



Company: B.P.
Project: Archuleta County, CO NAD83
Site: Kerrigan Pad
Well: Kerrigan GU 32-6-3



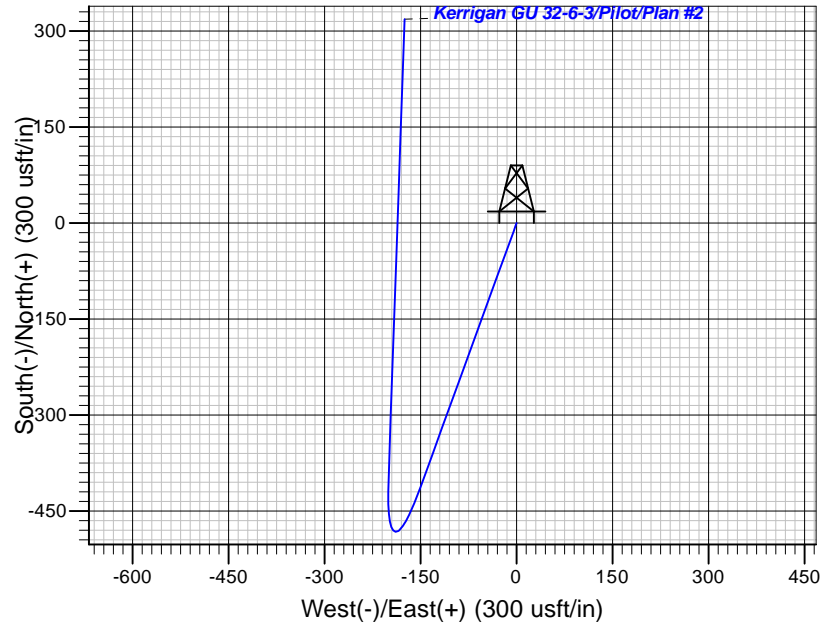
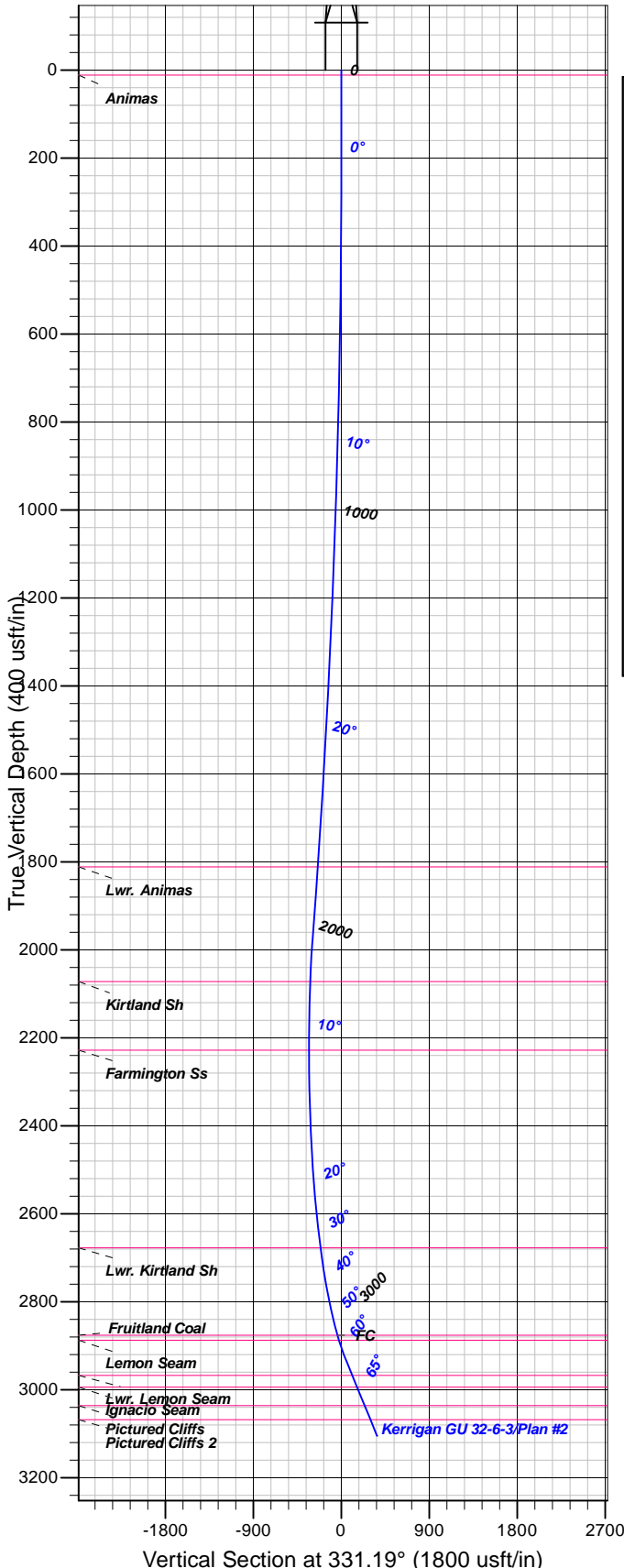
Well Details: Kerrigan GU 32-6-3

GL 6392' & 11' @ 6403.00usft (Aztec 507)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1142918.49	2423954.00	37.0424524	-107.4737064	

Azimuths to Grid North
True North: 1.21°
Magnetic North: 10.33°

Magnetic Field
Strength: 50080.7snT
Dip Angle: 63.60°
Date: 9/7/2017
Model: HDGM



FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
11.00	11.00	Animas
1811.00	1865.66	Lwr. Animas
2072.00	2152.78	Kirtland Sh
2228.00	2312.04	Farmington Ss
2677.00	2787.74	Lwr. Kirtland Sh
2876.00	3073.24	Fruitland Coal
2887.00	3093.58	Lemon Seam
2967.00	3271.36	Lwr. Lemon Seam
2994.00	3335.25	Ignacio Seam
3036.00	3434.63	Pictured Cliffs
3068.00	3510.35	Pictured Cliffs 2

Plan: Plan #2

12:22, October 04 2017
Created By: Mel Mireles Jr.

PROJECT DETAILS: Archuleta County, CO NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Southern Zone

System Datum: Mean Sea Level

CASING DETAILS

No casing data is available

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	175.00	0.00	0.00	175.00	0.00	0.00	0.00	0.00	0.00	
3	1975.00	27.00	200.00	1909.11	-391.22	-142.39	1.50	200.00	-274.18	
4	2025.00	27.00	200.00	1953.66	-412.55	-150.15	0.00	0.00	-289.13	
5	2691.03	27.00	2.00	2593.92	-402.81	-200.25	8.00	169.92	-256.46	
6	3183.81	65.00	2.00	2930.00	-55.00	-188.10	7.71	0.00	42.45	
7	3596.00	65.00	2.00	3104.20	318.34	-175.07	0.00	0.00	363.30	

DESIGN TARGET DETAILS

No target data is available.



B.P.

Archuleta County, CO NAD83

Kerrigan Pad

Kerrigan GU 32-6-3

Pilot

Plan: Plan #2

Standard Planning Report

04 October, 2017





Database:	Grand Junction District	Local Co-ordinate Reference:	Well Kerrigan GU 32-6-3
Company:	B.P.	TVD Reference:	GL 6392' & 11' @ 6403.00usft (Aztec 507)
Project:	Archuleta County, CO NAD83	MD Reference:	GL 6392' & 11' @ 6403.00usft (Aztec 507)
Site:	Kerrigan Pad	North Reference:	Grid
Well:	Kerrigan GU 32-6-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #2		

Project	Archuleta County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Southern Zone		

Site	Kerrigan Pad			
Site Position:		Northing:	1,142,918.49 usft	Latitude: 37.0424523
From: Map		Easting:	2,423,954.00 usft	Longitude: -107.4737065
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence: -1.21 °

Well	Kerrigan GU 32-6-3			
Well Position	+N/-S	0.00 usft	Northing:	1,142,918.49 usft
	+E/-W	0.00 usft	Easting:	2,423,954.00 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft
			Ground Level:	6,392.00 usft

Wellbore	Pilot				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/7/2017	9.12	63.60	50,081

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	331.19

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	
175.00	0.00	0.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,975.00	27.00	200.00	1,909.11	-391.22	-142.39	1.50	1.50	0.00	200.00	
2,025.00	27.00	200.00	1,953.66	-412.55	-150.15	0.00	0.00	0.00	0.00	
2,691.03	27.00	2.00	2,593.92	-402.81	-200.25	8.00	0.00	24.32	169.92	
3,183.81	65.00	2.00	2,930.00	-55.00	-188.10	7.71	7.71	0.00	0.00	
3,596.00	65.00	2.00	3,104.20	318.34	-175.07	0.00	0.00	0.00	0.00	



Database:	Grand Junction District	Local Co-ordinate Reference:	Well Kerrigan GU 32-6-3
Company:	B.P.	TVD Reference:	GL 6392' & 11' @ 6403.00usft (Aztec 507)
Project:	Archuleta County, CO NAD83	MD Reference:	GL 6392' & 11' @ 6403.00usft (Aztec 507)
Site:	Kerrigan Pad	North Reference:	Grid
Well:	Kerrigan GU 32-6-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #2		

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
Kerrigan Top									
11.00	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00	0.00
Animas									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
175.00	0.00	0.00	175.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.38	200.00	200.00	-0.08	-0.03	-0.05	1.50	1.50	0.00
300.00	1.88	200.00	299.98	-1.92	-0.70	-1.35	1.50	1.50	0.00
400.00	3.38	200.00	399.87	-6.23	-2.27	-4.36	1.50	1.50	0.00
500.00	4.88	200.00	499.61	-12.98	-4.73	-9.10	1.50	1.50	0.00
600.00	6.38	200.00	599.12	-22.19	-8.08	-15.56	1.50	1.50	0.00
700.00	7.88	200.00	698.35	-33.85	-12.32	-23.72	1.50	1.50	0.00
800.00	9.38	200.00	797.21	-47.94	-17.45	-33.60	1.50	1.50	0.00
900.00	10.88	200.00	895.65	-64.46	-23.46	-45.18	1.50	1.50	0.00
1,000.00	12.38	200.00	993.60	-83.40	-30.35	-58.45	1.50	1.50	0.00
1,100.00	13.88	200.00	1,090.99	-104.73	-38.12	-73.40	1.50	1.50	0.00
1,200.00	15.38	200.00	1,187.74	-128.46	-46.76	-90.03	1.50	1.50	0.00
1,300.00	16.88	200.00	1,283.81	-154.56	-56.25	-108.32	1.50	1.50	0.00
1,400.00	18.38	200.00	1,379.11	-183.01	-66.61	-128.26	1.50	1.50	0.00
1,500.00	19.88	200.00	1,473.59	-213.80	-77.82	-149.84	1.50	1.50	0.00
1,600.00	21.38	200.00	1,567.17	-246.89	-89.86	-173.04	1.50	1.50	0.00
1,700.00	22.88	200.00	1,659.81	-282.29	-102.74	-197.84	1.50	1.50	0.00
1,800.00	24.38	200.00	1,751.42	-319.94	-116.45	-224.23	1.50	1.50	0.00
1,865.66	25.36	200.00	1,811.00	-345.89	-125.89	-242.42	1.50	1.50	0.00
Lwr. Animas									
1,900.00	25.88	200.00	1,841.96	-359.84	-130.97	-252.19	1.50	1.50	0.00
1,975.00	27.00	200.00	1,909.11	-391.22	-142.39	-274.18	1.50	1.50	0.00
2,000.00	27.00	200.00	1,931.39	-401.88	-146.27	-281.66	0.00	0.00	0.00
2,025.00	27.00	200.00	1,953.66	-412.55	-150.15	-289.13	0.00	0.00	0.00
2,100.00	21.12	202.91	2,022.12	-441.02	-161.25	-308.73	8.00	-7.84	3.88
2,152.78	17.02	206.09	2,072.00	-456.72	-168.35	-319.07	8.00	-7.76	6.02
Kirtland Sh									
2,200.00	13.42	210.51	2,117.55	-467.65	-174.17	-325.85	8.00	-7.62	9.35
2,300.00	6.50	235.39	2,216.03	-480.89	-184.74	-332.35	8.00	-6.92	24.88
2,312.04	5.85	242.03	2,228.00	-481.57	-185.85	-332.41	8.00	-5.38	55.17
Farmington Ss									
2,400.00	5.66	317.45	2,315.62	-480.47	-192.75	-328.13	8.00	-0.22	85.75
2,500.00	12.23	349.42	2,414.41	-466.41	-198.04	-313.26	8.00	6.57	31.97
2,600.00	19.87	358.26	2,510.45	-438.97	-200.50	-288.02	8.00	7.64	8.84
2,691.03	27.00	2.00	2,593.92	-402.81	-200.25	-256.46	8.00	7.83	4.11
2,700.00	27.69	2.00	2,601.89	-398.69	-200.11	-252.92	7.71	7.71	0.00
2,787.74	34.46	2.00	2,677.00	-353.45	-198.53	-214.04	7.71	7.71	0.00
Lwr. Kirtland Sh									
2,800.00	35.40	2.00	2,687.05	-346.44	-198.28	-208.02	7.71	7.71	0.00
2,900.00	43.11	2.00	2,764.42	-283.24	-196.07	-153.70	7.71	7.71	0.00
3,000.00	50.83	2.00	2,832.61	-210.24	-193.53	-90.97	7.71	7.71	0.00
3,073.24	56.47	2.00	2,876.00	-151.31	-191.47	-40.32	7.71	7.71	0.00
FC - Fruitland Coal									
3,093.58	58.04	2.00	2,887.00	-134.22	-190.87	-25.63	7.71	7.71	0.00
Lemon Seam									
3,100.00	58.54	2.00	2,890.37	-128.76	-190.68	-20.94	7.71	7.71	0.00
3,183.81	65.00	2.00	2,930.00	-55.00	-188.10	42.45	7.71	7.71	0.00
3,200.00	65.00	2.00	2,936.84	-40.34	-187.59	55.05	0.00	0.00	0.00



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Site:	Kerrigan Pad	North Reference:	Grid
Well:	Kerrigan GU 32-6-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #2		

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)	
3,271.36	65.00	2.00	2,967.00	24.30	-185.34	110.60	0.00	0.00	0.00	
Lwr. Lemon Seam										
3,300.00	65.00	2.00	2,979.10	50.24	-184.43	132.89	0.00	0.00	0.00	
3,335.25	65.00	2.00	2,994.00	82.17	-183.31	160.33	0.00	0.00	0.00	
Ignacio Seam										
3,400.00	65.00	2.00	3,021.36	140.81	-181.27	210.73	0.00	0.00	0.00	
3,434.63	65.00	2.00	3,036.00	172.18	-180.17	237.69	0.00	0.00	0.00	
Pictured Cliffs										
3,500.00	65.00	2.00	3,063.63	231.39	-178.10	288.57	0.00	0.00	0.00	
3,510.35	65.00	2.00	3,068.00	240.76	-177.78	296.63	0.00	0.00	0.00	
Pictured Cliffs 2										
3,596.00	65.00	2.00	3,104.20	318.34	-175.07	363.30	0.00	0.00	0.00	
Kerrigan Lat 1 ST1 PBHL - Kerrigan Lat 1 PBHL										

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
11.00	11.00	Animas		0.00	360.00	
1,865.66	1,811.00	Lwr. Animas		0.00	360.00	
2,152.78	2,072.00	Kirtland Sh		0.00	360.00	
2,312.04	2,228.00	Farmington Ss		0.00	360.00	
2,787.74	2,677.00	Lwr. Kirtland Sh		0.00	360.00	
3,073.24	2,876.00	Fruitland Coal		0.00	360.00	
3,093.58	2,887.00	Lemon Seam		0.00	360.00	
3,271.36	2,967.00	Lwr. Lemon Seam		0.00	360.00	
3,335.25	2,994.00	Ignacio Seam		0.00	360.00	
3,434.63	3,036.00	Pictured Cliffs		0.00	360.00	
3,510.35	3,068.00	Pictured Cliffs 2		0.00	360.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
3,073.24	2,876.00	-151.31	-191.47	FC	