

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_ROW 13N-27HZ

ROW 13N-27HZ

ROW 13N-27HZ

Plan: ROW 13N-27HZ (wp01)

Standard Planning Report

18 May, 2011

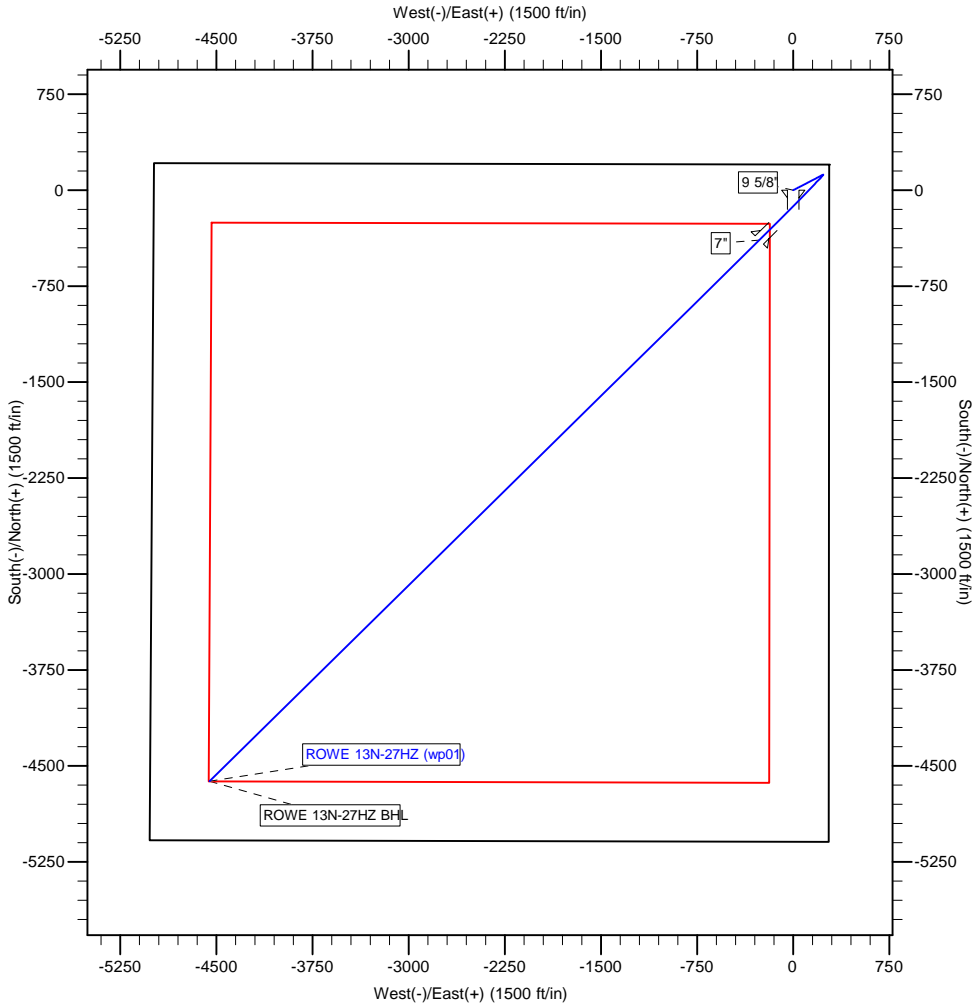


Weatherford®



Azimuths to True North
 Magnetic North: 8.78°
 Magnetic Field
 Strength: 52955.3snT
 Dip Angle: 66.77°
 Date: 5/18/2011
 Model: IGRF2010

Project: COLORADO NORTHERN ZONE - 83
Site: WELD ROWE 13N-27HZ
Well: ROWE 13N-27HZ
Wellbore: ROWE 13N-27HZ
Section:
SHL:
Design: ROWE 13N-27HZ (wp01)
Latitude: 40.029095
Longitude: -104.641779
GL: 5089.00
KB: 17' RKB + 5089' GL @ 5106.00ft



WELL DETAILS: ROWE 13N-27HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	5089.00 Latitude	Longitude	Slot
0.00	0.00	1254608.38	3240327.37	40.029095	-104.641779	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
ROWE 13N-27HZ BHL	7254.00	-4619.67	-4553.64	40.016412	-104.658037	Point

SECTION DETAILS

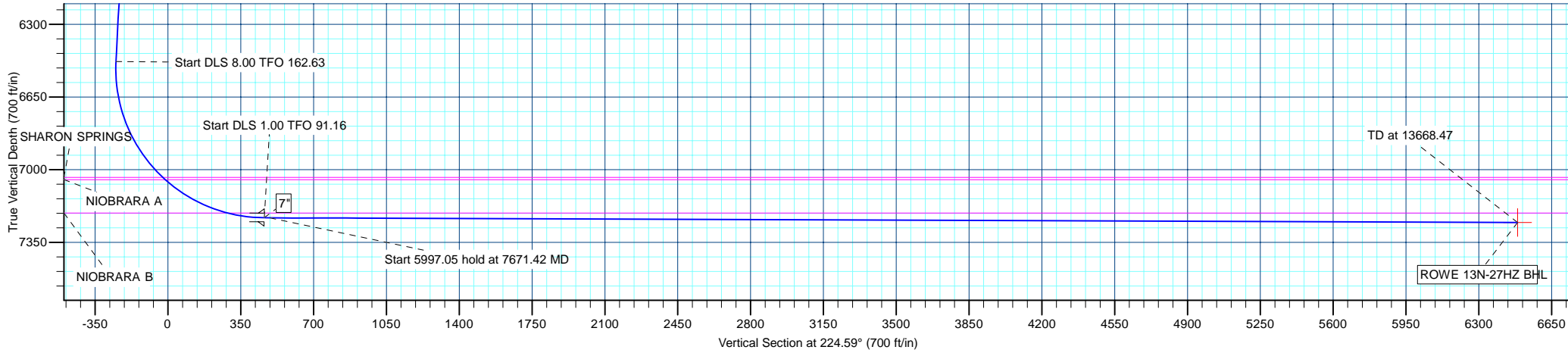
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1450.00	0.00	0.00	1450.00	0.00	0.00	0.00	0.00	0.00	
1601.61	3.03	62.49	1601.54	1.85	3.56	2.00	62.49	-3.82	
6485.65	3.03	62.49	6478.74	121.21	232.69	0.00	0.00	-249.67	
7644.16	89.79	225.13	7231.00	-389.93	-264.00	8.00	162.63	463.03	
7671.42	89.78	225.40	7231.10	-409.11	-283.36	1.00	91.16	490.28	
13668.47	89.78	225.40	7254.00	-4619.67	-4553.64	0.00	0.00	6486.68	ROWE 13N-27HZ BHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3183.00	3185.29	PARKMAN
4614.00	4618.29	SUSSEX
7037.00	7106.95	SHARON SPRINGS
7048.00	7123.22	NIOBRARA A
7208.00	7464.80	NIOBRARA B

CASING DETAILS

TVD	MD	Name	Size
1300.00	1300.00	9 5/8"	9-5/8
7231.00	7644.16	7"	7



Database:	edm5000p	Local Co-ordinate Reference:	Well ROWE 13N-27HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 5089' GL @ 5106.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 5089' GL @ 5106.00ft
Site:	WELD_ROWЕ 13N-27HZ	North Reference:	True
Well:	ROWE 13N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROWE 13N-27HZ		
Design:	ROWE 13N-27HZ (wp01)		

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	WELD_ROWЕ 13N-27HZ				
Site Position:		Northing:	1,254,608.38 ft	Latitude:	40.029095
From:	Lat/Long	Easting:	3,240,327.37 ft	Longitude:	-104.641779
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:	0.55 °

Well	ROWE 13N-27HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,254,608.38 ft	Latitude:	40.029095
	+E/-W	0.00 ft	Easting:	3,240,327.37 ft	Longitude:	-104.641779
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,089.00 ft

Wellbore	ROWE 13N-27HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/18/2011	8.78	66.77	52,955

Design	ROWE 13N-27HZ (wp01)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	224.59

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,450.00	0.00	0.00	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,601.61	3.03	62.49	1,601.54	1.85	3.56	2.00	2.00	0.00	62.49	
6,485.65	3.03	62.49	6,478.74	121.21	232.69	0.00	0.00	0.00	0.00	
7,644.16	89.79	225.13	7,231.00	-389.93	-264.00	8.00	7.49	14.04	162.63	
7,671.42	89.78	225.40	7,231.10	-409.11	-283.36	1.00	-0.02	1.00	91.16	
13,668.47	89.78	225.40	7,254.00	-4,619.67	-4,553.64	0.00	0.00	0.00	0.00	ROWE 13N-27HZ E

Database:	edm5000p	Local Co-ordinate Reference:	Well ROWE 13N-27HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 5089' GL @ 5106.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 5089' GL @ 5106.00ft
Site:	WELD_ROWЕ 13N-27HZ	North Reference:	True
Well:	ROWE 13N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROWE 13N-27HZ		
Design:	ROWE 13N-27HZ (wp01)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
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	
9 5/8"										
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,450.00	0.00	0.00	1,450.00	0.00	0.00	0.00	0.00	0.00	0.00	
Start Build 2.00										
1,500.00	1.00	62.49	1,500.00	0.20	0.39	-0.42	2.00	2.00	0.00	
1,600.00	3.00	62.49	1,599.93	1.81	3.48	-3.74	2.00	2.00	0.00	
1,601.61	3.03	62.49	1,601.54	1.85	3.56	-3.82	2.00	2.00	0.00	
Start 4884.04 hold at 1601.61 MD										
1,700.00	3.03	62.49	1,699.79	4.26	8.17	-8.77	0.00	0.00	0.00	
1,800.00	3.03	62.49	1,799.65	6.70	12.86	-13.80	0.00	0.00	0.00	
1,900.00	3.03	62.49	1,899.51	9.14	17.56	-18.84	0.00	0.00	0.00	
2,000.00	3.03	62.49	1,999.37	11.59	22.25	-23.87	0.00	0.00	0.00	
2,100.00	3.03	62.49	2,099.23	14.03	26.94	-28.90	0.00	0.00	0.00	
2,200.00	3.03	62.49	2,199.09	16.48	31.63	-33.94	0.00	0.00	0.00	
2,300.00	3.03	62.49	2,298.95	18.92	36.32	-38.97	0.00	0.00	0.00	
2,400.00	3.03	62.49	2,398.81	21.36	41.01	-44.01	0.00	0.00	0.00	
2,500.00	3.03	62.49	2,498.67	23.81	45.71	-49.04	0.00	0.00	0.00	
2,600.00	3.03	62.49	2,598.53	26.25	50.40	-54.07	0.00	0.00	0.00	
2,700.00	3.03	62.49	2,698.39	28.70	55.09	-59.11	0.00	0.00	0.00	
2,800.00	3.03	62.49	2,798.25	31.14	59.78	-64.14	0.00	0.00	0.00	
2,900.00	3.03	62.49	2,898.11	33.58	64.47	-69.18	0.00	0.00	0.00	
3,000.00	3.03	62.49	2,997.97	36.03	69.16	-74.21	0.00	0.00	0.00	
3,100.00	3.03	62.49	3,097.83	38.47	73.85	-79.24	0.00	0.00	0.00	
3,185.29	3.03	62.49	3,183.00	40.55	77.86	-83.54	0.00	0.00	0.00	
PARKMAN										
3,200.00	3.03	62.49	3,197.69	40.91	78.55	-84.28	0.00	0.00	0.00	
3,300.00	3.03	62.49	3,297.55	43.36	83.24	-89.31	0.00	0.00	0.00	
3,400.00	3.03	62.49	3,397.41	45.80	87.93	-94.34	0.00	0.00	0.00	
3,500.00	3.03	62.49	3,497.27	48.25	92.62	-99.38	0.00	0.00	0.00	
3,600.00	3.03	62.49	3,597.13	50.69	97.31	-104.41	0.00	0.00	0.00	
3,700.00	3.03	62.49	3,696.99	53.13	102.00	-109.45	0.00	0.00	0.00	
3,800.00	3.03	62.49	3,796.85	55.58	106.70	-114.48	0.00	0.00	0.00	
3,900.00	3.03	62.49	3,896.71	58.02	111.39	-119.51	0.00	0.00	0.00	
4,000.00	3.03	62.49	3,996.57	60.46	116.08	-124.55	0.00	0.00	0.00	
4,100.00	3.03	62.49	4,096.43	62.91	120.77	-129.58	0.00	0.00	0.00	
4,200.00	3.03	62.49	4,196.29	65.35	125.46	-134.62	0.00	0.00	0.00	
4,300.00	3.03	62.49	4,296.15	67.80	130.15	-139.65	0.00	0.00	0.00	
4,400.00	3.03	62.49	4,396.01	70.24	134.84	-144.68	0.00	0.00	0.00	
4,500.00	3.03	62.49	4,495.87	72.68	139.54	-149.72	0.00	0.00	0.00	
4,600.00	3.03	62.49	4,595.73	75.13	144.23	-154.75	0.00	0.00	0.00	

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 5089' GL @ 5106.00ft
Site:	WELD_ROWЕ 13N-27HZ	North Reference:	True
Well:	ROWE 13N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROWE 13N-27HZ		
Design:	ROWE 13N-27HZ (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,618.29	3.03	62.49	4,614.00	75.57	145.09	-155.67	0.00	0.00	0.00
SUSSEX									
4,700.00	3.03	62.49	4,695.59	77.57	148.92	-159.78	0.00	0.00	0.00
4,800.00	3.03	62.49	4,795.45	80.01	153.61	-164.82	0.00	0.00	0.00
4,900.00	3.03	62.49	4,895.31	82.46	158.30	-169.85	0.00	0.00	0.00
5,000.00	3.03	62.49	4,995.17	84.90	162.99	-174.89	0.00	0.00	0.00
5,100.00	3.03	62.49	5,095.03	87.35	167.68	-179.92	0.00	0.00	0.00
5,200.00	3.03	62.49	5,194.89	89.79	172.38	-184.95	0.00	0.00	0.00
5,300.00	3.03	62.49	5,294.75	92.23	177.07	-189.99	0.00	0.00	0.00
5,400.00	3.03	62.49	5,394.61	94.68	181.76	-195.02	0.00	0.00	0.00
5,500.00	3.03	62.49	5,494.47	97.12	186.45	-200.06	0.00	0.00	0.00
5,600.00	3.03	62.49	5,594.33	99.56	191.14	-205.09	0.00	0.00	0.00
5,700.00	3.03	62.49	5,694.19	102.01	195.83	-210.12	0.00	0.00	0.00
5,800.00	3.03	62.49	5,794.05	104.45	200.53	-215.16	0.00	0.00	0.00
5,900.00	3.03	62.49	5,893.91	106.90	205.22	-220.19	0.00	0.00	0.00
6,000.00	3.03	62.49	5,993.77	109.34	209.91	-225.22	0.00	0.00	0.00
6,100.00	3.03	62.49	6,093.63	111.78	214.60	-230.26	0.00	0.00	0.00
6,200.00	3.03	62.49	6,193.49	114.23	219.29	-235.29	0.00	0.00	0.00
6,300.00	3.03	62.49	6,293.35	116.67	223.98	-240.33	0.00	0.00	0.00
6,400.00	3.03	62.49	6,393.21	119.11	228.67	-245.36	0.00	0.00	0.00
6,485.65	3.03	62.49	6,478.74	121.21	232.69	-249.67	0.00	0.00	0.00
Start DLS 8.00 TFO 162.63									
6,500.00	1.97	72.53	6,493.08	121.46	233.26	-250.25	8.00	-7.43	69.96
6,600.00	6.32	216.93	6,592.91	117.57	231.59	-246.31	8.00	4.35	144.41
6,700.00	14.28	221.58	6,691.22	103.92	220.08	-228.51	8.00	7.96	4.64
6,800.00	22.27	222.92	6,786.10	80.78	198.96	-197.19	8.00	7.99	1.35
6,900.00	30.27	223.58	6,875.70	48.59	168.63	-152.98	8.00	7.99	0.66
7,000.00	38.26	223.99	6,958.27	7.99	129.69	-96.73	8.00	8.00	0.40
7,100.00	46.26	224.27	7,032.22	-40.23	82.89	-29.54	8.00	8.00	0.28
7,106.95	46.82	224.28	7,037.00	-43.84	79.37	-24.50	8.00	8.00	0.24
SHARON SPRINGS									
7,123.22	48.12	224.32	7,048.00	-52.42	71.00	-12.51	8.00	8.00	0.23
NIORARA A									
7,200.00	54.26	224.48	7,096.10	-95.14	29.15	47.29	8.00	8.00	0.21
7,300.00	62.26	224.66	7,148.67	-155.67	-30.49	132.27	8.00	8.00	0.18
7,400.00	70.26	224.81	7,188.90	-220.64	-94.86	223.73	8.00	8.00	0.15
7,464.80	75.44	224.90	7,208.00	-264.52	-138.52	285.62	8.00	8.00	0.14
NIORARA B									
7,500.00	78.26	224.95	7,216.01	-288.79	-162.72	319.90	8.00	8.00	0.13
7,600.00	86.25	225.08	7,229.48	-358.78	-232.74	418.90	8.00	8.00	0.13
7,644.16	89.79	225.13	7,231.00	-389.93	-264.00	463.03	8.00	8.00	0.13
Start DLS 1.00 TFO 91.16 - 7"									
7,671.42	89.78	225.40	7,231.10	-409.11	-283.36	490.28	1.00	-0.02	1.00
Start 5997.05 hold at 7671.42 MD									
7,700.00	89.78	225.40	7,231.21	-429.18	-303.72	518.86	0.00	0.00	0.00
7,800.00	89.78	225.40	7,231.59	-499.39	-374.92	618.85	0.00	0.00	0.00
7,900.00	89.78	225.40	7,231.98	-569.60	-446.13	718.84	0.00	0.00	0.00
8,000.00	89.78	225.40	7,232.36	-639.81	-517.33	818.83	0.00	0.00	0.00
8,100.00	89.78	225.40	7,232.74	-710.02	-588.54	918.82	0.00	0.00	0.00
8,200.00	89.78	225.40	7,233.12	-780.23	-659.75	1,018.81	0.00	0.00	0.00
8,300.00	89.78	225.40	7,233.50	-850.44	-730.95	1,118.80	0.00	0.00	0.00
8,400.00	89.78	225.40	7,233.88	-920.66	-802.16	1,218.79	0.00	0.00	0.00
8,500.00	89.78	225.40	7,234.27	-990.87	-873.37	1,318.78	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 5089' GL @ 5106.00ft
Site:	WELD_ROWЕ 13N-27HZ	North Reference:	True
Well:	ROWE 13N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROWE 13N-27HZ		
Design:	ROWE 13N-27HZ (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,600.00	89.78	225.40	7,234.65	-1,061.08	-944.57	1,418.76	0.00	0.00	0.00
8,700.00	89.78	225.40	7,235.03	-1,131.29	-1,015.78	1,518.75	0.00	0.00	0.00
8,800.00	89.78	225.40	7,235.41	-1,201.50	-1,086.99	1,618.74	0.00	0.00	0.00
8,900.00	89.78	225.40	7,235.79	-1,271.71	-1,158.19	1,718.73	0.00	0.00	0.00
9,000.00	89.78	225.40	7,236.18	-1,341.92	-1,229.40	1,818.72	0.00	0.00	0.00
9,100.00	89.78	225.40	7,236.56	-1,412.13	-1,300.60	1,918.71	0.00	0.00	0.00
9,200.00	89.78	225.40	7,236.94	-1,482.34	-1,371.81	2,018.70	0.00	0.00	0.00
9,300.00	89.78	225.40	7,237.32	-1,552.55	-1,443.02	2,118.69	0.00	0.00	0.00
9,400.00	89.78	225.40	7,237.70	-1,622.76	-1,514.22	2,218.68	0.00	0.00	0.00
9,500.00	89.78	225.40	7,238.08	-1,692.97	-1,585.43	2,318.67	0.00	0.00	0.00
9,600.00	89.78	225.40	7,238.47	-1,763.18	-1,656.64	2,418.66	0.00	0.00	0.00
9,700.00	89.78	225.40	7,238.85	-1,833.39	-1,727.84	2,518.64	0.00	0.00	0.00
9,800.00	89.78	225.40	7,239.23	-1,903.60	-1,799.05	2,618.63	0.00	0.00	0.00
9,900.00	89.78	225.40	7,239.61	-1,973.81	-1,870.25	2,718.62	0.00	0.00	0.00
10,000.00	89.78	225.40	7,239.99	-2,044.02	-1,941.46	2,818.61	0.00	0.00	0.00
10,100.00	89.78	225.40	7,240.38	-2,114.23	-2,012.67	2,918.60	0.00	0.00	0.00
10,200.00	89.78	225.40	7,240.76	-2,184.44	-2,083.87	3,018.59	0.00	0.00	0.00
10,300.00	89.78	225.40	7,241.14	-2,254.66	-2,155.08	3,118.58	0.00	0.00	0.00
10,400.00	89.78	225.40	7,241.52	-2,324.87	-2,226.29	3,218.57	0.00	0.00	0.00
10,500.00	89.78	225.40	7,241.90	-2,395.08	-2,297.49	3,318.56	0.00	0.00	0.00
10,600.00	89.78	225.40	7,242.28	-2,465.29	-2,368.70	3,418.55	0.00	0.00	0.00
10,700.00	89.78	225.40	7,242.67	-2,535.50	-2,439.90	3,518.54	0.00	0.00	0.00
10,800.00	89.78	225.40	7,243.05	-2,605.71	-2,511.11	3,618.53	0.00	0.00	0.00
10,900.00	89.78	225.40	7,243.43	-2,675.92	-2,582.32	3,718.51	0.00	0.00	0.00
11,000.00	89.78	225.40	7,243.81	-2,746.13	-2,653.52	3,818.50	0.00	0.00	0.00
11,100.00	89.78	225.40	7,244.19	-2,816.34	-2,724.73	3,918.49	0.00	0.00	0.00
11,200.00	89.78	225.40	7,244.58	-2,886.55	-2,795.94	4,018.48	0.00	0.00	0.00
11,300.00	89.78	225.40	7,244.96	-2,956.76	-2,867.14	4,118.47	0.00	0.00	0.00
11,400.00	89.78	225.40	7,245.34	-3,026.97	-2,938.35	4,218.46	0.00	0.00	0.00
11,500.00	89.78	225.40	7,245.72	-3,097.18	-3,009.56	4,318.45	0.00	0.00	0.00
11,600.00	89.78	225.40	7,246.10	-3,167.39	-3,080.76	4,418.44	0.00	0.00	0.00
11,700.00	89.78	225.40	7,246.48	-3,237.60	-3,151.97	4,518.43	0.00	0.00	0.00
11,800.00	89.78	225.40	7,246.87	-3,307.81	-3,223.17	4,618.42	0.00	0.00	0.00
11,900.00	89.78	225.40	7,247.25	-3,378.02	-3,294.38	4,718.41	0.00	0.00	0.00
12,000.00	89.78	225.40	7,247.63	-3,448.23	-3,365.59	4,818.39	0.00	0.00	0.00
12,100.00	89.78	225.40	7,248.01	-3,518.44	-3,436.79	4,918.38	0.00	0.00	0.00
12,200.00	89.78	225.40	7,248.39	-3,588.66	-3,508.00	5,018.37	0.00	0.00	0.00
12,300.00	89.78	225.40	7,248.78	-3,658.87	-3,579.21	5,118.36	0.00	0.00	0.00
12,400.00	89.78	225.40	7,249.16	-3,729.08	-3,650.41	5,218.35	0.00	0.00	0.00
12,500.00	89.78	225.40	7,249.54	-3,799.29	-3,721.62	5,318.34	0.00	0.00	0.00
12,600.00	89.78	225.40	7,249.92	-3,869.50	-3,792.82	5,418.33	0.00	0.00	0.00
12,700.00	89.78	225.40	7,250.30	-3,939.71	-3,864.03	5,518.32	0.00	0.00	0.00
12,800.00	89.78	225.40	7,250.68	-4,009.92	-3,935.24	5,618.31	0.00	0.00	0.00
12,900.00	89.78	225.40	7,251.07	-4,080.13	-4,006.44	5,718.30	0.00	0.00	0.00
13,000.00	89.78	225.40	7,251.45	-4,150.34	-4,077.65	5,818.29	0.00	0.00	0.00
13,100.00	89.78	225.40	7,251.83	-4,220.55	-4,148.86	5,918.28	0.00	0.00	0.00
13,200.00	89.78	225.40	7,252.21	-4,290.76	-4,220.06	6,018.26	0.00	0.00	0.00
13,300.00	89.78	225.40	7,252.59	-4,360.97	-4,291.27	6,118.25	0.00	0.00	0.00
13,400.00	89.78	225.40	7,252.98	-4,431.18	-4,362.47	6,218.24	0.00	0.00	0.00
13,500.00	89.78	225.40	7,253.36	-4,501.39	-4,433.68	6,318.23	0.00	0.00	0.00
13,600.00	89.78	225.40	7,253.74	-4,571.60	-4,504.89	6,418.22	0.00	0.00	0.00
13,668.47	89.78	225.40	7,254.00	-4,619.67	-4,553.64	6,486.68	0.00	0.00	0.00
TD at 13668.47 - ROWE 13N-27HZ BHL									

Database:	edm5000p	Local Co-ordinate Reference:	Well ROWE 13N-27HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 5089' GL @ 5106.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 5089' GL @ 5106.00ft
Site:	WELD_ROWЕ 13N-27HZ	North Reference:	True
Well:	ROWE 13N-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	ROWE 13N-27HZ		
Design:	ROWE 13N-27HZ (wp01)		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
ROWE 13N-27HZ BH - hit/miss target - Shape - Point	0.00	0.00	7,254.00	-4,619.67	-4,553.64	1,249,944.85	3,235,818.65	40.016412	-104.658037

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,300.00	1,300.00	9 5/8"	9-5/8	12-1/4	
7,644.16	7,231.00	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,185.29	3,183.00	PARKMAN		0.00	
4,618.29	4,614.00	SUSSEX		0.00	
7,106.95	7,037.00	SHARON SPRINGS		0.00	
7,123.22	7,048.00	NIOBRARA A		0.00	
7,464.80	7,208.00	NIOBRARA B		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,450.00	1,450.00	0.00	0.00	Start Build 2.00	
1,601.61	1,601.54	1.85	3.56	Start 4884.04 hold at 1601.61 MD	
6,485.65	6,478.74	121.21	232.69	Start DLS 8.00 TFO 162.63	
7,644.16	7,231.00	-389.93	-264.00	Start DLS 1.00 TFO 91.16	
7,671.42	7,231.10	-409.11	-283.36	Start 5997.05 hold at 7671.42 MD	
13,668.47	7,254.00	-4,619.67	-4,553.64	TD at 13668.47	