



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	140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	0.00	
3	1390.00	25.00	114.00	1350.71	-109.17	245.20	2.00	114.00	-106.64	
4	2890.00	25.00	114.00	2710.17	-367.01	824.32	0.00	0.00	-358.51	
5	2994.40	25.47	109.23	2804.62	-383.38	865.68	2.00	-79.22	-374.44	
6	7120.23	25.47	109.23	6529.53	-967.58	2540.86	0.00	0.00	-941.36	
7	8343.93	90.00	0.59	7272.00	-261.68	2883.29	8.00	-106.93	-231.98	RUEGGE 3R-4H-N165 TPZ
8	12745.14	90.00	0.59	7272.00	4139.29	2928.94	0.00	0.00	4169.23	RUEGGE 3R-4H-N165 BHL

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
RUEGGE 3R-4H-N165 BHL	7272.00	4139.29	2928.94	40.086648	-104.660058
RUEGGE 3R-4H-N165 TPZ	7272.00	-261.68	2883.29	40.074567	-104.660223

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

Tru Vertical Depth (1500 usft/in)

Start Build 2.00

Start 1500.00 hold at 1390.00 MD

Start DLS 2.00 TFO -79.22

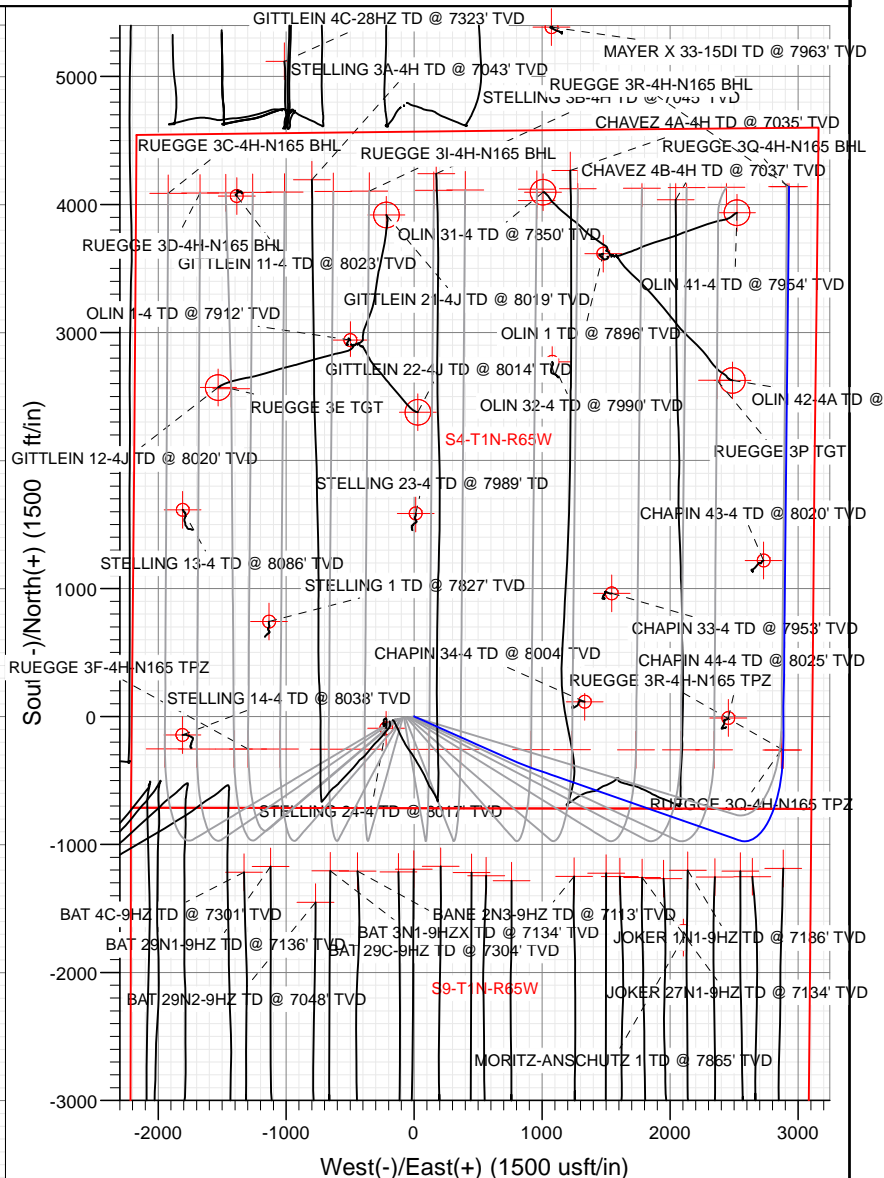
Start 4125.83 hold at 2994.40 MD

Start DLS 8.00 TFO -106.93

Start 4401.21 hold at 8343.93 MD

RUEGGE 3R-4H-N165 TPZ

Vertical Section at 0.59°



Azimuths to True North
Magnetic North: 8.22°

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

WELL DETAILS: RUEGGE 3R-4H-N165

4914.00						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1271357.12	3232120.12	40.075285	-104.967522	3R-4H-N165 SHL



CATHEDRAL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3R-4H-N165 - Slot RUEGGE 3R-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4937.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4937.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3R-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 3R-4H-N165 - Slot RUEGGE 3R-4H-N165 SHL					
Well Position	+N/-S	0.00 usft	Northing:	1,271,357.12 usft	Latitude:	40.075285
	+E/-W	0.00 usft	Easting:	3,232,120.12 usft	Longitude:	-104.670526
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,914.00 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	0.59

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,390.00	25.00	114.00	1,350.71	-109.17	245.20	2.00	2.00	0.00	114.00	
2,890.00	25.00	114.00	2,710.17	-367.01	824.32	0.00	0.00	0.00	0.00	
2,994.40	25.47	109.23	2,804.62	-383.38	865.68	2.00	0.45	-4.57	-79.22	
7,120.23	25.47	109.23	6,529.53	-967.58	2,540.86	0.00	0.00	0.00	0.00	
8,343.93	90.00	0.59	7,272.00	-261.68	2,883.29	8.00	5.27	-8.88	-106.93	RUEGGE 3R-4H-N16
12,745.14	90.00	0.59	7,272.00	4,139.29	2,928.94	0.00	0.00	0.00	0.00	RUEGGE 3R-4H-N16

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3R-4H-N165 - Slot RUEGGE 3R-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4937.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4937.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3R-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	
140.00	0.00	0.00	140.00	0.00	0.00	0.00	0.00	0.00	
200.00	1.20	114.00	200.00	-0.26	0.57	-0.25	2.00	2.00	
300.00	3.20	114.00	299.92	-1.82	4.08	-1.77	2.00	2.00	
400.00	5.20	114.00	399.64	-4.80	10.77	-4.68	2.00	2.00	
500.00	7.20	114.00	499.05	-9.19	20.64	-8.98	2.00	2.00	
600.00	9.20	114.00	598.03	-14.99	33.67	-14.64	2.00	2.00	
700.00	11.20	114.00	696.44	-22.19	49.84	-21.68	2.00	2.00	
800.00	13.20	114.00	794.18	-30.79	69.15	-30.07	2.00	2.00	
900.00	15.20	114.00	891.12	-40.76	91.56	-39.82	2.00	2.00	
1,000.00	17.20	114.00	987.14	-52.11	117.04	-50.90	2.00	2.00	
1,100.00	19.20	114.00	1,082.13	-64.81	145.57	-63.31	2.00	2.00	
1,200.00	21.20	114.00	1,175.98	-78.86	177.12	-77.03	2.00	2.00	
1,300.00	23.20	114.00	1,268.56	-94.22	211.63	-92.04	2.00	2.00	
1,390.00	25.00	114.00	1,350.71	-109.17	245.20	-106.64	2.00	2.00	
1,400.00	25.00	114.00	1,359.78	-110.89	249.06	-108.32	0.00	0.00	
1,500.00	25.00	114.00	1,450.41	-128.08	287.67	-125.11	0.00	0.00	
1,600.00	25.00	114.00	1,541.04	-145.27	326.28	-141.90	0.00	0.00	
1,700.00	25.00	114.00	1,631.67	-162.46	364.89	-158.69	0.00	0.00	
1,800.00	25.00	114.00	1,722.30	-179.65	403.50	-175.48	0.00	0.00	
1,900.00	25.00	114.00	1,812.93	-196.84	442.10	-192.27	0.00	0.00	
2,000.00	25.00	114.00	1,903.56	-214.03	480.71	-209.07	0.00	0.00	
2,100.00	25.00	114.00	1,994.19	-231.22	519.32	-225.86	0.00	0.00	
2,200.00	25.00	114.00	2,084.82	-248.41	557.93	-242.65	0.00	0.00	
2,300.00	25.00	114.00	2,175.45	-265.60	596.54	-259.44	0.00	0.00	
2,400.00	25.00	114.00	2,266.08	-282.78	635.15	-276.23	0.00	0.00	
2,500.00	25.00	114.00	2,356.71	-299.97	673.75	-293.02	0.00	0.00	
2,600.00	25.00	114.00	2,447.34	-317.16	712.36	-309.81	0.00	0.00	
2,700.00	25.00	114.00	2,537.98	-334.35	750.97	-326.60	0.00	0.00	
2,800.00	25.00	114.00	2,628.61	-351.54	789.58	-343.39	0.00	0.00	
2,890.00	25.00	114.00	2,710.17	-367.01	824.32	-358.51	0.00	0.00	
2,900.00	25.04	113.54	2,719.24	-368.72	828.20	-360.17	2.00	0.38	
2,994.40	25.47	109.23	2,804.62	-383.38	865.68	-374.44	2.00	0.46	
3,000.00	25.47	109.23	2,809.68	-384.17	867.95	-375.21	0.00	0.00	
3,100.00	25.47	109.23	2,899.96	-398.33	908.55	-388.95	0.00	0.00	
3,200.00	25.47	109.23	2,990.24	-412.49	949.16	-402.70	0.00	0.00	
3,300.00	25.47	109.23	3,080.52	-426.65	989.76	-416.44	0.00	0.00	
3,400.00	25.47	109.23	3,170.81	-440.81	1,030.36	-430.18	0.00	0.00	
3,500.00	25.47	109.23	3,261.09	-454.97	1,070.96	-443.92	0.00	0.00	
3,600.00	25.47	109.23	3,351.37	-469.13	1,111.56	-457.66	0.00	0.00	
3,700.00	25.47	109.23	3,441.66	-483.29	1,152.17	-471.40	0.00	0.00	
3,800.00	25.47	109.23	3,531.94	-497.45	1,192.77	-485.14	0.00	0.00	
3,900.00	25.47	109.23	3,622.22	-511.61	1,233.37	-498.88	0.00	0.00	
4,000.00	25.47	109.23	3,712.50	-525.77	1,273.97	-512.62	0.00	0.00	
4,100.00	25.47	109.23	3,802.79	-539.93	1,314.58	-526.36	0.00	0.00	
4,200.00	25.47	109.23	3,893.07	-554.09	1,355.18	-540.10	0.00	0.00	
4,300.00	25.47	109.23	3,983.35	-568.25	1,395.78	-553.84	0.00	0.00	
4,400.00	25.47	109.23	4,073.63	-582.40	1,436.38	-567.58	0.00	0.00	
4,500.00	25.47	109.23	4,163.92	-596.56	1,476.98	-581.32	0.00	0.00	
4,600.00	25.47	109.23	4,254.20	-610.72	1,517.59	-595.06	0.00	0.00	
4,700.00	25.47	109.23	4,344.48	-624.88	1,558.19	-608.81	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3R-4H-N165 - Slot RUEGGE 3R-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4937.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4937.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3R-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
4,800.00	25.47	109.23	4,434.77	-639.04	1,598.79	-622.55	0.00	0.00	
4,900.00	25.47	109.23	4,525.05	-653.20	1,639.39	-636.29	0.00	0.00	
5,000.00	25.47	109.23	4,615.33	-667.36	1,680.00	-650.03	0.00	0.00	
5,100.00	25.47	109.23	4,705.61	-681.52	1,720.60	-663.77	0.00	0.00	
5,200.00	25.47	109.23	4,795.90	-695.68	1,761.20	-677.51	0.00	0.00	
5,300.00	25.47	109.23	4,886.18	-709.84	1,801.80	-691.25	0.00	0.00	
5,400.00	25.47	109.23	4,976.46	-724.00	1,842.41	-704.99	0.00	0.00	
5,500.00	25.47	109.23	5,066.74	-738.16	1,883.01	-718.73	0.00	0.00	
5,600.00	25.47	109.23	5,157.03	-752.32	1,923.61	-732.47	0.00	0.00	
5,700.00	25.47	109.23	5,247.31	-766.48	1,964.21	-746.21	0.00	0.00	
5,800.00	25.47	109.23	5,337.59	-780.64	2,004.81	-759.95	0.00	0.00	
5,900.00	25.47	109.23	5,427.87	-794.80	2,045.42	-773.69	0.00	0.00	
6,000.00	25.47	109.23	5,518.16	-808.96	2,086.02	-787.43	0.00	0.00	
6,100.00	25.47	109.23	5,608.44	-823.12	2,126.62	-801.17	0.00	0.00	
6,200.00	25.47	109.23	5,698.72	-837.28	2,167.22	-814.92	0.00	0.00	
6,300.00	25.47	109.23	5,789.01	-851.44	2,207.83	-828.66	0.00	0.00	
6,400.00	25.47	109.23	5,879.29	-865.59	2,248.43	-842.40	0.00	0.00	
6,500.00	25.47	109.23	5,969.57	-879.75	2,289.03	-856.14	0.00	0.00	
6,600.00	25.47	109.23	6,059.85	-893.91	2,329.63	-869.88	0.00	0.00	
6,700.00	25.47	109.23	6,150.14	-908.07	2,370.23	-883.62	0.00	0.00	
6,800.00	25.47	109.23	6,240.42	-922.23	2,410.84	-897.36	0.00	0.00	
6,900.00	25.47	109.23	6,330.70	-936.39	2,451.44	-911.10	0.00	0.00	
7,000.00	25.47	109.23	6,420.98	-950.55	2,492.04	-924.84	0.00	0.00	
7,100.00	25.47	109.23	6,511.27	-964.71	2,532.64	-938.58	0.00	0.00	
7,120.23	25.47	109.23	6,529.53	-967.58	2,540.86	-941.36	0.00	0.00	
7,200.00	24.34	94.27	6,601.96	-974.45	2,573.48	-947.90	8.00	-1.42	
7,300.00	25.09	75.15	6,692.94	-970.55	2,614.58	-943.57	8.00	0.76	
7,400.00	28.06	58.46	6,782.50	-952.78	2,655.19	-925.39	8.00	2.96	
7,500.00	32.63	45.42	6,868.87	-921.51	2,694.50	-893.71	8.00	4.57	
7,600.00	38.24	35.54	6,950.38	-877.33	2,731.75	-849.16	8.00	5.61	
7,700.00	44.48	27.95	7,025.45	-821.11	2,766.21	-792.58	8.00	6.25	
7,800.00	51.13	21.93	7,092.61	-753.94	2,797.22	-725.10	8.00	6.65	
7,900.00	58.03	16.96	7,150.56	-677.14	2,824.17	-648.02	8.00	6.90	
8,000.00	65.10	12.69	7,198.17	-592.18	2,846.54	-562.84	8.00	7.07	
8,100.00	72.27	8.89	7,234.50	-500.74	2,863.89	-471.22	8.00	7.18	
8,200.00	79.52	5.38	7,258.86	-404.58	2,875.88	-374.94	8.00	7.24	
8,300.00	86.80	2.04	7,270.77	-305.58	2,882.28	-275.88	8.00	7.28	
8,343.93	90.00	0.59	7,272.00	-261.68	2,883.29	-231.98	8.00	7.29	
8,400.00	90.00	0.59	7,272.00	-205.62	2,883.87	-175.91	0.00	0.00	
8,500.00	90.00	0.59	7,272.00	-105.62	2,884.91	-75.91	0.00	0.00	
8,600.00	90.00	0.59	7,272.00	-5.63	2,885.95	24.09	0.00	0.00	
8,700.00	90.00	0.59	7,272.00	94.37	2,886.99	124.09	0.00	0.00	
8,800.00	90.00	0.59	7,272.00	194.36	2,888.02	224.09	0.00	0.00	
8,900.00	90.00	0.59	7,272.00	294.36	2,889.06	324.09	0.00	0.00	
9,000.00	90.00	0.59	7,272.00	394.35	2,890.10	424.09	0.00	0.00	
9,100.00	90.00	0.59	7,272.00	494.35	2,891.14	524.09	0.00	0.00	
9,200.00	90.00	0.59	7,272.00	594.34	2,892.17	624.09	0.00	0.00	
9,300.00	90.00	0.59	7,272.00	694.34	2,893.21	724.09	0.00	0.00	
9,400.00	90.00	0.59	7,272.00	794.33	2,894.25	824.09	0.00	0.00	
9,500.00	90.00	0.59	7,272.00	894.33	2,895.28	924.09	0.00	0.00	
9,600.00	90.00	0.59	7,272.00	994.32	2,896.32	1,024.09	0.00	0.00	
9,700.00	90.00	0.59	7,272.00	1,094.31	2,897.36	1,124.09	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well RUEGGE 3R-4H-N165 - Slot RUEGGE 3R-
Company:	Crestone Peak Resources	TVD Reference:	23' KB @ 4937.00usft
Project:	DJ BASIN	MD Reference:	23' KB @ 4937.00usft
Site:	S4-T1N-R65W	North Reference:	True
Well:	RUEGGE 3R-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
9,800.00	90.00	0.59	7,272.00	1,194.31	2,898.40	1,224.09	0.00	0.00	
9,900.00	90.00	0.59	7,272.00	1,294.30	2,899.43	1,324.09	0.00	0.00	
10,000.00	90.00	0.59	7,272.00	1,394.30	2,900.47	1,424.09	0.00	0.00	
10,100.00	90.00	0.59	7,272.00	1,494.29	2,901.51	1,524.09	0.00	0.00	
10,200.00	90.00	0.59	7,272.00	1,594.29	2,902.54	1,624.09	0.00	0.00	
10,300.00	90.00	0.59	7,272.00	1,694.28	2,903.58	1,724.09	0.00	0.00	
10,400.00	90.00	0.59	7,272.00	1,794.28	2,904.62	1,824.09	0.00	0.00	
10,500.00	90.00	0.59	7,272.00	1,894.27	2,905.66	1,924.09	0.00	0.00	
10,600.00	90.00	0.59	7,272.00	1,994.27	2,906.69	2,024.09	0.00	0.00	
10,700.00	90.00	0.59	7,272.00	2,094.26	2,907.73	2,124.09	0.00	0.00	
10,800.00	90.00	0.59	7,272.00	2,194.26	2,908.77	2,224.09	0.00	0.00	
10,900.00	90.00	0.59	7,272.00	2,294.25	2,909.81	2,324.09	0.00	0.00	
11,000.00	90.00	0.59	7,272.00	2,394.24	2,910.84	2,424.09	0.00	0.00	
11,100.00	90.00	0.59	7,272.00	2,494.24	2,911.88	2,524.09	0.00	0.00	
11,200.00	90.00	0.59	7,272.00	2,594.23	2,912.92	2,624.09	0.00	0.00	
11,300.00	90.00	0.59	7,272.00	2,694.23	2,913.95	2,724.09	0.00	0.00	
11,400.00	90.00	0.59	7,272.00	2,794.22	2,914.99	2,824.09	0.00	0.00	
11,500.00	90.00	0.59	7,272.00	2,894.22	2,916.03	2,924.09	0.00	0.00	
11,600.00	90.00	0.59	7,272.00	2,994.21	2,917.07	3,024.09	0.00	0.00	
11,700.00	90.00	0.59	7,272.00	3,094.21	2,918.10	3,124.09	0.00	0.00	
11,800.00	90.00	0.59	7,272.00	3,194.20	2,919.14	3,224.09	0.00	0.00	
11,900.00	90.00	0.59	7,272.00	3,294.20	2,920.18	3,324.09	0.00	0.00	
12,000.00	90.00	0.59	7,272.00	3,394.19	2,921.21	3,424.09	0.00	0.00	
12,100.00	90.00	0.59	7,272.00	3,494.19	2,922.25	3,524.09	0.00	0.00	
12,200.00	90.00	0.59	7,272.00	3,594.18	2,923.29	3,624.09	0.00	0.00	
12,300.00	90.00	0.59	7,272.00	3,694.17	2,924.33	3,724.09	0.00	0.00	
12,400.00	90.00	0.59	7,272.00	3,794.17	2,925.36	3,824.09	0.00	0.00	
12,500.00	90.00	0.59	7,272.00	3,894.16	2,926.40	3,924.09	0.00	0.00	
12,600.00	90.00	0.59	7,272.00	3,994.16	2,927.44	4,024.09	0.00	0.00	
12,700.00	90.00	0.59	7,272.00	4,094.15	2,928.47	4,124.09	0.00	0.00	
12,745.14	90.00	0.59	7,272.00	4,139.29	2,928.94	4,169.23	0.00	0.00	

Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
RUEGGE 3R-4H-N165 f - plan hits target center - Point	0.00	0.00	7,272.00	4,139.29	2,928.94	1,275,523.62	3,235,010.21	40.086648	-104.660058
RUEGGE 3R-4H-N165 1 - plan hits target center - Point	0.00	0.00	7,272.00	-261.68	2,883.29	1,271,122.42	3,235,005.73	40.074567	-104.660223