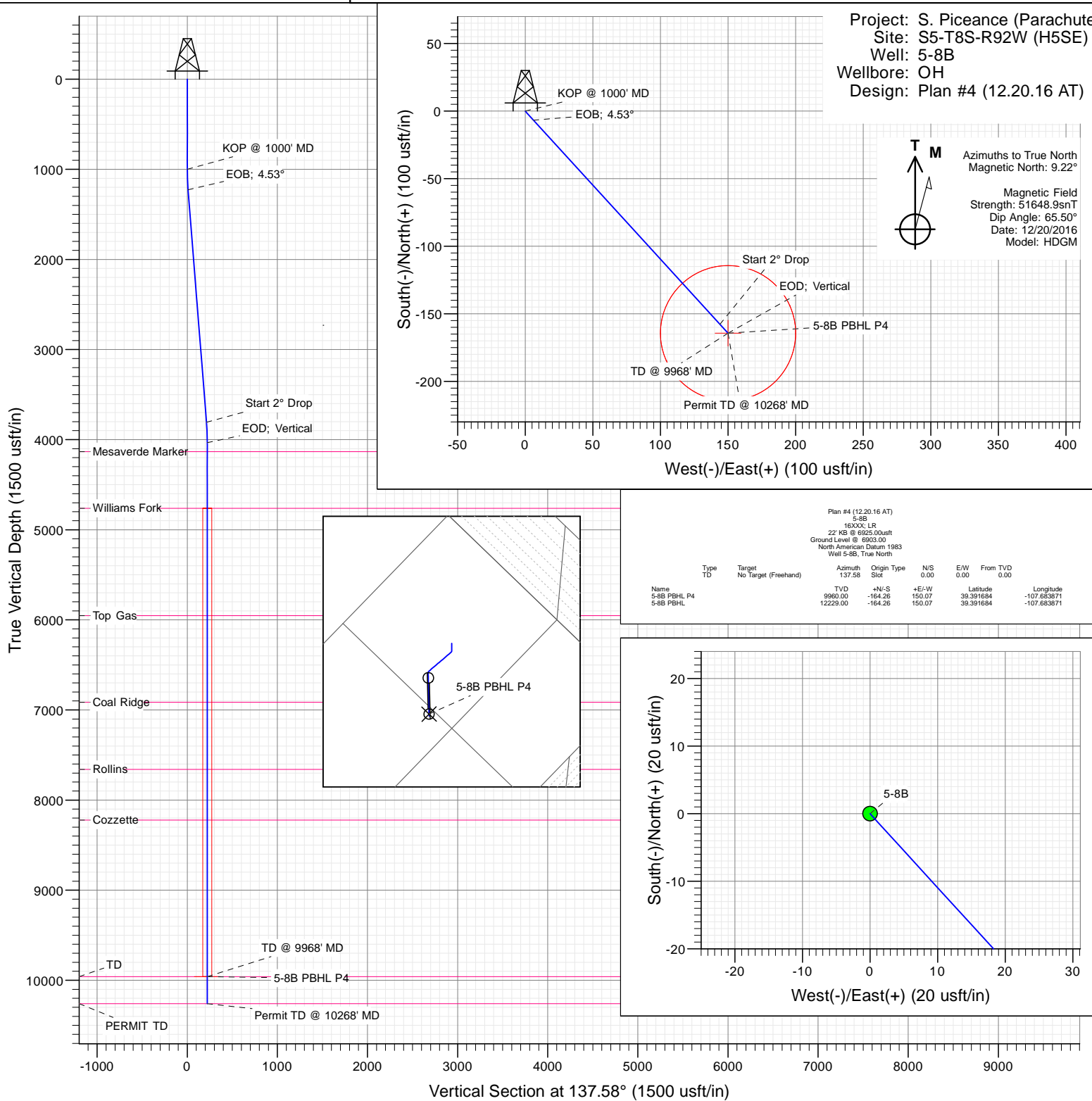




SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1226.66	4.53	137.58	1226.42	-6.62	6.04	2.00	137.58	8.96	
4	3814.91	4.53	137.58	3806.58	-157.64	144.03	0.00	0.00	213.53	
5	4041.57	0.00	0.00	4033.00	-164.26	150.07	2.00	180.00	222.49	
6	9968.57	0.00	0.00	9960.00	-164.26	150.07	0.00	0.00	222.49	
7	10268.57	0.00	0.00	10260.00	-164.26	150.07	0.00	0.00	222.49	5-8B PBHL P4



WELL DETAILS: 5-8B

+N/-S	+E/-W	Northing	Ground Level:	6903.00	Latitude	Longitude
0.00	0.00	1575137.36	Easting	2382710.56	39.392135	-107.684402





Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 5-8B
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	22' KB @ 6925.00usft
Project:	S. Piceance (Parachute)	MD Reference:	22' KB @ 6925.00usft
Site:	S5-T8S-R92W (H5SE)	North Reference:	True
Well:	5-8B	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4 (12.20.16 AT)		

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		S5-T8S-R92W (H5SE)			
Site Position:		Northing:	1,575,137.37 usft	Latitude:	39.392135
From:	Lat/Long	Easting:	2,382,710.56 usft	Longitude:	-107.684402
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.38 °

Well	5-8B					
Well Position	+N/-S	0.00 usft	Northing:	1,575,137.36 usft	Latitude:	39.392135
	+E/-W	0.00 usft	Easting:	2,382,710.56 usft	Longitude:	-107.684402
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,903.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/20/2016	9.22	65.50	51,649

Design	Plan #4 (12.20.16 AT)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	137.58

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,226.66	4.53	137.58	1,226.42	-6.62	6.04	2.00	2.00	0.00	137.58	
3,814.91	4.53	137.58	3,806.58	-157.64	144.03	0.00	0.00	0.00	0.00	
4,041.57	0.00	0.00	4,033.00	-164.26	150.07	2.00	-2.00	0.00	180.00	
9,968.57	0.00	0.00	9,960.00	-164.26	150.07	0.00	0.00	0.00	0.00	5-8B PBHL P4
10,268.57	0.00	0.00	10,260.00	-164.26	150.07	0.00	0.00	0.00	0.00	



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: S5-T8S-R92W (H5SE)
Well: 5-8B
Wellbore: OH
Design: Plan #4 (12.20.16 AT)

Local Co-ordinate Reference: Well 5-8B
TVD Reference: 22' KB @ 6925.00usft
MD Reference: 22' KB @ 6925.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	KOP @ 1000' MD
1,100.00	2.00	137.58	1,099.98	-1.29	1.18	1.75	2.00	2.00	
1,200.00	4.00	137.58	1,199.84	-5.15	4.71	6.98	2.00	2.00	
1,226.66	4.53	137.58	1,226.42	-6.62	6.04	8.96	2.00	2.00	EOB; 4.53°
1,300.00	4.53	137.58	1,299.53	-10.90	9.95	14.76	0.00	0.00	
1,400.00	4.53	137.58	1,399.22	-16.73	15.29	22.66	0.00	0.00	
1,500.00	4.53	137.58	1,498.91	-22.57	20.62	30.57	0.00	0.00	
1,600.00	4.53	137.58	1,598.60	-28.40	25.95	38.47	0.00	0.00	
1,700.00	4.53	137.58	1,698.28	-34.24	31.28	46.37	0.00	0.00	
1,800.00	4.53	137.58	1,797.97	-40.07	36.61	54.28	0.00	0.00	
1,900.00	4.53	137.58	1,897.66	-45.91	41.94	62.18	0.00	0.00	
2,000.00	4.53	137.58	1,997.34	-51.74	47.27	70.08	0.00	0.00	
2,100.00	4.53	137.58	2,097.03	-57.58	52.60	77.99	0.00	0.00	
2,200.00	4.53	137.58	2,196.72	-63.41	57.93	85.89	0.00	0.00	
2,300.00	4.53	137.58	2,296.41	-69.25	63.27	93.80	0.00	0.00	
2,400.00	4.53	137.58	2,396.09	-75.08	68.60	101.70	0.00	0.00	
2,500.00	4.53	137.58	2,495.78	-80.92	73.93	109.60	0.00	0.00	
2,600.00	4.53	137.58	2,595.47	-86.75	79.26	117.51	0.00	0.00	
2,700.00	4.53	137.58	2,695.15	-92.59	84.59	125.41	0.00	0.00	
2,800.00	4.53	137.58	2,794.84	-98.42	89.92	133.31	0.00	0.00	
2,900.00	4.53	137.58	2,894.53	-104.26	95.25	141.22	0.00	0.00	
3,000.00	4.53	137.58	2,994.22	-110.09	100.58	149.12	0.00	0.00	
3,100.00	4.53	137.58	3,093.90	-115.93	105.91	157.02	0.00	0.00	
3,200.00	4.53	137.58	3,193.59	-121.76	111.24	164.93	0.00	0.00	
3,300.00	4.53	137.58	3,293.28	-127.60	116.58	172.83	0.00	0.00	
3,400.00	4.53	137.58	3,392.96	-133.43	121.91	180.74	0.00	0.00	
3,500.00	4.53	137.58	3,492.65	-139.27	127.24	188.64	0.00	0.00	
3,600.00	4.53	137.58	3,592.34	-145.10	132.57	196.54	0.00	0.00	
3,700.00	4.53	137.58	3,692.03	-150.94	137.90	204.45	0.00	0.00	
3,800.00	4.53	137.58	3,791.71	-156.77	143.23	212.35	0.00	0.00	
3,814.91	4.53	137.58	3,806.58	-157.64	144.03	213.53	0.00	0.00	Start 2° Drop
3,900.00	2.83	137.58	3,891.49	-161.68	147.71	218.99	2.00	-2.00	
4,000.00	0.83	137.58	3,991.43	-164.04	149.87	222.19	2.00	-2.00	
4,041.57	0.00	0.00	4,033.00	-164.26	150.07	222.49	2.00	-2.00	EOD; Vertical
4,100.00	0.00	0.00	4,091.43	-164.26	150.07	222.49	0.00	0.00	
4,141.57	0.00	0.00	4,133.00	-164.26	150.07	222.49	0.00	0.00	Mesaverde Marker
4,200.00	0.00	0.00	4,191.43	-164.26	150.07	222.49	0.00	0.00	
4,300.00	0.00	0.00	4,291.43	-164.26	150.07	222.49	0.00	0.00	
4,400.00	0.00	0.00	4,391.43	-164.26	150.07	222.49	0.00	0.00	
4,500.00	0.00	0.00	4,491.43	-164.26	150.07	222.49	0.00	0.00	
4,600.00	0.00	0.00	4,591.43	-164.26	150.07	222.49	0.00	0.00	
4,700.00	0.00	0.00	4,691.43	-164.26	150.07	222.49	0.00	0.00	



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: S5-T8S-R92W (H5SE)
Well: 5-8B
Wellbore: OH
Design: Plan #4 (12.20.16 AT)

Local Co-ordinate Reference: Well 5-8B
TVD Reference: 22' KB @ 6925.00usft
MD Reference: 22' KB @ 6925.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,770.57	0.00	0.00	4,762.00	-164.26	150.07	222.49	0.00	0.00	Williams Fork
4,800.00	0.00	0.00	4,791.43	-164.26	150.07	222.49	0.00	0.00	
4,900.00	0.00	0.00	4,891.43	-164.26	150.07	222.49	0.00	0.00	
5,000.00	0.00	0.00	4,991.43	-164.26	150.07	222.49	0.00	0.00	
5,100.00	0.00	0.00	5,091.43	-164.26	150.07	222.49	0.00	0.00	
5,200.00	0.00	0.00	5,191.43	-164.26	150.07	222.49	0.00	0.00	
5,300.00	0.00	0.00	5,291.43	-164.26	150.07	222.49	0.00	0.00	
5,400.00	0.00	0.00	5,391.43	-164.26	150.07	222.49	0.00	0.00	
5,500.00	0.00	0.00	5,491.43	-164.26	150.07	222.49	0.00	0.00	
5,600.00	0.00	0.00	5,591.43	-164.26	150.07	222.49	0.00	0.00	
5,700.00	0.00	0.00	5,691.43	-164.26	150.07	222.49	0.00	0.00	
5,800.00	0.00	0.00	5,791.43	-164.26	150.07	222.49	0.00	0.00	
5,900.00	0.00	0.00	5,891.43	-164.26	150.07	222.49	0.00	0.00	
5,961.57	0.00	0.00	5,953.00	-164.26	150.07	222.49	0.00	0.00	Top Gas
6,000.00	0.00	0.00	5,991.43	-164.26	150.07	222.49	0.00	0.00	
6,100.00	0.00	0.00	6,091.43	-164.26	150.07	222.49	0.00	0.00	
6,200.00	0.00	0.00	6,191.43	-164.26	150.07	222.49	0.00	0.00	
6,300.00	0.00	0.00	6,291.43	-164.26	150.07	222.49	0.00	0.00	
6,400.00	0.00	0.00	6,391.43	-164.26	150.07	222.49	0.00	0.00	
6,500.00	0.00	0.00	6,491.43	-164.26	150.07	222.49	0.00	0.00	
6,600.00	0.00	0.00	6,591.43	-164.26	150.07	222.49	0.00	0.00	
6,700.00	0.00	0.00	6,691.43	-164.26	150.07	222.49	0.00	0.00	
6,800.00	0.00	0.00	6,791.43	-164.26	150.07	222.49	0.00	0.00	
6,900.00	0.00	0.00	6,891.43	-164.26	150.07	222.49	0.00	0.00	
6,923.57	0.00	0.00	6,915.00	-164.26	150.07	222.49	0.00	0.00	Coal Ridge
7,000.00	0.00	0.00	6,991.43	-164.26	150.07	222.49	0.00	0.00	
7,100.00	0.00	0.00	7,091.43	-164.26	150.07	222.49	0.00	0.00	
7,200.00	0.00	0.00	7,191.43	-164.26	150.07	222.49	0.00	0.00	
7,300.00	0.00	0.00	7,291.43	-164.26	150.07	222.49	0.00	0.00	
7,400.00	0.00	0.00	7,391.43	-164.26	150.07	222.49	0.00	0.00	
7,500.00	0.00	0.00	7,491.43	-164.26	150.07	222.49	0.00	0.00	
7,600.00	0.00	0.00	7,591.43	-164.26	150.07	222.49	0.00	0.00	
7,668.57	0.00	0.00	7,660.00	-164.26	150.07	222.49	0.00	0.00	
7,700.00	0.00	0.00	7,691.43	-164.26	150.07	222.49	0.00	0.00	
7,800.00	0.00	0.00	7,791.43	-164.26	150.07	222.49	0.00	0.00	
7,900.00	0.00	0.00	7,891.43	-164.26	150.07	222.49	0.00	0.00	
8,000.00	0.00	0.00	7,991.43	-164.26	150.07	222.49	0.00	0.00	
8,100.00	0.00	0.00	8,091.43	-164.26	150.07	222.49	0.00	0.00	
8,200.00	0.00	0.00	8,191.43	-164.26	150.07	222.49	0.00	0.00	
8,230.57	0.00	0.00	8,222.00	-164.26	150.07	222.49	0.00	0.00	Cozzette
8,300.00	0.00	0.00	8,291.43	-164.26	150.07	222.49	0.00	0.00	
8,400.00	0.00	0.00	8,391.43	-164.26	150.07	222.49	0.00	0.00	
8,500.00	0.00	0.00	8,491.43	-164.26	150.07	222.49	0.00	0.00	
8,600.00	0.00	0.00	8,591.43	-164.26	150.07	222.49	0.00	0.00	
8,700.00	0.00	0.00	8,691.43	-164.26	150.07	222.49	0.00	0.00	
8,800.00	0.00	0.00	8,791.43	-164.26	150.07	222.49	0.00	0.00	
8,900.00	0.00	0.00	8,891.43	-164.26	150.07	222.49	0.00	0.00	
9,000.00	0.00	0.00	8,991.43	-164.26	150.07	222.49	0.00	0.00	
9,100.00	0.00	0.00	9,091.43	-164.26	150.07	222.49	0.00	0.00	
9,200.00	0.00	0.00	9,191.43	-164.26	150.07	222.49	0.00	0.00	
9,300.00	0.00	0.00	9,291.43	-164.26	150.07	222.49	0.00	0.00	
9,400.00	0.00	0.00	9,391.43	-164.26	150.07	222.49	0.00	0.00	



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: S5-T8S-R92W (H5SE)
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Local Co-ordinate Reference: Well 5-8B
TVD Reference: 22' KB @ 6925.00usft
MD Reference: 22' KB @ 6925.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,500.00	0.00	0.00	9,491.43	-164.26	150.07	222.49	0.00	0.00	
9,600.00	0.00	0.00	9,591.43	-164.26	150.07	222.49	0.00	0.00	
9,700.00	0.00	0.00	9,691.43	-164.26	150.07	222.49	0.00	0.00	
9,800.00	0.00	0.00	9,791.43	-164.26	150.07	222.49	0.00	0.00	
9,900.00	0.00	0.00	9,891.43	-164.26	150.07	222.49	0.00	0.00	
9,968.57	0.00	0.00	9,960.00	-164.26	150.07	222.49	0.00	0.00	TD @ 9968' MD - TD
10,000.00	0.00	0.00	9,991.43	-164.26	150.07	222.49	0.00	0.00	
10,100.00	0.00	0.00	10,091.43	-164.26	150.07	222.49	0.00	0.00	
10,200.00	0.00	0.00	10,191.43	-164.26	150.07	222.49	0.00	0.00	
10,268.57	0.00	0.00	10,260.00	-164.26	150.07	222.49	0.00	0.00	Permit TD @ 10268' MD - PERMIT TD

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
5-8B PBHL - plan misses target center by 1969.00usft at 10268.57usft MD (10260.00 TVD, -164.26 N, 150.07 E) - Circle (radius 50.00)	0.00	0.00	12,229.00	-164.26	150.07	1,574,969.54	2,382,856.64	39.391684	-107.683871
5-8B PBHL P4 - plan hits target center - Circle (radius 50.00)	0.00	0.00	9,960.00	-164.26	150.07	1,574,969.54	2,382,856.64	39.391684	-107.683871

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,141.57	4,133.00	Mesaverde Marker			
4,770.57	4,762.00	Williams Fork			
5,961.57	5,953.00	Top Gas			
6,923.57	6,915.00	Coal Ridge			
7,668.57	7,660.00	Rollins			
8,230.57	8,222.00	Cozzette			
9,968.57	9,960.00	TD		0.00	
10,268.57	10,260.00	PERMIT TD		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft) +E/-W (usft)	Comment
1,000.00	1,000.00	0.00	KOP @ 1000' MD
1,226.66	1,226.42	-6.62	EOB; 4.53°
3,814.91	3,806.58	-157.64	Start 2° Drop
4,041.57	4,033.00	-164.26	EOD; Vertical
9,968.57	9,960.00	-164.26	TD @ 9968' MD
10,268.57	10,260.00	-164.26	Permit TD @ 10268' MD