

# EE3

Well Name: **Mutual 01-17H**

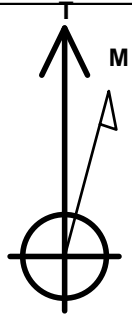
Surface Location: Mutual 01-17H Pad Sec.17-T7N-R80W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 8151.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1456887.36	2748548.68	40.584031	-106.405317	

Original Well Elev WELL @ 8164.0ft (Original Well Elev)

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 267'FNL & 501'FWL, Sec.17	1.0	0.0	0.0	Point
Entry Pt. 600'FNL & 600'FEL, Sec.18	7120.0	-316.9	-1100.2	Point
BHL 625'FNL & 625'FEL, Sec.18	7170.0	-4437.8	-1112.6	Point



Azimuths to True North  
 Magnetic North: 9.36°

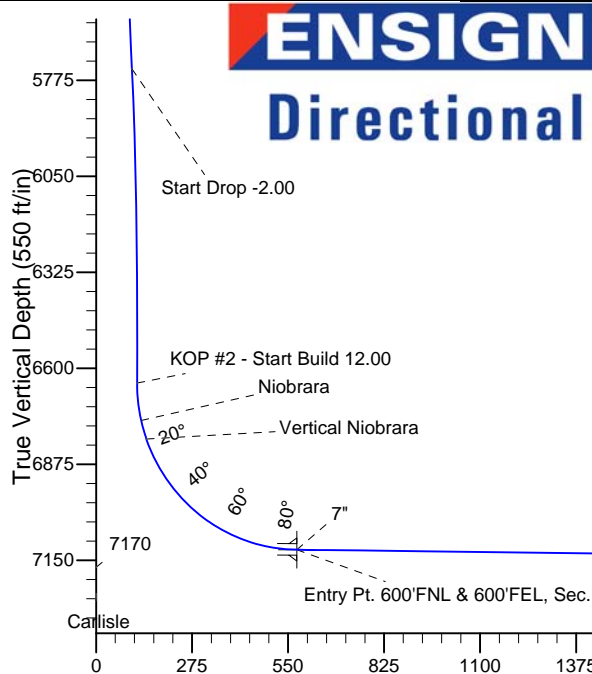
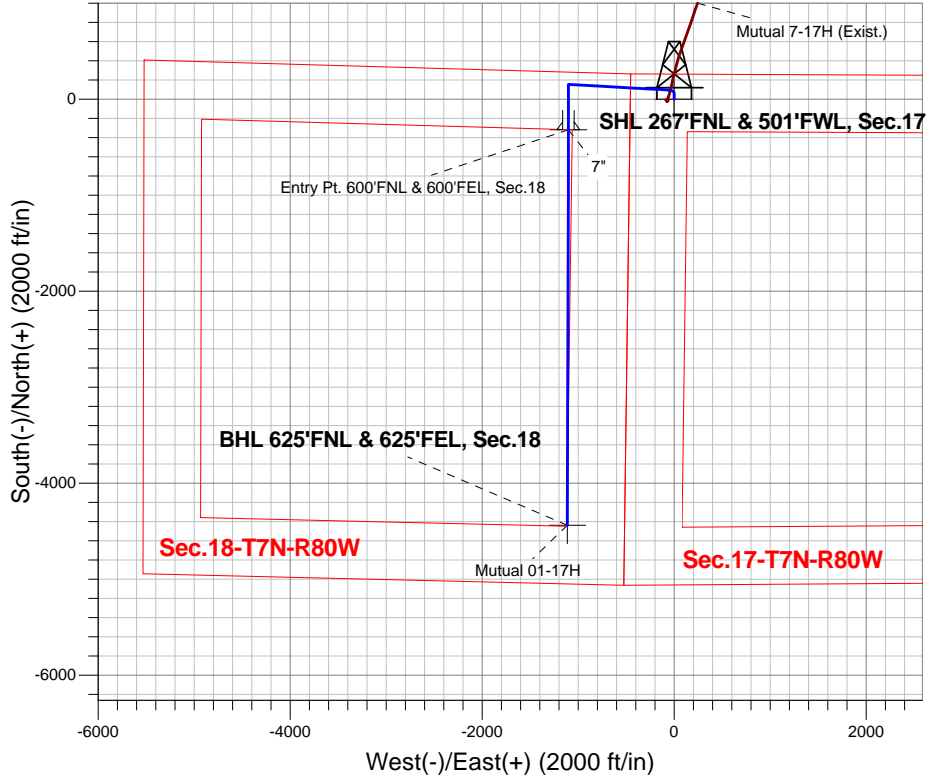
Magnetic Field  
 Strength: 52725.5srT  
 Dip Angle: 66.83°  
 Date: 4/1/2014  
 Model: IGRF2010

Mutual 01-17H Pad Sec.17-T7N-R80W  
 Mutual 01-17H  
 Plan #1 (4-1-14)  
 14:50, April 02 2014

## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 2.00
1047.4	1050.0	Start DLS 2.00 TFO -107.46
5742.3	5862.1	Start Drop -2.00
6642.6	6768.3	KOP #2 - Start Build 12.00
7170.0	11633.9	TD at 11633.9

South(-)/North(+) (2000 ft/in)



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	450.0	5.00	0.00	449.7	10.9	0.0	2.00	0.00	-10.6	
4	1050.0	5.00	0.00	1047.4	63.2	0.0	0.00	0.00	-61.3	
5	1745.2	13.27	273.19	1735.4	98.1	-80.1	2.00	-107.46	-75.7	
6	5862.1	13.27	273.19	5742.3	150.7	-1023.8	0.00	0.00	102.8	
7	6525.7	0.00	0.00	6400.0	155.0	-1100.2	2.00	180.00	117.2	
8	6768.3	0.00	0.00	6642.6	155.0	-1100.2	0.00	0.00	117.2	
9	7512.6	89.32	180.00	7120.0	-316.8	-1100.2	12.00	180.00	574.9	
10	7512.7	89.32	180.00	7120.0	-316.9	-1100.2	0.00	0.00	575.0	Entry Pt. 600'FNL & 600'FEL, Sec.18
11	7521.2	89.30	180.17	7120.1	-325.4	-1100.2	2.00	95.13	583.2	
12	11633.9	89.30	180.17	7170.0	-4437.8	-1112.6	0.00	0.00	4575.1	BHL 625'FNL & 625'FEL, Sec.18

BHL 625'FNL & 625'FEL, Sec.18

TD at 11633.9

Vertical Section at 194.08° (550 ft/in)



**EE3**

**SEC.17-T7N-R80W**

**Mutual 01-17H Pad Sec.17-T7N-R80W**

**Mutual 01-17H**

**Wellbore #1**

**Plan: Plan #1 (4-1-14)**

## **Standard Planning Report**

**02 April, 2014**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Company:</b>	EE3	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Project:</b>	SEC.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>North Reference:</b>	True
<b>Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (4-1-14)		

<b>Project</b>	SEC.17-T7N-R80W, Jackson County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Mutual 01-17H Pad Sec.17-T7N-R80W				
Site Position:		Northing:	1,456,887.37 ft	Latitude:	40.584031
From:	Lat/Long	Easting:	2,748,548.68ft	Longitude:	-106.405317
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-0.58 °

Well	Mutual 01-17H					
Well Position	+N-S	0.0 ft	Northing:	1,456,887.36 ft	Latitude:	40.584031
	+E-W	0.0 ft	Easting:	2,748,548.68 ft	Longitude:	-106.405317
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,151.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	4/1/2014	9.36	66.83	52,726

<b>Design</b>	Plan #1 (4-1-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	194.08

<b>Plan Sections</b>										
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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
450.0	5.00	0.00	449.7	10.9	0.0	2.00	2.00	0.00	0.00	
1,050.0	5.00	0.00	1,047.4	63.2	0.0	0.00	0.00	0.00	0.00	
1,745.2	13.27	273.19	1,735.4	98.1	-80.1	2.00	1.19	-12.49	-107.46	
5,862.1	13.27	273.19	5,742.3	150.7	-1,023.8	0.00	0.00	0.00	0.00	
6,525.7	0.00	0.00	6,400.0	155.0	-1,100.2	2.00	-2.00	0.00	180.00	
6,768.3	0.00	0.00	6,642.6	155.0	-1,100.2	0.00	0.00	0.00	0.00	
7,512.6	89.32	180.00	7,120.0	-316.8	-1,100.2	12.00	12.00	0.00	180.00	
7,512.7	89.32	180.00	7,120.0	-316.9	-1,100.2	0.00	0.00	0.00	0.00	Entry Pt. 600'FNL &
7,521.2	89.30	180.17	7,120.1	-325.4	-1,100.2	2.00	-0.18	1.99	95.13	
11,633.9	89.30	180.17	7,170.0	-4,437.8	-1,112.6	0.00	0.00	0.00	0.00	BHL 625'FNL & 625'

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Company:</b>	EE3	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Project:</b>	SEC.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>North Reference:</b>	True
<b>Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (4-1-14)		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 267'FNL &amp; 501'FWL, Sec.17</b>									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP - Start Build 2.00</b>									
300.0	2.00	0.00	300.0	1.7	0.0	-1.7	2.00	2.00	0.00
400.0	4.00	0.00	399.8	7.0	0.0	-6.8	2.00	2.00	0.00
450.0	5.00	0.00	449.7	10.9	0.0	-10.6	2.00	2.00	0.00
500.0	5.00	0.00	499.5	15.3	0.0	-14.8	0.00	0.00	0.00
600.0	5.00	0.00	599.1	24.0	0.0	-23.3	0.00	0.00	0.00
700.0	5.00	0.00	698.7	32.7	0.0	-31.7	0.00	0.00	0.00
800.0	5.00	0.00	798.4	41.4	0.0	-40.2	0.00	0.00	0.00
900.0	5.00	0.00	898.0	50.1	0.0	-48.6	0.00	0.00	0.00
1,000.0	5.00	0.00	997.6	58.8	0.0	-57.1	0.00	0.00	0.00
1,050.0	5.00	0.00	1,047.4	63.2	0.0	-61.3	0.00	0.00	0.00
<b>Start DLS 2.00 TFO -107.46</b>									
1,100.0	4.80	348.51	1,097.2	67.4	-0.4	-65.3	2.00	-0.41	-22.97
1,200.0	5.00	325.04	1,196.9	75.1	-3.7	-71.9	2.00	0.20	-23.48
1,300.0	5.91	306.17	1,296.4	81.7	-10.4	-76.7	2.00	0.91	-18.87
1,400.0	7.27	293.31	1,395.8	87.2	-20.4	-79.7	2.00	1.36	-12.86
1,500.0	8.88	284.76	1,494.8	91.7	-33.6	-80.8	2.00	1.61	-8.54
1,600.0	10.62	278.91	1,593.3	95.1	-50.2	-80.0	2.00	1.74	-5.86
1,700.0	12.43	274.71	1,691.3	97.4	-70.0	-77.5	2.00	1.82	-4.19
1,745.2	13.27	273.19	1,735.4	98.1	-80.1	-75.7	2.00	1.85	-3.36
1,800.0	13.27	273.19	1,788.7	98.8	-92.6	-73.3	0.00	0.00	0.00
1,866.1	13.27	273.19	1,853.0	99.7	-107.8	-70.4	0.00	0.00	0.00
<b>Midcoal</b>									
1,900.0	13.27	273.19	1,886.0	100.1	-115.6	-69.0	0.00	0.00	0.00
2,000.0	13.27	273.19	1,983.4	101.4	-138.5	-64.6	0.00	0.00	0.00
2,100.0	13.27	273.19	2,080.7	102.6	-161.4	-60.3	0.00	0.00	0.00
2,200.0	13.27	273.19	2,178.0	103.9	-184.3	-56.0	0.00	0.00	0.00
2,300.0	13.27	273.19	2,275.4	105.2	-207.3	-51.6	0.00	0.00	0.00
2,400.0	13.27	273.19	2,372.7	106.5	-230.2	-47.3	0.00	0.00	0.00
2,500.0	13.27	273.19	2,470.0	107.8	-253.1	-43.0	0.00	0.00	0.00
2,600.0	13.27	273.19	2,567.3	109.0	-276.0	-38.6	0.00	0.00	0.00
2,667.5	13.27	273.19	2,633.0	109.9	-291.5	-35.7	0.00	0.00	0.00
<b>Suddeth Coal</b>									
2,700.0	13.27	273.19	2,664.7	110.3	-298.9	-34.3	0.00	0.00	0.00
2,800.0	13.27	273.19	2,762.0	111.6	-321.9	-30.0	0.00	0.00	0.00
2,900.0	13.27	273.19	2,859.3	112.9	-344.8	-25.6	0.00	0.00	0.00
3,000.0	13.27	273.19	2,956.7	114.1	-367.7	-21.3	0.00	0.00	0.00
3,100.0	13.27	273.19	3,054.0	115.4	-390.6	-17.0	0.00	0.00	0.00
3,200.0	13.27	273.19	3,151.3	116.7	-413.6	-12.6	0.00	0.00	0.00
3,300.0	13.27	273.19	3,248.6	118.0	-436.5	-8.3	0.00	0.00	0.00
3,400.0	13.27	273.19	3,346.0	119.3	-459.4	-4.0	0.00	0.00	0.00
3,500.0	13.27	273.19	3,443.3	120.5	-482.3	0.4	0.00	0.00	0.00
3,600.0	13.27	273.19	3,540.6	121.8	-505.3	4.7	0.00	0.00	0.00
3,700.0	13.27	273.19	3,638.0	123.1	-528.2	9.0	0.00	0.00	0.00
3,800.0	13.27	273.19	3,735.3	124.4	-551.1	13.4	0.00	0.00	0.00
3,900.0	13.27	273.19	3,832.6	125.7	-574.0	17.7	0.00	0.00	0.00
4,000.0	13.27	273.19	3,929.9	126.9	-596.9	22.1	0.00	0.00	0.00
4,100.0	13.27	273.19	4,027.3	128.2	-619.9	26.4	0.00	0.00	0.00
4,200.0	13.27	273.19	4,124.6	129.5	-642.8	30.7	0.00	0.00	0.00

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<b>Company:</b>	EE3	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Project:</b>	SEC.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>North Reference:</b>	True
<b>Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (4-1-14)		

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)
4,300.0	13.27	273.19	4,221.9	130.8	-665.7	35.1	0.00	0.00	0.00
4,400.0	13.27	273.19	4,319.3	132.0	-688.6	39.4	0.00	0.00	0.00
4,500.0	13.27	273.19	4,416.6	133.3	-711.6	43.7	0.00	0.00	0.00
4,600.0	13.27	273.19	4,513.9	134.6	-734.5	48.1	0.00	0.00	0.00
4,700.0	13.27	273.19	4,611.2	135.9	-757.4	52.4	0.00	0.00	0.00
4,800.0	13.27	273.19	4,708.6	137.2	-780.3	56.7	0.00	0.00	0.00
4,900.0	13.27	273.19	4,805.9	138.4	-803.3	61.1	0.00	0.00	0.00
5,000.0	13.27	273.19	4,903.2	139.7	-826.2	65.4	0.00	0.00	0.00
5,100.0	13.27	273.19	5,000.6	141.0	-849.1	69.7	0.00	0.00	0.00
5,200.0	13.27	273.19	5,097.9	142.3	-872.0	74.1	0.00	0.00	0.00
5,236.1	13.27	273.19	5,133.0	142.7	-880.3	75.6	0.00	0.00	0.00
<b>Sussex</b>									
5,300.0	13.27	273.19	5,195.2	143.6	-894.9	78.4	0.00	0.00	0.00
5,400.0	13.27	273.19	5,292.5	144.8	-917.9	82.7	0.00	0.00	0.00
5,500.0	13.27	273.19	5,389.9	146.1	-940.8	87.1	0.00	0.00	0.00
5,544.3	13.27	273.19	5,433.0	146.7	-951.0	89.0	0.00	0.00	0.00
<b>Shannon</b>									
5,600.0	13.27	273.19	5,487.2	147.4	-963.7	91.4	0.00	0.00	0.00
5,700.0	13.27	273.19	5,584.5	148.7	-986.6	95.7	0.00	0.00	0.00
5,800.0	13.27	273.19	5,681.9	149.9	-1,009.6	100.1	0.00	0.00	0.00
5,862.1	13.27	273.19	5,742.3	150.7	-1,023.8	102.8	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,900.0	12.51	273.19	5,779.2	151.2	-1,032.2	104.4	2.00	-2.00	0.00
6,000.0	10.51	273.19	5,877.2	152.3	-1,052.2	108.1	2.00	-2.00	0.00
6,100.0	8.51	273.19	5,975.8	153.2	-1,068.7	111.3	2.00	-2.00	0.00
6,200.0	6.51	273.19	6,075.0	154.0	-1,081.7	113.7	2.00	-2.00	0.00
6,300.0	4.51	273.19	6,174.5	154.5	-1,091.3	115.5	2.00	-2.00	0.00
6,400.0	2.51	273.19	6,274.3	154.8	-1,097.4	116.7	2.00	-2.00	0.00
6,500.0	0.51	273.19	6,374.3	155.0	-1,100.1	117.2	2.00	-2.00	0.00
6,525.7	0.00	0.00	6,400.0	155.0	-1,100.2	117.2	2.00	-2.00	0.00
6,600.0	0.00	0.00	6,474.3	155.0	-1,100.2	117.2	0.00	0.00	0.00
6,700.0	0.00	0.00	6,574.3	155.0	-1,100.2	117.2	0.00	0.00	0.00
6,768.3	0.00	0.00	6,642.6	155.0	-1,100.2	117.2	0.00	0.00	0.00
<b>KOP #2 - Start Build 12.00</b>									
6,800.0	3.81	180.00	6,674.3	153.9	-1,100.2	118.2	12.01	12.01	0.00
6,876.6	13.00	180.00	6,750.0	142.8	-1,100.2	129.1	12.00	12.00	0.00
<b>Niobrara</b>									
6,900.0	15.81	180.00	6,772.6	136.9	-1,100.2	134.7	12.00	12.00	0.00
6,931.9	19.63	180.00	6,803.0	127.2	-1,100.2	144.1	12.00	12.00	0.00
<b>Vertical Niobrara</b>									
7,000.0	27.81	180.00	6,865.3	99.9	-1,100.2	170.7	12.00	12.00	0.00
7,100.0	39.81	180.00	6,948.2	44.3	-1,100.2	224.6	12.00	12.00	0.00
7,200.0	51.81	180.00	7,017.8	-27.2	-1,100.2	294.0	12.00	12.00	0.00
7,300.0	63.81	180.00	7,071.0	-111.7	-1,100.2	375.9	12.00	12.00	0.00
7,400.0	75.81	180.00	7,105.5	-205.4	-1,100.2	466.8	12.00	12.00	0.00
7,500.0	87.81	180.00	7,119.7	-304.2	-1,100.2	562.6	12.00	12.00	0.00
7,512.6	89.32	180.00	7,120.0	-316.8	-1,100.2	574.8	12.00	12.00	0.00
<b>7"</b>									
7,512.7	89.32	180.00	7,120.0	-316.9	-1,100.2	575.0	1.62	1.62	0.00
<b>Entry Pt. 600'FNL &amp; 600'FEL, Sec.18</b>									
7,521.2	89.30	180.17	7,120.1	-325.4	-1,100.2	583.2	2.00	-0.18	1.99
7,600.0	89.30	180.17	7,121.1	-404.2	-1,100.5	659.7	0.00	0.00	0.00
7,700.0	89.30	180.17	7,122.3	-504.2	-1,100.8	756.7	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Company:</b>	EE3	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Project:</b>	SEC.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>North Reference:</b>	True
<b>Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (4-1-14)		

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)
7,800.0	89.30	180.17	7,123.5	-604.2	-1,101.1	853.8	0.00	0.00	0.00
7,900.0	89.30	180.17	7,124.7	-704.1	-1,101.4	950.9	0.00	0.00	0.00
8,000.0	89.30	180.17	7,125.9	-804.1	-1,101.7	1,047.9	0.00	0.00	0.00
8,100.0	89.30	180.17	7,127.1	-904.1	-1,102.0	1,145.0	0.00	0.00	0.00
8,200.0	89.30	180.17	7,128.3	-1,004.1	-1,102.3	1,242.0	0.00	0.00	0.00
8,300.0	89.30	180.17	7,129.6	-1,104.1	-1,102.6	1,339.1	0.00	0.00	0.00
8,400.0	89.30	180.17	7,130.8	-1,204.1	-1,102.9	1,436.2	0.00	0.00	0.00
8,500.0	89.30	180.17	7,132.0	-1,304.1	-1,103.2	1,533.2	0.00	0.00	0.00
8,600.0	89.30	180.17	7,133.2	-1,404.1	-1,103.5	1,630.3	0.00	0.00	0.00
8,700.0	89.30	180.17	7,134.4	-1,504.1	-1,103.8	1,727.4	0.00	0.00	0.00
8,800.0	89.30	180.17	7,135.6	-1,604.1	-1,104.1	1,824.4	0.00	0.00	0.00
8,900.0	89.30	180.17	7,136.8	-1,704.1	-1,104.4	1,921.5	0.00	0.00	0.00
9,000.0	89.30	180.17	7,138.0	-1,804.1	-1,104.7	2,018.6	0.00	0.00	0.00
9,100.0	89.30	180.17	7,139.3	-1,904.1	-1,105.0	2,115.6	0.00	0.00	0.00
9,200.0	89.30	180.17	7,140.5	-2,004.0	-1,105.3	2,212.7	0.00	0.00	0.00
9,300.0	89.30	180.17	7,141.7	-2,104.0	-1,105.6	2,309.7	0.00	0.00	0.00
9,400.0	89.30	180.17	7,142.9	-2,204.0	-1,105.9	2,406.8	0.00	0.00	0.00
9,500.0	89.30	180.17	7,144.1	-2,304.0	-1,106.2	2,503.9	0.00	0.00	0.00
9,600.0	89.30	180.17	7,145.3	-2,404.0	-1,106.5	2,600.9	0.00	0.00	0.00
9,700.0	89.30	180.17	7,146.5	-2,504.0	-1,106.8	2,698.0	0.00	0.00	0.00
9,800.0	89.30	180.17	7,147.7	-2,604.0	-1,107.1	2,795.1	0.00	0.00	0.00
9,900.0	89.30	180.17	7,149.0	-2,704.0	-1,107.4	2,892.1	0.00	0.00	0.00
10,000.0	89.30	180.17	7,150.2	-2,804.0	-1,107.7	2,989.2	0.00	0.00	0.00
10,100.0	89.30	180.17	7,151.4	-2,904.0	-1,108.0	3,086.3	0.00	0.00	0.00
10,200.0	89.30	180.17	7,152.6	-3,004.0	-1,108.3	3,183.3	0.00	0.00	0.00
10,300.0	89.30	180.17	7,153.8	-3,104.0	-1,108.6	3,280.4	0.00	0.00	0.00
10,400.0	89.30	180.17	7,155.0	-3,204.0	-1,108.9	3,377.4	0.00	0.00	0.00
10,500.0	89.30	180.17	7,156.2	-3,303.9	-1,109.2	3,474.5	0.00	0.00	0.00
10,600.0	89.30	180.17	7,157.5	-3,403.9	-1,109.5	3,571.6	0.00	0.00	0.00
10,700.0	89.30	180.17	7,158.7	-3,503.9	-1,109.8	3,668.6	0.00	0.00	0.00
10,800.0	89.30	180.17	7,159.9	-3,603.9	-1,110.1	3,765.7	0.00	0.00	0.00
10,900.0	89.30	180.17	7,161.1	-3,703.9	-1,110.4	3,862.8	0.00	0.00	0.00
11,000.0	89.30	180.17	7,162.3	-3,803.9	-1,110.7	3,959.8	0.00	0.00	0.00
11,100.0	89.30	180.17	7,163.5	-3,903.9	-1,111.0	4,056.9	0.00	0.00	0.00
11,200.0	89.30	180.17	7,164.7	-4,003.9	-1,111.3	4,154.0	0.00	0.00	0.00
11,300.0	89.30	180.17	7,165.9	-4,103.9	-1,111.6	4,251.0	0.00	0.00	0.00
11,400.0	89.30	180.17	7,167.2	-4,203.9	-1,111.9	4,348.1	0.00	0.00	0.00
11,500.0	89.30	180.17	7,168.4	-4,303.9	-1,112.2	4,445.1	0.00	0.00	0.00
11,600.0	89.30	180.17	7,169.6	-4,403.9	-1,112.5	4,542.2	0.00	0.00	0.00
11,633.9	89.30	180.17	7,170.0	-4,437.8	-1,112.6	4,575.1	0.00	0.00	0.00
TD at 11633.9 - BHL 625'FNL & 625'FEL, Sec.18									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,512.6	7,120.0	7"	7	7-1/2

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Company:</b>	EE3	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Project:</b>	SEC.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>North Reference:</b>	True
<b>Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (4-1-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,866.1	1,853.0	Midcoal		0.00		
2,667.5	2,633.0	Suddeth Coal		0.00		
5,236.1	5,133.0	Sussex		0.00		
5,544.3	5,433.0	Shannon		0.00		
6,876.6	6,750.0	Niobrara		0.00		
6,931.9	6,803.0	Vertical Niobrara		0.00		
7,165.0	7,246.0	Carlisle		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP - Start Build 2.00	
1,050.0	1,047.4	63.2	0.0	Start DLS 2.00 TFO -107.46	
5,862.1	5,742.3	150.7	-1,023.8	Start Drop -2.00	
6,768.3	6,642.6	155.0	-1,100.2	KOP #2 - Start Build 12.00	
11,633.9	7,170.0	-4,437.8	-1,112.6	TD at 11633.9	



**EE3**

**SEC.17-T7N-R80W**

**Mutual 01-17H Pad Sec.17-T7N-R80W**

**Mutual 01-17H**

**Wellbore #1**

**Plan #1 (4-1-14)**

## **Anticollision Report**

**02 April, 2014**



<b>Company:</b>	EE3	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Project:</b>	SEC.17-T7N-R80W	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Reference Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (4-1-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (4-1-14)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 4/2/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,633.9	Plan #1 (4-1-14) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Mutual 01-17H Pad Sec.17-T7N-R80W						
Mutual 7-17H (Exist.) - Wellbore #1 - Wellbore #1	512.4	513.9	84.3	82.6	50.869	CC
Mutual 7-17H (Exist.) - Wellbore #1 - Wellbore #1	600.0	601.5	84.5	82.5	42.624	ES
Mutual 7-17H (Exist.) - Wellbore #1 - Wellbore #1	1,900.0	1,886.8	127.1	119.8	17.297	SF

<b>Offset Design</b> Mutual 01-17H Pad Sec.17-T7N-R80W - Mutual 7-17H (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0ft
<b>Survey Program:</b> 1031-MWD												<b>Offset Well Error:</b>	0.0ft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>									<b>Warning</b>
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>Offset Wellbore Centre +E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>	
0.0	0.0	0.0	0.0	0.0	0.0	-94.54	-6.9	-87.2	87.5				
100.0	100.0	100.4	100.4	0.1	0.1	-94.53	-6.9	-87.0	87.3	87.0	0.23	385.128	
200.0	200.0	200.8	200.8	0.3	0.2	-94.50	-6.8	-86.3	86.6	86.0	0.57	153.139	
300.0	300.0	301.2	301.2	0.6	0.4	-95.65	-6.6	-85.2	85.6	84.7	0.90	94.690	
400.0	399.8	401.4	401.4	0.8	0.5	-99.16	-6.4	-83.6	84.7	83.4	1.25	67.777	
500.0	499.5	501.5	501.4	1.0	0.6	-104.76	-6.1	-81.5	84.3	82.7	1.61	52.332	
512.4	511.9	513.9	513.8	1.1	0.6	-105.49	-6.1	-81.2	84.3	82.6	1.66	50.869	CC
600.0	599.1	601.5	601.4	1.3	0.7	-110.69	-5.8	-79.0	84.5	82.5	1.98	42.624	ES
700.0	698.7	701.4	701.3	1.6	0.8	-116.63	-5.4	-76.1	85.1	82.8	2.35	36.151	
800.0	798.4	801.4	801.2	1.8	1.0	-122.55	-4.9	-72.7	86.2	83.5	2.72	31.647	
900.0	898.0	901.3	901.1	2.1	1.1	-128.40	-4.4	-68.8	87.8	84.8	3.09	28.420	
1,000.0	997.6	1,001.3	1,000.9	2.4	1.2	-134.16	-3.8	-64.5	90.0	86.5	3.45	26.062	
1,100.0	1,097.2	1,093.3	1,092.9	2.6	1.4	-127.83	-5.9	-62.9	96.4	92.5	3.86	25.006	
1,200.0	1,196.9	1,193.9	1,193.4	2.9	1.6	-109.59	-10.1	-63.9	104.3	100.0	4.26	24.506	
1,300.0	1,296.4	1,295.0	1,294.4	3.1	1.8	-96.15	-12.7	-64.6	108.9	104.2	4.67	23.286	
1,400.0	1,395.8	1,395.1	1,394.5	3.3	2.0	-89.19	-13.8	-65.4	110.6	105.5	5.10	21.689	
1,500.0	1,494.8	1,493.8	1,493.2	3.6	2.2	-87.57	-14.7	-66.4	111.3	105.8	5.52	20.160	
1,600.0	1,593.3	1,592.0	1,591.4	3.9	2.3	-89.76	-16.0	-67.7	112.5	106.5	5.95	18.897	
1,700.0	1,691.3	1,689.4	1,688.8	4.2	2.5	-94.24	-17.7	-70.2	115.1	108.7	6.40	17.986	
1,800.0	1,788.7	1,788.5	1,787.8	4.5	2.7	-102.29	-19.4	-72.8	119.9	113.0	6.88	17.424	
1,900.0	1,886.0	1,886.8	1,886.1	4.9	2.9	-111.93	-19.9	-73.6	127.1	119.8	7.35	17.297	SF
2,000.0	1,983.4	1,983.9	1,983.2	5.3	3.1	-120.65	-19.9	-73.6	137.6	129.8	7.79	17.656	
2,100.0	2,080.7	2,081.4	2,080.6	5.7	3.3	-128.06	-20.0	-73.5	150.9	142.7	8.22	18.356	
2,200.0	2,178.0	2,178.7	2,178.0	6.1	3.6	-134.22	-20.0	-73.5	166.3	157.6	8.65	19.219	

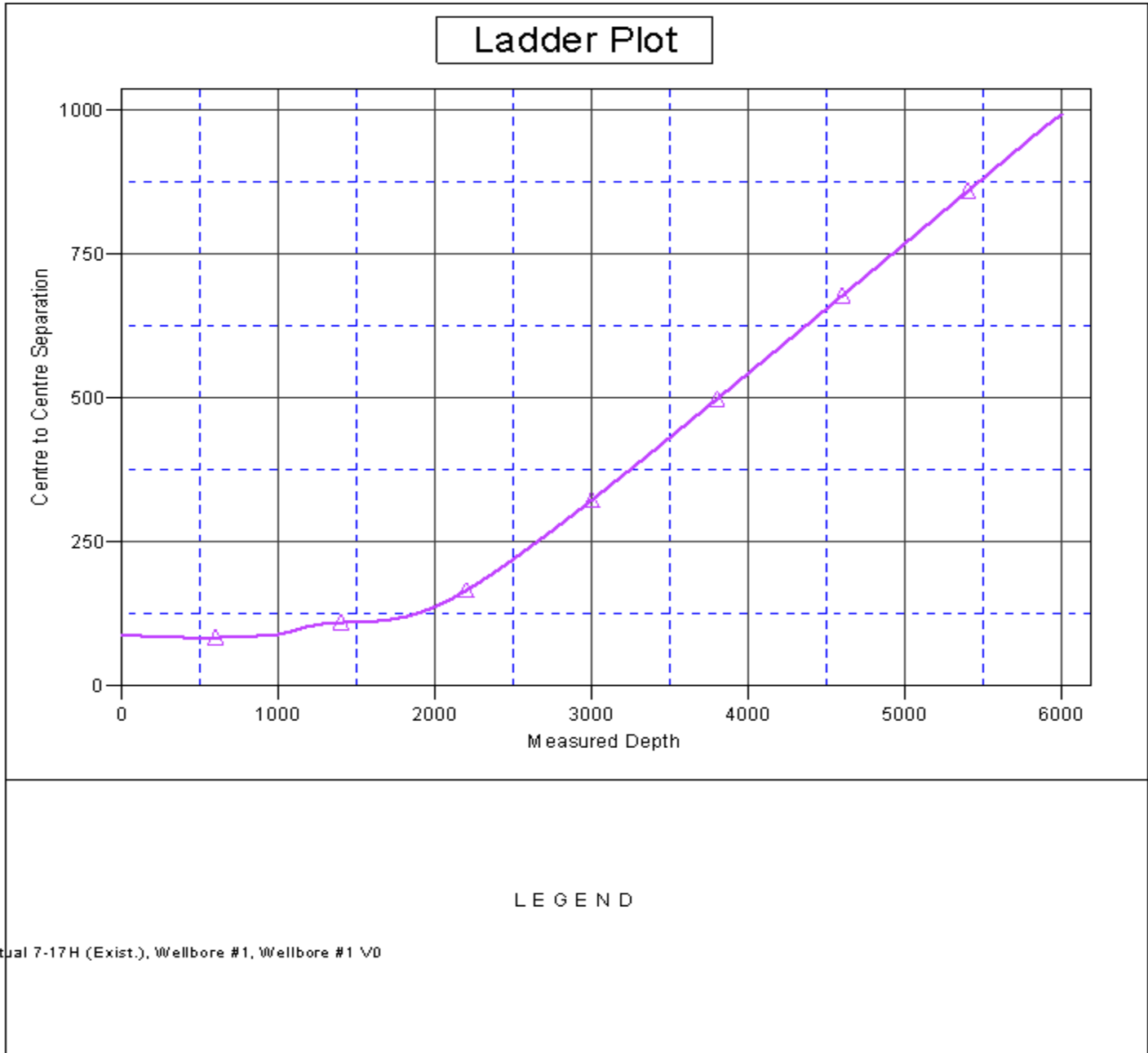
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	EE3	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Project:</b>	SEC.17-T7N-R80W	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Reference Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (4-1-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 1031-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,300.0	2,275.4	2,276.1	2,275.4	6.6	3.8	-139.32	-20.0	-73.5	183.2	174.2	9.08	20.185		
2,400.0	2,372.7	2,373.6	2,372.9	7.0	4.0	-143.56	-20.0	-73.5	201.4	191.8	9.51	21.183		
2,500.0	2,470.0	2,470.7	2,470.0	7.5	4.2	-147.10	-19.9	-73.5	220.3	210.4	9.94	22.172		
2,600.0	2,567.3	2,568.3	2,567.6	7.9	4.4	-150.07	-19.8	-73.5	240.0	229.7	10.38	23.133		
2,700.0	2,664.7	2,665.4	2,664.7	8.4	4.6	-152.59	-19.7	-73.5	260.3	249.4	10.83	24.042		
2,800.0	2,762.0	2,762.7	2,762.0	8.9	4.8	-154.74	-19.7	-73.5	280.9	269.7	11.27	24.929		
2,900.0	2,859.3	2,860.0	2,859.3	9.3	5.0	-156.59	-19.7	-73.5	302.0	290.3	11.72	25.775		
3,000.0	2,956.7	2,957.4	2,956.7	9.8	5.2	-158.20	-19.7	-73.5	323.2	311.1	12.16	26.574		
3,100.0	3,054.0	3,054.7	3,054.0	10.3	5.4	-159.61	-19.7	-73.5	344.7	332.1	12.62	27.327		
3,200.0	3,151.3	3,152.0	3,151.3	10.8	5.6	-160.86	-19.7	-73.5	366.4	353.3	13.08	28.022		
3,300.0	3,248.6	3,249.4	3,248.6	11.3	5.8	-161.97	-19.7	-73.5	388.2	374.7	13.53	28.687		
3,400.0	3,346.0	3,346.7	3,346.0	11.8	6.0	-162.96	-19.7	-73.5	410.2	396.2	13.99	29.326		
3,500.0	3,443.3	3,444.0	3,443.3	12.2	6.2	-163.85	-19.7	-73.5	432.2	417.8	14.44	29.924		
3,600.0	3,540.6	3,541.3	3,540.6	12.7	6.4	-164.65	-19.7	-73.5	454.4	439.5	14.91	30.484		
3,700.0	3,638.0	3,638.7	3,638.0	13.2	6.6	-165.38	-19.7	-73.5	476.6	461.2	15.37	31.012		
3,800.0	3,735.3	3,736.1	3,735.3	13.7	6.8	-166.05	-19.7	-73.5	498.9	483.0	15.84	31.503		
3,900.0	3,832.6	3,833.5	3,832.8	14.2	7.0	-166.67	-19.6	-73.5	521.2	504.9	16.31	31.963		
4,000.0	3,929.9	3,930.7	3,929.9	14.7	7.2	-167.23	-19.5	-73.5	543.6	526.8	16.78	32.404		
4,100.0	4,027.3	4,028.0	4,027.3	15.2	7.4	-167.74	-19.5	-73.5	566.0	548.8	17.24	32.829		
4,200.0	4,124.6	4,125.3	4,124.6	15.7	7.6	-168.22	-19.5	-73.5	588.5	570.8	17.71	33.228		
4,300.0	4,221.9	4,223.1	4,222.3	16.2	7.8	-168.66	-19.5	-73.5	611.0	592.8	18.18	33.602		
4,400.0	4,319.3	4,320.5	4,319.8	16.7	8.0	-169.07	-19.4	-73.6	633.4	614.8	18.65	33.960		
4,500.0	4,416.6	4,417.3	4,416.6	17.2	8.2	-169.45	-19.4	-73.6	656.0	636.9	19.12	34.315		
4,600.0	4,513.9	4,515.1	4,514.4	17.7	8.4	-169.81	-19.4	-73.6	678.6	659.0	19.59	34.646		
4,700.0	4,611.2	4,612.4	4,611.7	18.2	8.6	-170.15	-19.3	-73.7	701.1	681.1	20.06	34.957		
4,800.0	4,708.6	4,709.3	4,708.6	18.7	8.8	-170.46	-19.3	-73.7	723.7	703.2	20.53	35.260		
4,900.0	4,805.9	4,806.6	4,805.9	19.1	9.0	-170.75	-19.3	-73.7	746.4	725.4	21.00	35.545		
5,000.0	4,903.2	4,903.9	4,903.2	19.6	9.2	-171.02	-19.3	-73.7	769.1	747.6	21.48	35.812		
5,100.0	5,000.6	5,001.3	5,000.6	20.1	9.5	-171.28	-19.3	-73.7	791.8	769.8	21.95	36.069		
5,200.0	5,097.9	5,098.6	5,097.9	20.6	9.7	-171.53	-19.3	-73.7	814.5	792.1	22.43	36.316		
5,300.0	5,195.2	5,195.9	5,195.2	21.1	9.9	-171.76	-19.3	-73.7	837.2	814.3	22.90	36.553		
5,400.0	5,292.5	5,293.3	5,292.5	21.6	10.1	-171.98	-19.3	-73.7	860.0	836.6	23.38	36.780		
5,500.0	5,389.9	5,390.6	5,389.9	22.1	10.3	-172.19	-19.3	-73.7	882.7	858.9	23.86	36.995		
5,600.0	5,487.2	5,488.6	5,487.9	22.6	10.5	-172.39	-19.2	-73.7	905.5	881.1	24.34	37.196		
5,700.0	5,584.5	5,585.3	5,584.5	23.1	10.7	-172.58	-19.1	-73.7	928.2	903.4	24.82	37.400		
5,800.0	5,681.9	5,681.6	5,680.9	23.6	10.9	-172.77	-19.0	-73.7	951.0	925.7	25.29	37.602		
5,900.0	5,779.2	5,778.7	5,778.0	24.1	11.1	-172.96	-18.9	-73.5	973.7	947.9	25.78	37.772		
6,000.0	5,877.2	5,879.5	5,878.8	24.4	11.3	-173.16	-18.8	-73.5	993.5	967.2	26.26	37.839		

<b>Company:</b>	EE3	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Project:</b>	SEC.17-T7N-R80W	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Reference Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (4-1-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 8164.0ft (Original Well Elev) Coordinates are relative to: Mutual 01-17H  
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: -0.58°



<b>Company:</b>	EE3	<b>Local Co-ordinate Reference:</b>	Well Mutual 01-17H
<b>Project:</b>	SEC.17-T7N-R80W	<b>TVD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Reference Site:</b>	Mutual 01-17H Pad Sec.17-T7N-R80W	<b>MD Reference:</b>	WELL @ 8164.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Mutual 01-17H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (4-1-14)	<b>Offset TVD Reference:</b>	Offset Datum

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