

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-66-13 VERDE 3-13HZ PAD
VERDE 13-18HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

02 June, 2017



Azimuths to True North
Magnetic North: 8.01°

Magnetic Field
Strength: 52325.5snT
Dip Angle: 66.57°
Date: 6/1/2017
Model: IGRF2010

SITE: 1N-66-13 VERDE 3-13HZ PAD

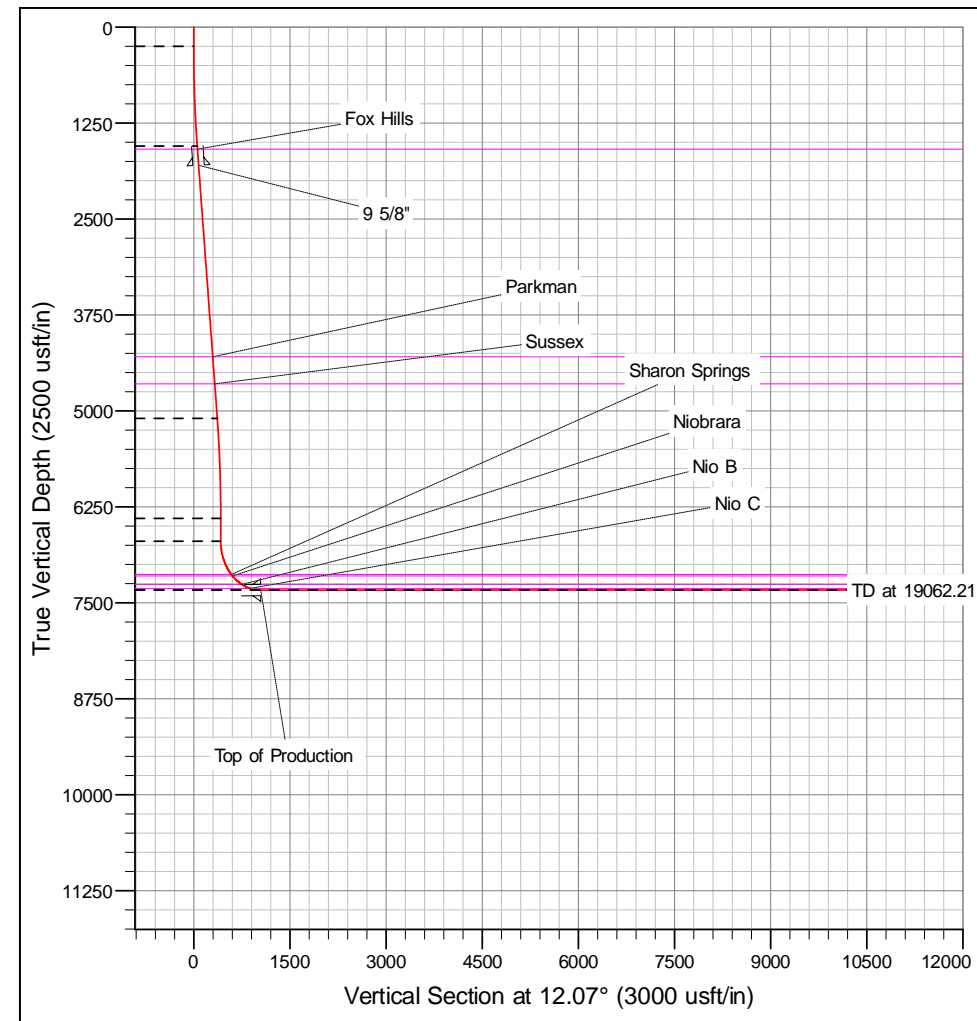
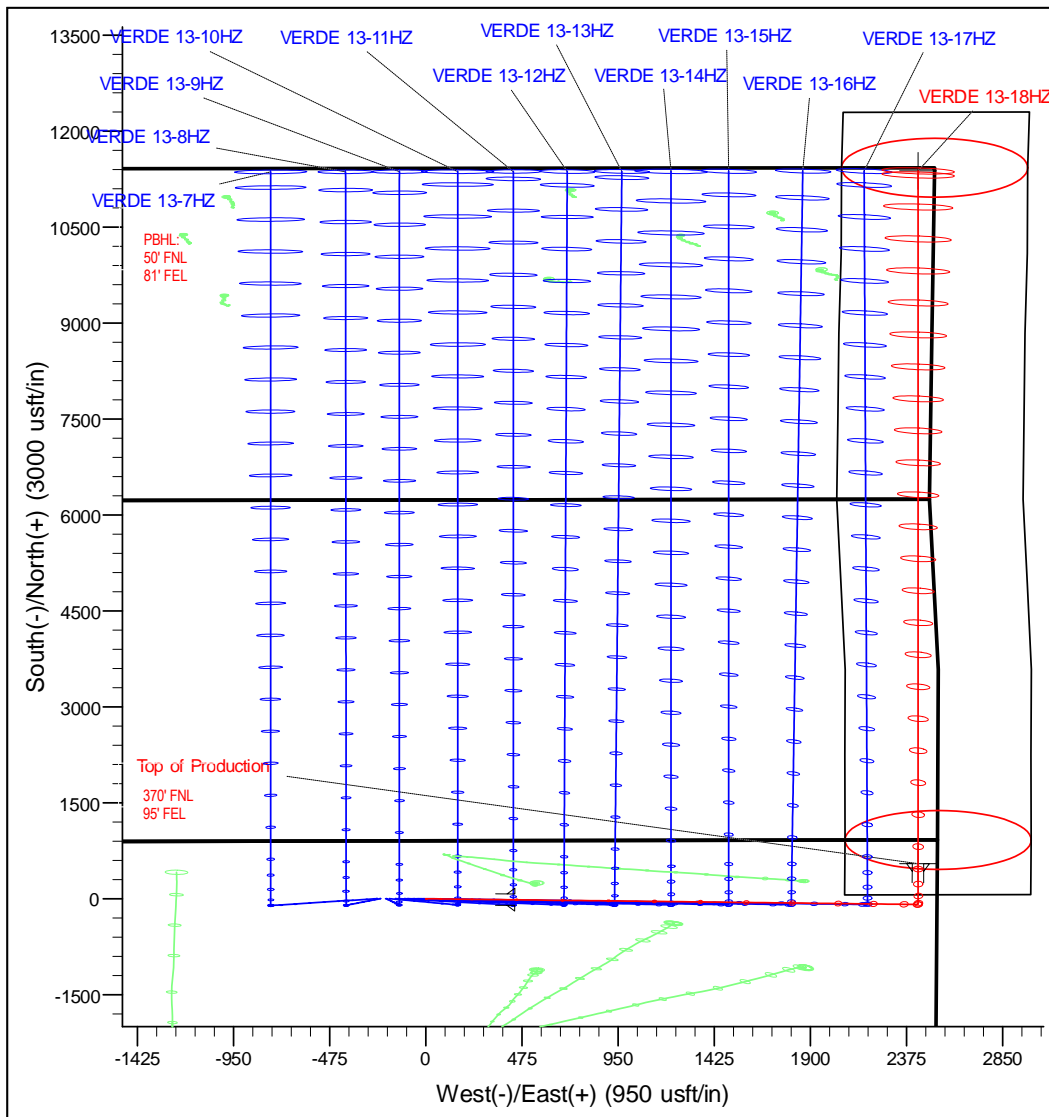
Well: VERDE 13-18HZ
Wellbore: Plan A
Design: Permit Rev-1

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1591.00	1645.36	Fox Hills
4295.00	4680.45	Parkman
4648.00	5076.67	Sussex
7130.00	7705.74	Sharon Springs
7151.00	7734.88	Niobrara
7262.00	7922.92	Nio B
7313.00	8061.55	Nio C

WELL DETAILS: VERDE 13-18HZ					
		GL: 5071.00	RKB @ 5088.00usft (D Rig)		
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14547268.29	1717360.15	40.056066	-104.725027

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VERDE 13-18HZ, PBHL	7333.00	11377.25	2432.00	14558653.00	1719757.00	40.087309	-104.716332

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00		
1600.59	27.01	92.10	1551.11	-11.43	312.30	2.00	54.11		
5592.77	27.01	92.10	5088.89	-77.57	2119.70	0.00	367.24		
6933.36	0.00	0.00	6400.00	-89.00	2432.00	2.00	421.35		
7232.58	0.00	0.00	6699.22	-89.00	2432.00	0.00	421.35		
8232.74	90.01	0.00	7335.84	547.79	2432.00	9.00	1044.06		
19062.21	90.01	0.00	7333.00	11377.25	2432.00	0.00	1634.28		



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site						1N-66-13 VERDE 3-13HZ PAD											
Site Position:						Northing:			14,547,269.73 usft			Latitude:			40.056072		
From:			Lat/Long			Easting:			1,717,120.05 usft			Longitude:			-104.725885		
Position Uncertainty:			3.28 usft			Slot Radius:			13-3/16 "			Grid Convergence:			0.18 °		

Well	VERDE 13-18HZ					
Well Position	+N-S	-2.18 usft	Northing:	14,547,268.28 usft	Latitude:	40.056066
	+E-W	240.09 usft	Easting:	1,717,360.15 usft	Longitude:	-104.725027
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	5,071.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/1/2017	8.01	66.57	52,325.51686198

Design	Permit Rev-1				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)	
	0.00	0.00	0.00	12.07	

Plan Survey Tool Program	Date	6/2/2017			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	1,879.95	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	
				Fixed:v2:standard declination	
2	1,879.95	19,062.21	Permit Rev-1 (Plan A)	APC_ISCWSA REV 2 MWI	
				Fixed:v2:crustal field declinat	

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

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	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.59	27.01	92.10	1,551.11	-11.43	312.30	2.00	2.00	0.00	92.10	
5,582.77	27.01	92.10	5,098.89	-77.57	2,119.70	0.00	0.00	0.00	0.00	
6,933.36	0.00	0.00	6,400.00	-89.00	2,432.00	2.00	-2.00	0.00	180.00	
7,232.58	0.00	0.00	6,699.22	-89.00	2,432.00	0.00	0.00	0.00	0.00	
8,232.74	90.02	0.00	7,335.84	547.79	2,432.00	9.00	9.00	0.00	0.00	
19,062.21	90.02	0.00	7,333.00	11,377.25	2,432.00	0.00	0.00	0.00	0.00	VERDE 13-18HZ_P

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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 (°/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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	1.00	92.10	300.00	-0.02	0.44	0.08	2.00	2.00	0.00
400.00	3.00	92.10	399.93	-0.14	3.92	0.68	2.00	2.00	0.00
500.00	5.00	92.10	499.68	-0.40	10.89	1.89	2.00	2.00	0.00
600.00	7.00	92.10	599.13	-0.78	21.34	3.70	2.00	2.00	0.00
700.00	9.00	92.10	698.15	-1.29	35.25	6.11	2.00	2.00	0.00
800.00	11.00	92.10	796.63	-1.92	52.60	9.11	2.00	2.00	0.00
900.00	13.00	92.10	894.44	-2.69	73.38	12.71	2.00	2.00	0.00
1,000.00	15.00	92.10	991.46	-3.57	97.55	16.90	2.00	2.00	0.00
1,100.00	17.00	92.10	1,087.58	-4.58	125.09	21.67	2.00	2.00	0.00
1,200.00	19.00	92.10	1,182.68	-5.71	155.97	27.02	2.00	2.00	0.00
1,300.00	21.00	92.10	1,276.65	-6.96	190.15	32.94	2.00	2.00	0.00
1,400.00	23.00	92.10	1,369.36	-8.33	227.58	39.43	2.00	2.00	0.00
1,500.00	25.00	92.10	1,460.71	-9.82	268.23	46.47	2.00	2.00	0.00
1,600.00	27.00	92.10	1,550.59	-11.42	312.03	54.06	2.00	2.00	0.00
1,600.59	27.01	92.10	1,551.11	-11.43	312.30	54.11	2.00	2.00	0.00
1,645.36	27.01	92.10	1,591.00	-12.17	332.62	57.63	0.00	0.00	0.00
Fox Hills									
1,700.00	27.01	92.10	1,639.68	-13.08	357.42	61.92	0.00	0.00	0.00
1,800.00	27.01	92.10	1,728.77	-14.74	402.81	69.79	0.00	0.00	0.00
1,879.95	27.01	92.10	1,800.00	-16.07	439.10	76.07	0.00	0.00	0.00
9 5/8"									
1,900.00	27.01	92.10	1,817.86	-16.40	448.20	77.65	0.00	0.00	0.00
2,000.00	27.01	92.10	1,906.95	-18.06	493.58	85.51	0.00	0.00	0.00
2,100.00	27.01	92.10	1,996.04	-19.72	538.97	93.38	0.00	0.00	0.00
2,200.00	27.01	92.10	2,085.13	-21.38	584.36	101.24	0.00	0.00	0.00
2,300.00	27.01	92.10	2,174.23	-23.05	629.74	109.10	0.00	0.00	0.00
2,400.00	27.01	92.10	2,263.32	-24.71	675.13	116.97	0.00	0.00	0.00
2,500.00	27.01	92.10	2,352.41	-26.37	720.52	124.83	0.00	0.00	0.00
2,600.00	27.01	92.10	2,441.50	-28.03	765.91	132.69	0.00	0.00	0.00
2,700.00	27.01	92.10	2,530.59	-29.69	811.29	140.56	0.00	0.00	0.00
2,800.00	27.01	92.10	2,619.68	-31.35	856.68	148.42	0.00	0.00	0.00
2,900.00	27.01	92.10	2,708.77	-33.01	902.07	156.28	0.00	0.00	0.00
3,000.00	27.01	92.10	2,797.86	-34.67	947.45	164.15	0.00	0.00	0.00
3,100.00	27.01	92.10	2,886.96	-36.33	992.84	172.01	0.00	0.00	0.00
3,200.00	27.01	92.10	2,976.05	-37.99	1,038.23	179.87	0.00	0.00	0.00
3,300.00	27.01	92.10	3,065.14	-39.66	1,083.61	187.74	0.00	0.00	0.00
3,400.00	27.01	92.10	3,154.23	-41.32	1,129.00	195.60	0.00	0.00	0.00
3,500.00	27.01	92.10	3,243.32	-42.98	1,174.39	203.46	0.00	0.00	0.00
3,600.00	27.01	92.10	3,332.41	-44.64	1,219.78	211.33	0.00	0.00	0.00
3,700.00	27.01	92.10	3,421.50	-46.30	1,265.16	219.19	0.00	0.00	0.00
3,800.00	27.01	92.10	3,510.59	-47.96	1,310.55	227.05	0.00	0.00	0.00
3,900.00	27.01	92.10	3,599.69	-49.62	1,355.94	234.92	0.00	0.00	0.00
4,000.00	27.01	92.10	3,688.78	-51.28	1,401.32	242.78	0.00	0.00	0.00
4,100.00	27.01	92.10	3,777.87	-52.94	1,446.71	250.64	0.00	0.00	0.00
4,200.00	27.01	92.10	3,866.96	-54.60	1,492.10	258.51	0.00	0.00	0.00
4,300.00	27.01	92.10	3,956.05	-56.26	1,537.49	266.37	0.00	0.00	0.00
4,400.00	27.01	92.10	4,045.14	-57.93	1,582.87	274.23	0.00	0.00	0.00
4,500.00	27.01	92.10	4,134.23	-59.59	1,628.26	282.10	0.00	0.00	0.00
4,600.00	27.01	92.10	4,223.33	-61.25	1,673.65	289.96	0.00	0.00	0.00
4,680.45	27.01	92.10	4,295.00	-62.58	1,710.16	296.29	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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 (°/100usft)	Turn Rate (°/100usft)
Parkman									
4,700.00	27.01	92.10	4,312.42	-62.91	1,719.03	297.82	0.00	0.00	0.00
4,800.00	27.01	92.10	4,401.51	-64.57	1,764.42	305.69	0.00	0.00	0.00
4,900.00	27.01	92.10	4,490.60	-66.23	1,809.81	313.55	0.00	0.00	0.00
5,000.00	27.01	92.10	4,579.69	-67.89	1,855.20	321.41	0.00	0.00	0.00
5,076.67	27.01	92.10	4,648.00	-69.17	1,890.00	327.44	0.00	0.00	0.00
Sussex									
5,100.00	27.01	92.10	4,668.78	-69.55	1,900.58	329.28	0.00	0.00	0.00
5,200.00	27.01	92.10	4,757.87	-71.21	1,945.97	337.14	0.00	0.00	0.00
5,300.00	27.01	92.10	4,846.96	-72.87	1,991.36	345.00	0.00	0.00	0.00
5,400.00	27.01	92.10	4,936.06	-74.54	2,036.74	352.87	0.00	0.00	0.00
5,500.00	27.01	92.10	5,025.15	-76.20	2,082.13	360.73	0.00	0.00	0.00
5,582.77	27.01	92.10	5,098.89	-77.57	2,119.70	367.24	0.00	0.00	0.00
5,600.00	26.67	92.10	5,114.26	-77.86	2,127.47	368.59	2.00	-2.00	0.00
5,700.00	24.67	92.10	5,204.39	-79.44	2,170.75	376.08	2.00	-2.00	0.00
5,800.00	22.67	92.10	5,295.97	-80.91	2,210.87	383.03	2.00	-2.00	0.00
5,900.00	20.67	92.10	5,388.90	-82.26	2,247.76	389.43	2.00	-2.00	0.00
6,000.00	18.67	92.10	5,483.06	-83.49	2,281.39	395.25	2.00	-2.00	0.00
6,100.00	16.67	92.10	5,578.34	-84.60	2,311.72	400.51	2.00	-2.00	0.00
6,200.00	14.67	92.10	5,674.62	-85.59	2,338.71	405.18	2.00	-2.00	0.00
6,300.00	12.67	92.10	5,771.79	-86.45	2,362.32	409.27	2.00	-2.00	0.00
6,400.00	10.67	92.10	5,869.72	-87.19	2,382.53	412.77	2.00	-2.00	0.00
6,500.00	8.67	92.10	5,968.29	-87.80	2,399.31	415.68	2.00	-2.00	0.00
6,600.00	6.67	92.10	6,067.39	-88.29	2,412.64	417.99	2.00	-2.00	0.00
6,700.00	4.67	92.10	6,166.90	-88.65	2,422.51	419.70	2.00	-2.00	0.00
6,800.00	2.67	92.10	6,266.69	-88.89	2,428.90	420.81	2.00	-2.00	0.00
6,900.00	0.67	92.10	6,366.64	-88.99	2,431.81	421.31	2.00	-2.00	0.00
6,933.36	0.00	0.00	6,400.00	-89.00	2,432.00	421.35	2.00	-2.00	0.00
7,000.00	0.00	0.00	6,466.64	-89.00	2,432.00	421.35	0.00	0.00	0.00
7,100.00	0.00	0.00	6,566.64	-89.00	2,432.00	421.35	0.00	0.00	0.00
7,200.00	0.00	0.00	6,666.64	-89.00	2,432.00	421.35	0.00	0.00	0.00
7,232.58	0.00	0.00	6,699.22	-89.00	2,432.00	421.35	0.00	0.00	0.00
7,300.00	6.07	0.00	6,766.51	-85.43	2,432.00	424.83	9.00	9.00	0.00
7,400.00	15.07	0.00	6,864.72	-67.11	2,432.00	442.75	9.00	9.00	0.00
7,500.00	24.07	0.00	6,958.84	-33.65	2,432.00	475.47	9.00	9.00	0.00
7,600.00	33.07	0.00	7,046.58	14.12	2,432.00	522.19	9.00	9.00	0.00
7,700.00	42.07	0.00	7,125.76	75.03	2,432.00	581.75	9.00	9.00	0.00
7,705.74	42.58	0.00	7,130.00	78.89	2,432.00	585.52	9.00	9.00	0.00
Sharon Springs									
7,734.88	45.21	0.00	7,151.00	99.09	2,432.00	605.28	9.00	9.00	0.00
Niobrara									
7,800.00	51.07	0.00	7,194.44	147.57	2,432.00	652.69	9.00	9.00	0.00
7,900.00	60.07	0.00	7,250.92	229.97	2,432.00	733.27	9.00	9.00	0.00
7,922.92	62.13	0.00	7,262.00	250.03	2,432.00	752.89	9.00	9.00	0.00
Nio B									
8,000.00	69.07	0.00	7,293.82	320.18	2,432.00	821.49	9.00	9.00	0.00
8,061.55	74.61	0.00	7,313.00	378.64	2,432.00	878.66	9.00	9.00	0.00
Nio C									
8,100.00	78.07	0.00	7,322.08	416.00	2,432.00	915.19	9.00	9.00	0.00
8,200.00	87.07	0.00	7,335.00	515.06	2,432.00	1,012.06	9.00	9.00	0.00
8,232.74	90.01	0.00	7,335.84	547.78	2,432.00	1,044.06	9.00	9.00	0.00
Top of Production - VERDE 13-18HZ_PHL									
8,300.00	90.02	0.00	7,335.82	615.04	2,432.00	1,109.84	0.00	0.00	0.00

Corporate Planning Report

Database: PLANNING
Company: US ROCKIES WATTENBERG PLANNING
Project: WELD-NAD83-UTMFT13N
Site: 1N-66-13 VERDE 3-13HZ PAD
Well: VERDE 13-18HZ
Wellbore: Plan A
Design: Permit Rev-1

Local Co-ordinate Reference: Well VERDE 13-18HZ
TVD Reference: RKB @ 5088.00usft (D Rig)
MD Reference: RKB @ 5088.00usft (D Rig)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,400.00	90.02	0.00	7,335.79	715.04	2,432.00	1,207.63	0.00	0.00	0.00
8,500.00	90.02	0.00	7,335.77	815.04	2,432.00	1,305.42	0.00	0.00	0.00
8,600.00	90.02	0.00	7,335.74	915.04	2,432.00	1,403.21	0.00	0.00	0.00
8,700.00	90.02	0.00	7,335.71	1,015.04	2,432.00	1,501.00	0.00	0.00	0.00
8,800.00	90.02	0.00	7,335.69	1,115.04	2,432.00	1,598.79	0.00	0.00	0.00
8,900.00	90.02	0.00	7,335.66	1,215.04	2,432.00	1,696.58	0.00	0.00	0.00
9,000.00	90.02	0.00	7,335.63	1,315.04	2,432.00	1,794.37	0.00	0.00	0.00
9,100.00	90.02	0.00	7,335.61	1,415.04	2,432.00	1,892.16	0.00	0.00	0.00
9,200.00	90.02	0.00	7,335.58	1,515.04	2,432.00	1,989.95	0.00	0.00	0.00
9,300.00	90.02	0.00	7,335.56	1,615.04	2,432.00	2,087.74	0.00	0.00	0.00
9,400.00	90.02	0.00	7,335.53	1,715.04	2,432.00	2,185.53	0.00	0.00	0.00
9,500.00	90.02	0.00	7,335.50	1,815.04	2,432.00	2,283.32	0.00	0.00	0.00
9,600.00	90.02	0.00	7,335.48	1,915.04	2,432.00	2,381.12	0.00	0.00	0.00
9,700.00	90.02	0.00	7,335.45	2,015.04	2,432.00	2,478.91	0.00	0.00	0.00
9,800.00	90.02	0.00	7,335.43	2,115.04	2,432.00	2,576.70	0.00	0.00	0.00
9,900.00	90.02	0.00	7,335.40	2,215.04	2,432.00	2,674.49	0.00	0.00	0.00
10,000.00	90.02	0.00	7,335.37	2,315.04	2,432.00	2,772.28	0.00	0.00	0.00
10,100.00	90.02	0.00	7,335.35	2,415.04	2,432.00	2,870.07	0.00	0.00	0.00
10,200.00	90.02	0.00	7,335.32	2,515.04	2,432.00	2,967.86	0.00	0.00	0.00
10,300.00	90.02	0.00	7,335.29	2,615.04	2,432.00	3,065.65	0.00	0.00	0.00
10,400.00	90.02	0.00	7,335.27	2,715.04	2,432.00	3,163.44	0.00	0.00	0.00
10,500.00	90.02	0.00	7,335.24	2,815.04	2,432.00	3,261.23	0.00	0.00	0.00
10,600.00	90.02	0.00	7,335.22	2,915.04	2,432.00	3,359.02	0.00	0.00	0.00
10,700.00	90.02	0.00	7,335.19	3,015.04	2,432.00	3,456.81	0.00	0.00	0.00
10,800.00	90.02	0.00	7,335.16	3,115.04	2,432.00	3,554.60	0.00	0.00	0.00
10,900.00	90.02	0.00	7,335.14	3,215.04	2,432.00	3,652.40	0.00	0.00	0.00
11,000.00	90.02	0.00	7,335.11	3,315.04	2,432.00	3,750.19	0.00	0.00	0.00
11,100.00	90.02	0.00	7,335.08	3,415.04	2,432.00	3,847.98	0.00	0.00	0.00
11,200.00	90.02	0.00	7,335.06	3,515.04	2,432.00	3,945.77	0.00	0.00	0.00
11,300.00	90.02	0.00	7,335.03	3,615.04	2,432.00	4,043.56	0.00	0.00	0.00
11,400.00	90.02	0.00	7,335.01	3,715.04	2,432.00	4,141.35	0.00	0.00	0.00
11,500.00	90.02	0.00	7,334.98	3,815.04	2,432.00	4,239.14	0.00	0.00	0.00
11,600.00	90.02	0.00	7,334.95	3,915.04	2,432.00	4,336.93	0.00	0.00	0.00
11,700.00	90.02	0.00	7,334.93	4,015.04	2,432.00	4,434.72	0.00	0.00	0.00
11,800.00	90.02	0.00	7,334.90	4,115.04	2,432.00	4,532.51	0.00	0.00	0.00
11,900.00	90.02	0.00	7,334.88	4,215.04	2,432.00	4,630.30	0.00	0.00	0.00
12,000.00	90.02	0.00	7,334.85	4,315.04	2,432.00	4,728.09	0.00	0.00	0.00
12,100.00	90.02	0.00	7,334.82	4,415.04	2,432.00	4,825.88	0.00	0.00	0.00
12,200.00	90.02	0.00	7,334.80	4,515.04	2,432.00	4,923.68	0.00	0.00	0.00
12,300.00	90.02	0.00	7,334.77	4,615.04	2,432.00	5,021.47	0.00	0.00	0.00
12,400.00	90.02	0.00	7,334.74	4,715.04	2,432.00	5,119.26	0.00	0.00	0.00
12,500.00	90.02	0.00	7,334.72	4,815.04	2,432.00	5,217.05	0.00	0.00	0.00
12,600.00	90.02	0.00	7,334.69	4,915.04	2,432.00	5,314.84	0.00	0.00	0.00
12,700.00	90.02	0.00	7,334.67	5,015.04	2,432.00	5,412.63	0.00	0.00	0.00
12,800.00	90.02	0.00	7,334.64	5,115.04	2,432.00	5,510.42	0.00	0.00	0.00
12,900.00	90.02	0.00	7,334.61	5,215.04	2,432.00	5,608.21	0.00	0.00	0.00
13,000.00	90.02	0.00	7,334.59	5,315.04	2,432.00	5,706.00	0.00	0.00	0.00
13,100.00	90.02	0.00	7,334.56	5,415.04	2,432.00	5,803.79	0.00	0.00	0.00
13,200.00	90.02	0.00	7,334.53	5,515.04	2,432.00	5,901.58	0.00	0.00	0.00
13,300.00	90.02	0.00	7,334.51	5,615.04	2,432.00	5,999.37	0.00	0.00	0.00
13,400.00	90.02	0.00	7,334.48	5,715.04	2,432.00	6,097.16	0.00	0.00	0.00
13,500.00	90.02	0.00	7,334.46	5,815.04	2,432.00	6,194.96	0.00	0.00	0.00
13,600.00	90.02	0.00	7,334.43	5,915.04	2,432.00	6,292.75	0.00	0.00	0.00
13,700.00	90.02	0.00	7,334.40	6,015.04	2,432.00	6,390.54	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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 (°/100usft)	Turn Rate (°/100usft)
13,800.00	90.02	0.00	7,334.38	6,115.04	2,432.00	6,488.33	0.00	0.00	0.00
13,900.00	90.02	0.00	7,334.35	6,215.04	2,432.00	6,586.12	0.00	0.00	0.00
14,000.00	90.02	0.00	7,334.33	6,315.04	2,432.00	6,683.91	0.00	0.00	0.00
14,100.00	90.02	0.00	7,334.30	6,415.04	2,432.00	6,781.70	0.00	0.00	0.00
14,200.00	90.02	0.00	7,334.27	6,515.04	2,432.00	6,879.49	0.00	0.00	0.00
14,300.00	90.02	0.00	7,334.25	6,615.04	2,432.00	6,977.28	0.00	0.00	0.00
14,400.00	90.02	0.00	7,334.22	6,715.04	2,432.00	7,075.07	0.00	0.00	0.00
14,500.00	90.02	0.00	7,334.19	6,815.04	2,432.00	7,172.86	0.00	0.00	0.00
14,600.00	90.02	0.00	7,334.17	6,915.04	2,432.00	7,270.65	0.00	0.00	0.00
14,700.00	90.02	0.00	7,334.14	7,015.04	2,432.00	7,368.44	0.00	0.00	0.00
14,800.00	90.02	0.00	7,334.12	7,115.04	2,432.00	7,466.24	0.00	0.00	0.00
14,900.00	90.02	0.00	7,334.09	7,215.04	2,432.00	7,564.03	0.00	0.00	0.00
15,000.00	90.02	0.00	7,334.06	7,315.04	2,432.00	7,661.82	0.00	0.00	0.00
15,100.00	90.02	0.00	7,334.04	7,415.04	2,432.00	7,759.61	0.00	0.00	0.00
15,200.00	90.02	0.00	7,334.01	7,515.04	2,432.00	7,857.40	0.00	0.00	0.00
15,300.00	90.02	0.00	7,333.99	7,615.04	2,432.00	7,955.19	0.00	0.00	0.00
15,400.00	90.02	0.00	7,333.96	7,715.04	2,432.00	8,052.98	0.00	0.00	0.00
15,500.00	90.02	0.00	7,333.93	7,815.04	2,432.00	8,150.77	0.00	0.00	0.00
15,600.00	90.02	0.00	7,333.91	7,915.04	2,432.00	8,248.56	0.00	0.00	0.00
15,700.00	90.02	0.00	7,333.88	8,015.04	2,432.00	8,346.35	0.00	0.00	0.00
15,800.00	90.02	0.00	7,333.85	8,115.04	2,432.00	8,444.14	0.00	0.00	0.00
15,900.00	90.02	0.00	7,333.83	8,215.04	2,432.00	8,541.93	0.00	0.00	0.00
16,000.00	90.02	0.00	7,333.80	8,315.04	2,432.00	8,639.72	0.00	0.00	0.00
16,100.00	90.02	0.00	7,333.78	8,415.04	2,432.00	8,737.52	0.00	0.00	0.00
16,200.00	90.02	0.00	7,333.75	8,515.04	2,432.00	8,835.31	0.00	0.00	0.00
16,300.00	90.02	0.00	7,333.72	8,615.04	2,432.00	8,933.10	0.00	0.00	0.00
16,400.00	90.02	0.00	7,333.70	8,715.04	2,432.00	9,030.89	0.00	0.00	0.00
16,500.00	90.02	0.00	7,333.67	8,815.04	2,432.00	9,128.68	0.00	0.00	0.00
16,600.00	90.02	0.00	7,333.64	8,915.04	2,432.00	9,226.47	0.00	0.00	0.00
16,700.00	90.02	0.00	7,333.62	9,015.04	2,432.00	9,324.26	0.00	0.00	0.00
16,800.00	90.02	0.00	7,333.59	9,115.04	2,432.00	9,422.05	0.00	0.00	0.00
16,900.00	90.02	0.00	7,333.57	9,215.04	2,432.00	9,519.84	0.00	0.00	0.00
17,000.00	90.02	0.00	7,333.54	9,315.04	2,432.00	9,617.63	0.00	0.00	0.00
17,100.00	90.02	0.00	7,333.51	9,415.04	2,432.00	9,715.42	0.00	0.00	0.00
17,200.00	90.02	0.00	7,333.49	9,515.04	2,432.00	9,813.21	0.00	0.00	0.00
17,300.00	90.02	0.00	7,333.46	9,615.04	2,432.00	9,911.00	0.00	0.00	0.00
17,400.00	90.02	0.00	7,333.44	9,715.04	2,432.00	10,008.80	0.00	0.00	0.00
17,500.00	90.02	0.00	7,333.41	9,815.04	2,432.00	10,106.59	0.00	0.00	0.00
17,600.00	90.02	0.00	7,333.38	9,915.04	2,432.00	10,204.38	0.00	0.00	0.00
17,700.00	90.02	0.00	7,333.36	10,015.04	2,432.00	10,302.17	0.00	0.00	0.00
17,800.00	90.02	0.00	7,333.33	10,115.04	2,432.00	10,399.96	0.00	0.00	0.00
17,900.00	90.02	0.00	7,333.30	10,215.04	2,432.00	10,497.75	0.00	0.00	0.00
18,000.00	90.02	0.00	7,333.28	10,315.04	2,432.00	10,595.54	0.00	0.00	0.00
18,100.00	90.02	0.00	7,333.25	10,415.04	2,432.00	10,693.33	0.00	0.00	0.00
18,200.00	90.02	0.00	7,333.23	10,515.04	2,432.00	10,791.12	0.00	0.00	0.00
18,300.00	90.02	0.00	7,333.20	10,615.04	2,432.00	10,888.91	0.00	0.00	0.00
18,400.00	90.02	0.00	7,333.17	10,715.04	2,432.00	10,986.70	0.00	0.00	0.00
18,500.00	90.02	0.00	7,333.15	10,815.04	2,432.00	11,084.49	0.00	0.00	0.00
18,600.00	90.02	0.00	7,333.12	10,915.04	2,432.00	11,182.28	0.00	0.00	0.00
18,700.00	90.02	0.00	7,333.09	11,015.04	2,432.00	11,280.08	0.00	0.00	0.00
18,800.00	90.02	0.00	7,333.07	11,115.04	2,432.00	11,377.87	0.00	0.00	0.00
18,900.00	90.02	0.00	7,333.04	11,215.04	2,432.00	11,475.66	0.00	0.00	0.00
19,000.00	90.02	0.00	7,333.02	11,315.04	2,432.00	11,573.45	0.00	0.00	0.00
19,062.21	90.02	0.00	7,333.00	11,377.25	2,432.00	11,634.28	0.00	0.00	0.00

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well VERDE 13-18HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB @ 5088.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB @ 5088.00usft (D Rig)
Site:	1N-66-13 VERDE 3-13HZ PAD	North Reference:	True
Well:	VERDE 13-18HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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 (°/100usft)	Turn Rate (°/100usft)
VERDE 13-18HZ_PBHL									

Design 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									
VERDE 13-18HZ_PBHL	0.00	0.00	7,333.00	11,377.25	2,432.00	14,558,653.00	1,719,757.00	40.087309	-104.716332
- plan hits target center									
- Point									
VERDE 13-18HZ_PHI	0.00	0.00	7,335.84	547.78	2,432.00	14,547,823.58	1,719,790.45	40.057570	-104.716336
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,879.95	1,800.00	9 5/8"	9-5/8	13-1/2	
8,232.74	7,335.84	Top of Production	5-1/2	7-7/8	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,645.36	1,591.00	Fox Hills				
4,680.45	4,295.00	Parkman				
5,076.67	4,648.00	Sussex				
7,705.74	7,130.00	Sharon Springs				
7,734.88	7,151.00	Niobrara				
7,922.92	7,262.00	Nio B				
8,061.55	7,313.00	Nio C				