

HOBBS OCD

OCT 03 2016

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Rockcliff Energy

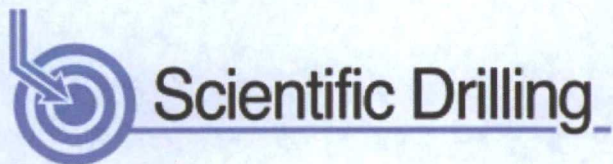
**Annapurna 20
1H**

Wellbore #1

Plan: Plan #1

Standard Planning Report

26 September, 2016



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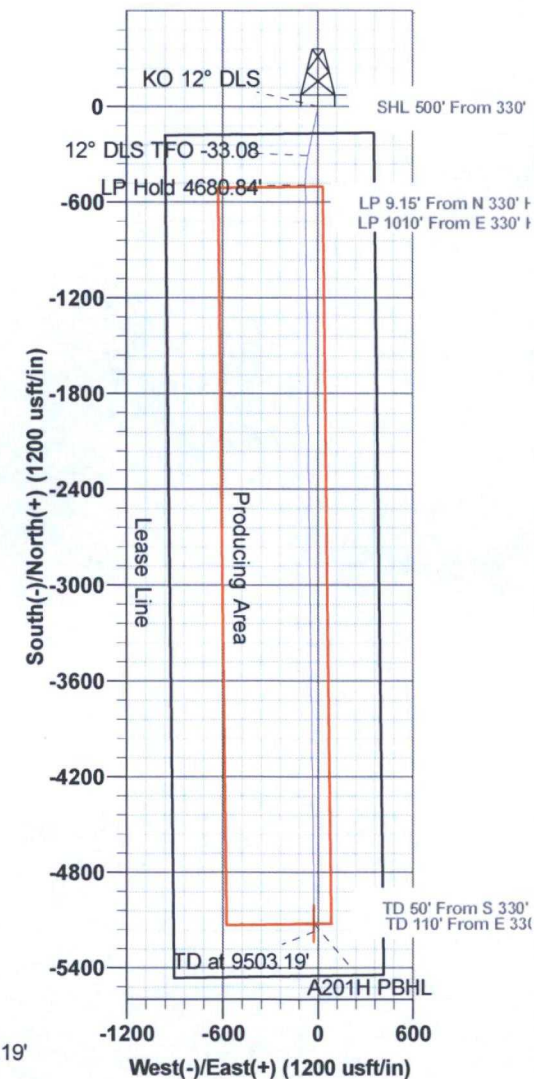
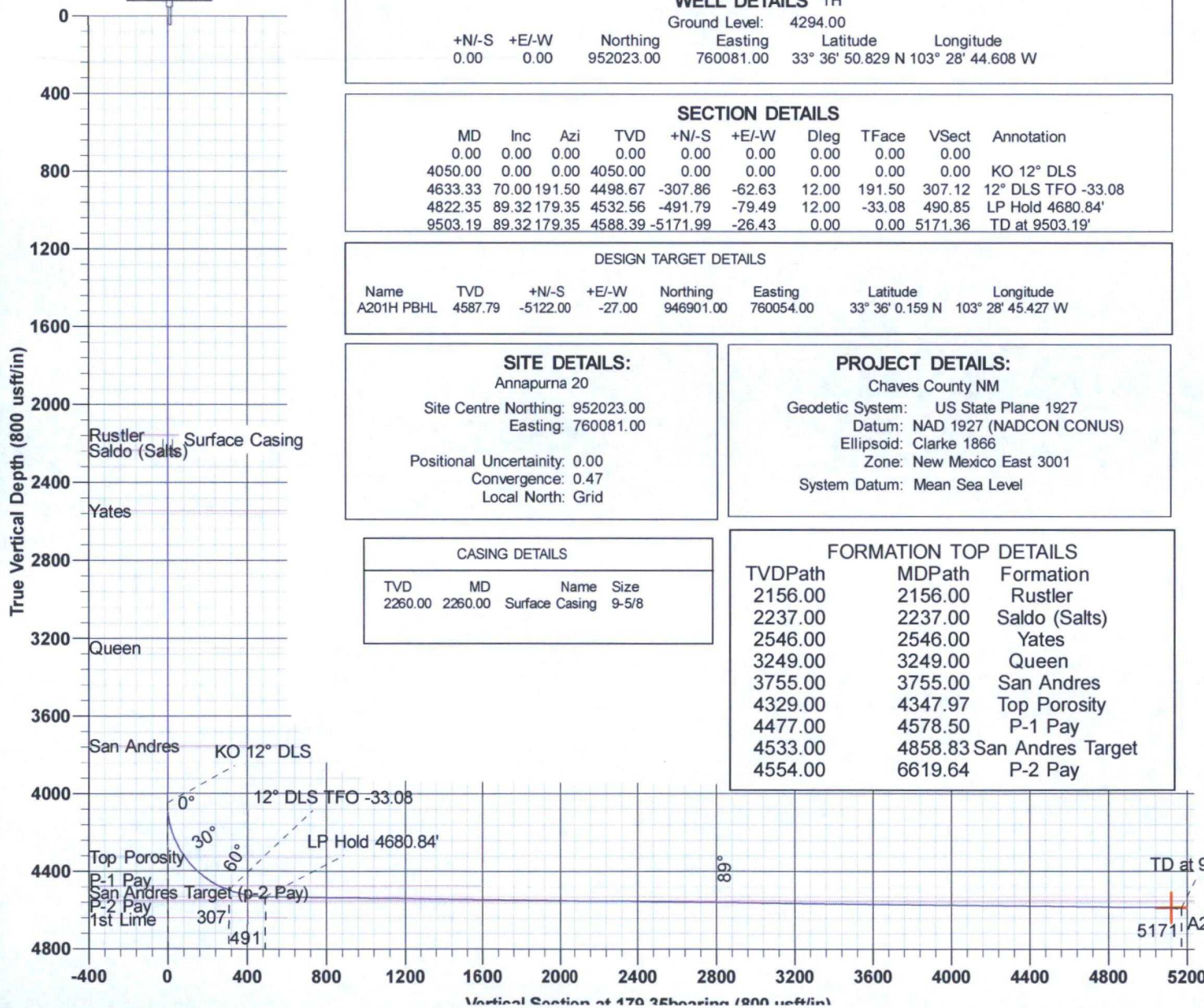
1H
Chaves County NM
Northing: 952023.00
Easting: 760081.00
Plan #1



Azimuths to Grid NC
True North: -6.1
Magnetic North: 6.1
Magnetic Fi
Strength: 48858.2s
Dip Angle: 61.1
Date: 9/22/20
Model: HD

To convert Magnetic North to Grid, Add 6.69°
To convert True North to Grid, Subtract 0.47°

KB @ 4310.00usft
Gr@ 4294.00



Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well 1H
Company:	Rockcliff Energy	TVD Reference:	KB @ 4310.00usft
Project:	Chaves County NM	MD Reference:	KB @ 4310.00usft
Site:	Annapurna 20	North Reference:	Grid
Well:	1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Chaves County NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site		Annapurna 20			
Site Position:		Northing:	952,023.00 usft	Latitude:	33° 36' 50.829 N
From:	Map	Easting:	760,081.00 usft	Longitude:	103° 28' 44.608 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 °

Well	1H					
Well Position	+N/-S	0.00 usft	Northing:	952,023.00 usft	Latitude:	33° 36' 50.829 N
	+E/-W	0.00 usft	Easting:	760,081.00 usft	Longitude:	103° 28' 44.608 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,294.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/22/2016	7.17	61.38	48,858

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (bearing)
	0.00	0.00	0.00	179.35

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	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	
4,050.00	0.00	0.00	4,050.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,633.33	70.00	191.50	4,498.67	-307.86	-62.63	12.00	12.00	0.00	191.50	
4,822.35	89.32	179.35	4,532.57	-491.79	-79.49	12.00	10.22	-6.43	-33.08	
9,503.19	89.32	179.35	4,588.39	-5,171.99	-26.43	0.00	0.00	0.00	0.00	

Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well 1H
Company:	Rockcliff Energy	TVD Reference:	KB @ 4310.00usft
Project:	Chaves County NM	MD Reference:	KB @ 4310.00usft
Site:	Annapurna 20	North Reference:	Grid
Well:	1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	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	0.00
400.00	0.00	0.00	400.00	0.00	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	0.00
600.00	0.00	0.00	600.00	0.00	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	0.00
800.00	0.00	0.00	800.00	0.00	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	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,156.00	0.00	0.00	2,156.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,237.00	0.00	0.00	2,237.00	0.00	0.00	0.00	0.00	0.00	0.00
Saldo (Salts)									
2,260.00	0.00	0.00	2,260.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Casing									
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,546.00	0.00	0.00	2,546.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,249.00	0.00	0.00	3,249.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,755.00	0.00	0.00	3,755.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00

Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well 1H
Company:	Rockcliff Energy	TVD Reference:	KB @ 4310.00usft
Project:	Chaves County NM	MD Reference:	KB @ 4310.00usft
Site:	Annapurna 20	North Reference:	Grid
Well:	1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,050.00	0.00	0.00	4,050.00	0.00	0.00	0.00	0.00	0.00	0.00
KO 12° DLS									
4,075.00	3.00	191.50	4,074.99	-0.64	-0.13	0.64	12.00	12.00	0.00
4,100.00	6.00	191.50	4,099.91	-2.56	-0.52	2.56	12.00	12.00	0.00
4,125.00	9.00	191.50	4,124.69	-5.76	-1.17	5.75	12.00	12.00	0.00
4,150.00	12.00	191.50	4,149.27	-10.22	-2.08	10.20	12.00	12.00	0.00
4,175.00	15.00	191.50	4,173.58	-15.94	-3.24	15.90	12.00	12.00	0.00
4,200.00	18.00	191.50	4,197.54	-22.90	-4.66	22.85	12.00	12.00	0.00
4,225.00	21.00	191.50	4,221.11	-31.08	-6.32	31.00	12.00	12.00	0.00
4,250.00	24.00	191.50	4,244.20	-40.45	-8.23	40.35	12.00	12.00	0.00
4,275.00	27.00	191.50	4,266.76	-51.00	-10.38	50.87	12.00	12.00	0.00
4,300.00	30.00	191.50	4,288.73	-62.68	-12.75	62.54	12.00	12.00	0.00
4,325.00	33.00	191.50	4,310.05	-75.48	-15.36	75.30	12.00	12.00	0.00
4,347.97	35.76	191.50	4,329.00	-88.19	-17.94	87.98	12.00	12.00	0.00
Top Porosity									
4,350.00	36.00	191.50	4,330.65	-89.36	-18.18	89.15	12.00	12.00	0.00
4,375.00	39.00	191.50	4,350.48	-104.27	-21.21	104.02	12.00	12.00	0.00
4,400.00	42.00	191.50	4,369.49	-120.18	-24.45	119.89	12.00	12.00	0.00
4,425.00	45.00	191.50	4,387.62	-137.04	-27.88	136.71	12.00	12.00	0.00
4,450.00	48.00	191.50	4,404.83	-154.81	-31.50	154.44	12.00	12.00	0.00
4,475.00	51.00	191.50	4,421.06	-173.43	-35.29	173.02	12.00	12.00	0.00
4,500.00	54.00	191.50	4,436.28	-192.87	-39.24	192.41	12.00	12.00	0.00
4,525.00	57.00	191.50	4,450.44	-213.05	-43.35	212.55	12.00	12.00	0.00
4,550.00	60.00	191.50	4,463.50	-233.94	-47.60	233.38	12.00	12.00	0.00
4,575.00	63.00	191.50	4,475.42	-255.47	-51.98	254.86	12.00	12.00	0.00
4,578.50	63.42	191.50	4,477.00	-258.52	-52.60	257.91	12.00	12.00	0.00
P-1 Pay									
4,600.00	66.00	191.50	4,486.19	-277.58	-56.47	276.92	12.00	12.00	0.00
4,625.00	69.00	191.50	4,495.75	-300.21	-61.08	299.49	12.00	12.00	0.00
4,633.33	70.00	191.50	4,498.67	-307.86	-62.63	307.12	12.00	12.00	0.00
12° DLS TFO -33.08									
4,650.00	71.68	190.35	4,504.14	-323.31	-65.62	322.55	12.00	10.08	-6.90
4,675.00	74.21	188.67	4,511.47	-346.88	-69.56	346.07	12.00	10.13	-6.73
4,700.00	76.76	187.02	4,517.74	-370.86	-72.86	370.00	12.00	10.18	-6.57
4,725.00	79.31	185.42	4,522.92	-395.17	-75.51	394.28	12.00	10.22	-6.43
4,750.00	81.87	183.84	4,527.01	-419.75	-77.50	418.84	12.00	10.25	-6.32
4,775.00	84.44	182.27	4,529.99	-444.53	-78.82	443.61	12.00	10.28	-6.24
4,800.00	87.01	180.73	4,531.85	-469.45	-79.47	468.52	12.00	10.29	-6.19
4,822.35	89.32	179.35	4,532.57	-491.79	-79.49	490.85	12.00	10.30	-6.16
LP Hold 4680.84'									
4,858.83	89.32	179.35	4,533.00	-528.26	-79.08	527.32	0.00	0.00	0.00
San Andres Target (p-2 Pay)									
4,900.00	89.32	179.35	4,533.49	-569.42	-78.61	568.50	0.00	0.00	0.00
5,000.00	89.32	179.35	4,534.68	-669.41	-77.48	668.49	0.00	0.00	0.00
5,100.00	89.32	179.35	4,535.88	-769.40	-76.34	768.48	0.00	0.00	0.00
5,200.00	89.32	179.35	4,537.07	-869.38	-75.21	868.47	0.00	0.00	0.00
5,300.00	89.32	179.35	4,538.26	-969.37	-74.07	968.47	0.00	0.00	0.00
5,400.00	89.32	179.35	4,539.45	-1,069.36	-72.94	1,068.46	0.00	0.00	0.00
5,500.00	89.32	179.35	4,540.65	-1,169.34	-71.81	1,168.45	0.00	0.00	0.00
5,600.00	89.32	179.35	4,541.84	-1,269.33	-70.67	1,268.45	0.00	0.00	0.00
5,700.00	89.32	179.35	4,543.03	-1,369.32	-69.54	1,368.44	0.00	0.00	0.00
5,800.00	89.32	179.35	4,544.22	-1,469.30	-68.41	1,468.43	0.00	0.00	0.00
5,900.00	89.32	179.35	4,545.42	-1,569.29	-67.27	1,568.43	0.00	0.00	0.00

Planning Report

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Project:	Chaves County NM	MD Reference:	KB @ 4310.00usft
Site:	Annapurna 20	North Reference:	Grid
Well:	1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,000.00	89.32	179.35	4,546.61	-1,669.28	-66.14	1,668.42	0.00	0.00	0.00
6,100.00	89.32	179.35	4,547.80	-1,769.26	-65.01	1,768.41	0.00	0.00	0.00
6,200.00	89.32	179.35	4,549.00	-1,869.25	-63.87	1,868.40	0.00	0.00	0.00
6,300.00	89.32	179.35	4,550.19	-1,969.24	-62.74	1,968.40	0.00	0.00	0.00
6,400.00	89.32	179.35	4,551.38	-2,069.22	-61.61	2,068.39	0.00	0.00	0.00
6,500.00	89.32	179.35	4,552.57	-2,169.21	-60.47	2,168.38	0.00	0.00	0.00
6,600.00	89.32	179.35	4,553.77	-2,269.19	-59.34	2,268.38	0.00	0.00	0.00
6,619.64	89.32	179.35	4,554.00	-2,288.83	-59.12	2,288.02	0.00	0.00	0.00
P-2 Pay									
6,700.00	89.32	179.35	4,554.96	-2,369.18	-58.21	2,368.37	0.00	0.00	0.00
6,800.00	89.32	179.35	4,556.15	-2,469.17	-57.07	2,468.36	0.00	0.00	0.00
6,900.00	89.32	179.35	4,557.34	-2,569.15	-55.94	2,568.35	0.00	0.00	0.00
7,000.00	89.32	179.35	4,558.54	-2,669.14	-54.80	2,668.35	0.00	0.00	0.00
7,100.00	89.32	179.35	4,559.73	-2,769.13	-53.67	2,768.34	0.00	0.00	0.00
7,200.00	89.32	179.35	4,560.92	-2,869.11	-52.54	2,868.33	0.00	0.00	0.00
7,300.00	89.32	179.35	4,562.11	-2,969.10	-51.40	2,968.33	0.00	0.00	0.00
7,400.00	89.32	179.35	4,563.31	-3,069.09	-50.27	3,068.32	0.00	0.00	0.00
7,500.00	89.32	179.35	4,564.50	-3,169.07	-49.14	3,168.31	0.00	0.00	0.00
7,600.00	89.32	179.35	4,565.69	-3,269.06	-48.00	3,268.30	0.00	0.00	0.00
7,700.00	89.32	179.35	4,566.88	-3,369.05	-46.87	3,368.30	0.00	0.00	0.00
7,800.00	89.32	179.35	4,568.08	-3,469.03	-45.74	3,468.29	0.00	0.00	0.00
7,900.00	89.32	179.35	4,569.27	-3,569.02	-44.60	3,568.28	0.00	0.00	0.00
8,000.00	89.32	179.35	4,570.46	-3,669.01	-43.47	3,668.28	0.00	0.00	0.00
8,100.00	89.32	179.35	4,571.66	-3,768.99	-42.34	3,768.27	0.00	0.00	0.00
8,200.00	89.32	179.35	4,572.85	-3,868.98	-41.20	3,868.26	0.00	0.00	0.00
8,300.00	89.32	179.35	4,574.04	-3,968.96	-40.07	3,968.25	0.00	0.00	0.00
8,400.00	89.32	179.35	4,575.23	-4,068.95	-38.94	4,068.25	0.00	0.00	0.00
8,500.00	89.32	179.35	4,576.43	-4,168.94	-37.80	4,168.24	0.00	0.00	0.00
8,600.00	89.32	179.35	4,577.62	-4,268.92	-36.67	4,268.23	0.00	0.00	0.00
8,700.00	89.32	179.35	4,578.81	-4,368.91	-35.53	4,368.23	0.00	0.00	0.00
8,800.00	89.32	179.35	4,580.00	-4,468.90	-34.40	4,468.22	0.00	0.00	0.00
8,900.00	89.32	179.35	4,581.20	-4,568.88	-33.27	4,568.21	0.00	0.00	0.00
9,000.00	89.32	179.35	4,582.39	-4,668.87	-32.13	4,668.20	0.00	0.00	0.00
9,100.00	89.32	179.35	4,583.58	-4,768.86	-31.00	4,768.20	0.00	0.00	0.00
9,200.00	89.32	179.35	4,584.77	-4,868.84	-29.87	4,868.19	0.00	0.00	0.00
9,300.00	89.32	179.35	4,585.97	-4,968.83	-28.73	4,968.18	0.00	0.00	0.00
9,400.00	89.32	179.35	4,587.16	-5,068.82	-27.60	5,068.18	0.00	0.00	0.00
9,503.19	89.32	179.35	4,588.39	-5,171.99	-26.43	5,171.36	0.00	0.00	0.00
TD at 9503.19'									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (bearing)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
A201H PBHL - plan hits target center - Point	0.00	0.00	4,587.79	-5,122.00	-27.00	946,901.00	760,054.00	33° 36' 0.159 N	103° 28' 45.427 W

Planning Report

Database:	Midland District	Local Co-ordinate Reference:	Well 1H
Company:	Rockcliff Energy	TVD Reference:	KB @ 4310.00usft
Project:	Chaves County NM	MD Reference:	KB @ 4310.00usft
Site:	Annapurna 20	North Reference:	Grid
Well:	1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
2,260.00	2,260.00	Surface Casing	9-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (bearing)	
2,156.00	2,156.00	Rustler		0.00	0.00	
2,237.00	2,237.00	Saldo (Salts)		0.00	0.00	
2,546.00	2,546.00	Yates		0.00	0.00	
3,249.00	3,249.00	Queen		0.00	0.00	
3,755.00	3,755.00	San Andres		0.00	0.00	
4,347.97	4,329.00	Top Porosity		0.00	0.00	
4,578.50	4,477.00	P-1 Pay		0.00	0.00	
4,858.83	4,533.00	San Andres Target (p-2 Pay)		0.00	0.00	
6,619.64	4,554.00	P-2 Pay		0.00	0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
4,050.00	4,050.00	0.00	0.00	KO 12° DLS	
4,633.33	4,498.67	-307.86	-62.63	12° DLS TFO -33.08	
4,822.35	4,532.57	-491.79	-79.49	LP Hold 4680.84'	
9,503.19	4,588.39	-5,171.99	-26.43	TD at 9503.19'	