



CRESTONE PEAK
RESOURCES

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
3	1536.06	14.72	229.71	1527.99	-60.82	-71.73	2.00	229.71	-61.40	
4	6433.87	14.72	229.71	6265.02	-865.72	-1021.04	0.00	0.00	-874.06	
5	7678.26	90.00	0.47	7084.00	-158.12	-1178.17	8.00	129.82	-167.78	
6	11948.26	90.00	0.47	7084.00	4111.73	-1142.88	0.00	0.00	4102.22	RUEGGE 3F-4H-N165 BHL

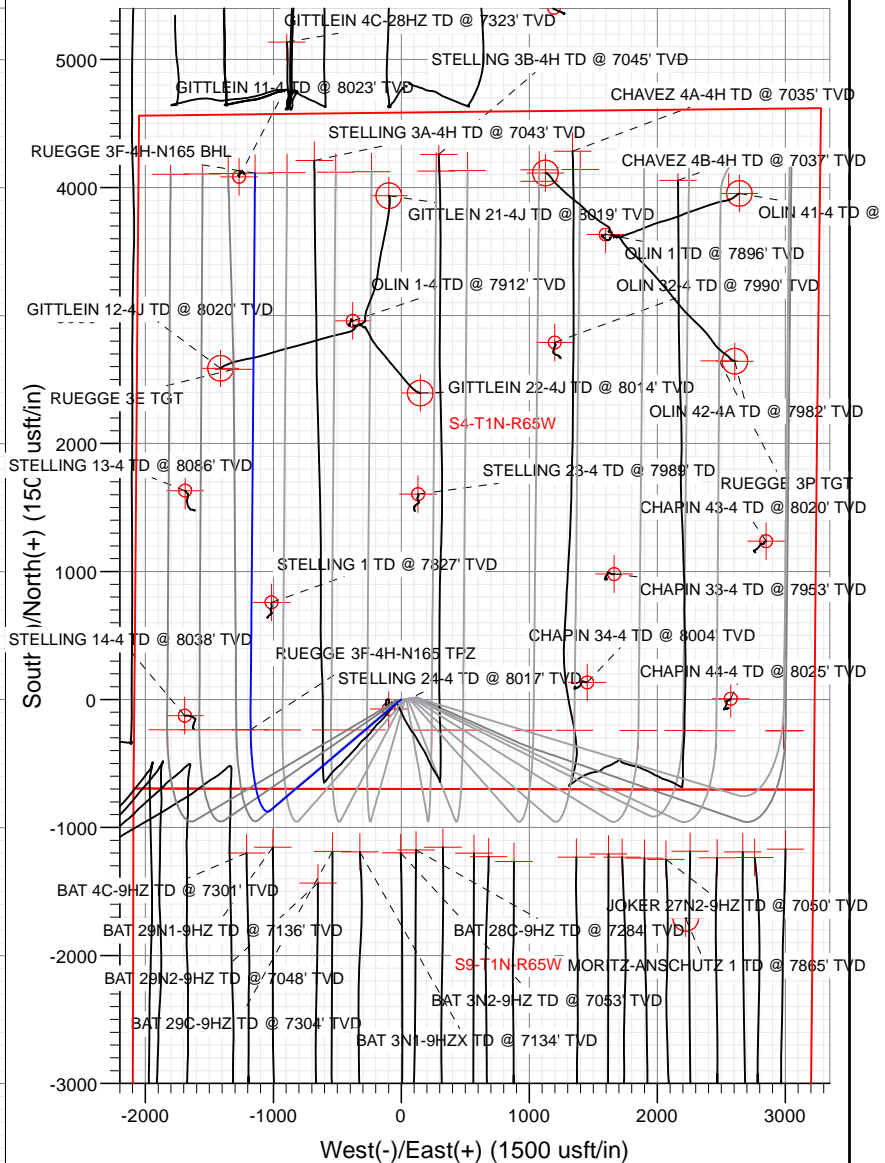
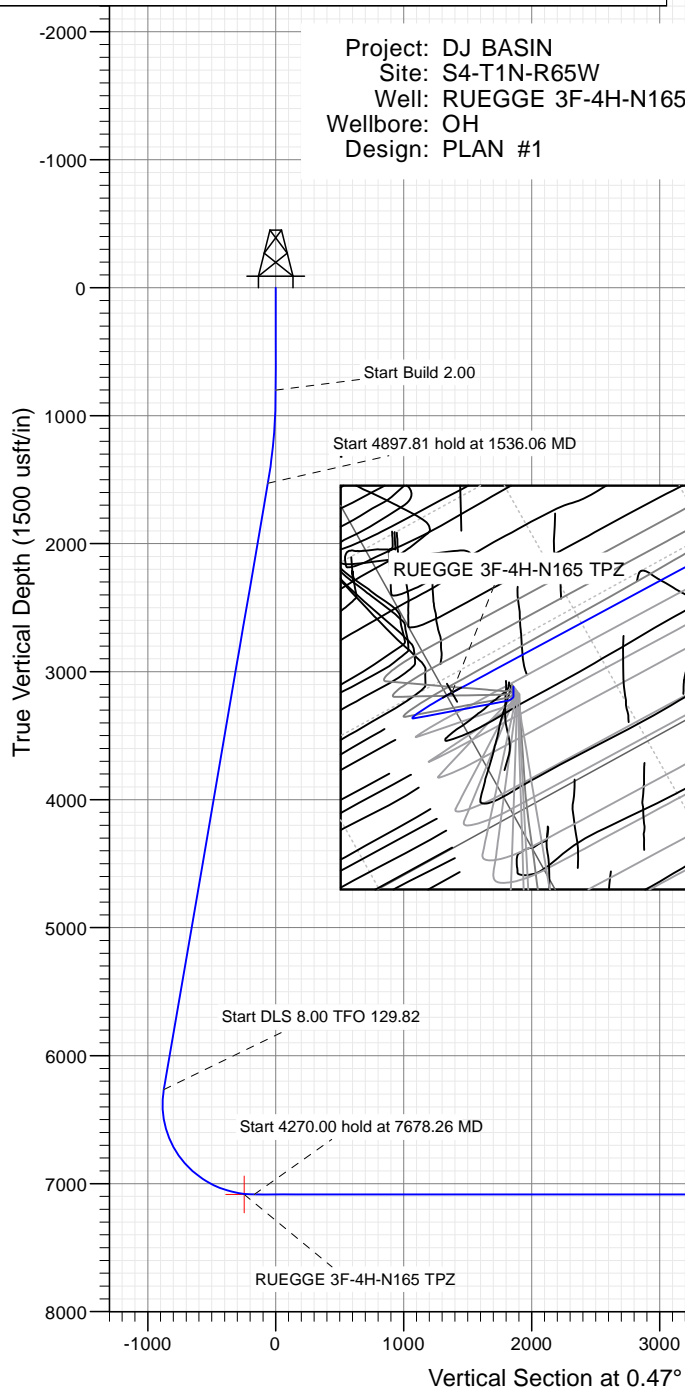
PLAN #1
RUEGGE 3F-4H-N165
23' IS @ 4350.00ft
Ground Level @ 4916.00
North American Datum 1983
Well RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-4H-N165 SHL True North

Type	Target	Asimuth	Origin	Type	N/S	E/W	From	TVD
User	No Target (Freehand)	0.47	0.00	0.00	0.00	0.00	0.00	0.00

Name
RUEGGE 3F-4H-N165 BHL
RUEGGE 3F-4H-N165 TPZ

TVD	+N/-S	+E/-W	Latitude	Longitude
7084.00	4111.73	-1142.88	40.086524	-104.675035
7084.00	-236.80	-1178.82	40.074587	-104.675163

Project: DJ BASIN
Site: S4-T1N-R65W
Well: RUEGGE 3F-4H-N165
Wellbore: OH
Design: PLAN #1



Azimuths to True North
Magnetic North: 8.22°

Magnetic Field
Strength: 52188.7nT
Dip Angle: 66.50°
Date: 11/2/2017
Model: HDGM

WELL DETAILS: RUEGGE 3F-4H-N165

4916.00
+N/-S 0.00 +E/-W 0.00 Northing 1271338.37 Easting 3232001.59 Latitude 40.075237 Longitude -104.675035 Slot RUEGGE 3F-4H-N165 SHL

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4939.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4939.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3F-4H-N165	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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		S4-T1N-R65W			
Site Position:		Northing:	1,271,333.68 usft	Latitude:	40.075225
From:	Map	Easting:	3,231,971.96 usft	Longitude:	-104.671056
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.54 °

Well	RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-4H-N165 SHL					
Well Position	+N/-S	0.00 usft	Northing:	1,271,338.37 usft	Latitude:	40.075237
	+E/-W	0.00 usft	Easting:	3,232,001.59 usft	Longitude:	-104.670950
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,916.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	11/2/2017	8.22	66.50	52,188.70000000

Design	PLAN #1			
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	0.47

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	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,536.06	14.72	229.71	1,527.99	-60.82	-71.73	2.00	2.00	0.00	229.71	
6,433.87	14.72	229.71	6,265.02	-865.72	-1,021.04	0.00	0.00	0.00	0.00	
7,678.26	90.00	0.47	7,084.00	-158.12	-1,178.17	8.00	6.05	10.51	129.82	
11,948.26	90.00	0.47	7,084.00	4,111.73	-1,142.88	0.00	0.00	0.00	0.00	RUEGGE 3F-4H-N16

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4939.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4939.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3F-4H-N165	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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	2.00	229.71	899.98	-1.13	-1.33	-1.14	2.00	2.00	
1,000.00	4.00	229.71	999.84	-4.51	-5.32	-4.56	2.00	2.00	
1,100.00	6.00	229.71	1,099.45	-10.15	-11.97	-10.25	2.00	2.00	
1,200.00	8.00	229.71	1,198.70	-18.03	-21.27	-18.20	2.00	2.00	
1,300.00	10.00	229.71	1,297.47	-28.15	-33.20	-28.42	2.00	2.00	
1,400.00	12.00	229.71	1,395.62	-40.49	-47.75	-40.88	2.00	2.00	
1,500.00	14.00	229.71	1,493.06	-55.03	-64.91	-55.56	2.00	2.00	
1,536.06	14.72	229.71	1,527.99	-60.82	-71.73	-61.40	2.00	2.00	
1,600.00	14.72	229.71	1,589.83	-71.32	-84.12	-72.01	0.00	0.00	
1,700.00	14.72	229.71	1,686.55	-87.76	-103.50	-88.60	0.00	0.00	
1,800.00	14.72	229.71	1,783.26	-104.19	-122.89	-105.20	0.00	0.00	
1,900.00	14.72	229.71	1,879.98	-120.63	-142.27	-121.79	0.00	0.00	
2,000.00	14.72	229.71	1,976.70	-137.06	-161.65	-138.38	0.00	0.00	
2,100.00	14.72	229.71	2,073.42	-153.49	-181.03	-154.97	0.00	0.00	
2,200.00	14.72	229.71	2,170.13	-169.93	-200.42	-171.57	0.00	0.00	
2,300.00	14.72	229.71	2,266.85	-186.36	-219.80	-188.16	0.00	0.00	
2,400.00	14.72	229.71	2,363.57	-202.80	-239.18	-204.75	0.00	0.00	
2,500.00	14.72	229.71	2,460.29	-219.23	-258.56	-221.34	0.00	0.00	
2,600.00	14.72	229.71	2,557.00	-235.66	-277.95	-237.93	0.00	0.00	
2,700.00	14.72	229.71	2,653.72	-252.10	-297.33	-254.53	0.00	0.00	
2,800.00	14.72	229.71	2,750.44	-268.53	-316.71	-271.12	0.00	0.00	
2,900.00	14.72	229.71	2,847.16	-284.96	-336.09	-287.71	0.00	0.00	
3,000.00	14.72	229.71	2,943.87	-301.40	-355.48	-304.30	0.00	0.00	
3,100.00	14.72	229.71	3,040.59	-317.83	-374.86	-320.90	0.00	0.00	
3,200.00	14.72	229.71	3,137.31	-334.27	-394.24	-337.49	0.00	0.00	
3,300.00	14.72	229.71	3,234.02	-350.70	-413.62	-354.08	0.00	0.00	
3,400.00	14.72	229.71	3,330.74	-367.13	-433.01	-370.67	0.00	0.00	
3,500.00	14.72	229.71	3,427.46	-383.57	-452.39	-387.27	0.00	0.00	
3,600.00	14.72	229.71	3,524.18	-400.00	-471.77	-403.86	0.00	0.00	
3,700.00	14.72	229.71	3,620.89	-416.44	-491.15	-420.45	0.00	0.00	
3,800.00	14.72	229.71	3,717.61	-432.87	-510.53	-437.04	0.00	0.00	
3,900.00	14.72	229.71	3,814.33	-449.30	-529.92	-453.64	0.00	0.00	
4,000.00	14.72	229.71	3,911.05	-465.74	-549.30	-470.23	0.00	0.00	
4,100.00	14.72	229.71	4,007.76	-482.17	-568.68	-486.82	0.00	0.00	
4,200.00	14.72	229.71	4,104.48	-498.60	-588.06	-503.41	0.00	0.00	
4,300.00	14.72	229.71	4,201.20	-515.04	-607.45	-520.00	0.00	0.00	
4,400.00	14.72	229.71	4,297.92	-531.47	-626.83	-536.60	0.00	0.00	
4,500.00	14.72	229.71	4,394.63	-547.91	-646.21	-553.19	0.00	0.00	
4,600.00	14.72	229.71	4,491.35	-564.34	-665.59	-569.78	0.00	0.00	
4,700.00	14.72	229.71	4,588.07	-580.77	-684.98	-586.37	0.00	0.00	
4,800.00	14.72	229.71	4,684.79	-597.21	-704.36	-602.97	0.00	0.00	
4,900.00	14.72	229.71	4,781.50	-613.64	-723.74	-619.56	0.00	0.00	
5,000.00	14.72	229.71	4,878.22	-630.08	-743.12	-636.15	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4939.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4939.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3F-4H-N165	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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
5,100.00	14.72	229.71	4,974.94	-646.51	-762.51	-652.74	0.00	0.00	
5,200.00	14.72	229.71	5,071.65	-662.94	-781.89	-669.34	0.00	0.00	
5,300.00	14.72	229.71	5,168.37	-679.38	-801.27	-685.93	0.00	0.00	
5,400.00	14.72	229.71	5,265.09	-695.81	-820.65	-702.52	0.00	0.00	
5,500.00	14.72	229.71	5,361.81	-712.25	-840.04	-719.11	0.00	0.00	
5,600.00	14.72	229.71	5,458.52	-728.68	-859.42	-735.70	0.00	0.00	
5,700.00	14.72	229.71	5,555.24	-745.11	-878.80	-752.30	0.00	0.00	
5,800.00	14.72	229.71	5,651.96	-761.55	-898.18	-768.89	0.00	0.00	
5,900.00	14.72	229.71	5,748.68	-777.98	-917.57	-785.48	0.00	0.00	
6,000.00	14.72	229.71	5,845.39	-794.41	-936.95	-802.07	0.00	0.00	
6,100.00	14.72	229.71	5,942.11	-810.85	-956.33	-818.67	0.00	0.00	
6,200.00	14.72	229.71	6,038.83	-827.28	-975.71	-835.26	0.00	0.00	
6,300.00	14.72	229.71	6,135.55	-843.72	-995.10	-851.85	0.00	0.00	
6,400.00	14.72	229.71	6,232.26	-860.15	-1,014.48	-868.44	0.00	0.00	
6,433.87	14.72	229.71	6,265.02	-865.72	-1,021.04	-874.06	0.00	0.00	
6,500.00	12.02	249.58	6,329.39	-873.56	-1,033.92	-882.01	8.00	-4.08	
6,600.00	11.85	288.99	6,427.38	-873.85	-1,053.42	-882.46	8.00	-0.17	
6,700.00	16.21	317.27	6,524.49	-860.24	-1,072.63	-869.01	8.00	4.36	
6,800.00	22.61	331.93	6,618.81	-832.98	-1,091.18	-841.90	8.00	6.40	
6,900.00	29.77	340.11	6,708.52	-792.61	-1,108.69	-801.68	8.00	7.16	
7,000.00	37.24	345.30	6,791.86	-739.91	-1,124.84	-749.11	8.00	7.48	
7,100.00	44.88	348.95	6,867.21	-675.91	-1,139.31	-685.24	8.00	7.64	
7,200.00	52.60	351.72	6,933.12	-601.86	-1,151.81	-611.29	8.00	7.72	
7,300.00	60.38	353.98	6,988.29	-519.19	-1,162.11	-528.70	8.00	7.78	
7,400.00	68.19	355.91	7,031.65	-429.51	-1,170.00	-439.10	8.00	7.81	
7,500.00	76.02	357.63	7,062.35	-334.58	-1,175.32	-344.21	8.00	7.83	
7,600.00	83.86	359.25	7,079.81	-236.23	-1,177.98	-245.89	8.00	7.84	
7,678.26	90.00	0.47	7,084.00	-158.12	-1,178.17	-167.78	8.00	7.85	
7,700.00	90.00	0.47	7,084.00	-136.39	-1,177.99	-146.04	0.00	0.00	
7,800.00	90.00	0.47	7,084.00	-36.39	-1,177.16	-46.04	0.00	0.00	
7,900.00	90.00	0.47	7,084.00	63.61	-1,176.34	53.96	0.00	0.00	
8,000.00	90.00	0.47	7,084.00	163.60	-1,175.51	153.96	0.00	0.00	
8,100.00	90.00	0.47	7,084.00	263.60	-1,174.68	253.96	0.00	0.00	
8,200.00	90.00	0.47	7,084.00	363.60	-1,173.86	353.96	0.00	0.00	
8,300.00	90.00	0.47	7,084.00	463.59	-1,173.03	453.96	0.00	0.00	
8,400.00	90.00	0.47	7,084.00	563.59	-1,172.21	553.96	0.00	0.00	
8,500.00	90.00	0.47	7,084.00	663.59	-1,171.38	653.96	0.00	0.00	
8,600.00	90.00	0.47	7,084.00	763.58	-1,170.55	753.96	0.00	0.00	
8,700.00	90.00	0.47	7,084.00	863.58	-1,169.73	853.96	0.00	0.00	
8,800.00	90.00	0.47	7,084.00	963.58	-1,168.90	953.96	0.00	0.00	
8,900.00	90.00	0.47	7,084.00	1,063.57	-1,168.07	1,053.96	0.00	0.00	
9,000.00	90.00	0.47	7,084.00	1,163.57	-1,167.25	1,153.96	0.00	0.00	
9,100.00	90.00	0.47	7,084.00	1,263.57	-1,166.42	1,253.96	0.00	0.00	
9,200.00	90.00	0.47	7,084.00	1,363.56	-1,165.59	1,353.96	0.00	0.00	
9,300.00	90.00	0.47	7,084.00	1,463.56	-1,164.77	1,453.96	0.00	0.00	
9,400.00	90.00	0.47	7,084.00	1,563.56	-1,163.94	1,553.96	0.00	0.00	
9,500.00	90.00	0.47	7,084.00	1,663.55	-1,163.11	1,653.96	0.00	0.00	
9,600.00	90.00	0.47	7,084.00	1,763.55	-1,162.29	1,753.96	0.00	0.00	
9,700.00	90.00	0.47	7,084.00	1,863.55	-1,161.46	1,853.96	0.00	0.00	
9,800.00	90.00	0.47	7,084.00	1,963.54	-1,160.63	1,953.96	0.00	0.00	
9,900.00	90.00	0.47	7,084.00	2,063.54	-1,159.81	2,053.96	0.00	0.00	
10,000.00	90.00	0.47	7,084.00	2,163.53	-1,158.98	2,153.96	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3F-4H-N165 - Slot RUEGGE 3F-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4939.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4939.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3F-4H-N165	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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
10,100.00	90.00	0.47	7,084.00	2,263.53	-1,158.16	2,253.96	0.00	0.00	
10,200.00	90.00	0.47	7,084.00	2,363.53	-1,157.33	2,353.96	0.00	0.00	
10,300.00	90.00	0.47	7,084.00	2,463.52	-1,156.50	2,453.96	0.00	0.00	
10,400.00	90.00	0.47	7,084.00	2,563.52	-1,155.68	2,553.96	0.00	0.00	
10,500.00	90.00	0.47	7,084.00	2,663.52	-1,154.85	2,653.96	0.00	0.00	
10,600.00	90.00	0.47	7,084.00	2,763.51	-1,154.02	2,753.96	0.00	0.00	
10,700.00	90.00	0.47	7,084.00	2,863.51	-1,153.20	2,853.96	0.00	0.00	
10,800.00	90.00	0.47	7,084.00	2,963.51	-1,152.37	2,953.96	0.00	0.00	
10,900.00	90.00	0.47	7,084.00	3,063.50	-1,151.54	3,053.96	0.00	0.00	
11,000.00	90.00	0.47	7,084.00	3,163.50	-1,150.72	3,153.96	0.00	0.00	
11,100.00	90.00	0.47	7,084.00	3,263.50	-1,149.89	3,253.96	0.00	0.00	
11,200.00	90.00	0.47	7,084.00	3,363.49	-1,149.06	3,353.96	0.00	0.00	
11,300.00	90.00	0.47	7,084.00	3,463.49	-1,148.24	3,453.96	0.00	0.00	
11,400.00	90.00	0.47	7,084.00	3,563.49	-1,147.41	3,553.96	0.00	0.00	
11,500.00	90.00	0.47	7,084.00	3,663.48	-1,146.58	3,653.96	0.00	0.00	
11,600.00	90.00	0.47	7,084.00	3,763.48	-1,145.76	3,753.96	0.00	0.00	
11,700.00	90.00	0.47	7,084.00	3,863.48	-1,144.93	3,853.96	0.00	0.00	
11,800.00	90.00	0.47	7,084.00	3,963.47	-1,144.10	3,953.96	0.00	0.00	
11,900.00	90.00	0.47	7,084.00	4,063.47	-1,143.28	4,053.96	0.00	0.00	
11,948.26	90.00	0.47	7,084.00	4,111.73	-1,142.88	4,102.22	0.00	0.00	

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
RUEGGE 3F-4H-N165 E	0.00	0.00	7,084.00	4,111.73	-1,142.88	1,275,439.23	3,230,820.32	40.086524	-104.675035
- plan hits target center									
- Point									
RUEGGE 3F-4H-N165 1	0.00	0.00	7,084.00	-236.80	-1,178.82	1,271,090.56	3,230,825.04	40.074587	-104.675163
- plan misses target center by 4.31usft at 7600.00usft MD (7079.81 TVD, -236.23 N, -1177.98 E)									
- Point									