

EE3

Well Name: **Hebron 01-18HR**

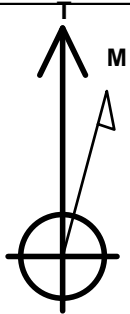
Surface Location: Hebron 01-18HR Pad Sec.18-T7N-R80W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 8153.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1457023.35	2745630.46	40.584322	-106.415828	
Original Well Elev WELL @ 8166.0ft (Original Well Elev)						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 221'FNL & 2419'FEL, Sec.18	1.0	0.0	0.0	Point
BHL 600'FNL & 782'FEL, Sec.7	6825.0	4863.8	1722.6	Point



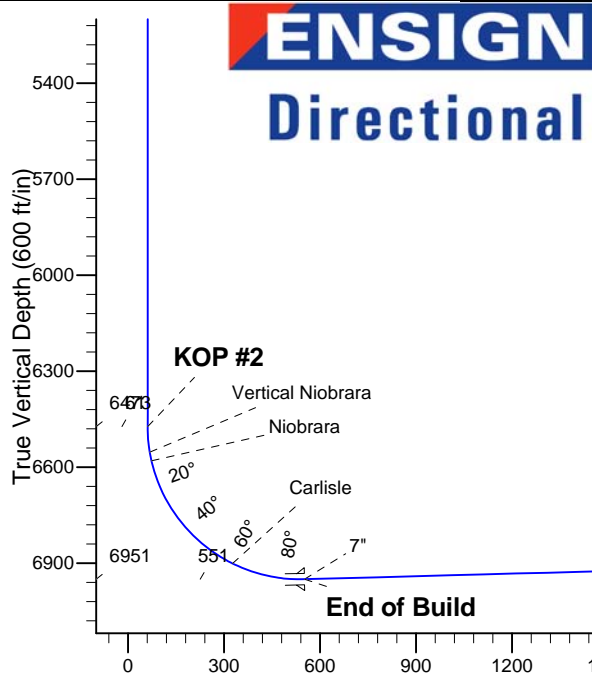
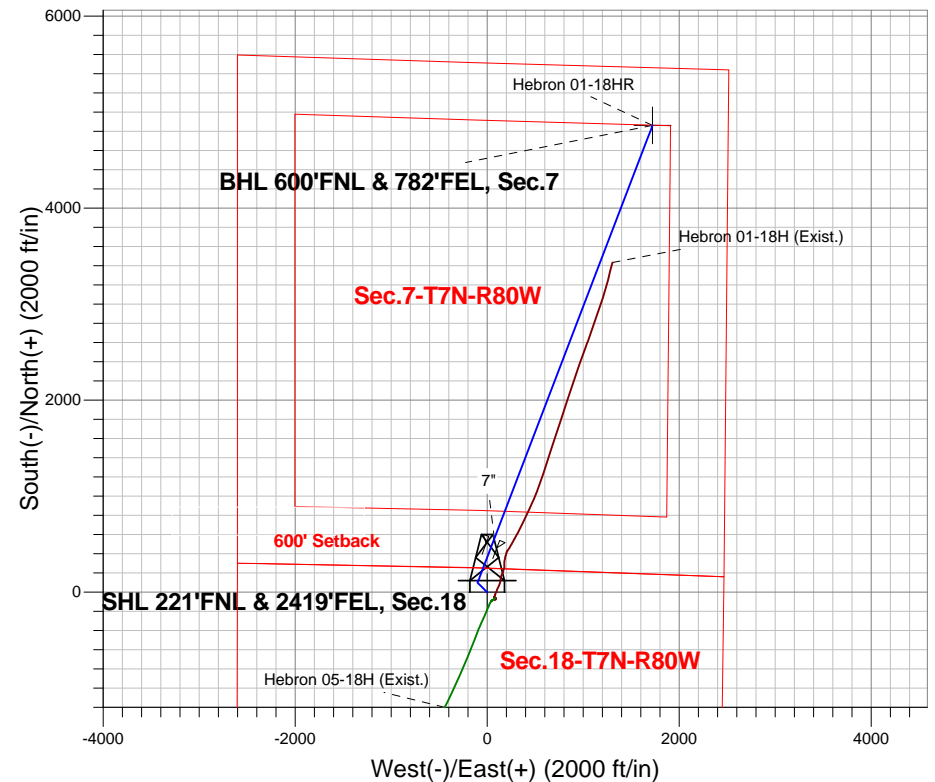
Azimuths to True North
Magnetic North: 9.36°

Magnetic Field
Strength: 52723.6srT
Dip Angle: 66.83°
Date: 4/4/2014
Model: IGRF2010

Hebron 01-18HR Pad Sec.18-T7N-R80W
Hebron 01-18HR
Plan #1 (4-4-14)
11:31, April 07 2014

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6473.2	6476.8	KOP #2
6950.6	7239.8	End of Build



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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1299.8	3.00	315.00	1299.7	5.5	-5.5	1.00	315.00	3.4	
4	3703.7	3.00	315.00	3700.3	94.5	-94.5	0.00	0.00	57.5	
5	4003.6	0.00	0.00	4000.0	100.0	-100.0	1.00	180.00	60.9	
6	6476.8	0.00	0.00	6473.3	100.0	-100.0	0.00	0.00	60.9	
7	7239.8	91.56	20.94	6950.6	558.1	75.3	12.00	20.94	551.2	
8	11851.6	91.56	20.94	6825.0	4863.8	1722.6	0.00	0.00	5159.8	BHL 600'FNL & 782'FEL, Sec.7

BHL 600'FNL & 782'FEL, Sec.7

Vertical Section at 19.50° (600 ft/in)

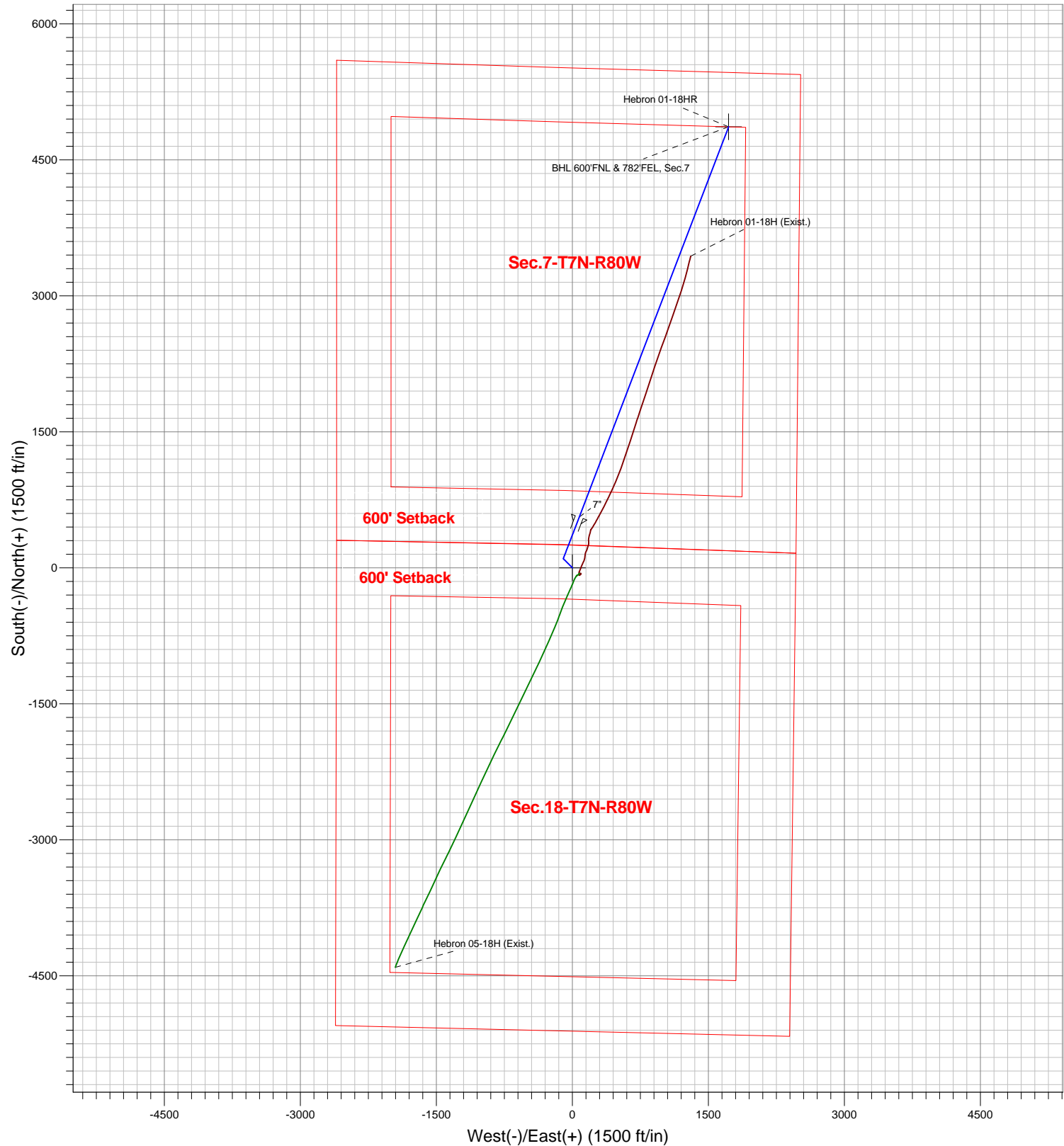


Surface Location: Hebron 01-18HR Pad Sec.18-T7N-R80W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 8153.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1457023.35	2745630.46	40.584322	-106.415828	
Design Version: Plan #1 (4-4-14)						





EE3

SEC.18-T7N-R80W

Hebron 01-18HR Pad Sec.18-T7N-R80W

Hebron 01-18HR

Wellbore #1

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

Standard Planning Report

07 April, 2014



Database:	Landmark	Local Co-ordinate Reference:	Well Hebron 01-18HR
Company:	EE3	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Project:	SEC.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	North Reference:	True
Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-4-14)		

Project	SEC.18-T7N-R80W, Jackson County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Hebron 01-18HR Pad Sec.18-T7N-R80W				
Site Position:		Northing:	1,457,023.36ft	Latitude:	40.584322
From:	Lat/Long	Easting:	2,745,630.46ft	Longitude:	-106.415828
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	-0.59 °

Well	Hebron 01-18HR					
Well Position	+N-S	0.0 ft	Northing:	1,457,023.35 ft	Latitude:	40.584322
	+E-W	0.0 ft	Easting:	2,745,630.46 ft	Longitude:	-106.415828
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,153.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/4/2014	9.36	66.83	52,724

Design	Plan #1 (4-4-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	19.50

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,299.8	3.00	315.00	1,299.7	5.5	-5.5	1.00	1.00	0.00	315.00	
3,703.7	3.00	315.00	3,700.3	94.5	-94.5	0.00	0.00	0.00	0.00	
4,003.6	0.00	0.00	4,000.0	100.0	-100.0	1.00	-1.00	0.00	180.00	
6,476.8	0.00	0.00	6,473.3	100.0	-100.0	0.00	0.00	0.00	0.00	
7,239.8	91.56	20.94	6,950.6	558.1	75.3	12.00	12.00	0.00	20.94	
11,851.6	91.56	20.94	6,825.0	4,863.8	1,722.6	0.00	0.00	0.00	0.00	BHL 600'FNL & 78°

Database:	Landmark	Local Co-ordinate Reference:	Well Hebron 01-18HR
Company:	EE3	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Project:	SEC.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	North Reference:	True
Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-4-14)		

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
SHL 221'FNL & 2419'FEL, Sec.18									
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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,100.0	1.00	315.00	1,100.0	0.6	-0.6	0.4	1.00	1.00	0.00
1,200.0	2.00	315.00	1,200.0	2.5	-2.5	1.5	1.00	1.00	0.00
1,299.8	3.00	315.00	1,299.7	5.5	-5.5	3.4	1.00	1.00	0.00
1,300.0	3.00	315.00	1,299.9	5.6	-5.6	3.4	0.00	0.00	0.00
1,400.0	3.00	315.00	1,399.7	9.3	-9.3	5.6	0.00	0.00	0.00
1,500.0	3.00	315.00	1,499.6	12.9	-12.9	7.9	0.00	0.00	0.00
1,600.0	3.00	315.00	1,599.5	16.6	-16.6	10.1	0.00	0.00	0.00
1,603.6	3.00	315.00	1,603.0	16.8	-16.8	10.2	0.00	0.00	0.00
Midcoal									
1,700.0	3.00	315.00	1,699.3	20.3	-20.3	12.4	0.00	0.00	0.00
1,800.0	3.00	315.00	1,799.2	24.0	-24.0	14.6	0.00	0.00	0.00
1,900.0	3.00	315.00	1,899.0	27.7	-27.7	16.9	0.00	0.00	0.00
2,000.0	3.00	315.00	1,998.9	31.4	-31.4	19.1	0.00	0.00	0.00
2,100.0	3.00	315.00	2,098.8	35.1	-35.1	21.4	0.00	0.00	0.00
2,200.0	3.00	315.00	2,198.6	38.8	-38.8	23.6	0.00	0.00	0.00
2,300.0	3.00	315.00	2,298.5	42.5	-42.5	25.9	0.00	0.00	0.00
2,384.6	3.00	315.00	2,383.0	45.7	-45.7	27.8	0.00	0.00	0.00
Suddeth Coal									
2,400.0	3.00	315.00	2,398.4	46.2	-46.2	28.1	0.00	0.00	0.00
2,500.0	3.00	315.00	2,498.2	49.9	-49.9	30.4	0.00	0.00	0.00
2,600.0	3.00	315.00	2,598.1	53.6	-53.6	32.7	0.00	0.00	0.00
2,700.0	3.00	315.00	2,697.9	57.3	-57.3	34.9	0.00	0.00	0.00
2,800.0	3.00	315.00	2,797.8	61.0	-61.0	37.2	0.00	0.00	0.00
2,900.0	3.00	315.00	2,897.7	64.7	-64.7	39.4	0.00	0.00	0.00
3,000.0	3.00	315.00	2,997.5	68.4	-68.4	41.7	0.00	0.00	0.00
3,100.0	3.00	315.00	3,097.4	72.1	-72.1	43.9	0.00	0.00	0.00
3,200.0	3.00	315.00	3,197.3	75.8	-75.8	46.2	0.00	0.00	0.00
3,300.0	3.00	315.00	3,297.1	79.5	-79.5	48.4	0.00	0.00	0.00
3,400.0	3.00	315.00	3,397.0	83.2	-83.2	50.7	0.00	0.00	0.00
3,500.0	3.00	315.00	3,496.9	86.9	-86.9	52.9	0.00	0.00	0.00
3,600.0	3.00	315.00	3,596.7	90.6	-90.6	55.2	0.00	0.00	0.00
3,700.0	3.00	315.00	3,696.6	94.3	-94.3	57.4	0.00	0.00	0.00
3,703.7	3.00	315.00	3,700.3	94.5	-94.5	57.5	0.00	0.00	0.00
3,800.0	2.04	315.00	3,796.5	97.4	-97.4	59.3	1.00	-1.00	0.00
3,900.0	1.04	315.00	3,896.4	99.3	-99.3	60.5	1.00	-1.00	0.00
4,000.0	0.04	315.00	3,996.4	100.0	-100.0	60.9	1.00	-1.00	0.00
4,003.6	0.00	0.00	4,000.0	100.0	-100.0	60.9	1.00	-1.00	0.00
4,100.0	0.00	0.00	4,096.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,200.0	0.00	0.00	4,196.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,300.0	0.00	0.00	4,296.4	100.0	-100.0	60.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Hebron 01-18HR
Company:	EE3	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Project:	SEC.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	North Reference:	True
Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-4-14)		

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)
4,400.0	0.00	0.00	4,396.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,500.0	0.00	0.00	4,496.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,600.0	0.00	0.00	4,596.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,700.0	0.00	0.00	4,696.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,800.0	0.00	0.00	4,796.4	100.0	-100.0	60.9	0.00	0.00	0.00
4,886.6	0.00	0.00	4,883.0	100.0	-100.0	60.9	0.00	0.00	0.00
Sussex									
4,900.0	0.00	0.00	4,896.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,000.0	0.00	0.00	4,996.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,100.0	0.00	0.00	5,096.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,186.6	0.00	0.00	5,183.0	100.0	-100.0	60.9	0.00	0.00	0.00
Shannon									
5,200.0	0.00	0.00	5,196.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,300.0	0.00	0.00	5,296.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,396.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,496.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,596.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,696.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,796.4	100.0	-100.0	60.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,896.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,996.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,096.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,196.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,296.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,396.4	100.0	-100.0	60.9	0.00	0.00	0.00
6,476.8	0.00	0.00	6,473.2	100.0	-100.0	60.9	0.00	0.00	0.00
KOP #2									
6,500.0	2.78	20.94	6,496.4	100.5	-99.8	61.4	11.99	11.99	0.00
6,556.9	9.61	20.94	6,553.0	106.3	-97.6	67.6	12.00	12.00	0.00
Vertical Niobrara									
6,584.5	12.92	20.94	6,580.0	111.3	-95.7	73.0	12.00	12.00	0.00
Niobrara									
6,600.0	14.78	20.94	6,595.1	114.8	-94.4	76.7	12.00	12.00	0.00
6,700.0	26.78	20.94	6,688.4	147.8	-81.7	112.1	12.00	12.00	0.00
6,800.0	38.78	20.94	6,772.3	198.3	-62.4	166.1	12.00	12.00	0.00
6,900.0	50.78	20.94	6,843.2	264.0	-37.3	236.4	12.00	12.00	0.00
7,000.0	62.78	20.94	6,897.9	342.0	-7.4	319.9	12.00	12.00	0.00
7,007.0	63.62	20.94	6,901.0	347.8	-5.2	326.1	12.00	12.00	0.00
Carlisle									
7,100.0	74.78	20.94	6,934.0	428.9	25.8	412.9	12.00	12.00	0.00
7,200.0	86.78	20.94	6,950.0	520.9	61.0	511.4	12.00	12.00	0.00
7,239.8	91.56	20.94	6,950.6	558.1	75.3	551.2	12.00	12.00	0.00
End of Build - 7"									
7,300.0	91.56	20.94	6,948.9	614.3	96.8	611.3	0.01	0.01	0.00
7,400.0	91.56	20.94	6,946.2	707.6	132.5	711.3	0.00	0.00	0.00
7,500.0	91.56	20.94	6,943.5	801.0	168.2	811.2	0.00	0.00	0.00
7,600.0	91.56	20.94	6,940.7	894.3	203.9	911.1	0.00	0.00	0.00
7,700.0	91.56	20.94	6,938.0	987.7	239.6	1,011.0	0.00	0.00	0.00
7,800.0	91.56	20.94	6,935.3	1,081.1	275.4	1,111.0	0.00	0.00	0.00
7,900.0	91.56	20.94	6,932.6	1,174.4	311.1	1,210.9	0.00	0.00	0.00
8,000.0	91.56	20.94	6,929.9	1,267.8	346.8	1,310.8	0.00	0.00	0.00
8,100.0	91.56	20.94	6,927.1	1,361.2	382.5	1,410.8	0.00	0.00	0.00
8,200.0	91.56	20.94	6,924.4	1,454.5	418.2	1,510.7	0.00	0.00	0.00

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Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	North Reference:	True
Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-4-14)		

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)	
8,300.0	91.56	20.94	6,921.7	1,547.9	454.0	1,610.6	0.00	0.00	0.00	
8,400.0	91.56	20.94	6,919.0	1,641.3	489.7	1,710.6	0.00	0.00	0.00	
8,500.0	91.56	20.94	6,916.2	1,734.6	525.4	1,810.5	0.00	0.00	0.00	
8,600.0	91.56	20.94	6,913.5	1,828.0	561.1	1,910.4	0.00	0.00	0.00	
8,700.0	91.56	20.94	6,910.8	1,921.3	596.8	2,010.4	0.00	0.00	0.00	
8,800.0	91.56	20.94	6,908.1	2,014.7	632.6	2,110.3	0.00	0.00	0.00	
8,900.0	91.56	20.94	6,905.4	2,108.1	668.3	2,210.2	0.00	0.00	0.00	
9,000.0	91.56	20.94	6,902.6	2,201.4	704.0	2,310.2	0.00	0.00	0.00	
9,100.0	91.56	20.94	6,899.9	2,294.8	739.7	2,410.1	0.00	0.00	0.00	
9,200.0	91.56	20.94	6,897.2	2,388.2	775.4	2,510.0	0.00	0.00	0.00	
9,300.0	91.56	20.94	6,894.5	2,481.5	811.2	2,610.0	0.00	0.00	0.00	
9,400.0	91.56	20.94	6,891.7	2,574.9	846.9	2,709.9	0.00	0.00	0.00	
9,500.0	91.56	20.94	6,889.0	2,668.2	882.6	2,809.8	0.00	0.00	0.00	
9,600.0	91.56	20.94	6,886.3	2,761.6	918.3	2,909.7	0.00	0.00	0.00	
9,700.0	91.56	20.94	6,883.6	2,855.0	954.0	3,009.7	0.00	0.00	0.00	
9,800.0	91.56	20.94	6,880.9	2,948.3	989.8	3,109.6	0.00	0.00	0.00	
9,900.0	91.56	20.94	6,878.1	3,041.7	1,025.5	3,209.5	0.00	0.00	0.00	
10,000.0	91.56	20.94	6,875.4	3,135.1	1,061.2	3,309.5	0.00	0.00	0.00	
10,100.0	91.56	20.94	6,872.7	3,228.4	1,096.9	3,409.4	0.00	0.00	0.00	
10,200.0	91.56	20.94	6,870.0	3,321.8	1,132.6	3,509.3	0.00	0.00	0.00	
10,300.0	91.56	20.94	6,867.2	3,415.2	1,168.4	3,609.3	0.00	0.00	0.00	
10,400.0	91.56	20.94	6,864.5	3,508.5	1,204.1	3,709.2	0.00	0.00	0.00	
10,500.0	91.56	20.94	6,861.8	3,601.9	1,239.8	3,809.1	0.00	0.00	0.00	
10,600.0	91.56	20.94	6,859.1	3,695.2	1,275.5	3,909.1	0.00	0.00	0.00	
10,700.0	91.56	20.94	6,856.4	3,788.6	1,311.2	4,009.0	0.00	0.00	0.00	
10,800.0	91.56	20.94	6,853.6	3,882.0	1,347.0	4,108.9	0.00	0.00	0.00	
10,900.0	91.56	20.94	6,850.9	3,975.3	1,382.7	4,208.9	0.00	0.00	0.00	
11,000.0	91.56	20.94	6,848.2	4,068.7	1,418.4	4,308.8	0.00	0.00	0.00	
11,100.0	91.56	20.94	6,845.5	4,162.1	1,454.1	4,408.7	0.00	0.00	0.00	
11,200.0	91.56	20.94	6,842.7	4,255.4	1,489.8	4,508.7	0.00	0.00	0.00	
11,300.0	91.56	20.94	6,840.0	4,348.8	1,525.6	4,608.6	0.00	0.00	0.00	
11,400.0	91.56	20.94	6,837.3	4,442.1	1,561.3	4,708.5	0.00	0.00	0.00	
11,500.0	91.56	20.94	6,834.6	4,535.5	1,597.0	4,808.4	0.00	0.00	0.00	
11,600.0	91.56	20.94	6,831.9	4,628.9	1,632.7	4,908.4	0.00	0.00	0.00	
11,700.0	91.56	20.94	6,829.1	4,722.2	1,668.4	5,008.3	0.00	0.00	0.00	
11,800.0	91.56	20.94	6,826.4	4,815.6	1,704.2	5,108.2	0.00	0.00	0.00	
11,851.6	91.56	20.94	6,825.0	4,863.8	1,722.6	5,159.8	0.00	0.00	0.00	
BHL 600'FNL & 782'FEL, Sec.7										

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,239.8	6,950.6	7"	7	7-1/2	

Database:	Landmark	Local Co-ordinate Reference:	Well Hebron 01-18HR
Company:	EE3	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Project:	SEC.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	North Reference:	True
Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (4-4-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,603.6	1,603.0	Midcoal		0.00		
2,384.6	2,383.0	Suddeth Coal		0.00		
4,886.6	4,883.0	Sussex		0.00		
5,186.6	5,183.0	Shannon		0.00		
6,556.9	6,553.0	Vertical Niobrara		0.00		
6,584.5	6,580.0	Niobrara		0.00		
7,007.0	6,901.0	Carlisle		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.0	1,000.0	0.0	0.0	KOP #1	
6,476.8	6,473.2	100.0	-100.0	KOP #2	
7,239.8	6,950.6	558.1	75.3	End of Build	



EE3

SEC.18-T7N-R80W

Hebron 01-18HR Pad Sec.18-T7N-R80W

Hebron 01-18HR

Wellbore #1

Plan #1 (4-4-14)

Anticollision Report

07 April, 2014



Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	4/7/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,851.6	Plan #1 (4-4-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth	Offset Measured Depth	Distance Between Centres	Distance Between Ellipses	Separation Factor	Warning
Offset Well - Wellbore - Design	(ft)	(ft)	(ft)	(ft)		
Hebron 01-18HR Pad Sec.18-T7N-R80W						
Hebron 01-18H (Exist.) - Wellbore #1 - Wellbore #1	114.6	121.7	110.6	110.2	307.546	CC
Hebron 01-18H (Exist.) - Wellbore #1 - Wellbore #1	10,368.6	9,944.0	121.5	-18.5	0.868	Level 1, ES, SF
Hebron 05-18H (Exist.) - Wellbore #1 - Wellbore #1	191.5	198.5	98.8	98.1	141.793	CC
Hebron 05-18H (Exist.) - Wellbore #1 - Wellbore #1	1,000.0	1,007.3	100.1	95.8	23.373	ES
Hebron 05-18H (Exist.) - Wellbore #1 - Wellbore #1	6,400.0	6,391.5	240.5	213.1	8.782	SF

Offset Design	Hebron 01-18HR Pad Sec.18-T7N-R80W - Hebron 01-18H (Exist.) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0ft
Survey Program:	50-MWD												Offset Well Error:	0.0ft
Reference	Offset	Semi Major Axis	Reference	Offset	Highside	Offset Wellbore Centre	Distance	Minimum	Separation	Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Tooface (")	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	7.1	7.1	0.0	0.0	122.63	-59.8	93.3	110.8	110.8	0.01	N/A		
100.0	100.0	107.2	107.2	0.1	0.2	122.95	-60.1	92.8	110.6	110.3	0.30	373.515		
114.6	114.6	121.7	121.6	0.1	0.2	123.03	-60.3	92.7	110.6	110.2	0.36	307.546	CC	
200.0	200.0	206.1	206.1	0.3	0.4	123.59	-61.4	92.4	110.9	110.2	0.73	151.384		
300.0	300.0	305.3	305.3	0.6	0.6	124.38	-63.4	92.6	112.2	111.1	1.17	96.167		
400.0	400.0	405.5	405.5	0.8	0.8	125.19	-65.6	93.0	113.8	112.2	1.60	70.918		
500.0	500.0	505.5	505.5	1.0	1.0	126.11	-67.8	93.0	115.1	113.1	2.04	56.562		
600.0	600.0	605.9	605.8	1.2	1.3	127.11	-70.2	92.8	116.4	114.0	2.48	47.019		
700.0	700.0	707.3	707.1	1.5	1.5	128.32	-72.5	91.7	116.9	114.0	2.91	40.095		
800.0	800.0	808.3	808.1	1.7	1.7	129.60	-74.1	89.6	116.3	112.9	3.35	34.683		
900.0	900.0	908.1	907.8	1.9	1.9	130.94	-75.7	87.2	115.4	111.7	3.79	30.450		
1,000.0	1,000.0	1,007.9	1,007.7	2.1	2.1	132.43	-77.5	84.8	114.8	110.6	4.23	27.163		
1,033.4	1,033.3	1,041.3	1,041.0	2.2	2.2	177.90	-78.0	84.0	114.7	110.3	4.39	26.138		
1,100.0	1,100.0	1,107.6	1,107.3	2.4	2.3	178.82	-79.1	82.5	115.1	110.5	4.67	24.631		
1,200.0	1,200.0	1,208.6	1,208.3	2.6	2.5	-179.64	-80.8	79.8	117.1	112.0	5.11	22.920		
1,300.0	1,299.9	1,308.4	1,308.0	2.8	2.7	-178.47	-81.8	77.3	120.4	114.8	5.53	21.756		
1,400.0	1,399.7	1,410.9	1,410.5	3.0	3.0	-177.87	-81.5	75.0	123.8	117.9	5.96	20.764		
1,500.0	1,499.6	1,513.5	1,513.0	3.3	3.2	-178.42	-77.5	72.7	124.8	118.4	6.39	19.525		
1,600.0	1,599.5	1,614.0	1,613.2	3.5	3.4	179.38	-70.3	72.2	124.4	117.6	6.81	18.281		
1,611.1	1,610.6	1,624.9	1,624.1	3.5	3.4	179.07	-69.4	72.2	124.4	117.6	6.85	18.158		
1,700.0	1,699.3	1,711.6	1,710.4	3.7	3.6	176.33	-62.3	73.6	125.2	118.0	7.22	17.346		
1,800.0	1,799.2	1,810.6	1,809.2	3.9	3.8	173.64	-55.7	75.7	127.8	120.1	7.64	16.719		

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

Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 50-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
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	Warning
1,900.0	1,899.0	1,911.0	1,909.6	4.2	4.0	172.26	-51.2	76.0	130.4	122.4	8.08	16.153	
2,000.0	1,998.9	2,009.7	2,008.1	4.4	4.2	172.17	-48.9	74.6	133.1	124.5	8.51	15.638	
2,100.0	2,098.8	2,107.7	2,106.2	4.7	4.4	172.39	-48.4	74.2	137.6	128.6	8.94	15.392	
2,200.0	2,198.6	2,207.2	2,205.7	4.9	4.6	172.60	-48.2	74.1	142.6	133.2	9.37	15.216	
2,300.0	2,298.5	2,307.2	2,305.7	5.1	4.8	172.93	-48.3	74.0	147.8	138.0	9.80	15.076	
2,400.0	2,398.4	2,406.9	2,405.3	5.4	5.0	173.15	-48.2	73.9	152.8	142.6	10.24	14.929	
2,500.0	2,498.2	2,506.3	2,504.7	5.6	5.2	173.44	-48.5	74.0	158.2	147.6	10.67	14.829	
2,600.0	2,598.1	2,606.2	2,604.7	5.8	5.4	173.64	-48.6	74.3	163.7	152.6	11.10	14.747	
2,700.0	2,697.9	2,706.5	2,704.9	6.1	5.6	173.74	-48.5	74.5	169.1	157.6	11.54	14.658	
2,800.0	2,797.8	2,807.0	2,805.5	6.3	5.8	173.53	-47.4	75.2	174.1	162.1	11.97	14.545	
2,900.0	2,897.7	2,908.7	2,907.1	6.6	6.0	172.59	-44.1	76.7	178.5	166.1	12.41	14.383	
3,000.0	2,997.5	3,009.8	3,008.0	6.8	6.3	170.94	-38.4	78.9	182.0	169.1	12.85	14.165	
3,100.0	3,097.4	3,111.8	3,109.6	7.0	6.5	168.54	-29.9	81.8	184.7	171.4	13.30	13.893	
3,200.0	3,197.3	3,211.4	3,208.3	7.3	6.7	164.95	-17.7	86.4	187.3	173.5	13.75	13.616	
3,300.0	3,297.1	3,310.7	3,306.3	7.5	7.0	160.54	-2.7	92.4	190.5	176.3	14.23	13.388	
3,400.0	3,397.0	3,408.4	3,402.3	7.8	7.2	155.69	14.1	99.4	195.3	180.5	14.73	13.256	
3,500.0	3,496.9	3,506.9	3,498.8	8.0	7.5	150.70	32.2	107.0	201.6	186.3	15.25	13.219	
3,600.0	3,596.7	3,605.0	3,595.1	8.3	7.8	146.27	49.4	114.4	209.3	193.6	15.77	13.278	
3,700.0	3,696.6	3,703.8	3,692.3	8.5	8.0	142.52	65.3	121.8	218.4	202.1	16.28	13.417	
3,800.0	3,796.5	3,805.6	3,792.9	8.7	8.3	139.36	79.9	128.4	226.8	210.0	16.77	13.525	
3,900.0	3,896.4	3,908.8	3,895.0	8.9	8.6	136.30	93.9	133.4	233.0	215.8	17.24	13.518	
4,000.0	3,996.4	4,011.4	3,996.5	9.1	8.9	133.04	108.1	136.6	236.8	219.1	17.70	13.380	
4,100.0	4,096.4	4,111.8	4,095.9	9.2	9.1	84.63	122.4	138.6	239.7	221.6	18.12	13.232	
4,200.0	4,196.4	4,211.8	4,194.9	9.5	9.4	81.43	136.2	140.2	243.1	224.5	18.57	13.088	
4,300.0	4,296.4	4,309.7	4,291.9	9.7	9.7	78.35	149.8	141.7	247.0	228.0	19.02	12.991	
4,400.0	4,396.4	4,404.7	4,385.9	9.9	10.0	75.61	162.7	144.2	252.7	233.3	19.44	12.997	
4,500.0	4,496.4	4,499.8	4,480.2	10.1	10.3	73.22	175.0	148.7	260.8	240.9	19.87	13.126	
4,600.0	4,596.4	4,598.0	4,577.5	10.3	10.5	71.18	186.8	154.5	270.2	249.9	20.29	13.316	
4,700.0	4,696.4	4,700.3	4,678.9	10.5	10.8	69.20	198.8	160.2	279.4	258.7	20.72	13.486	
4,800.0	4,796.4	4,805.7	4,783.5	10.7	11.1	67.11	211.5	164.0	287.3	266.1	21.16	13.578	
4,900.0	4,896.4	4,902.4	4,879.4	11.0	11.4	65.16	223.4	166.5	294.6	273.1	21.58	13.656	
5,000.0	4,996.4	4,998.7	4,974.9	11.2	11.7	63.50	234.8	170.4	303.4	281.4	21.99	13.798	
5,100.0	5,096.4	5,099.0	5,074.5	11.4	12.0	62.09	245.8	175.3	312.8	290.4	22.41	13.958	
5,200.0	5,196.4	5,205.2	5,180.0	11.6	12.2	60.61	257.2	179.1	321.2	298.3	22.85	14.055	
5,300.0	5,296.4	5,311.0	5,285.2	11.8	12.5	58.94	268.7	180.0	327.4	304.1	23.29	14.058	
5,400.0	5,396.4	5,408.6	5,382.1	12.0	12.8	57.22	280.2	179.8	333.4	309.7	23.71	14.063	
5,500.0	5,496.4	5,507.9	5,480.6	12.3	13.1	55.37	292.7	179.1	339.9	315.8	24.14	14.083	
5,600.0	5,596.4	5,605.0	5,576.9	12.5	13.4	53.76	304.6	179.2	347.1	322.6	24.56	14.135	
5,700.0	5,696.4	5,703.2	5,674.4	12.7	13.6	52.28	316.5	179.9	355.1	330.1	24.98	14.215	
5,800.0	5,796.4	5,801.6	5,772.2	12.9	13.9	50.96	328.1	181.2	363.4	338.0	25.40	14.306	
5,900.0	5,896.4	5,898.8	5,868.7	13.1	14.2	49.77	339.5	183.0	372.4	346.6	25.82	14.421	
6,000.0	5,996.4	5,997.5	5,966.7	13.4	14.5	48.66	351.1	185.4	381.9	355.7	26.25	14.550	
6,100.0	6,096.4	6,094.6	6,063.1	13.6	14.8	47.65	362.4	187.9	391.7	365.0	26.67	14.686	
6,200.0	6,196.4	6,189.0	6,156.7	13.8	15.0	46.72	374.2	191.2	402.7	375.7	27.09	14.868	
6,300.0	6,296.4	6,286.6	6,253.4	14.0	15.3	45.86	386.7	195.4	414.7	387.1	27.52	15.069	
6,400.0	6,396.4	6,384.6	6,350.4	14.2	15.6	44.87	400.1	198.7	426.7	398.8	27.95	15.269	
6,500.0	6,496.4	6,466.0	6,430.9	14.4	15.9	22.94	412.1	201.5	439.5	410.6	28.86	15.231	
6,600.0	6,595.1	6,530.0	6,493.3	14.7	16.1	22.53	424.8	207.2	446.0	417.2	28.76	15.505	
6,700.0	6,688.4	6,573.9	6,534.8	14.9	16.3	23.08	436.7	215.0	444.2	416.3	27.89	15.926	
6,800.0	6,772.3	6,625.0	6,581.3	15.2	16.6	24.53	454.4	226.7	434.0	407.5	26.50	16.377	
6,900.0	6,843.2	6,688.0	6,635.6	15.6	17.0	27.27	481.4	243.5	414.9	389.8	25.08	16.544	
7,000.0	6,897.9	6,764.2	6,698.4	16.2	17.6	32.17	518.9	264.8	384.8	360.2	24.53	15.686	

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

Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

Offset Design		Hebron 01-18HR Pad Sec.18-T7N-R80W - Hebron 01-18H (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error: 0.0 ft	
Survey Program: 50-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	
7,100.0	6,934.0	6,825.0	6,746.3	17.0	18.1	38.90	552.1	282.2	344.7	319.1	25.57	13.481	
7,200.0	6,950.0	6,879.0	6,785.8	17.9	18.6	48.24	584.3	300.0	300.7	272.0	28.78	10.448	
7,300.0	6,948.9	6,931.3	6,820.6	19.0	19.1	57.16	618.4	319.0	260.3	227.5	32.76	7.945	
7,400.0	6,946.2	6,994.9	6,856.9	20.2	19.8	65.81	664.6	343.1	235.5	198.7	36.82	6.397	
7,500.0	6,943.5	7,069.0	6,888.2	21.5	20.8	74.09	724.7	372.8	227.1	186.4	40.72	5.577	
7,514.8	6,943.1	7,081.0	6,892.1	21.7	20.9	75.19	734.9	377.9	227.0	185.7	41.27	5.500	
7,600.0	6,940.7	7,161.1	6,909.4	22.9	22.1	80.31	805.2	411.7	229.3	185.0	44.30	5.177	
7,700.0	6,938.0	7,257.9	6,918.3	24.4	23.5	83.35	893.0	451.5	233.6	186.1	47.52	4.916	
7,800.0	6,935.3	7,362.9	6,919.8	26.0	25.1	84.55	988.8	494.4	238.8	188.0	50.76	4.704	
7,900.0	6,932.6	7,476.0	6,919.7	27.6	26.8	85.26	1,094.1	535.5	239.2	185.1	54.08	4.423	
8,000.0	6,929.9	7,580.0	6,919.5	29.2	28.3	85.83	1,192.5	569.3	235.6	178.3	57.30	4.112	
8,100.0	6,927.1	7,678.0	6,920.3	30.9	29.8	86.63	1,285.1	601.4	232.1	171.7	60.47	3.839	
8,200.0	6,924.4	7,782.0	6,921.6	32.6	31.4	87.59	1,383.7	634.2	227.5	163.7	63.84	3.564	
8,300.0	6,921.7	7,884.8	6,922.2	34.3	33.0	88.42	1,481.8	665.1	221.4	154.1	67.22	3.293	
8,400.0	6,919.0	7,981.0	6,923.5	36.0	34.5	89.42	1,573.5	694.0	215.3	144.8	70.51	3.053	
8,500.0	6,916.2	8,080.2	6,921.8	37.8	36.2	89.68	1,667.6	725.4	210.9	137.0	73.90	2.854	
8,600.0	6,913.5	8,179.4	6,918.6	39.6	37.8	89.53	1,761.4	757.4	207.2	129.9	77.33	2.680	
8,700.0	6,910.8	8,280.6	6,913.4	41.4	39.5	88.84	1,857.3	789.3	202.9	122.0	80.82	2.510	
8,800.0	6,908.1	8,379.9	6,908.3	43.2	41.2	88.10	1,951.5	820.5	198.4	114.2	84.22	2.355	
8,900.0	6,905.4	8,481.3	6,903.3	45.0	42.9	87.37	2,047.8	851.7	193.3	105.5	87.71	2.203	
9,000.0	6,902.6	8,582.2	6,898.1	46.8	44.6	86.58	2,143.6	882.9	188.4	97.2	91.15	2.067	
9,100.0	6,899.9	8,679.8	6,896.0	48.7	46.2	86.66	2,236.5	913.0	183.1	88.5	94.62	1.935	
9,200.0	6,897.2	8,773.8	6,892.1	50.5	47.8	86.21	2,324.6	945.3	181.8	83.8	98.03	1.854	
9,300.0	6,894.5	8,876.1	6,889.5	52.4	49.5	86.20	2,421.0	979.6	179.4	77.8	101.61	1.766	
9,400.0	6,891.7	8,975.9	6,889.2	54.2	51.2	86.94	2,514.9	1,013.3	177.1	71.9	105.24	1.683	
9,500.0	6,889.0	9,075.5	6,892.1	56.1	52.9	88.76	2,608.5	1,047.2	175.1	66.2	108.92	1.608	
9,600.0	6,886.3	9,179.2	6,895.5	57.9	54.7	90.80	2,706.2	1,081.7	172.5	59.9	112.63	1.532	
9,700.0	6,883.6	9,280.0	6,896.6	59.8	56.5	92.12	2,801.7	1,114.0	168.7	52.5	116.21	1.452 Level 3	
9,800.0	6,880.9	9,378.7	6,891.9	61.7	58.2	91.44	2,894.6	1,147.0	166.2	46.3	119.84	1.387 Level 3	
9,900.0	6,878.1	9,481.0	6,887.7	63.6	60.0	90.98	2,991.4	1,179.8	162.3	38.8	123.52	1.314 Level 3	
10,000.0	6,875.4	9,581.6	6,884.0	65.5	61.7	90.67	3,086.9	1,211.3	157.6	30.5	127.15	1.240 Level 2	
10,100.0	6,872.7	9,686.9	6,880.3	67.4	63.6	90.39	3,187.6	1,241.7	150.4	19.5	130.88	1.149 Level 2	
10,200.0	6,870.0	9,791.0	6,876.6	69.2	65.4	90.02	3,288.3	1,268.0	139.4	4.8	134.58	1.036 Level 2	
10,300.0	6,867.2	9,888.4	6,869.6	71.1	67.1	88.07	3,382.5	1,291.3	127.3	-10.8	138.06	0.922 Level 1	
10,368.6	6,865.4	9,944.0	6,862.5	72.4	68.0	85.33	3,435.7	1,305.8	121.5	-18.5	139.94	0.868 Level 1, ES, SF	
10,400.0	6,864.5	9,944.0	6,862.5	73.0	68.0	85.33	3,435.7	1,305.8	125.4	-15.1	140.53	0.893 Level 1	
10,500.0	6,861.8	9,944.0	6,862.5	74.9	68.0	85.33	3,435.7	1,305.8	178.9	36.5	142.42	1.256 Level 3	
10,600.0	6,859.1	9,944.0	6,862.5	76.8	68.0	85.33	3,435.7	1,305.8	261.3	117.0	144.32	1.811	
10,700.0	6,856.4	9,944.0	6,862.5	78.7	68.0	85.33	3,435.7	1,305.8	352.9	206.7	146.22	2.414	
10,800.0	6,853.6	9,944.0	6,862.5	80.6	68.0	85.33	3,435.7	1,305.8	448.1	300.0	148.11	3.026	
10,900.0	6,850.9	9,944.0	6,862.5	82.5	68.0	85.33	3,435.7	1,305.8	545.1	395.1	150.02	3.633	
11,000.0	6,848.2	9,944.0	6,862.5	84.5	68.0	85.33	3,435.7	1,305.8	642.9	491.0	151.92	4.232	
11,100.0	6,845.5	9,944.0	6,862.5	86.4	68.0	85.33	3,435.7	1,305.8	741.4	587.6	153.82	4.820	
11,200.0	6,842.7	9,944.0	6,862.5	88.3	68.0	85.33	3,435.7	1,305.8	840.2	684.5	155.73	5.395	
11,300.0	6,840.0	9,944.0	6,862.5	90.2	68.0	85.33	3,435.7	1,305.8	939.3	781.6	157.63	5.958	

Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 50-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		
0.0	0.0	7.1	7.1	0.0	0.0	128.27	-61.6	78.0	99.4	99.4	0.01	N/A		
100.0	100.0	107.5	107.5	0.1	0.2	128.53	-61.7	77.4	99.0	98.7	0.30	335.488		
191.5	191.5	198.5	198.5	0.3	0.4	128.99	-62.1	76.8	98.8	98.1	0.70	141.793 CC		
200.0	200.0	207.0	207.0	0.3	0.4	129.04	-62.2	76.7	98.8	98.0	0.73	134.578		
300.0	300.0	306.7	306.7	0.6	0.6	129.73	-63.2	76.1	98.9	97.8	1.18	84.154		
400.0	400.0	406.7	406.7	0.8	0.8	130.91	-65.0	75.0	99.2	97.6	1.62	61.158		
500.0	500.0	506.7	506.6	1.0	1.1	132.37	-67.1	73.5	99.5	97.5	2.06	48.326		
600.0	600.0	606.7	606.6	1.2	1.3	134.38	-69.9	71.4	100.0	97.5	2.51	39.832		
700.0	700.0	707.6	707.4	1.5	1.5	136.74	-72.7	68.4	99.9	96.9	2.95	33.842		
750.2	750.2	757.5	757.2	1.6	1.6	138.12	-74.3	66.6	99.8	96.6	3.18	31.426		
800.0	800.0	807.3	807.0	1.7	1.7	139.60	-76.0	64.7	99.8	96.4	3.40	29.356		
900.0	900.0	907.3	906.9	1.9	2.0	142.63	-79.3	60.6	99.8	96.0	3.84	25.987		
1,000.0	1,000.0	1,007.3	1,006.7	2.1	2.2	145.70	-82.7	56.4	100.1	95.8	4.28	23.373 ES		
1,100.0	1,100.0	1,107.7	1,107.0	2.4	2.4	-166.62	-85.5	52.4	101.2	96.4	4.75	21.276		
1,200.0	1,200.0	1,207.9	1,207.1	2.6	2.6	-165.81	-86.4	50.5	103.5	98.3	5.17	20.014		
1,300.0	1,299.9	1,307.6	1,306.9	2.8	2.8	-166.15	-86.6	50.2	107.7	102.1	5.58	19.288		
1,400.0	1,399.7	1,407.6	1,406.9	3.0	3.0	-166.77	-86.6	50.1	112.7	106.7	6.01	18.762		
1,500.0	1,499.6	1,507.6	1,506.8	3.3	3.2	-167.35	-86.4	50.0	117.6	111.2	6.43	18.295		
1,600.0	1,599.5	1,607.3	1,606.6	3.5	3.4	-167.92	-86.3	50.0	122.6	115.8	6.85	17.903		
1,700.0	1,699.3	1,707.2	1,706.4	3.7	3.6	-168.42	-86.2	50.0	127.7	120.4	7.28	17.546		
1,800.0	1,799.2	1,806.8	1,806.0	3.9	3.8	-168.81	-86.3	49.9	132.8	125.1	7.71	17.231		
1,900.0	1,899.0	1,907.1	1,906.3	4.2	4.0	-169.21	-86.3	49.8	137.9	129.8	8.14	16.951		
2,000.0	1,998.9	2,006.9	2,006.1	4.4	4.2	-169.58	-86.2	49.7	142.9	134.3	8.57	16.678		
2,100.0	2,098.8	2,106.7	2,105.9	4.7	4.4	-169.89	-86.2	49.5	148.0	138.9	9.00	16.431		
2,200.0	2,198.6	2,206.6	2,205.8	4.9	4.6	-170.24	-86.1	49.5	153.0	143.5	9.43	16.215		
2,300.0	2,298.5	2,306.4	2,305.6	5.1	4.8	-170.55	-86.0	49.4	158.0	148.1	9.87	16.013		
2,400.0	2,398.4	2,406.0	2,405.2	5.4	5.1	-170.80	-86.1	49.3	163.2	152.9	10.30	15.840		
2,500.0	2,498.2	2,505.9	2,505.1	5.6	5.3	-171.08	-86.2	49.3	168.5	157.8	10.73	15.698		
2,600.0	2,598.1	2,606.0	2,605.3	5.8	5.5	-171.35	-86.1	49.3	173.6	162.4	11.16	15.548		
2,700.0	2,697.9	2,705.7	2,705.0	6.1	5.7	-171.60	-86.1	49.2	178.7	167.1	11.59	15.413		
2,800.0	2,797.8	2,805.5	2,804.7	6.3	5.9	-171.80	-86.2	49.1	183.9	171.9	12.03	15.288		
2,900.0	2,897.7	2,905.1	2,904.4	6.6	6.1	-172.02	-86.3	49.2	189.2	176.7	12.46	15.182		
3,000.0	2,997.5	3,005.3	3,004.6	6.8	6.3	-172.22	-86.4	49.2	194.5	181.6	12.90	15.080		
3,100.0	3,097.4	3,105.4	3,104.6	7.0	6.5	-172.43	-86.3	49.2	199.6	186.3	13.33	14.969		
3,200.0	3,197.3	3,205.1	3,204.3	7.3	6.7	-172.59	-86.4	49.1	204.7	190.9	13.77	14.866		
3,300.0	3,297.1	3,305.0	3,304.2	7.5	6.9	-172.77	-86.4	49.0	209.9	195.7	14.21	14.770		
3,400.0	3,397.0	3,404.8	3,404.0	7.8	7.1	-172.91	-86.4	48.9	215.0	200.4	14.65	14.680		
3,500.0	3,496.9	3,504.6	3,503.8	8.0	7.3	-173.06	-86.4	48.9	220.2	205.1	15.08	14.600		
3,600.0	3,596.7	3,604.7	3,603.9	8.3	7.6	-173.21	-86.5	48.8	225.4	209.9	15.52	14.523		
3,700.0	3,696.6	3,704.4	3,703.6	8.5	7.8	-173.38	-86.4	48.9	230.5	214.6	15.95	14.450		
3,800.0	3,796.5	3,804.4	3,803.6	8.7	8.0	-173.50	-86.4	48.8	234.9	218.5	16.37	14.348		
3,900.0	3,896.4	3,904.3	3,903.5	8.9	8.2	-173.57	-86.4	48.8	237.5	220.8	16.75	14.177		
4,000.0	3,996.4	4,004.6	4,003.8	9.1	8.4	-173.62	-86.2	48.8	238.4	221.2	17.13	13.911		
4,064.3	4,060.7	4,068.5	4,067.7	9.2	8.5	-173.63	-86.2	48.8	238.3	220.9	17.39	13.702		
4,100.0	4,096.4	4,104.0	4,103.2	9.2	8.6	141.36	-86.1	48.8	238.3	220.8	17.53	13.596		
4,200.0	4,196.4	4,204.2	4,203.5	9.5	8.8	141.34	-86.1	48.9	238.4	220.4	17.95	13.278		
4,300.0	4,296.4	4,304.3	4,303.5	9.7	9.0	141.32	-86.1	49.0	238.3	220.0	18.37	12.971		
4,400.0	4,396.4	4,404.2	4,403.4	9.9	9.2	141.28	-85.9	49.1	238.3	219.5	18.80	12.677		
4,403.5	4,399.9	4,407.7	4,406.9	9.9	9.2	141.28	-85.9	49.1	238.3	219.5	18.81	12.667		
4,500.0	4,496.4	4,504.2	4,503.5	10.1	9.4	141.30	-86.0	49.0	238.3	219.1	19.23	12.394		
4,600.0	4,596.4	4,604.3	4,603.5	10.3	9.6	141.33	-86.0	48.9	238.3	218.6	19.66	12.121		
4,607.9	4,604.4	4,612.1	4,611.4	10.3	9.6	141.33	-86.0	48.9	238.3	218.6	19.69	12.100		

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

Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

Offset Design		Hebron 01-18HR Pad Sec.18-T7N-R80W - Hebron 05-18H (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error:	0.0 ft	
Survey Program: 50-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		
4,700.0	4,696.4	4,703.9	4,703.1	10.5	9.8	141.36	-86.2	48.8	238.4	218.3	20.08	11.868		
4,800.0	4,796.4	4,804.0	4,803.2	10.7	10.0	141.38	-86.3	48.9	238.5	218.0	20.51	11.628		
4,900.0	4,896.4	4,904.0	4,903.3	11.0	10.3	141.41	-86.4	48.8	238.5	217.6	20.94	11.391		
5,000.0	4,996.4	5,004.0	5,003.2	11.2	10.5	141.42	-86.6	48.8	238.7	217.3	21.37	11.169		
5,100.0	5,096.4	5,104.2	5,103.4	11.4	10.7	141.42	-86.6	48.8	238.7	216.9	21.80	10.950		
5,156.4	5,152.9	5,160.6	5,159.9	11.5	10.8	141.44	-86.6	48.8	238.7	216.6	22.04	10.829		
5,200.0	5,196.4	5,204.1	5,203.4	11.6	10.9	141.46	-86.7	48.7	238.7	216.4	22.23	10.738		
5,300.0	5,296.4	5,304.3	5,303.5	11.8	11.1	141.50	-86.8	48.6	238.7	216.0	22.66	10.534		
5,400.0	5,396.4	5,404.3	5,403.5	12.0	11.3	141.53	-86.8	48.5	238.6	215.6	23.09	10.336		
5,500.0	5,496.4	5,504.4	5,503.7	12.3	11.5	141.52	-86.8	48.5	238.6	215.1	23.52	10.145		
5,567.6	5,564.0	5,571.8	5,571.0	12.4	11.6	141.51	-86.7	48.5	238.6	214.7	23.81	10.019		
5,600.0	5,596.4	5,604.0	5,603.2	12.5	11.7	141.51	-86.7	48.5	238.6	214.6	23.95	9.962		
5,700.0	5,696.4	5,704.5	5,703.7	12.7	11.9	141.52	-86.8	48.4	238.6	214.2	24.38	9.786		
5,800.0	5,796.4	5,804.3	5,803.6	12.9	12.1	141.53	-86.7	48.4	238.5	213.7	24.81	9.612		
5,900.0	5,896.4	5,904.2	5,903.5	13.1	12.3	141.57	-86.8	48.2	238.4	213.2	25.24	9.446		
6,000.0	5,996.4	6,004.5	6,003.7	13.4	12.6	141.58	-86.8	48.1	238.4	212.7	25.67	9.285		
6,055.6	6,052.1	6,059.8	6,059.1	13.5	12.7	141.57	-86.7	48.1	238.3	212.4	25.91	9.198		
6,100.0	6,096.4	6,104.1	6,103.3	13.6	12.8	141.59	-86.8	48.1	238.4	212.3	26.10	9.132		
6,200.0	6,196.4	6,204.8	6,204.1	13.8	13.0	141.60	-86.8	48.0	238.3	211.8	26.54	8.980		
6,269.9	6,266.3	6,273.9	6,273.2	13.9	13.1	141.60	-86.6	47.9	238.1	211.3	26.84	8.873		
6,300.0	6,296.4	6,303.5	6,302.7	14.0	13.2	141.63	-86.7	47.8	238.2	211.2	26.97	8.832		
6,400.0	6,396.4	6,391.5	6,390.2	14.2	13.4	143.49	-93.0	42.9	240.5	213.1	27.38	8.782 SF		
6,500.0	6,496.4	6,472.0	6,468.0	14.4	13.6	126.80	-110.3	31.5	250.9	223.1	27.83	9.017		
6,600.0	6,595.1	6,535.0	6,526.6	14.7	13.7	129.68	-131.0	21.5	282.0	254.0	27.97	10.081		
6,700.0	6,688.4	6,574.9	6,562.2	14.9	13.9	128.52	-147.7	14.6	338.2	310.4	27.75	12.184		
6,800.0	6,772.3	6,599.0	6,582.9	15.2	13.9	120.92	-159.1	10.0	414.2	386.4	27.83	14.882		
6,900.0	6,843.2	6,612.6	6,594.2	15.6	14.0	103.15	-166.0	7.2	502.4	473.2	29.14	17.236		
7,000.0	6,897.9	6,611.9	6,593.7	16.2	14.0	72.30	-165.7	7.3	595.6	566.4	29.20	20.397		
7,100.0	6,934.0	6,599.0	6,582.9	17.0	13.9	44.34	-159.1	10.0	688.7	664.3	24.32	28.321		
7,200.0	6,950.0	6,587.1	6,572.8	17.9	13.9	29.38	-153.4	12.4	777.6	757.6	19.95	38.978		
7,300.0	6,948.9	6,567.0	6,555.2	19.0	13.8	24.95	-144.2	16.1	861.5	842.5	19.00	45.346		
7,400.0	6,946.2	6,552.0	6,541.9	20.2	13.8	24.30	-137.8	18.7	947.0	927.6	19.35	48.948		

Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
Reference Site:	Hebron 01-18HR Pad Sec.18-T7N-R80W	MD Reference:	WELL @ 8166.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hebron 01-18HR	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (4-4-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 8166.0ft (Original Well Elev) Coordinates are relative to: Hebron 01-18HR
 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: -0.59°



Company:	EE3	Local Co-ordinate Reference:	Well Hebron 01-18HR
Project:	SEC.18-T7N-R80W	TVD Reference:	WELL @ 8166.0ft (Original Well Elev)
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