76
4,746.00	1.76	34.44	4,715.21	-333.30	169.02	335.66	0.89	0.02	29.41
4,840.00	0.15	253.89	4,809.19	-332.14	169.72	334.52	2.00	-1.71	-149.52
4,934.00	0.24	222.20	4,903.19	-332.32	169.47	334.69	0.15	0.10	-33.71
5,028.00	0.17	249.74	4,997.19	-332.51	169.20	334.88	0.13	-0.07	29.30
5,122.00	0.20	261.94	5,091.19	-332.59	168.91	334.95	0.05	0.03	12.98
5,311.00	0.20	19.96	5,280.19	-332.32	168.70	334.68	0.18	0.00	62.44
5,405.00	0.34	55.66	5,374.19	-332.01	168.98	334.38	0.23	0.15	37.98
5,500.00	0.41	53.68	5,469.19	-331.65	169.49	334.02	0.07	0.07	-2.08
5,594.00	0.47	66.98	5,563.18	-331.30	170.11	333.68	0.13	0.06	14.15
5,688.00	0.75	18.29	5,657.18	-330.57	170.66	332.95	0.60	0.30	-51.80
5,782.00	0.66	45.11	5,751.17	-329.60	171.24	332.00	0.36	-0.10	28.53
5,877.00	0.64	37.99	5,846.17	-328.79	171.95	331.20	0.09	-0.02	-7.49
5,971.00	0.46	57.56	5,940.16	-328.18	172.59	330.59	0.27	-0.19	20.82
6,065.00	0.50	51.57	6,034.16	-327.72	173.23	330.15	0.07	0.04	-6.37
6,160.00	0.75	49.31	6,129.15	-327.06	174.03	329.50	0.26	0.26	-2.38
6,254.00	1.02	56.94	6,223.14	-326.20	175.20	328.65	0.31	0.29	8.12
6,348.00	1.10	71.42	6,317.12	-325.46	176.75	327.93	0.30	0.09	15.40
6,442.00	0.53	69.02	6,411.11	-325.01	178.02	327.51	0.61	-0.61	-2.55
6,537.00	0.75	85.68	6,506.11	-324.81	179.05	327.32	0.30	0.23	17.54
6,631.00	1.11	74.30	6,600.10	-324.52	180.54	327.05	0.43	0.38	-12.11
6,725.00	6.07	150.78	6,693.91	-328.61	183.84	331.19	6.29	5.28	81.36
6,819.00	10.37	174.60	6,786.95	-341.38	187.07	344.00	5.74	4.57	25.34
6,914.00	18.09	181.38	6,878.97	-364.67	187.52	367.30	8.30	8.13	7.14
7,007.00	26.71	178.99	6,964.87	-400.07	187.54	402.70	9.32	9.27	-2.57
7,101.00	35.99	175.53	7,045.07	-448.84	190.07	451.49	10.05	9.87	-3.68
7,195.00	45.16	176.68	7,116.39	-509.78	194.16	512.48	9.79	9.76	1.22
7,290.00	55.15	175.71	7,177.18	-582.46	199.04	585.23	10.54	10.52	-1.02
7,384.00	65.21	177.23	7,223.87	-663.76	204.00	666.58	10.79	10.70	1.62
7,478.00	73.02	179.46	7,257.35	-751.47	206.49	754.32	8.60	8.31	2.37
7,572.00	81.11	179.43	7,278.38	-843.00	207.38	845.86	8.61	8.61	-0.03
7,604.00	84.79	180.23	7,282.30	-874.76	207.47	877.61	11.76	11.50	2.50
7,678.00	86.89	179.92	7,287.67	-948.56	207.37	951.40	2.86	2.83	-0.41
7"(494 FNL 371 FEL)									
7,713.00	87.88	179.78	7,289.27	-983.52	207.46	986.36	2.86	2.83	-0.41
7,808.00	88.59	180.75	7,292.20	-1,078.47	207.02	1,081.30	1.26	0.75	1.02
7,902.00	89.09	180.89	7,294.10	-1,172.44	205.68	1,175.24	0.55	0.53	0.15
7,996.00	89.83	181.39	7,294.99	-1,266.42	203.81	1,269.18	0.95	0.79	0.53
8,091.00	90.17	180.73	7,294.99	-1,361.40	202.05	1,364.13	0.78	0.36	-0.69
8,185.00	91.48	180.98	7,293.63	-1,455.38	200.65	1,458.08	1.42	1.39	0.27

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<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)
8,279.00	92.22	180.81	7,290.60	-1,549.32	199.18	1,551.99	0.81	0.79	-0.18
8,373.00	91.92	181.80	7,287.20	-1,643.23	197.04	1,645.86	1.10	-0.32	1.05
8,468.00	91.75	182.27	7,284.16	-1,738.12	193.67	1,740.70	0.53	-0.18	0.49
8,562.00	91.68	182.21	7,281.35	-1,832.01	189.99	1,834.52	0.10	-0.07	-0.06
8,656.00	89.56	182.10	7,280.33	-1,925.93	186.46	1,928.38	2.26	-2.26	-0.12
8,751.00	89.60	181.94	7,281.03	-2,020.87	183.11	2,023.26	0.17	0.04	-0.17
8,845.00	89.60	182.44	7,281.68	-2,114.80	179.52	2,117.13	0.53	0.00	0.53
8,939.00	88.08	182.15	7,283.59	-2,208.70	175.76	2,210.97	1.65	-1.62	-0.31
9,033.00	89.36	182.24	7,285.69	-2,302.61	172.16	2,304.82	1.37	1.36	0.10
9,128.00	89.23	182.24	7,286.86	-2,397.53	168.44	2,399.68	0.14	-0.14	0.00
9,222.00	88.05	181.06	7,289.09	-2,491.46	165.74	2,493.56	1.78	-1.26	-1.26
9,317.00	90.20	180.61	7,290.54	-2,586.43	164.35	2,588.50	2.31	2.26	-0.47
9,411.00	90.10	180.84	7,290.29	-2,680.42	163.16	2,682.47	0.27	-0.11	0.24
9,504.00	90.20	179.75	7,290.05	-2,773.42	162.69	2,775.45	1.18	0.11	-1.17
9,599.00	90.17	179.05	7,289.74	-2,868.41	163.68	2,870.45	0.74	-0.03	-0.74
9,693.00	89.60	179.39	7,289.93	-2,962.40	164.96	2,964.45	0.71	-0.61	0.36
9,787.00	89.36	179.09	7,290.78	-3,056.39	166.21	3,058.44	0.41	-0.26	-0.32
9,881.00	88.89	179.19	7,292.22	-3,150.37	167.62	3,152.43	0.51	-0.50	0.11
9,975.00	89.36	178.87	7,293.65	-3,244.34	169.21	3,246.42	0.60	0.50	-0.34
10,070.00	89.66	178.12	7,294.47	-3,339.31	171.70	3,341.41	0.85	0.32	-0.79
10,164.00	89.87	179.44	7,294.85	-3,433.28	173.71	3,435.40	1.42	0.22	1.40
10,256.00	87.98	179.08	7,296.58	-3,525.26	174.89	3,527.38	2.09	-2.05	-0.39
10,348.00	87.95	178.79	7,299.84	-3,617.18	176.60	3,619.32	0.32	-0.03	-0.32
10,439.00	86.77	177.96	7,304.04	-3,708.05	179.18	3,710.22	1.58	-1.30	-0.91
10,531.00	86.64	176.85	7,309.32	-3,799.80	183.34	3,802.02	1.21	-0.14	-1.21
10,623.00	87.61	175.82	7,313.94	-3,891.49	189.21	3,893.79	1.54	1.05	-1.12
10,715.00	89.50	175.38	7,316.26	-3,983.19	196.27	3,985.57	2.11	2.05	-0.48
10,807.00	91.98	177.72	7,315.07	-4,075.00	201.80	4,077.45	3.71	2.70	2.54
10,898.00	91.65	177.67	7,312.19	-4,165.88	205.46	4,168.38	0.37	-0.36	-0.05
10,990.00	91.24	178.85	7,309.87	-4,257.81	208.25	4,260.33	1.36	-0.45	1.28
11,082.00	91.95	181.13	7,307.31	-4,349.76	208.27	4,352.28	2.59	0.77	2.48
11,173.00	91.58	182.43	7,304.50	-4,440.68	205.44	4,443.14	1.48	-0.41	1.43
11,265.00	90.67	184.52	7,302.70	-4,532.48	199.87	4,534.86	2.48	-0.99	2.27
11,356.00	86.84	184.44	7,304.67	-4,623.17	192.76	4,625.44	4.21	-4.21	-0.09
11,451.00	86.37	183.98	7,310.30	-4,717.74	185.80	4,719.90	0.69	-0.49	-0.48
11,545.00	88.02	181.86	7,314.90	-4,811.50	181.02	4,813.58	2.86	1.76	-2.26
11,639.00	88.59	180.73	7,317.68	-4,905.43	178.90	4,907.48	1.35	0.61	-1.20
11,733.00	91.34	180.13	7,317.74	-4,999.42	178.19	5,001.45	2.99	2.93	-0.64
11,827.00	90.54	180.38	7,316.20	-5,093.41	177.77	5,095.42	0.89	-0.85	0.27
11,922.00	90.10	180.18	7,315.67	-5,188.40	177.31	5,190.40	0.51	-0.46	-0.21
12,016.00	89.70	180.07	7,315.83	-5,282.40	177.10	5,284.38	0.44	-0.43	-0.12
12,110.00	90.54	179.25	7,315.63	-5,376.40	177.66	5,378.38	1.25	0.89	-0.87
12,204.00	89.26	177.86	7,315.80	-5,470.36	180.03	5,472.37	2.01	-1.36	-1.48

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BARCLAY 16N-26HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Site:</b>	BARCLAY 16-14HZ PAD	<b>MD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Well:</b>	BARCLAY 16N-26HZ	<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)
12,299.00	89.66	177.72	7,316.69	-5,565.29	183.70	5,567.34	0.45	0.42	-0.15
12,393.00	89.90	178.95	7,317.05	-5,659.25	186.43	5,661.32	1.33	0.26	1.31
12,487.00	90.70	179.94	7,316.56	-5,753.24	187.34	5,755.32	1.35	0.85	1.05
12,581.00	89.73	180.63	7,316.21	-5,847.24	186.87	5,849.30	1.27	-1.03	0.73
12,675.00	90.10	180.53	7,316.35	-5,941.23	185.92	5,943.27	0.41	0.39	-0.11
12,769.00	90.40	179.30	7,315.94	-6,035.23	186.06	6,037.26	1.35	0.32	-1.31
12,863.00	90.24	179.68	7,315.41	-6,129.22	186.89	6,131.26	0.44	-0.17	0.40
12,958.00	90.44	180.53	7,314.85	-6,224.22	186.72	6,226.24	0.92	0.21	0.89
13,052.00	89.40	181.41	7,314.98	-6,318.20	185.13	6,320.20	1.45	-1.11	0.94
13,146.00	88.62	180.44	7,316.60	-6,412.18	183.61	6,414.14	1.32	-0.83	-1.03
13,240.00	89.60	180.04	7,318.06	-6,506.16	183.22	6,508.11	1.13	1.04	-0.43
13,335.00	90.00	180.16	7,318.40	-6,601.16	183.05	6,603.09	0.44	0.42	0.13
13,429.00	89.53	179.69	7,318.78	-6,695.16	183.18	6,697.09	0.71	-0.50	-0.50
13,523.00	90.54	179.75	7,318.72	-6,789.16	183.63	6,791.08	1.08	1.07	0.06
13,617.00	91.01	179.38	7,317.45	-6,883.15	184.35	6,885.07	0.64	0.50	-0.39
13,711.00	91.64	179.99	7,315.28	-6,977.12	184.87	6,979.04	0.93	0.67	0.65
13,805.00	91.85	180.64	7,312.42	-7,071.07	184.35	7,072.98	0.73	0.22	0.69
13,899.00	91.34	182.57	7,309.80	-7,165.00	181.72	7,166.85	2.12	-0.54	2.05
13,993.00	92.22	183.81	7,306.88	-7,258.80	176.49	7,260.58	1.62	0.94	1.32
14,087.00	91.44	183.52	7,303.88	-7,352.56	170.48	7,354.24	0.89	-0.83	-0.31
14,181.00	89.80	181.25	7,302.86	-7,446.46	166.57	7,448.08	2.98	-1.74	-2.41
14,275.00	90.17	180.32	7,302.89	-7,540.45	165.28	7,542.04	1.06	0.39	-0.99
14,370.00	88.42	179.34	7,304.05	-7,635.44	165.57	7,637.02	2.11	-1.84	-1.03
14,464.00	87.69	180.09	7,307.24	-7,729.39	166.03	7,730.96	1.11	-0.78	0.80
14,558.00	88.56	179.79	7,310.32	-7,823.33	166.13	7,824.90	0.98	0.93	-0.32
14,653.00	87.51	179.71	7,313.58	-7,918.28	166.55	7,919.84	1.11	-1.11	-0.08
14,747.00	88.02	179.81	7,317.24	-8,012.20	166.94	8,013.77	0.55	0.54	0.11
14,842.00	88.83	180.13	7,319.85	-8,107.17	166.99	8,108.72	0.92	0.85	0.34
14,936.00	88.52	180.91	7,322.03	-8,201.14	166.14	8,202.67	0.89	-0.33	0.83
15,030.00	89.33	180.41	7,323.79	-8,295.11	165.05	8,296.62	1.01	0.86	-0.53
15,124.00	89.67	180.88	7,324.61	-8,389.10	164.00	8,390.59	0.62	0.36	0.50
15,219.00	89.87	180.73	7,324.99	-8,484.09	162.66	8,485.55	0.26	0.21	-0.16
15,313.00	89.63	180.44	7,325.40	-8,578.09	161.70	8,579.52	0.40	-0.26	-0.31
15,408.00	89.73	180.58	7,325.93	-8,673.08	160.86	8,674.49	0.18	0.11	0.15
15,502.00	89.60	180.66	7,326.48	-8,767.07	159.84	8,768.46	0.16	-0.14	0.09
15,596.00	89.80	181.32	7,326.98	-8,861.06	158.21	8,862.41	0.73	0.21	0.70
15,691.00	89.43	181.11	7,327.61	-8,956.03	156.20	8,957.35	0.45	-0.39	-0.22
15,785.00	90.17	181.75	7,327.94	-9,050.00	153.85	9,051.28	1.04	0.79	0.68
15,880.00	90.23	180.31	7,327.61	-9,144.99	152.15	9,146.22	1.52	0.06	-1.52
15,974.00	89.33	179.56	7,327.97	-9,238.98	152.25	9,240.21	1.25	-0.96	-0.80
16,069.00	88.99	180.81	7,329.36	-9,333.97	151.95	9,335.19	1.36	-0.36	1.32
16,163.00	88.76	181.14	7,331.21	-9,427.94	150.35	9,429.12	0.43	-0.24	0.35
16,257.00	89.56	180.27	7,332.59	-9,521.92	149.19	9,523.08	1.26	0.85	-0.93
16,352.00	90.54	179.33	7,332.51	-9,616.92	149.52	9,618.07	1.43	1.03	-0.99

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well BARCLAY 16N-26HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Site:</b>	BARCLAY 16-14HZ PAD	<b>MD Reference:</b>	GL 4908 & KB 25 @ 4933.00ft (HP 311)
<b>Well:</b>	BARCLAY 16N-26HZ	<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)
16,446.00	90.74	179.74	7,331.46	-9,710.91	150.29	9,712.06	0.49	0.21	0.44
16,540.00	90.97	179.52	7,330.05	-9,804.89	150.89	9,806.05	0.34	0.24	-0.23
16,635.00	90.97	180.12	7,328.44	-9,899.88	151.19	9,901.03	0.63	0.00	0.63
16,729.00	90.74	180.29	7,327.04	-9,993.87	150.85	9,995.00	0.30	-0.24	0.18
16,823.00	89.93	179.91	7,326.49	-10,087.87	150.69	10,088.99	0.95	-0.86	-0.40
16,917.00	89.13	180.15	7,327.26	-10,181.86	150.64	10,182.97	0.89	-0.85	0.26
17,010.00	88.89	180.55	7,328.87	-10,274.85	150.07	10,275.94	0.50	-0.26	0.43
17,104.00	88.39	180.43	7,331.10	-10,368.82	149.27	10,369.89	0.55	-0.53	-0.13
17,136.00	88.32	180.50	7,332.02	-10,400.80	149.01	10,401.87	0.31	-0.22	0.22
LAST SDI MWD PRODUCTION SURVEY									
17,196.00	88.32	180.50	7,333.78	-10,460.77	148.49	10,461.83	0.00	0.00	0.00
SDI PROJECTION TO TD(488 FSL 357 FEL)									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,365.00	1,364.89	9 5/8"	9.625	13.500
7,678.00	7,287.67	7"(494 FNL 371 FEL)	7.000	8.750

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
102.00	102.00	-0.11	-0.10	FIRST CATHEDRAL MWD SURFACE SURVEY
1,339.00	1,338.89	0.30	0.55	LAST CATHEDRAL MWD SURFACE SURVEY
1,447.00	1,446.87	2.67	0.27	FIRST SDI MWD PRODUCTION SURVEY
17,136.00	7,332.02	-10,400.80	149.01	LAST SDI MWD PRODUCTION SURVEY
17,196.00	7,333.78	-10,460.77	148.49	SDI PROJECTION TO TD(488 FSL 357 FEL)

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