



Azimuths to Grid North
 True North: 1.29°
 Magnetic North: 10.60°
 Magnetic Field
 Strength: 50289.1snT
 Dip Angle: 63.68°
 Date: 11/25/2015
 Model: HDGM

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SUT E2 FC	2339.00	-1883.23	427.25116	2870.89	2384679.37	37.0948787	-107.6097726	Point

- plan hits target center



B.P.

**La Plata County, CO NAD83
Southern Ute Tribal E2 Pad
Southern Ute Tribal E2**

Pilot

Plan: Plan #5

Standard Planning Report

26 September, 2016





Database:	Grand Junction District	Local Co-ordinate Reference:	Well Southern Ute Tribal E2
Company:	B.P.	TVD Reference:	GL 6443' & RKB 11' @ 6454.00usft (Aztec 507)
Project:	La Plata County, CO NAD83	MD Reference:	GL 6443' & RKB 11' @ 6454.00usft (Aztec 507)
Site:	Southern Ute Tribal E2 Pad	North Reference:	Grid
Well:	Southern Ute Tribal E2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #5		

Project	La Plata 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		Southern Ute Tribal E2 Pad			
Site Position:		Northing:	1,164,754.12 usft	Latitude:	37.1000229
From:	Map	Easting:	2,384,252.12 usft	Longitude:	-107.6113830
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.30 °

Well	Southern Ute Tribal E2					
Well Position	+N/-S	0.00 usft	Northing:	1,164,754.12 usft	Latitude:	37.1000229
	+E/-W	0.00 usft	Easting:	2,384,252.12 usft	Longitude:	-107.6113830
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,443.00 usft

Wellbore	Pilot				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/25/2015	9.30	63.68	50,289

Design	Plan #5			
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	167.22

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	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,027.68	48.27	167.22	927.47	-339.73	77.08	5.50	5.50	0.00	167.22	
3,148.39	48.27	167.22	2,339.00	-1,883.23	427.25	0.00	0.00	0.00	0.00	SUT E2 FC
3,752.36	48.27	167.22	2,741.00	-2,322.81	526.98	0.00	0.00	0.00	0.00	



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Site:	Southern Ute Tribal E2 Pad	North Reference:	Grid
Well:	Southern Ute Tribal E2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #5		

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
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.75	167.22	199.98	-1.17	0.27	1.20	5.50	5.50	0.00
300.00	8.25	167.22	299.48	-10.51	2.39	10.78	5.50	5.50	0.00
351.25	11.07	167.22	350.00	-18.90	4.29	19.38	5.50	5.50	0.00
Surface Casing									
400.00	13.75	167.22	397.61	-29.11	6.61	29.85	5.50	5.50	0.00
500.00	19.25	167.22	493.45	-56.80	12.89	58.24	5.50	5.50	0.00
600.00	24.75	167.22	586.14	-93.32	21.17	95.69	5.50	5.50	0.00
700.00	30.25	167.22	674.80	-138.33	31.38	141.85	5.50	5.50	0.00
800.00	35.75	167.22	758.64	-191.43	43.43	196.29	5.50	5.50	0.00
900.00	41.25	167.22	836.87	-252.11	57.20	258.52	5.50	5.50	0.00
1,000.00	46.75	167.22	908.77	-319.83	72.56	327.96	5.50	5.50	0.00
1,027.68	48.27	167.22	927.47	-339.73	77.08	348.37	5.50	5.50	0.00
1,100.00	48.27	167.22	975.61	-392.37	89.02	402.34	0.00	0.00	0.00
1,200.00	48.27	167.22	1,042.17	-465.15	105.53	476.97	0.00	0.00	0.00
1,300.00	48.27	167.22	1,108.72	-537.94	122.04	551.61	0.00	0.00	0.00
1,400.00	48.27	167.22	1,175.28	-610.72	138.55	626.24	0.00	0.00	0.00
1,453.66	48.27	167.22	1,211.00	-649.77	147.41	666.28	0.00	0.00	0.00
Lwr. Animas									
1,500.00	48.27	167.22	1,241.84	-683.50	155.07	700.87	0.00	0.00	0.00
1,600.00	48.27	167.22	1,308.40	-756.28	171.58	775.50	0.00	0.00	0.00
1,700.00	48.27	167.22	1,374.96	-829.06	188.09	850.13	0.00	0.00	0.00
1,800.00	48.27	167.22	1,441.52	-901.84	204.60	924.76	0.00	0.00	0.00
1,900.00	48.27	167.22	1,508.08	-974.63	221.11	999.39	0.00	0.00	0.00
2,000.00	48.27	167.22	1,574.64	-1,047.41	237.63	1,074.03	0.00	0.00	0.00
2,098.20	48.27	167.22	1,640.00	-1,118.88	253.84	1,147.31	0.00	0.00	0.00
Kirtland Sh									
2,100.00	48.27	167.22	1,641.20	-1,120.19	254.14	1,148.66	0.00	0.00	0.00
2,200.00	48.27	167.22	1,707.76	-1,192.97	270.65	1,223.29	0.00	0.00	0.00
2,300.00	48.27	167.22	1,774.32	-1,265.75	287.16	1,297.92	0.00	0.00	0.00
2,350.61	48.27	167.22	1,808.00	-1,302.59	295.52	1,335.69	0.00	0.00	0.00
Farmington Ss									
2,400.00	48.27	167.22	1,840.88	-1,338.54	303.67	1,372.55	0.00	0.00	0.00
2,500.00	48.27	167.22	1,907.44	-1,411.32	320.19	1,447.18	0.00	0.00	0.00
2,600.00	48.27	167.22	1,974.00	-1,484.10	336.70	1,521.81	0.00	0.00	0.00
2,700.00	48.27	167.22	2,040.55	-1,556.88	353.21	1,596.45	0.00	0.00	0.00
2,800.00	48.27	167.22	2,107.11	-1,629.66	369.72	1,671.08	0.00	0.00	0.00
2,865.94	48.27	167.22	2,151.00	-1,677.65	380.61	1,720.29	0.00	0.00	0.00
Lwr. Kirtland Sh									
2,900.00	48.27	167.22	2,173.67	-1,702.45	386.24	1,745.71	0.00	0.00	0.00
2,938.97	48.27	167.22	2,199.61	-1,730.81	392.67	1,774.80	0.00	0.00	0.00
SUT E2 FC REV									
3,000.00	48.27	167.22	2,240.23	-1,775.23	402.75	1,820.34	0.00	0.00	0.00
3,100.00	48.27	167.22	2,306.79	-1,848.01	419.26	1,894.97	0.00	0.00	0.00
3,148.39	48.27	167.22	2,339.00	-1,883.23	427.25	1,931.09	0.00	0.00	0.00
Fruitland Coal - SUT E2 FC									
3,199.47	48.27	167.22	2,373.00	-1,920.41	435.68	1,969.21	0.00	0.00	0.00
Lemon Seam									
3,200.00	48.27	167.22	2,373.35	-1,920.79	435.77	1,969.60	0.00	0.00	0.00



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Site:	Southern Ute Tribal E2 Pad	North Reference:	Grid
Well:	Southern Ute Tribal E2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Pilot		
Design:	Plan #5		

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)
3,300.00	48.27	167.22	2,439.91	-1,993.57	452.28	2,044.24	0.00	0.00	0.00
3,331.69	48.27	167.22	2,461.00	-2,016.64	457.52	2,067.88	0.00	0.00	0.00
Lwr Lemon Seam									
3,384.27	48.27	167.22	2,496.00	-2,054.91	466.20	2,107.13	0.00	0.00	0.00
Ignacio Seam									
3,400.00	48.27	167.22	2,506.47	-2,066.36	468.80	2,118.87	0.00	0.00	0.00
3,415.96	48.27	167.22	2,517.09	-2,077.97	471.43	2,130.78	0.00	0.00	0.00
SUT E2 PBHL									
3,451.88	48.27	167.22	2,541.00	-2,104.12	477.36	2,157.59	0.00	0.00	0.00
Pictured Cliffs Ss									
3,500.00	48.27	167.22	2,573.03	-2,139.14	485.31	2,193.50	0.00	0.00	0.00
3,600.00	48.27	167.22	2,639.59	-2,211.92	501.82	2,268.13	0.00	0.00	0.00
3,700.00	48.27	167.22	2,706.15	-2,284.70	518.33	2,342.76	0.00	0.00	0.00
3,752.36	48.27	167.22	2,741.00	-2,322.81	526.98	2,381.84	0.00	0.00	0.00

Design Targets**Target Name**

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SUT E2 FC - plan hits target center - Point	0.00	0.00	2,339.00	-1,883.23	427.25	1,162,870.89	2,384,679.37	37.0948787	-107.6097727

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
351.25	350.00	Surface Casing	9.62	12.25

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,453.66	1,211.00	Lwr. Animas		0.00	0.00
2,098.20	1,640.00	Kirtland Sh		0.00	0.00
2,350.61	1,808.00	Farmington Ss		0.00	0.00
2,865.94	2,151.00	Lwr. Kirtland Sh		0.00	0.00
3,148.39	2,339.00	Fruitland Coal		0.00	0.00
3,199.47	2,373.00	Lemon Seam		0.00	0.00
3,331.69	2,461.00	Lwr Lemon Seam		0.00	0.00
3,384.27	2,496.00	Ignacio Seam		0.00	0.00
3,451.88	2,541.00	Pictured Cliffs Ss		0.00	0.00