

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB	Local Co-ordinate Reference: Well KUGEL 1F-18H-H267 - Slot KUGEL 1F
Company: Crestone Peak Resources	TVD Reference: 23' KB @ 4976.00usft
Project: DJ BASIN	MD Reference: 23' KB @ 4976.00usft
Site: S18-T2N-R67W (KUGEL)	North Reference: True
Well: KUGEL 1F-18H-H267	Survey Calculation Method: Minimum Curvature
Wellbore: OH	
Design: PLAN #2 (6.11)	

Project DJ BASIN		
Map System: US State Plane 1983	System Datum: Mean Sea Level	
Geo Datum: North American Datum 1983		
Map Zone: Colorado Northern Zone		

Site S18-T2N-R67W (KUGEL)				
Site Position:	Northing: 1,294,180.28 usft	Latitude: 40.139495		
From: Lat/Long	Easting: 3,160,365.72 usft	Longitude: -104.926402		
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.37 °		

Well KUGEL 1F-18H-H267 - Slot KUGEL 1F				
Well Position	+N/-S 0.00 usft	Northing: 1,294,250.50 usft	Latitude: 40.139688	
	+E/-W 0.00 usft	Easting: 3,160,349.95 usft	Longitude: -104.926457	
Position Uncertainty	0.00 usft	Wellhead Elevation: usft	Ground Level: 4,953.00 usft	

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM_FILE	4/20/2018	8.48	66.55	52,162.10000000

Design PLAN #2 (6.11)				
Audit Notes:				
Version:	Phase: PLAN	Tie On Depth: 0.00		
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	353.08

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
450.00	5.00	220.00	449.68	-8.35	-7.01	2.00	2.00	0.00	220.00	
738.10	10.52	233.08	735.06	-33.79	-36.13	2.00	1.92	4.54	24.30	
6,597.14	10.52	233.08	6,495.58	-676.55	-891.43	0.00	0.00	0.00	0.00	
7,802.02	90.00	0.63	7,283.00	36.43	-999.55	8.00	6.60	10.59	127.09	KUGEL 1F-18H-H267
15,316.84	90.00	0.63	7,283.00	7,550.81	-917.08	0.00	0.00	0.00	0.00	KUGEL 1F-18H-H267

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Project:	DJ BASIN	MD Reference:	23' KB @ 4976.00usft
Site:	S18-T2N-R67W (KUGEL)	North Reference:	True
Well:	KUGEL 1F-18H-H267	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 (6.11)		

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	2.00	220.00	299.98	-1.34	-1.12	-1.19	2.00	2.00	
400.00	4.00	220.00	399.84	-5.35	-4.49	-4.77	2.00	2.00	
450.00	5.00	220.00	449.68	-8.35	-7.01	-7.45	2.00	2.00	
500.00	5.93	223.99	499.46	-11.88	-10.20	-10.56	2.00	1.85	
600.00	7.83	229.09	598.73	-20.05	-18.94	-17.62	2.00	1.91	
700.00	9.78	232.19	697.55	-29.72	-30.79	-25.79	2.00	1.94	
738.10	10.52	233.08	735.06	-33.79	-36.13	-29.19	2.00	1.96	
800.00	10.52	233.08	795.91	-40.58	-45.17	-34.84	0.00	0.00	
900.00	10.52	233.08	894.23	-51.55	-59.76	-43.97	0.00	0.00	
1,000.00	10.52	233.08	992.55	-62.52	-74.36	-53.10	0.00	0.00	
1,100.00	10.52	233.08	1,090.87	-73.49	-88.96	-62.23	0.00	0.00	
1,200.00	10.52	233.08	1,189.19	-84.46	-103.56	-71.36	0.00	0.00	
1,300.00	10.52	233.08	1,287.51	-95.43	-118.16	-80.49	0.00	0.00	
1,400.00	10.52	233.08	1,385.82	-106.40	-132.75	-89.62	0.00	0.00	
1,500.00	10.52	233.08	1,484.14	-117.38	-147.35	-98.75	0.00	0.00	
1,600.00	10.52	233.08	1,582.46	-128.35	-161.95	-107.88	0.00	0.00	
1,700.00	10.52	233.08	1,680.78	-139.32	-176.55	-117.01	0.00	0.00	
1,800.00	10.52	233.08	1,779.10	-150.29	-191.15	-126.14	0.00	0.00	
1,900.00	10.52	233.08	1,877.42	-161.26	-205.74	-135.27	0.00	0.00	
2,000.00	10.52	233.08	1,975.74	-172.23	-220.34	-144.40	0.00	0.00	
2,100.00	10.52	233.08	2,074.05	-183.20	-234.94	-153.53	0.00	0.00	
2,200.00	10.52	233.08	2,172.37	-194.17	-249.54	-162.66	0.00	0.00	
2,300.00	10.52	233.08	2,270.69	-205.14	-264.14	-171.79	0.00	0.00	
2,400.00	10.52	233.08	2,369.01	-216.11	-278.73	-180.92	0.00	0.00	
2,500.00	10.52	233.08	2,467.33	-227.08	-293.33	-190.05	0.00	0.00	
2,600.00	10.52	233.08	2,565.65	-238.05	-307.93	-199.18	0.00	0.00	
2,700.00	10.52	233.08	2,663.97	-249.02	-322.53	-208.32	0.00	0.00	
2,800.00	10.52	233.08	2,762.28	-259.99	-337.13	-217.45	0.00	0.00	
2,900.00	10.52	233.08	2,860.60	-270.96	-351.72	-226.58	0.00	0.00	
3,000.00	10.52	233.08	2,958.92	-281.93	-366.32	-235.71	0.00	0.00	
3,100.00	10.52	233.08	3,057.24	-292.90	-380.92	-244.84	0.00	0.00	
3,200.00	10.52	233.08	3,155.56	-303.87	-395.52	-253.97	0.00	0.00	
3,300.00	10.52	233.08	3,253.88	-314.84	-410.12	-263.10	0.00	0.00	
3,400.00	10.52	233.08	3,352.20	-325.81	-424.71	-272.23	0.00	0.00	
3,500.00	10.52	233.08	3,450.52	-336.78	-439.31	-281.36	0.00	0.00	
3,600.00	10.52	233.08	3,548.83	-347.75	-453.91	-290.49	0.00	0.00	
3,700.00	10.52	233.08	3,647.15	-358.72	-468.51	-299.62	0.00	0.00	
3,800.00	10.52	233.08	3,745.47	-369.69	-483.11	-308.75	0.00	0.00	
3,900.00	10.52	233.08	3,843.79	-380.66	-497.70	-317.88	0.00	0.00	
4,000.00	10.52	233.08	3,942.11	-391.63	-512.30	-327.01	0.00	0.00	
4,100.00	10.52	233.08	4,040.43	-402.60	-526.90	-336.14	0.00	0.00	
4,200.00	10.52	233.08	4,138.75	-413.57	-541.50	-345.27	0.00	0.00	
4,300.00	10.52	233.08	4,237.06	-424.54	-556.10	-354.40	0.00	0.00	
4,400.00	10.52	233.08	4,335.38	-435.51	-570.69	-363.53	0.00	0.00	
4,500.00	10.52	233.08	4,433.70	-446.48	-585.29	-372.66	0.00	0.00	
4,600.00	10.52	233.08	4,532.02	-457.45	-599.89	-381.79	0.00	0.00	
4,700.00	10.52	233.08	4,630.34	-468.42	-614.49	-390.92	0.00	0.00	
4,800.00	10.52	233.08	4,728.66	-479.39	-629.09	-400.05	0.00	0.00	
4,900.00	10.52	233.08	4,826.98	-490.36	-643.68	-409.18	0.00	0.00	

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Well:	KUGEL 1F-18H-H267	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 (6.11)		

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
5,000.00	10.52	233.08	4,925.29	-501.33	-658.28	-418.31	0.00	0.00	
5,100.00	10.52	233.08	5,023.61	-512.30	-672.88	-427.44	0.00	0.00	
5,200.00	10.52	233.08	5,121.93	-523.28	-687.48	-436.57	0.00	0.00	
5,300.00	10.52	233.08	5,220.25	-534.25	-702.07	-445.70	0.00	0.00	
5,400.00	10.52	233.08	5,318.57	-545.22	-716.67	-454.83	0.00	0.00	
5,500.00	10.52	233.08	5,416.89	-556.19	-731.27	-463.96	0.00	0.00	
5,600.00	10.52	233.08	5,515.21	-567.16	-745.87	-473.09	0.00	0.00	
5,700.00	10.52	233.08	5,613.53	-578.13	-760.47	-482.22	0.00	0.00	
5,800.00	10.52	233.08	5,711.84	-589.10	-775.06	-491.35	0.00	0.00	
5,900.00	10.52	233.08	5,810.16	-600.07	-789.66	-500.48	0.00	0.00	
6,000.00	10.52	233.08	5,908.48	-611.04	-804.26	-509.61	0.00	0.00	
6,100.00	10.52	233.08	6,006.80	-622.01	-818.86	-518.74	0.00	0.00	
6,200.00	10.52	233.08	6,105.12	-632.98	-833.46	-527.87	0.00	0.00	
6,300.00	10.52	233.08	6,203.44	-643.95	-848.05	-537.00	0.00	0.00	
6,400.00	10.52	233.08	6,301.76	-654.92	-862.65	-546.13	0.00	0.00	
6,500.00	10.52	233.08	6,400.07	-665.89	-877.25	-555.26	0.00	0.00	
6,597.14	10.52	233.08	6,495.58	-676.55	-891.43	-564.13	0.00	0.00	
6,600.00	10.39	234.09	6,498.39	-676.85	-891.85	-564.39	8.00	-4.77	
6,700.00	8.57	283.06	6,597.18	-680.46	-906.43	-566.21	8.00	-1.81	
6,800.00	12.89	320.60	6,695.52	-670.14	-920.80	-554.23	8.00	4.32	
6,900.00	19.65	336.27	6,791.50	-646.09	-934.67	-528.68	8.00	6.75	
7,000.00	27.07	343.89	6,883.26	-608.77	-947.77	-490.06	8.00	7.42	
7,100.00	34.74	348.37	6,969.01	-558.92	-959.85	-439.11	8.00	7.67	
7,200.00	42.52	351.39	7,047.07	-497.50	-970.67	-376.84	8.00	7.78	
7,300.00	50.35	353.62	7,115.94	-425.72	-980.03	-304.45	8.00	7.84	
7,400.00	58.22	355.40	7,174.27	-344.96	-987.73	-223.35	8.00	7.87	
7,500.00	66.11	356.89	7,220.93	-256.80	-993.63	-135.12	8.00	7.89	
7,600.00	74.02	358.21	7,255.00	-162.95	-997.62	-41.48	8.00	7.90	
7,700.00	81.93	359.43	7,275.82	-65.25	-999.61	55.75	8.00	7.91	
7,800.00	89.84	0.61	7,283.00	34.41	-999.58	154.68	8.00	7.91	
7,802.02	90.00	0.63	7,283.00	36.43	-999.55	156.68	8.00	7.91	KUGEL 1F-18H-H267 TPZ
7,900.00	90.00	0.63	7,283.00	134.41	-998.48	253.81	0.00	0.00	
8,000.00	90.00	0.63	7,283.00	234.40	-997.38	352.95	0.00	0.00	
8,100.00	90.00	0.63	7,283.00	334.40	-996.28	452.08	0.00	0.00	
8,200.00	90.00	0.63	7,283.00	434.39	-995.19	551.21	0.00	0.00	
8,300.00	90.00	0.63	7,283.00	534.38	-994.09	650.34	0.00	0.00	
8,400.00	90.00	0.63	7,283.00	634.38	-992.99	749.47	0.00	0.00	
8,500.00	90.00	0.63	7,283.00	734.37	-991.89	848.61	0.00	0.00	
8,600.00	90.00	0.63	7,283.00	834.37	-990.80	947.74	0.00	0.00	
8,700.00	90.00	0.63	7,283.00	934.36	-989.70	1,046.87	0.00	0.00	
8,800.00	90.00	0.63	7,283.00	1,034.35	-988.60	1,146.00	0.00	0.00	
8,900.00	90.00	0.63	7,283.00	1,134.35	-987.50	1,245.14	0.00	0.00	
9,000.00	90.00	0.63	7,283.00	1,234.34	-986.41	1,344.27	0.00	0.00	
9,100.00	90.00	0.63	7,283.00	1,334.34	-985.31	1,443.40	0.00	0.00	
9,200.00	90.00	0.63	7,283.00	1,434.33	-984.21	1,542.53	0.00	0.00	
9,300.00	90.00	0.63	7,283.00	1,534.32	-983.11	1,641.66	0.00	0.00	
9,400.00	90.00	0.63	7,283.00	1,634.32	-982.02	1,740.80	0.00	0.00	
9,500.00	90.00	0.63	7,283.00	1,734.31	-980.92	1,839.93	0.00	0.00	
9,600.00	90.00	0.63	7,283.00	1,834.31	-979.82	1,939.06	0.00	0.00	
9,700.00	90.00	0.63	7,283.00	1,934.30	-978.72	2,038.19	0.00	0.00	
9,800.00	90.00	0.63	7,283.00	2,034.29	-977.63	2,137.32	0.00	0.00	
9,900.00	90.00	0.63	7,283.00	2,134.29	-976.53	2,236.46	0.00	0.00	

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Project:	DJ BASIN	MD Reference:	23' KB @ 4976.00usft
Site:	S18-T2N-R67W (KUGEL)	North Reference:	True
Well:	KUGEL 1F-18H-H267	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 (6.11)		

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
10,000.00	90.00	0.63	7,283.00	2,234.28	-975.43	2,335.59	0.00	0.00	
10,100.00	90.00	0.63	7,283.00	2,334.28	-974.33	2,434.72	0.00	0.00	
10,200.00	90.00	0.63	7,283.00	2,434.27	-973.24	2,533.85	0.00	0.00	
10,300.00	90.00	0.63	7,283.00	2,534.26	-972.14	2,632.99	0.00	0.00	
10,400.00	90.00	0.63	7,283.00	2,634.26	-971.04	2,732.12	0.00	0.00	
10,500.00	90.00	0.63	7,283.00	2,734.25	-969.94	2,831.25	0.00	0.00	
10,600.00	90.00	0.63	7,283.00	2,834.25	-968.85	2,930.38	0.00	0.00	
10,700.00	90.00	0.63	7,283.00	2,934.24	-967.75	3,029.51	0.00	0.00	
10,800.00	90.00	0.63	7,283.00	3,034.23	-966.65	3,128.65	0.00	0.00	
10,900.00	90.00	0.63	7,283.00	3,134.23	-965.55	3,227.78	0.00	0.00	
11,000.00	90.00	0.63	7,283.00	3,234.22	-964.46	3,326.91	0.00	0.00	
11,100.00	90.00	0.63	7,283.00	3,334.22	-963.36	3,426.04	0.00	0.00	
11,200.00	90.00	0.63	7,283.00	3,434.21	-962.26	3,525.18	0.00	0.00	
11,300.00	90.00	0.63	7,283.00	3,534.20	-961.16	3,624.31	0.00	0.00	
11,400.00	90.00	0.63	7,283.00	3,634.20	-960.07	3,723.44	0.00	0.00	
11,500.00	90.00	0.63	7,283.00	3,734.19	-958.97	3,822.57	0.00	0.00	
11,600.00	90.00	0.63	7,283.00	3,834.19	-957.87	3,921.70	0.00	0.00	
11,700.00	90.00	0.63	7,283.00	3,934.18	-956.77	4,020.84	0.00	0.00	
11,800.00	90.00	0.63	7,283.00	4,034.17	-955.68	4,119.97	0.00	0.00	
11,900.00	90.00	0.63	7,283.00	4,134.17	-954.58	4,219.10	0.00	0.00	
12,000.00	90.00	0.63	7,283.00	4,234.16	-953.48	4,318.23	0.00	0.00	
12,100.00	90.00	0.63	7,283.00	4,334.16	-952.38	4,417.37	0.00	0.00	
12,200.00	90.00	0.63	7,283.00	4,434.15	-951.29	4,516.50	0.00	0.00	
12,300.00	90.00	0.63	7,283.00	4,534.14	-950.19	4,615.63	0.00	0.00	
12,400.00	90.00	0.63	7,283.00	4,634.14	-949.09	4,714.76	0.00	0.00	
12,500.00	90.00	0.63	7,283.00	4,734.13	-947.99	4,813.89	0.00	0.00	
12,600.00	90.00	0.63	7,283.00	4,834.13	-946.90	4,913.03	0.00	0.00	
12,700.00	90.00	0.63	7,283.00	4,934.12	-945.80	5,012.16	0.00	0.00	
12,800.00	90.00	0.63	7,283.00	5,034.11	-944.70	5,111.29	0.00	0.00	
12,900.00	90.00	0.63	7,283.00	5,134.11	-943.60	5,210.42	0.00	0.00	
13,000.00	90.00	0.63	7,283.00	5,234.10	-942.51	5,309.56	0.00	0.00	
13,100.00	90.00	0.63	7,283.00	5,334.10	-941.41	5,408.69	0.00	0.00	
13,200.00	90.00	0.63	7,283.00	5,434.09	-940.31	5,507.82	0.00	0.00	
13,300.00	90.00	0.63	7,283.00	5,534.08	-939.21	5,606.95	0.00	0.00	
13,400.00	90.00	0.63	7,283.00	5,634.08	-938.12	5,706.08	0.00	0.00	
13,500.00	90.00	0.63	7,283.00	5,734.07	-937.02	5,805.22	0.00	0.00	
13,600.00	90.00	0.63	7,283.00	5,834.07	-935.92	5,904.35	0.00	0.00	
13,700.00	90.00	0.63	7,283.00	5,934.06	-934.82	6,003.48	0.00	0.00	
13,800.00	90.00	0.63	7,283.00	6,034.05	-933.73	6,102.61	0.00	0.00	
13,900.00	90.00	0.63	7,283.00	6,134.05	-932.63	6,201.75	0.00	0.00	
14,000.00	90.00	0.63	7,283.00	6,234.04	-931.53	6,300.88	0.00	0.00	
14,100.00	90.00	0.63	7,283.00	6,334.04	-930.43	6,400.01	0.00	0.00	
14,200.00	90.00	0.63	7,283.00	6,434.03	-929.34	6,499.14	0.00	0.00	
14,300.00	90.00	0.63	7,283.00	6,534.02	-928.24	6,598.27	0.00	0.00	
14,400.00	90.00	0.63	7,283.00	6,634.02	-927.14	6,697.41	0.00	0.00	
14,500.00	90.00	0.63	7,283.00	6,734.01	-926.04	6,796.54	0.00	0.00	
14,600.00	90.00	0.63	7,283.00	6,834.00	-924.95	6,895.67	0.00	0.00	
14,700.00	90.00	0.63	7,283.00	6,934.00	-923.85	6,994.80	0.00	0.00	
14,800.00	90.00	0.63	7,283.00	7,033.99	-922.75	7,093.93	0.00	0.00	
14,900.00	90.00	0.63	7,283.00	7,133.99	-921.65	7,193.07	0.00	0.00	
15,000.00	90.00	0.63	7,283.00	7,233.98	-920.56	7,292.20	0.00	0.00	
15,100.00	90.00	0.63	7,283.00	7,333.97	-919.46	7,391.33	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well KUGEL 1F-18H-H267 - Slot KUGEL 1F
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4976.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4976.00usft
Site:	S18-T2N-R67W (KUGEL)	North Reference:	True
Well:	KUGEL 1F-18H-H267	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2 (6.11)		

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
15,200.00	90.00	0.63	7,283.00	7,433.97	-918.36	7,490.46	0.00	0.00	
15,300.00	90.00	0.63	7,283.00	7,533.96	-917.26	7,589.60	0.00	0.00	
15,316.84	90.00	0.63	7,283.00	7,550.81	-917.08	7,606.29	0.00	0.00	KUGEL 1F-18H-H267 BHL

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KUGEL 1F-18H-H267 BI - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	7,283.00	7,550.81	-917.08	1,301,795.22	3,159,384.05	40.160416	-104.929738
KUGEL 1F-18H-H267 TI - plan hits target center - Point	0.00	0.00	7,283.00	36.43	-999.55	1,294,280.47	3,159,350.18	40.139788	-104.930032