



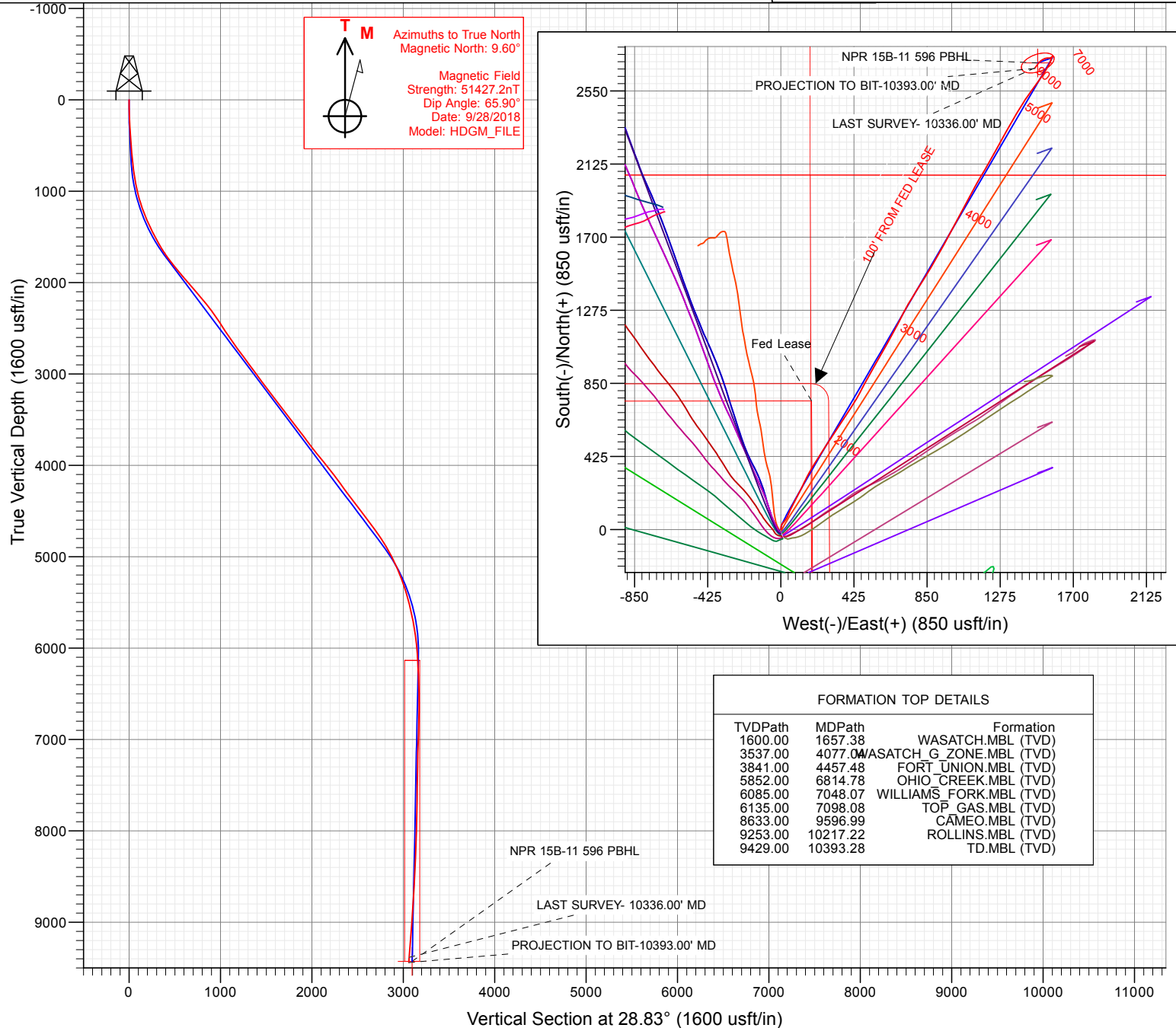
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	300.00	3.00	10.00	299.95	2.58	0.45	3.00	10.00	2.48	
4	670.00	3.00	10.00	669.45	21.65	3.82	0.00	0.00	20.81	
5	1808.51	36.96	30.24	1724.23	356.64	186.79	3.00	21.74	402.51	
6	5766.18	36.96	30.24	4886.78	2412.30	1385.02	0.00	0.002781.18		
7	6998.07	0.00	0.00	6035.00	2743.80	1578.25	3.00	180.003164.77		
8	7075.29	1.54	250.00	6112.22	2743.44	1577.27	2.00	250.003163.99		
9	10393.28	1.54	250.00	9429.00	2712.86	1493.23	0.00	0.003096.66		NPR 15B-11 596 PBHL

FINAL
NPR 15B-11 596
GL+KB @ 6459.00usft
Ground Level @ 6429.00
NAD 1927 - Western US
Well NPR 15B-11 596 - Slot NPR 15B-11 596, True North

Project: Garfield County, CO (UTM 12N)
Site: S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)
Well: NPR 15B-11 596
Wellbore: OH
Design: FINAL

Type	Target	Azimuth	Origin	Type	N/S	E/W	From TVD
User	No Target (Freehand)	28.83	Slot		0.00	0.00	0.00
Name	TVD	+N/-S	+E/-W	Latitude	Longitude		
NPR 15B-11 596 PBHL	9429.00	2712.86	1493.23	39.624145	-108.140793		



WELL DETAILS: NPR 15B-11 596

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14399246.77	2444190.72	39.616700	-108.146092

CATHEDRAL

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 15B-11 596 - Slot NPR 15B-11 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	GL+KB @ 6459.00usft
Site:	S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)	MD Reference:	GL+KB @ 6459.00usft
Well:	NPR 15B-11 596	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Garfield County, CO (UTM 12N)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		
Map Zone:	Zone 12N (114 W to 108 W)		

Site		S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)			
Site Position:		Northing:	14,399,246.77 usft	Latitude:	39.616700
From:	Map	Easting:	2,444,190.72 usft	Longitude:	-108.146092
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.82 °

Well	NPR 15B-11 596 - Slot NPR 15B-11 596					
Well Position	+N/-S	0.00 usft	Northing:	14,399,246.77 usft	Latitude:	39.616700
	+E/-W	0.00 usft	Easting:	2,444,190.72 usft	Longitude:	-108.146092
Position Uncertainty		3.28 usft	Wellhead Elevation:	usft	Ground Level:	6,429.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	9/28/2018	9.60	65.90	51,427.20000000

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	28.83	

Survey Program	Date	10/5/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
170.00	2,353.00	Survey #1 (OH)	INC+TREND	Inclinometer + known azi trend	
2,432.00	10,393.00	Survey #2 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
170.00	1.54	33.70	169.98	1.90	1.27	2.28	0.91	0.91	
201.00	2.29	12.08	200.96	2.85	1.63	3.28	3.32	2.42	
291.00	3.25	4.52	290.86	7.15	2.21	7.33	1.14	1.07	
381.00	4.88	352.83	380.63	13.50	1.93	12.75	2.02	1.81	
471.00	4.92	14.19	470.31	21.04	2.40	19.59	2.02	0.04	
561.00	4.88	23.86	559.98	28.28	4.89	27.13	0.92	-0.04	
656.00	5.32	36.87	654.61	35.50	9.17	35.52	1.30	0.46	
750.00	7.08	47.68	748.06	42.89	16.07	45.32	2.24	1.87	
845.00	9.40	38.36	842.07	52.91	25.21	58.51	2.81	2.44	
939.00	11.34	27.90	934.54	67.10	34.30	75.33	2.87	2.06	
1,033.00	13.93	22.36	1,026.26	85.74	42.93	95.81	3.04	2.76	

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 15B-11 596 - Slot NPR 15B-11 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	GL+KB @ 6459.00usft
Site:	S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)	MD Reference:	GL+KB @ 6459.00usft
Well:	NPR 15B-11 596	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,128.00	16.88	23.71	1,117.84	108.95	52.83	120.92	3.13	3.11	
1,222.00	19.60	26.93	1,207.11	135.50	65.46	150.28	3.08	2.89	
1,316.00	23.95	27.90	1,294.38	166.44	81.54	185.13	4.64	4.63	
1,410.00	25.40	28.52	1,379.80	201.01	100.09	224.36	1.57	1.54	
1,505.00	26.54	25.79	1,465.20	238.03	119.06	265.94	1.74	1.20	
1,599.00	28.74	25.35	1,548.47	277.36	137.87	309.47	2.35	2.34	
1,692.00	31.33	27.29	1,628.98	319.07	158.53	355.97	2.97	2.78	
1,787.00	35.33	31.77	1,708.35	364.39	184.34	408.12	4.94	4.21	
1,881.00	38.19	32.47	1,783.65	412.03	214.25	464.27	3.07	3.04	
1,975.00	39.42	33.18	1,856.90	461.52	246.19	523.03	1.39	1.31	
2,070.00	40.87	32.82	1,929.52	512.89	279.54	584.12	1.55	1.53	
2,165.00	41.31	33.26	2,001.12	565.23	313.59	646.39	0.55	0.46	
2,259.00	39.81	33.35	2,072.53	616.32	347.15	707.32	1.60	-1.60	
2,353.00	39.95	32.91	2,144.67	666.79	380.09	767.43	0.34	0.15	
2,432.00	40.25	33.35	2,205.09	709.40	407.90	818.17	0.52	0.38	
2,526.00	38.01	30.36	2,278.01	759.75	439.23	877.39	3.12	-2.38	
2,620.00	34.67	28.69	2,353.72	808.19	466.70	933.07	3.71	-3.55	
2,715.00	33.71	27.55	2,432.31	855.27	491.87	986.45	1.21	-1.01	
2,809.00	32.92	28.08	2,510.86	900.94	515.95	1,038.07	0.90	-0.84	
2,904.00	34.19	29.92	2,590.03	946.85	541.42	1,090.57	1.71	1.34	
2,998.00	36.08	30.27	2,666.90	993.65	568.55	1,144.65	2.02	2.01	
3,092.00	36.65	29.75	2,742.59	1,041.91	596.42	1,200.38	0.69	0.61	
3,186.00	36.34	28.96	2,818.16	1,090.64	623.83	1,256.28	0.60	-0.33	
3,281.00	36.48	27.73	2,894.61	1,140.27	650.60	1,312.66	0.78	0.15	
3,375.00	36.26	27.37	2,970.30	1,189.69	676.38	1,368.39	0.33	-0.23	
3,470.00	35.73	27.37	3,047.16	1,239.27	702.05	1,424.20	0.56	-0.56	
3,564.00	36.74	28.60	3,122.98	1,288.33	728.13	1,479.76	1.32	1.07	
3,659.00	37.31	31.77	3,198.84	1,337.76	756.89	1,536.93	2.10	0.60	
3,753.00	37.53	32.03	3,273.49	1,386.25	787.08	1,593.97	0.29	0.23	
3,847.00	37.44	32.74	3,348.08	1,434.56	817.71	1,651.06	0.47	-0.10	
3,942.00	38.19	30.80	3,423.13	1,484.07	848.37	1,709.22	1.48	0.79	
4,036.00	37.49	30.71	3,497.37	1,533.63	877.86	1,766.86	0.75	-0.74	
4,130.00	37.09	31.15	3,572.15	1,582.48	907.13	1,823.77	0.51	-0.43	
4,225.00	37.66	28.08	3,647.65	1,632.61	935.61	1,881.41	2.05	0.60	
4,319.00	36.43	27.73	3,722.68	1,682.65	962.11	1,938.04	1.33	-1.31	
4,413.00	37.79	28.43	3,797.64	1,732.68	988.81	1,994.74	1.51	1.45	
4,507.00	38.76	28.60	3,871.43	1,783.85	1,016.61	2,052.97	1.04	1.03	
4,601.00	39.20	28.25	3,944.51	1,835.85	1,044.76	2,112.10	0.52	0.47	
4,696.00	38.85	27.64	4,018.31	1,888.69	1,072.79	2,171.91	0.55	-0.37	
4,790.00	37.40	28.87	4,092.26	1,939.81	1,100.25	2,229.93	1.74	-1.54	
4,885.00	36.08	27.46	4,168.38	1,989.90	1,127.08	2,286.75	1.65	-1.39	
4,979.00	36.12	30.54	4,244.34	2,038.33	1,153.93	2,342.12	1.93	0.04	
5,074.00	37.27	29.75	4,320.51	2,087.42	1,182.43	2,398.87	1.31	1.21	
5,168.00	37.35	29.92	4,395.28	2,136.84	1,210.78	2,455.84	0.14	0.09	
5,262.00	37.05	29.66	4,470.15	2,186.16	1,239.01	2,512.66	0.36	-0.32	
5,357.00	36.91	29.92	4,546.04	2,235.76	1,267.40	2,569.80	0.22	-0.15	
5,451.00	37.49	28.25	4,620.92	2,285.42	1,295.02	2,626.63	1.24	0.62	
5,546.00	35.51	28.96	4,697.28	2,335.03	1,322.07	2,683.13	2.13	-2.08	
5,640.00	34.67	30.80	4,774.20	2,381.89	1,348.98	2,737.16	1.44	-0.89	
5,734.00	31.90	30.54	4,852.77	2,426.25	1,375.29	2,788.71	2.95	-2.95	
5,828.00	29.71	31.77	4,933.50	2,467.45	1,400.18	2,836.81	2.42	-2.33	
5,923.00	26.24	33.61	5,017.39	2,504.97	1,424.21	2,881.26	3.76	-3.65	
6,017.00	24.39	36.08	5,102.36	2,537.96	1,447.14	2,921.22	2.27	-1.97	

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 15B-11 596 - Slot NPR 15B-11 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	GL+KB @ 6459.00usft
Site:	S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)	MD Reference:	GL+KB @ 6459.00usft
Well:	NPR 15B-11 596	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,112.00	22.10	37.13	5,189.65	2,568.07	1,469.49	2,958.37	2.45	-2.41	
6,206.00	19.95	35.55	5,277.38	2,595.22	1,489.48	2,991.80	2.37	-2.29	
6,300.00	17.75	35.11	5,366.34	2,619.99	1,507.05	3,021.97	2.35	-2.34	
6,394.00	14.90	32.74	5,456.54	2,641.88	1,521.83	3,048.28	3.11	-3.03	
6,488.00	13.84	30.98	5,547.60	2,661.69	1,534.16	3,071.57	1.22	-1.13	
6,583.00	12.09	32.65	5,640.17	2,679.81	1,545.37	3,092.85	1.88	-1.84	
6,676.00	10.37	30.10	5,731.39	2,695.25	1,554.83	3,110.94	1.92	-1.85	
6,770.00	9.05	22.80	5,824.04	2,709.38	1,561.93	3,126.75	1.92	-1.40	
6,865.00	6.37	25.00	5,918.18	2,721.05	1,567.06	3,139.44	2.84	-2.82	
6,959.00	4.35	18.59	6,011.76	2,729.16	1,570.40	3,148.15	2.24	-2.15	
7,053.00	3.91	7.77	6,105.52	2,735.71	1,571.97	3,154.65	0.95	-0.47	
7,147.00	2.51	26.06	6,199.37	2,740.74	1,573.31	3,159.70	1.83	-1.49	
7,241.00	2.81	31.77	6,293.27	2,744.54	1,575.42	3,164.06	0.43	0.32	
7,336.00	1.76	38.62	6,388.19	2,747.66	1,577.56	3,167.82	1.14	-1.11	
7,430.00	0.79	40.65	6,482.17	2,749.28	1,578.88	3,169.88	1.03	-1.03	
7,524.00	1.41	24.39	6,576.15	2,750.83	1,579.78	3,171.67	0.73	0.66	
7,619.00	0.84	209.40	6,671.14	2,751.29	1,579.92	3,172.13	2.37	-0.60	
7,807.00	2.20	237.87	6,859.08	2,748.17	1,576.19	3,167.60	0.81	0.72	
7,901.00	2.42	236.99	6,953.00	2,746.13	1,573.00	3,164.27	0.24	0.23	
7,995.00	1.98	232.34	7,046.93	2,744.05	1,570.05	3,161.04	0.50	-0.47	
8,088.00	1.80	255.27	7,139.88	2,742.70	1,567.36	3,158.56	0.83	-0.19	
8,277.00	1.63	265.91	7,328.80	2,741.75	1,561.81	3,155.05	0.19	-0.09	
8,466.00	2.11	273.20	7,517.70	2,741.76	1,555.66	3,152.08	0.28	0.25	
8,654.00	1.85	266.44	7,705.58	2,741.76	1,549.17	3,148.96	0.19	-0.14	
8,842.00	1.71	247.36	7,893.49	2,740.49	1,543.56	3,145.14	0.32	-0.07	
9,031.00	2.29	258.26	8,082.38	2,738.64	1,537.26	3,140.48	0.37	0.31	
9,220.00	3.08	243.32	8,271.17	2,735.59	1,529.02	3,133.84	0.56	0.42	
9,314.00	3.25	245.61	8,365.03	2,733.36	1,524.34	3,129.62	0.23	0.18	
9,408.00	3.52	243.06	8,458.86	2,730.95	1,519.34	3,125.10	0.33	0.29	
9,503.00	2.77	229.52	8,553.72	2,728.14	1,514.99	3,120.54	1.11	-0.79	
9,692.00	3.69	228.82	8,742.42	2,721.17	1,506.94	3,110.56	0.49	0.49	
9,786.00	3.91	219.77	8,836.21	2,716.71	1,502.62	3,104.57	0.68	0.23	
9,975.00	4.22	218.80	9,024.74	2,706.34	1,494.14	3,091.39	0.17	0.16	
10,164.00	4.61	211.33	9,213.18	2,694.43	1,485.83	3,076.95	0.37	0.21	
10,336.00	4.70	223.11	9,384.62	2,683.38	1,477.42	3,063.22	0.56	0.05	LAST SURVEY- 10336.00' MD
10,393.00	4.70	223.11	9,441.42	2,679.97	1,474.23	3,058.69	0.00	0.00	PROJECTION TO BIT-10393.00' MD

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 15B-11 596 - Slot NPR 15B-11 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	GL+KB @ 6459.00usft
Site:	S15-T5S-R96W NPR H15 596 (POD 1) (H&P 330)	MD Reference:	GL+KB @ 6459.00usft
Well:	NPR 15B-11 596	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
NPR 15B-11 596 PBHL	0.00	0.00	9,429.00	2,712.86	1,493.23	14,402,005.70	2,445,597.00	39.624145	-108.140793
- actual wellpath misses target center by 36.87usft at 10377.59usft MD (9426.06 TVD, 2680.90 N, 1475.09 E)									
- Ellipse (radii L100.00 W50.00 on 250.00 azi)									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	Comment	
10,336.00	9,384.62	2,683.38	1,477.42	LAST SURVEY- 10336.00' MD	
10,393.00	9,441.42	2,679.97	1,474.23	PROJECTION TO BIT-10393.00' MD	

Checked By: _____	Approved By: _____	Date: _____
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