

Extraction Oil & Gas

Well Name: **Kennedy 16**

Surface Location: Kennedy Pad Sec.18-T4N-R68W

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

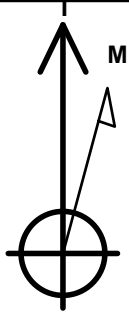
Ground Elevation: 4962.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1358730.13	3128800.48	40.317194	-105.038100	

Frontier 10 RKB - 22' WELL @ 4984.0ft (Frontier 10 RKB - 22')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1101'FNL & 345'FEL, Sec.18	1.0	0.0	0.0	Point
BHL 2609'FNL & 460'FEL, Sec.17	6062.0	-1395.1	5202.8	Point
Landing Pt. 2478'FNL & 75'FWL, Sec.17	6062.0	-1370.1	423.6	Point



Azimuths to True North
Magnetic North: 8.59°

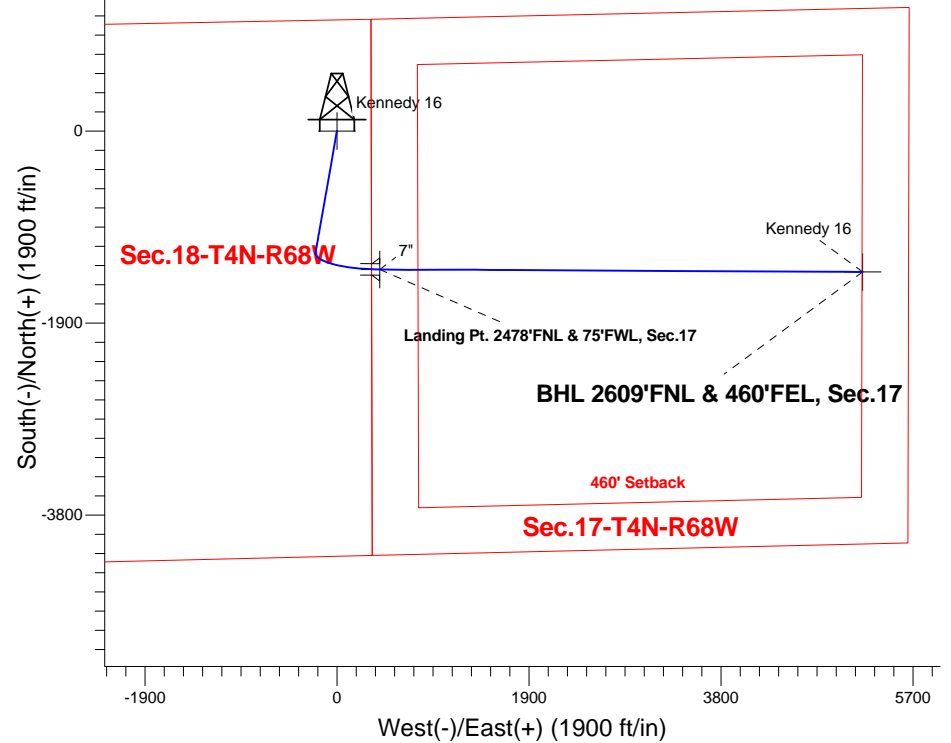
Magnetic Field
Strength: 52732.3srT
Dip Angle: 66.83°
Date: 7/18/2014
Model: IGRF2010

ANNOTATIONS

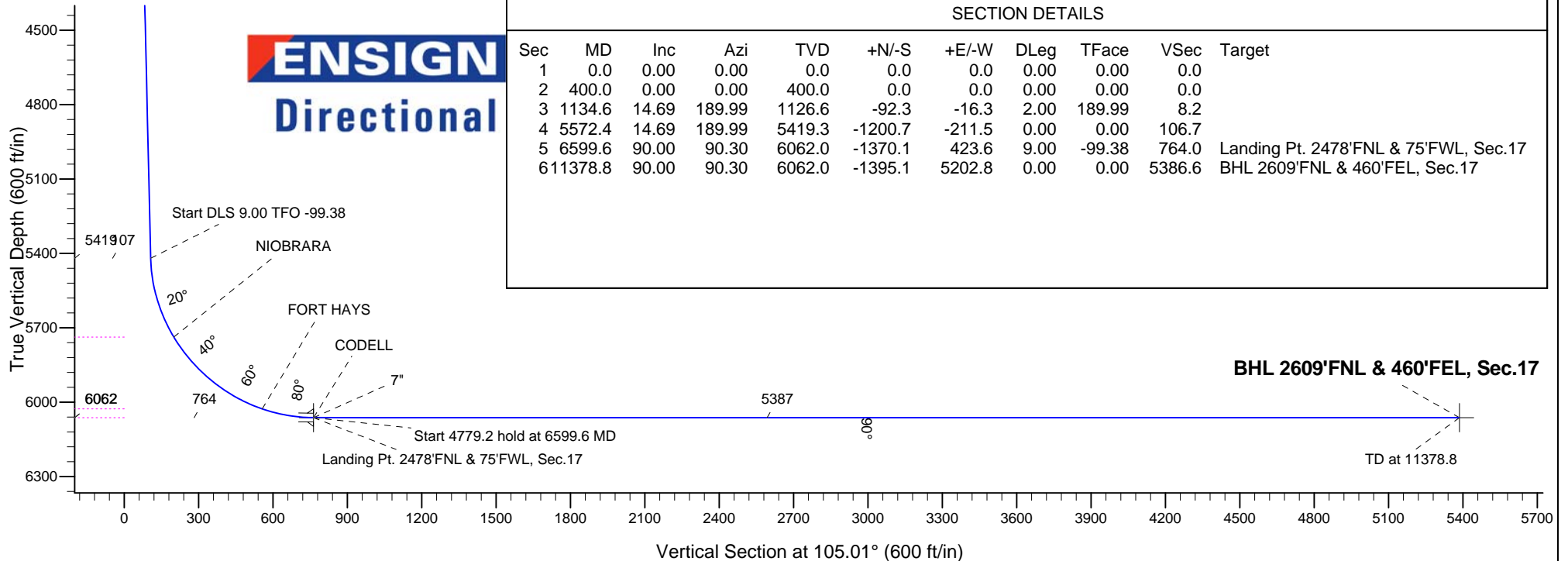
TVD	MD	Annotation
400.0	400.0	KOP - Start Build 2.00
1126.6	1134.6	Start 4437.8 hold at 1134.6 MD
5419.3	5572.4	Start DLS 9.00 TFO -99.38
6062.0	6599.6	Start 4779.2 hold at 6599.6 MD
6062.0	11378.8	TD at 11378.8

Kennedy Pad Sec.18-T4N-R68W
Kennedy 16
Plan #1 (7-18-14)
13:27, July 23 2014

SHL 1101'FNL & 345'FEL, Sec.18



ENSIGN
Directional



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	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	1134.6	14.69	189.99	1126.6	-92.3	-16.3	2.00	189.99	8.2	
4	5572.4	14.69	189.99	5419.3	-1200.7	-211.5	0.00	0.00	106.7	
5	6599.6	90.00	90.30	6062.0	-1370.1	423.6	9.00	-99.38	764.0	Landing Pt. 2478'FNL & 75'FWL, Sec.17
6	11378.8	90.00	90.30	6062.0	-1395.1	5202.8	0.00	0.00	5386.6	BHL 2609'FNL & 460'FEL, Sec.17



Extraction Oil & Gas

SEC.18-T4N-R68W

Kennedy Pad Sec.18-T4N-R68W

Kennedy 16

Wellbore #1

Plan: Plan #1 (7-18-14)

Standard Planning Report

23 July, 2014



Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 16
Company:	Extraction Oil & Gas	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Project:	SEC.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-18-14)		

Project	SEC.18-T4N-R68W, Weld 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 Kennedy Pad Sec.18-T4N-R68W					
Site Position:		Northing:	1,359,150.18 ft	Latitude:	40.318347
From:	Lat/Long	Easting:	3,128,800.53 ft	Longitude:	-105.038092
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.30 °

Well	Kennedy 16					
Well Position	+N/-S	-420.1 ft	Northing:	1,358,730.13 ft	Latitude:	40.317194
	+E/-W	-2.2 ft	Easting:	3,128,800.48 ft	Longitude:	-105.038100
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,962.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/18/2014	8.59	66.83	52,732

Design	Plan #1 (7-18-14)			
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	105.01

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,134.6	14.69	189.99	1,126.6	-92.3	-16.3	2.00	2.00	0.00	189.99	
5,572.4	14.69	189.99	5,419.3	-1,200.7	-211.5	0.00	0.00	0.00	0.00	
6,599.6	90.00	90.30	6,062.0	-1,370.1	423.6	9.00	7.33	-9.71	-99.38	Landing Pt. 2478'Ft
11,378.8	90.00	90.30	6,062.0	-1,395.1	5,202.8	0.00	0.00	0.00	0.00	BHL 2609'FNL & 46

Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 16
Company:	Extraction Oil & Gas	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Project:	SEC.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-18-14)		

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
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
KOP - Start Build 2.00									
500.0	2.00	189.99	500.0	-1.7	-0.3	0.2	2.00	2.00	0.00
600.0	4.00	189.99	599.8	-6.9	-1.2	0.6	2.00	2.00	0.00
700.0	6.00	189.99	699.5	-15.5	-2.7	1.4	2.00	2.00	0.00
800.0	8.00	189.99	798.7	-27.5	-4.8	2.4	2.00	2.00	0.00
900.0	10.00	189.99	897.5	-42.9	-7.6	3.8	2.00	2.00	0.00
1,000.0	12.00	189.99	995.6	-61.7	-10.9	5.5	2.00	2.00	0.00
1,100.0	14.00	189.99	1,093.1	-83.8	-14.8	7.4	2.00	2.00	0.00
1,134.6	14.69	189.99	1,126.6	-92.3	-16.3	8.2	2.00	2.00	0.00
Start 4437.8 hold at 1134.6 MD									
1,200.0	14.69	189.99	1,189.8	-108.6	-19.1	9.6	0.00	0.00	0.00
1,300.0	14.69	189.99	1,286.6	-133.6	-23.5	11.9	0.00	0.00	0.00
1,400.0	14.69	189.99	1,383.3	-158.5	-27.9	14.1	0.00	0.00	0.00
1,500.0	14.69	189.99	1,480.0	-183.5	-32.3	16.3	0.00	0.00	0.00
1,600.0	14.69	189.99	1,576.8	-208.5	-36.7	18.5	0.00	0.00	0.00
1,700.0	14.69	189.99	1,673.5	-233.5	-41.1	20.7	0.00	0.00	0.00
1,800.0	14.69	189.99	1,770.2	-258.5	-45.5	23.0	0.00	0.00	0.00
1,900.0	14.69	189.99	1,866.9	-283.4	-49.9	25.2	0.00	0.00	0.00
2,000.0	14.69	189.99	1,963.7	-308.4	-54.3	27.4	0.00	0.00	0.00
2,100.0	14.69	189.99	2,060.4	-333.4	-58.7	29.6	0.00	0.00	0.00
2,200.0	14.69	189.99	2,157.1	-358.4	-63.1	31.8	0.00	0.00	0.00
2,272.2	14.69	189.99	2,227.0	-376.4	-66.3	33.4	0.00	0.00	0.00
PARKMNA									
2,300.0	14.69	189.99	2,253.9	-383.3	-67.5	34.0	0.00	0.00	0.00
2,400.0	14.69	189.99	2,350.6	-408.3	-71.9	36.3	0.00	0.00	0.00
2,500.0	14.69	189.99	2,447.3	-433.3	-76.3	38.5	0.00	0.00	0.00
2,600.0	14.69	189.99	2,544.1	-458.3	-80.7	40.7	0.00	0.00	0.00
2,700.0	14.69	189.99	2,640.8	-483.3	-85.1	42.9	0.00	0.00	0.00
2,800.0	14.69	189.99	2,737.5	-508.2	-89.5	45.1	0.00	0.00	0.00
2,892.5	14.69	189.99	2,827.0	-531.3	-93.6	47.2	0.00	0.00	0.00
SUSSEX									
2,900.0	14.69	189.99	2,834.3	-533.2	-93.9	47.4	0.00	0.00	0.00
3,000.0	14.69	189.99	2,931.0	-558.2	-98.3	49.6	0.00	0.00	0.00
3,100.0	14.69	189.99	3,027.7	-583.2	-102.7	51.8	0.00	0.00	0.00
3,200.0	14.69	189.99	3,124.4	-608.1	-107.1	54.0	0.00	0.00	0.00
3,300.0	14.69	189.99	3,221.2	-633.1	-111.5	56.2	0.00	0.00	0.00
3,347.4	14.69	189.99	3,267.0	-644.9	-113.6	57.3	0.00	0.00	0.00
SHANNON									
3,400.0	14.69	189.99	3,317.9	-658.1	-115.9	58.5	0.00	0.00	0.00
3,500.0	14.69	189.99	3,414.6	-683.1	-120.3	60.7	0.00	0.00	0.00
3,600.0	14.69	189.99	3,511.4	-708.0	-124.7	62.9	0.00	0.00	0.00
3,700.0	14.69	189.99	3,608.1	-733.0	-129.1	65.1	0.00	0.00	0.00
3,800.0	14.69	189.99	3,704.8	-758.0	-133.5	67.3	0.00	0.00	0.00
3,900.0	14.69	189.99	3,801.6	-783.0	-137.9	69.5	0.00	0.00	0.00
4,000.0	14.69	189.99	3,898.3	-808.0	-142.3	71.8	0.00	0.00	0.00
4,100.0	14.69	189.99	3,995.0	-832.9	-146.8	74.0	0.00	0.00	0.00
4,200.0	14.69	189.99	4,091.7	-857.9	-151.2	76.2	0.00	0.00	0.00
4,300.0	14.69	189.99	4,188.5	-882.9	-155.6	78.4	0.00	0.00	0.00
4,400.0	14.69	189.99	4,285.2	-907.9	-160.0	80.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 16
Company:	Extraction Oil & Gas	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Project:	SEC.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-18-14)		

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)
4,500.0	14.69	189.99	4,381.9	-932.8	-164.4	82.9	0.00	0.00	0.00
4,600.0	14.69	189.99	4,478.7	-957.8	-168.8	85.1	0.00	0.00	0.00
4,700.0	14.69	189.99	4,575.4	-982.8	-173.2	87.3	0.00	0.00	0.00
4,800.0	14.69	189.99	4,672.1	-1,007.8	-177.6	89.5	0.00	0.00	0.00
4,900.0	14.69	189.99	4,768.9	-1,032.8	-182.0	91.7	0.00	0.00	0.00
5,000.0	14.69	189.99	4,865.6	-1,057.7	-186.4	94.0	0.00	0.00	0.00
5,100.0	14.69	189.99	4,962.3	-1,082.7	-190.8	96.2	0.00	0.00	0.00
5,200.0	14.69	189.99	5,059.0	-1,107.7	-195.2	98.4	0.00	0.00	0.00
5,300.0	14.69	189.99	5,155.8	-1,132.7	-199.6	100.6	0.00	0.00	0.00
5,400.0	14.69	189.99	5,252.5	-1,157.6	-204.0	102.8	0.00	0.00	0.00
5,500.0	14.69	189.99	5,349.2	-1,182.6	-208.4	105.0	0.00	0.00	0.00
5,572.4	14.69	189.99	5,419.3	-1,200.7	-211.5	106.7	0.00	0.00	0.00
Start DLS 9.00 TFO -99.38									
5,600.0	14.49	180.17	5,446.0	-1,207.6	-212.2	107.8	9.00	-0.73	-35.65
5,700.0	17.02	147.87	5,542.4	-1,232.6	-204.4	121.8	9.00	2.53	-32.30
5,800.0	22.98	127.85	5,636.4	-1,257.0	-181.2	150.6	9.00	5.96	-20.03
5,900.0	30.41	116.42	5,725.8	-1,280.3	-143.0	193.5	9.00	7.43	-11.42
5,913.1	31.44	115.31	5,737.0	-1,283.2	-136.9	200.1	9.00	7.86	-8.53
NIORARA									
6,000.0	38.47	109.28	5,808.2	-1,301.9	-90.9	249.4	9.00	8.09	-6.93
6,100.0	46.83	104.33	5,881.7	-1,321.2	-26.0	317.0	9.00	8.36	-4.95
6,200.0	55.34	100.59	5,944.5	-1,337.8	49.9	394.7	9.00	8.52	-3.74
6,300.0	63.96	97.56	5,995.0	-1,351.3	135.0	480.4	9.00	8.61	-3.04
6,384.1	71.24	95.34	6,027.0	-1,360.0	212.2	557.2	9.00	8.66	-2.64
FORT HAYS									
6,400.0	72.62	94.94	6,031.9	-1,361.4	227.3	572.1	9.00	8.68	-2.49
6,500.0	81.32	92.56	6,054.5	-1,367.7	324.4	667.6	9.00	8.70	-2.38
6,599.6	90.00	90.30	6,062.0	-1,370.1	423.6	764.0	9.00	8.71	-2.27
Start 4779.2 hold at 6599.6 MD - CODELL - 7"									
6,600.0	90.00	90.30	6,062.0	-1,370.1	424.0	764.4	0.83	0.80	-0.21
6,700.0	90.00	90.30	6,062.0	-1,370.7	524.0	861.1	0.00	0.00	0.00
6,800.0	90.00	90.30	6,062.0	-1,371.2	624.0	957.8	0.00	0.00	0.00
6,900.0	90.00	90.30	6,062.0	-1,371.7	724.0	1,054.5	0.00	0.00	0.00
7,000.0	90.00	90.30	6,062.0	-1,372.2	824.0	1,151.3	0.00	0.00	0.00
7,100.0	90.00	90.30	6,062.0	-1,372.8	924.0	1,248.0	0.00	0.00	0.00
7,200.0	90.00	90.30	6,062.0	-1,373.3	1,024.0	1,344.7	0.00	0.00	0.00
7,300.0	90.00	90.30	6,062.0	-1,373.8	1,124.0	1,441.4	0.00	0.00	0.00
7,400.0	90.00	90.30	6,062.0	-1,374.3	1,224.0	1,538.2	0.00	0.00	0.00
7,500.0	90.00	90.30	6,062.0	-1,374.8	1,324.0	1,634.9	0.00	0.00	0.00
7,600.0	90.00	90.30	6,062.0	-1,375.4	1,424.0	1,731.6	0.00	0.00	0.00
7,700.0	90.00	90.30	6,062.0	-1,375.9	1,524.0	1,828.3	0.00	0.00	0.00
7,800.0	90.00	90.30	6,062.0	-1,376.4	1,624.0	1,925.0	0.00	0.00	0.00
7,900.0	90.00	90.30	6,062.0	-1,376.9	1,724.0	2,021.8	0.00	0.00	0.00
8,000.0	90.00	90.30	6,062.0	-1,377.5	1,824.0	2,118.5	0.00	0.00	0.00
8,100.0	90.00	90.30	6,062.0	-1,378.0	1,924.0	2,215.2	0.00	0.00	0.00
8,200.0	90.00	90.30	6,062.0	-1,378.5	2,024.0	2,311.9	0.00	0.00	0.00
8,300.0	90.00	90.30	6,062.0	-1,379.0	2,124.0	2,408.6	0.00	0.00	0.00
8,400.0	90.00	90.30	6,062.0	-1,379.5	2,224.0	2,505.4	0.00	0.00	0.00
8,500.0	90.00	90.30	6,062.0	-1,380.1	2,324.0	2,602.1	0.00	0.00	0.00
8,600.0	90.00	90.30	6,062.0	-1,380.6	2,424.0	2,698.8	0.00	0.00	0.00
8,700.0	90.00	90.30	6,062.0	-1,381.1	2,524.0	2,795.5	0.00	0.00	0.00
8,800.0	90.00	90.30	6,062.0	-1,381.6	2,623.9	2,892.3	0.00	0.00	0.00
8,900.0	90.00	90.30	6,062.0	-1,382.2	2,723.9	2,989.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 16
Company:	Extraction Oil & Gas	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Project:	SEC.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-18-14)		

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)	
9,000.0	90.00	90.30	6,062.0	-1,382.7	2,823.9	3,085.7	0.00	0.00	0.00	
9,100.0	90.00	90.30	6,062.0	-1,383.2	2,923.9	3,182.4	0.00	0.00	0.00	
9,200.0	90.00	90.30	6,062.0	-1,383.7	3,023.9	3,279.1	0.00	0.00	0.00	
9,300.0	90.00	90.30	6,062.0	-1,384.2	3,123.9	3,375.9	0.00	0.00	0.00	
9,400.0	90.00	90.30	6,062.0	-1,384.8	3,223.9	3,472.6	0.00	0.00	0.00	
9,500.0	90.00	90.30	6,062.0	-1,385.3	3,323.9	3,569.3	0.00	0.00	0.00	
9,600.0	90.00	90.30	6,062.0	-1,385.8	3,423.9	3,666.0	0.00	0.00	0.00	
9,700.0	90.00	90.30	6,062.0	-1,386.3	3,523.9	3,762.8	0.00	0.00	0.00	
9,800.0	90.00	90.30	6,062.0	-1,386.9	3,623.9	3,859.5	0.00	0.00	0.00	
9,900.0	90.00	90.30	6,062.0	-1,387.4	3,723.9	3,956.2	0.00	0.00	0.00	
10,000.0	90.00	90.30	6,062.0	-1,387.9	3,823.9	4,052.9	0.00	0.00	0.00	
10,100.0	90.00	90.30	6,062.0	-1,388.4	3,923.9	4,149.6	0.00	0.00	0.00	
10,200.0	90.00	90.30	6,062.0	-1,388.9	4,023.9	4,246.4	0.00	0.00	0.00	
10,300.0	90.00	90.30	6,062.0	-1,389.5	4,123.9	4,343.1	0.00	0.00	0.00	
10,400.0	90.00	90.30	6,062.0	-1,390.0	4,223.9	4,439.8	0.00	0.00	0.00	
10,500.0	90.00	90.30	6,062.0	-1,390.5	4,323.9	4,536.5	0.00	0.00	0.00	
10,600.0	90.00	90.30	6,062.0	-1,391.0	4,423.9	4,633.2	0.00	0.00	0.00	
10,700.0	90.00	90.30	6,062.0	-1,391.6	4,523.9	4,730.0	0.00	0.00	0.00	
10,800.0	90.00	90.30	6,062.0	-1,392.1	4,623.9	4,826.7	0.00	0.00	0.00	
10,900.0	90.00	90.30	6,062.0	-1,392.6	4,723.9	4,923.4	0.00	0.00	0.00	
11,000.0	90.00	90.30	6,062.0	-1,393.1	4,823.9	5,020.1	0.00	0.00	0.00	
11,100.0	90.00	90.30	6,062.0	-1,393.6	4,923.9	5,116.9	0.00	0.00	0.00	
11,200.0	90.00	90.30	6,062.0	-1,394.2	5,023.9	5,213.6	0.00	0.00	0.00	
11,300.0	90.00	90.30	6,062.0	-1,394.7	5,123.9	5,310.3	0.00	0.00	0.00	
11,378.8	90.00	90.30	6,062.0	-1,395.1	5,202.8	5,386.6	0.00	0.00	0.00	
TD at 11378.8										

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
SHL 1101'FNL & 345'	0.00	0.00	1.0	0.0	0.0	1,358,730.14	3,128,800.48	40.317194	-105.038100
- plan hits target center									
- Point									
BHL 2609'FNL & 460'	0.00	0.00	6,062.0	-1,395.1	5,202.8	1,357,362.21	3,134,010.21	40.313363	-105.019444
- plan hits target center									
- Point									
Landing Pt. 2478'FNL	0.00	0.00	6,062.0	-1,370.1	423.6	1,357,362.27	3,129,231.21	40.313433	-105.036581
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
6,599.6	6,062.0	7"		7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 16
Company:	Extraction Oil & Gas	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Project:	SEC.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (7-18-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,272.2	2,227.0	PARKMNA		0.00		
2,892.5	2,827.0	SUSSEX		0.00		
3,347.4	3,267.0	SHANNON		0.00		
5,913.1	5,737.0	NIOBRARA		0.00		
6,384.1	6,027.0	FORT HAYS		0.00		
6,599.6	6,062.0	CODELL		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
400.0	400.0	0.0	0.0	KOP - Start Build 2.00	
1,134.6	1,126.6	-92.3	-16.3	Start 4437.8 hold at 1134.6 MD	
5,572.4	5,419.3	-1,200.7	-211.5	Start DLS 9.00 TFO -99.38	
6,599.6	6,062.0	-1,370.1	423.6	Start 4779.2 hold at 6599.6 MD	
11,378.8	6,062.0	-1,395.1	5,202.8	TD at 11378.8	

Extraction Oil & Gas

SEC.18-T4N-R68W

Kennedy Pad Sec.18-T4N-R68W

Kennedy 16

Wellbore #1

Plan #1 (7-18-14)

Anticollision Report

23 July, 2014



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (7-18-14)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 7/23/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,378.8	Plan #1 (7-18-14) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Kennedy Pad Sec.18-T4N-R68W						
Kennedy 14 - Wellbore #1 - Plan #1 (7-18-14)	400.0	400.0	56.1	54.5	35.659	CC, ES
Kennedy 14 - Wellbore #1 - Plan #1 (7-18-14)	11,378.8	11,012.1	465.1	247.9	2.141	SF
Kennedy 15 - Wellbore #1 - Plan #1 (7-18-14)	400.0	400.0	28.1	26.5	17.829	CC, ES
Kennedy 15 - Wellbore #1 - Plan #1 (7-18-14)	5,890.3	6,772.1	78.4	32.3	1.702	SF
Kennedy 17 - Wellbore #1 - Plan #1 (7-18-14)	200.0	200.0	28.1	27.4	41.603	CC, ES
Kennedy 17 - Wellbore #1 - Plan #1 (7-18-14)	6,700.0	6,454.8	159.1	112.8	3.437	SF

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 14 - Wellbore #1 - Plan #1 (7-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	0.28	56.1	0.3	56.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.28	56.1	0.3	56.1	55.9	0.22	249.610		
200.0	200.0	200.0	200.0	0.3	0.3	0.28	56.1	0.3	56.1	55.4	0.67	83.203		
300.0	300.0	300.0	300.0	0.6	0.6	0.28	56.1	0.3	56.1	55.0	1.12	49.922		
400.0	400.0	400.0	400.0	0.8	0.8	0.28	56.1	0.3	56.1	54.5	1.57	35.659	CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	170.58	56.1	0.3	57.8	55.8	2.00	28.912		
600.0	599.8	599.8	599.8	1.2	1.2	171.34	56.1	0.3	63.0	60.6	2.42	26.068		
700.0	699.5	699.5	699.5	1.4	1.5	172.37	56.1	0.3	71.6	68.8	2.84	25.179		
800.0	798.7	798.7	798.7	1.7	1.7	173.45	56.1	0.3	83.7	80.4	3.28	25.527		
900.0	897.5	900.9	900.9	2.0	1.9	174.33	54.4	-0.1	97.6	93.9	3.69	26.425		
1,000.0	995.6	1,003.6	1,003.5	2.3	2.1	174.90	49.0	-1.3	111.4	107.3	4.09	27.250		
1,100.0	1,093.1	1,106.9	1,106.3	2.7	2.3	175.25	40.1	-3.4	125.1	120.6	4.50	27.799		
1,200.0	1,189.8	1,210.8	1,209.4	3.2	2.5	175.45	27.4	-6.2	138.0	133.1	4.94	27.911		
1,300.0	1,286.6	1,315.5	1,312.8	3.7	2.8	175.44	11.0	-9.9	147.5	142.1	5.42	27.226		
1,400.0	1,383.3	1,420.9	1,416.0	4.2	3.1	175.25	-9.3	-14.5	153.4	147.5	5.92	25.934		
1,500.0	1,480.0	1,524.3	1,516.7	4.7	3.5	174.90	-32.5	-19.8	155.9	149.5	6.43	24.252		
1,600.0	1,576.8	1,624.3	1,613.8	5.2	3.9	174.54	-55.6	-25.0	157.8	150.8	6.95	22.697		
1,700.0	1,673.5	1,724.2	1,710.9	5.7	4.4	174.19	-78.7	-30.3	159.6	152.1	7.48	21.324		
1,800.0	1,770.2	1,824.2	1,808.0	6.2	4.8	173.85	-101.8	-35.5	161.4	153.4	8.02	20.129		
1,900.0	1,866.9	1,924.2	1,905.2	6.8	5.3	173.51	-124.9	-40.7	163.3	154.7	8.57	19.057		
2,000.0	1,963.7	2,024.2	2,002.3	7.3	5.7	173.18	-148.1	-46.0	165.1	156.0	9.12	18.101		

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

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 14 - Wellbore #1 - Plan #1 (7-18-14)												Offset Site Error:	0.0 ft
Survey Program: 0-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
2,100.0	2,060.4	2,124.2	2,099.4	7.8	6.2	172.86	-171.2	-51.2	167.0	157.3	9.68	17.245	
2,200.0	2,157.1	2,224.1	2,196.6	8.3	6.7	172.55	-194.3	-56.5	168.9	158.6	10.25	16.475	
2,300.0	2,253.9	2,324.1	2,293.7	8.9	7.2	172.24	-217.4	-61.7	170.7	159.9	10.82	15.779	
2,400.0	2,350.6	2,424.1	2,390.8	9.4	7.6	171.94	-240.5	-66.9	172.6	161.2	11.40	15.146	
2,500.0	2,447.3	2,524.1	2,487.9	9.9	8.1	171.65	-263.6	-72.2	174.5	162.5	11.98	14.570	
2,600.0	2,544.1	2,624.0	2,585.1	10.5	8.6	171.36	-286.8	-77.4	176.4	163.8	12.56	14.043	
2,700.0	2,640.8	2,724.0	2,682.2	11.0	9.1	171.08	-309.9	-82.6	178.3	165.1	13.15	13.559	
2,800.0	2,737.5	2,824.0	2,779.3	11.5	9.6	170.81	-333.0	-87.9	180.2	166.4	13.74	13.113	
2,900.0	2,834.3	2,924.0	2,876.4	12.0	10.1	170.54	-356.1	-93.1	182.0	167.7	14.33	12.702	
3,000.0	2,931.0	3,024.0	2,973.6	12.6	10.6	170.27	-379.2	-98.4	183.9	169.0	14.93	12.321	
3,100.0	3,027.7	3,123.9	3,070.7	13.1	11.1	170.02	-402.4	-103.6	185.8	170.3	15.53	11.967	
3,200.0	3,124.4	3,223.9	3,167.8	13.6	11.6	169.76	-425.5	-108.8	187.8	171.6	16.13	11.637	
3,300.0	3,221.2	3,323.9	3,265.0	14.2	12.1	169.51	-448.6	-114.1	189.7	172.9	16.74	11.330	
3,400.0	3,317.9	3,423.9	3,362.1	14.7	12.6	169.27	-471.7	-119.3	191.6	174.2	17.35	11.042	
3,500.0	3,414.6	3,523.9	3,459.2	15.2	13.1	169.03	-494.8	-124.6	193.5	175.5	17.96	10.773	
3,600.0	3,511.4	3,623.8	3,556.3	15.8	13.6	168.80	-517.9	-129.8	195.4	176.8	18.58	10.520	
3,700.0	3,608.1	3,723.8	3,653.5	16.3	14.1	168.57	-541.1	-135.0	197.3	178.2	19.19	10.282	
3,800.0	3,704.8	3,823.8	3,750.6	16.8	14.6	168.35	-564.2	-140.3	199.3	179.5	19.81	10.057	
3,900.0	3,801.6	3,923.8	3,847.7	17.4	15.1	168.13	-587.3	-145.5	201.2	180.8	20.44	9.846	
4,000.0	3,898.3	4,023.7	3,944.9	17.9	15.6	167.91	-610.4	-150.7	203.1	182.1	21.06	9.646	
4,100.0	3,995.0	4,123.7	4,042.0	18.4	16.1	167.70	-633.5	-156.0	205.1	183.4	21.69	9.456	
4,200.0	4,091.7	4,223.7	4,139.1	19.0	16.6	167.49	-656.6	-161.2	207.0	184.7	22.32	9.276	
4,300.0	4,188.5	4,323.7	4,236.2	19.5	17.1	167.28	-679.8	-166.5	209.0	186.0	22.95	9.106	
4,400.0	4,285.2	4,423.7	4,333.4	20.0	17.6	167.08	-702.9	-171.7	210.9	187.3	23.58	8.944	
4,500.0	4,381.9	4,523.6	4,430.5	20.6	18.1	166.89	-726.0	-176.9	212.8	188.6	24.22	8.790	
4,600.0	4,478.7	4,623.6	4,527.6	21.1	18.6	166.69	-749.1	-182.2	214.8	189.9	24.85	8.643	
4,700.0	4,575.4	4,723.6	4,624.7	21.6	19.1	166.50	-772.2	-187.4	216.7	191.3	25.49	8.502	
4,800.0	4,672.1	4,823.6	4,721.9	22.2	19.6	166.32	-795.4	-192.6	218.7	192.6	26.13	8.368	
4,900.0	4,768.9	4,923.6	4,819.0	22.7	20.1	166.13	-818.5	-197.9	220.7	193.9	26.78	8.240	
5,000.0	4,865.6	5,023.5	4,916.1	23.2	20.6	165.95	-841.6	-203.1	222.6	195.2	27.42	8.118	
5,100.0	4,962.3	5,123.5	5,013.3	23.8	21.1	165.78	-864.7	-208.4	224.6	196.5	28.07	8.001	
5,200.0	5,059.0	5,224.3	5,111.2	24.3	21.6	165.74	-888.0	-213.1	226.5	197.8	28.68	7.898	
5,300.0	5,155.8	5,325.9	5,209.6	24.8	22.0	168.62	-911.5	-206.2	227.7	199.1	28.61	7.958	
5,400.0	5,252.5	5,421.6	5,300.3	25.4	22.3	174.93	-933.2	-185.0	230.3	202.1	28.20	8.165	
5,500.0	5,349.2	5,508.1	5,378.8	25.9	22.6	-176.75	-952.1	-154.1	238.7	210.2	28.54	8.363	
5,600.0	5,446.0	5,584.2	5,444.0	26.4	22.8	-158.06	-967.7	-118.0	257.7	227.3	30.37	8.484	
5,700.0	5,542.4	5,655.3	5,500.6	26.8	22.9	-117.68	-981.4	-77.3	284.5	251.2	33.31	8.541	
5,800.0	5,636.4	5,724.0	5,550.7	27.2	23.1	-91.34	-993.6	-32.1	314.5	278.7	35.81	8.784	
5,900.0	5,725.8	5,790.7	5,594.7	27.5	23.3	-75.23	-1,004.3	16.9	344.8	307.7	37.10	9.295	
6,000.0	5,808.2	5,850.0	5,629.4	27.8	23.4	-65.00	-1,012.8	64.2	373.6	336.7	36.93	10.117	
6,100.0	5,881.7	5,920.3	5,664.7	28.1	23.7	-57.69	-1,021.5	124.4	399.4	363.6	35.84	11.145	
6,200.0	5,944.5	5,983.7	5,690.9	28.4	23.9	-52.76	-1,028.0	181.7	421.6	387.7	33.81	12.467	
6,300.0	5,995.0	6,050.0	5,712.1	28.7	24.2	-49.32	-1,033.3	244.2	439.4	408.0	31.39	13.999	
6,400.0	6,031.9	6,100.0	5,723.9	29.1	24.5	-47.20	-1,036.4	292.7	452.5	423.7	28.81	15.706	
6,500.0	6,054.5	6,170.8	5,734.2	29.5	24.9	-45.86	-1,039.1	362.7	460.4	433.3	27.09	16.997	
6,600.0	6,062.0	6,233.7	5,737.0	30.1	25.5	-45.44	-1,040.1	425.5	463.2	436.9	26.35	17.580	
6,700.0	6,062.0	6,333.7	5,737.0	30.9	26.6	-45.45	-1,040.6	525.5	463.2	433.9	29.32	15.802	
6,800.0	6,062.0	6,433.7	5,737.0	31.9	28.1	-45.45	-1,041.0	625.5	463.3	430.8	32.53	14.242	
6,900.0	6,062.0	6,533.7	5,737.0	33.2	29.8	-45.46	-1,041.5	725.5	463.3	427.4	35.93	12.894	
7,000.0	6,062.0	6,633.7	5,737.0	34.8	31.8	-45.46	-1,042.0	825.5	463.4	423.9	39.48	11.737	
7,100.0	6,062.0	6,733.7	5,737.0	36.6	33.9	-45.47	-1,042.4	925.5	463.4	420.3	43.13	10.744	
7,200.0	6,062.0	6,833.7	5,737.0	38.6	36.2	-45.47	-1,042.9	1,025.5	463.4	416.6	46.87	9.888	

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

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 14 - Wellbore #1 - Plan #1 (7-18-14)												Offset Site Error:	0.0 ft
Survey Program: 0-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
7,300.0	6,062.0	6,933.7	5,737.0	40.7	38.5	-45.48	-1,043.4	1,125.5	463.5	412.8	50.67	9.148	
7,400.0	6,062.0	7,033.7	5,737.0	42.9	40.9	-45.48	-1,043.8	1,225.5	463.5	409.0	54.52	8.502	
7,500.0	6,062.0	7,133.7	5,737.0	45.2	43.4	-45.49	-1,044.3	1,325.5	463.6	405.2	58.41	7.937	
7,600.0	6,062.0	7,233.7	5,737.0	47.6	45.9	-45.49	-1,044.8	1,425.5	463.6	401.3	62.33	7.437	
7,700.0	6,062.0	7,333.7	5,737.0	50.0	48.5	-45.50	-1,045.2	1,525.5	463.6	397.4	66.29	6.995	
7,800.0	6,062.0	7,433.7	5,737.0	52.5	51.1	-45.50	-1,045.7	1,625.5	463.7	393.4	70.26	6.599	
7,900.0	6,062.0	7,533.7	5,737.0	55.0	53.7	-45.51	-1,046.2	1,725.5	463.7	389.5	74.26	6.245	
8,000.0	6,062.0	7,633.7	5,737.0	57.6	56.3	-45.51	-1,046.6	1,825.5	463.8	385.5	78.27	5.925	
8,100.0	6,062.0	7,733.7	5,737.0	60.1	58.9	-45.52	-1,047.1	1,925.5	463.8	381.5	82.29	5.636	
8,200.0	6,062.0	7,833.7	5,737.0	62.7	61.6	-45.52	-1,047.6	2,025.5	463.8	377.5	86.33	5.373	
8,300.0	6,062.0	7,933.7	5,737.0	65.4	64.3	-45.53	-1,048.0	2,125.5	463.9	373.5	90.38	5.133	
8,400.0	6,062.0	8,033.7	5,737.0	68.0	66.9	-45.53	-1,048.5	2,225.5	463.9	369.5	94.44	4.913	
8,500.0	6,062.0	8,133.7	5,737.0	70.6	69.6	-45.53	-1,048.9	2,325.5	464.0	365.5	98.50	4.710	
8,600.0	6,062.0	8,233.7	5,737.0	73.3	72.3	-45.54	-1,049.4	2,425.5	464.0	361.4	102.58	4.523	
8,700.0	6,062.0	8,333.7	5,737.0	76.0	75.1	-45.54	-1,049.9	2,525.5	464.1	357.4	106.66	4.351	
8,800.0	6,062.0	8,433.7	5,737.0	78.6	77.8	-45.55	-1,050.3	2,625.5	464.1	353.3	110.74	4.191	
8,900.0	6,062.0	8,533.7	5,737.0	81.3	80.5	-45.55	-1,050.8	2,725.5	464.1	349.3	114.84	4.042	
9,000.0	6,062.0	8,633.7	5,737.0	84.0	83.2	-45.56	-1,051.3	2,825.5	464.2	345.2	118.93	3.903	
9,100.0	6,062.0	8,733.7	5,737.0	86.7	86.0	-45.56	-1,051.7	2,925.5	464.2	341.2	123.03	3.773	
9,200.0	6,062.0	8,833.7	5,737.0	89.4	88.7	-45.57	-1,052.2	3,025.5	464.3	337.1	127.14	3.652	
9,300.0	6,062.0	8,933.7	5,737.0	92.2	91.4	-45.57	-1,052.7	3,125.5	464.3	333.0	131.25	3.538	
9,400.0	6,062.0	9,033.7	5,737.0	94.9	94.2	-45.58	-1,053.1	3,225.5	464.3	329.0	135.36	3.430	
9,500.0	6,062.0	9,133.7	5,737.0	97.6	96.9	-45.58	-1,053.6	3,325.5	464.4	324.9	139.48	3.329	
9,600.0	6,062.0	9,233.7	5,737.0	100.3	99.7	-45.59	-1,054.1	3,425.5	464.4	320.8	143.60	3.234	
9,700.0	6,062.0	9,333.7	5,737.0	103.1	102.4	-45.59	-1,054.5	3,525.5	464.5	316.7	147.72	3.144	
9,800.0	6,062.0	9,433.7	5,737.0	105.8	105.2	-45.60	-1,055.0	3,625.5	464.5	312.7	151.84	3.059	
9,900.0	6,062.0	9,533.7	5,737.0	108.6	108.0	-45.60	-1,055.5	3,725.5	464.5	308.6	155.97	2.978	
10,000.0	6,062.0	9,633.7	5,737.0	111.3	110.7	-45.61	-1,055.9	3,825.5	464.6	304.5	160.10	2.902	
10,100.0	6,062.0	9,733.7	5,737.0	114.1	113.5	-45.61	-1,056.4	3,925.5	464.6	300.4	164.23	2.829	
10,200.0	6,062.0	9,833.7	5,737.0	116.8	116.3	-45.62	-1,056.9	4,025.5	464.7	296.3	168.36	2.760	
10,300.0	6,062.0	9,933.7	5,737.0	119.6	119.0	-45.62	-1,057.3	4,125.5	464.7	292.2	172.50	2.694	
10,400.0	6,062.0	10,033.7	5,737.0	122.3	121.8	-45.63	-1,057.8	4,225.5	464.7	288.1	176.63	2.631	
10,500.0	6,062.0	10,133.7	5,737.0	125.1	124.6	-45.63	-1,058.3	4,325.5	464.8	284.0	180.77	2.571	
10,600.0	6,062.0	10,233.7	5,737.0	127.9	127.4	-45.64	-1,058.7	4,425.5	464.8	279.9	184.91	2.514	
10,700.0	6,062.0	10,333.7	5,737.0	130.6	130.1	-45.64	-1,059.2	4,525.5	464.9	275.8	189.06	2.459	
10,800.0	6,062.0	10,433.7	5,737.0	133.4	132.9	-45.65	-1,059.7	4,625.5	464.9	271.7	193.20	2.406	
10,900.0	6,062.0	10,533.7	5,737.0	136.1	135.7	-45.65	-1,060.1	4,725.5	464.9	267.6	197.35	2.356	
11,000.0	6,062.0	10,633.7	5,737.0	138.9	138.5	-45.66	-1,060.6	4,825.5	465.0	263.5	201.49	2.308	
11,100.0	6,062.0	10,733.7	5,737.0	141.7	141.3	-45.66	-1,061.1	4,925.5	465.0	259.4	205.64	2.261	
11,200.0	6,062.0	10,833.7	5,737.0	144.5	144.0	-45.67	-1,061.5	5,025.5	465.1	255.3	209.79	2.217	
11,300.0	6,062.0	10,933.7	5,737.0	147.2	146.8	-45.67	-1,062.0	5,125.5	465.1	251.2	213.94	2.174	
11,378.8	6,062.0	11,012.1	5,737.0	149.4	149.0	-45.68	-1,062.4	5,203.8	465.1	247.9	217.20	2.141 SF	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 15 - Wellbore #1 - Plan #1 (7-18-14)													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	0.00	28.1	0.0	28.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	28.1	0.0	28.1	27.8	0.22	124.804		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	28.1	0.0	28.1	27.4	0.67	41.601		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	28.1	0.0	28.1	26.9	1.12	24.961		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	28.1	0.0	28.1	26.5	1.57	17.829	CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	170.59	28.1	0.0	29.8	27.8	2.00	14.886		
600.0	599.8	599.8	599.8	1.2	1.2	171.97	28.1	0.0	34.9	32.5	2.42	14.461		
700.0	699.5	700.5	700.5	1.4	1.4	175.24	26.7	1.2	42.4	39.5	2.82	15.025		
800.0	798.7	801.1	800.9	1.7	1.6	-179.32	22.7	4.6	51.1	47.9	3.22	15.890		
900.0	897.5	901.5	900.9	2.0	1.8	-173.05	16.1	10.4	61.7	58.0	3.64	16.935		
1,000.0	995.6	1,001.6	1,000.2	2.3	2.1	-166.76	6.8	18.4	74.6	70.4	4.12	18.113		
1,100.0	1,093.1	1,101.1	1,098.6	2.7	2.4	-160.92	-5.0	28.6	90.1	85.4	4.66	19.312		
1,200.0	1,189.8	1,200.2	1,195.8	3.2	2.7	-155.67	-19.4	40.9	107.7	102.4	5.32	20.265		
1,300.0	1,286.6	1,299.0	1,292.1	3.7	3.1	-150.46	-36.2	55.5	125.5	119.4	6.09	20.622		
1,400.0	1,383.3	1,397.2	1,386.9	4.2	3.6	-145.23	-55.4	72.0	143.7	136.7	6.98	20.603		
1,500.0	1,480.0	1,494.6	1,480.2	4.7	4.1	-140.03	-76.8	90.6	162.7	154.8	7.97	20.409		
1,600.0	1,576.8	1,591.2	1,571.6	5.2	4.7	-134.96	-100.4	110.9	183.1	174.0	9.06	20.197		
1,700.0	1,673.5	1,687.8	1,662.7	5.7	5.3	-130.64	-124.6	131.8	204.7	194.5	10.19	20.088		
1,800.0	1,770.2	1,784.4	1,753.8	6.2	5.9	-127.14	-148.9	152.8	227.2	215.9	11.31	20.087		
1,900.0	1,866.9	1,880.9	1,844.9	6.8	6.5	-124.27	-173.1	173.7	250.3	237.9	12.43	20.146		
2,000.0	1,963.7	1,977.5	1,936.0	7.3	7.2	-121.89	-197.3	194.6	274.0	260.5	13.54	20.240		
2,100.0	2,060.4	2,074.1	2,027.1	7.8	7.8	-119.89	-221.6	215.6	298.1	283.4	14.65	20.353		
2,200.0	2,157.1	2,170.7	2,118.2	8.3	8.5	-118.18	-245.8	236.5	322.4	306.7	15.75	20.475		
2,300.0	2,253.9	2,267.2	2,209.4	8.9	9.1	-116.71	-270.1	257.4	347.0	330.2	16.84	20.601		
2,400.0	2,350.6	2,363.8	2,300.5	9.4	9.8	-115.44	-294.3	278.4	371.8	353.8	17.94	20.726		
2,500.0	2,447.3	2,460.4	2,391.6	9.9	10.5	-114.33	-318.5	299.3	396.7	377.7	19.03	20.847		
2,600.0	2,544.1	2,557.0	2,482.7	10.5	11.1	-113.34	-342.8	320.2	421.7	401.6	20.12	20.965		
2,700.0	2,640.8	2,653.5	2,573.8	11.0	11.8	-112.47	-367.0	341.1	446.9	425.7	21.20	21.077		
2,800.0	2,737.5	2,750.1	2,664.9	11.5	12.5	-111.69	-391.2	362.1	472.1	449.9	22.29	21.184		
2,900.0	2,834.3	2,846.7	2,756.0	12.0	13.1	-110.99	-415.5	383.0	497.5	474.1	23.37	21.286		
3,000.0	2,931.0	2,943.2	2,847.1	12.6	13.8	-110.35	-439.7	403.9	522.8	498.4	24.45	21.383		
3,100.0	3,027.7	3,039.8	2,938.2	13.1	14.5	-109.78	-464.0	424.9	548.3	522.7	25.53	21.475		
3,200.0	3,124.4	3,136.4	3,029.3	13.6	15.1	-109.25	-488.2	445.8	573.7	547.1	26.61	21.561		
3,300.0	3,221.2	3,233.0	3,120.4	14.2	15.8	-108.77	-512.4	466.7	599.3	571.6	27.69	21.643		
3,400.0	3,317.9	3,329.5	3,211.5	14.7	16.5	-108.33	-536.7	487.7	624.8	596.0	28.77	21.721		
3,500.0	3,414.6	3,426.1	3,302.6	15.2	17.2	-107.93	-560.9	508.6	650.4	620.6	29.84	21.795		
3,600.0	3,511.4	3,522.7	3,393.8	15.8	17.8	-107.55	-585.2	529.5	676.0	645.1	30.92	21.865		
3,700.0	3,608.1	3,619.2	3,484.9	16.3	18.5	-107.20	-609.4	550.4	701.7	669.7	31.99	21.931		
3,800.0	3,704.8	3,715.8	3,576.0	16.8	19.2	-106.88	-633.6	571.4	727.3	694.3	33.07	21.995		
3,900.0	3,801.6	3,812.4	3,667.1	17.4	19.9	-106.58	-657.9	592.3	753.0	718.9	34.14	22.054		
4,000.0	3,898.3	3,909.0	3,758.2	17.9	20.5	-106.30	-682.1	613.2	778.7	743.5	35.22	22.112		
4,100.0	3,995.0	4,005.5	3,849.3	18.4	21.2	-106.03	-706.3	634.2	804.4	768.1	36.29	22.166		
4,200.0	4,091.7	4,102.1	3,940.4	19.0	21.9	-105.79	-730.6	655.1	830.2	792.8	37.36	22.218		
4,300.0	4,188.5	4,198.7	4,031.5	19.5	22.6	-105.55	-754.8	676.0	855.9	817.5	38.44	22.267		
4,400.0	4,285.2	4,295.3	4,122.6	20.0	23.2	-105.33	-779.1	697.0	881.7	842.2	39.51	22.314		
4,500.0	4,381.9	4,391.8	4,213.7	20.6	23.9	-105.13	-803.3	717.9	907.4	866.9	40.58	22.359		
4,600.0	4,478.7	4,488.4	4,304.8	21.1	24.6	-104.93	-827.5	738.8	933.2	891.6	41.66	22.402		
4,700.0	4,575.4	4,585.0	4,395.9	21.6	25.3	-104.75	-851.8	759.8	959.0	916.3	42.73	22.443		
4,800.0	4,672.1	4,681.5	4,487.0	22.2	25.9	-104.57	-876.0	780.7	984.8	941.0	43.80	22.483		
4,900.0	4,768.9	4,778.0	4,578.0	22.7	31.1	-161.30	-1,202.0	-182.8	982.8	937.9	44.90	21.890		
5,000.0	4,865.6	6,812.3	5,737.0	23.2	31.2	-163.78	-1,202.0	-187.1	883.3	838.2	45.06	19.603		
5,100.0	4,962.3	6,816.5	5,737.0	23.8	31.3	-166.37	-1,202.0	-191.4	783.8	738.6	45.22	17.332		

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design		Kennedy Pad Sec.18-T4N-R68W - Kennedy 15 - Wellbore #1 - Plan #1 (7-18-14)											Offset Site Error:		0.0 ft
Survey Program: 0-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			
5,200.0	5,059.0	6,820.8	5,737.0	24.3	31.4	-169.06	-1,201.9	-195.7	684.5	639.1	45.40	15.076			
5,300.0	5,155.8	6,825.1	5,737.0	24.8	31.4	-171.85	-1,201.9	-199.9	585.3	539.7	45.61	12.834			
5,400.0	5,252.5	6,829.4	5,737.0	25.4	31.5	-174.73	-1,201.9	-204.2	486.5	440.7	45.85	10.610			
5,500.0	5,349.2	6,833.6	5,737.0	25.9	31.6	-177.68	-1,201.9	-208.5	388.2	342.1	46.15	8.413			
5,600.0	5,446.0	6,837.3	5,737.0	26.4	31.6	-179.99	-1,201.8	-212.1	291.1	244.3	46.82	6.217			
5,700.0	5,542.4	6,829.4	5,737.0	26.8	31.5	-168.62	-1,201.9	-204.2	197.0	148.4	48.59	4.055			
5,800.0	5,636.4	6,806.0	5,737.0	27.2	31.1	-148.12	-1,202.0	-180.9	114.6	67.0	47.64	2.406			
5,890.3	5,717.4	6,772.1	5,737.0	27.5	30.6	-120.38	-1,202.2	-146.9	78.4	32.3	46.07	1.702 SF			
5,900.0	5,725.8	6,767.7	5,737.0	27.5	30.6	-116.75	-1,202.2	-142.6	78.9	32.8	46.03	1.714			
6,000.0	5,808.2	6,715.5	5,737.0	27.8	30.0	-78.58	-1,202.5	-90.3	122.3	75.2	47.07	2.597			
6,100.0	5,881.7	6,650.6	5,737.0	28.1	29.5	-53.21	-1,202.8	-25.4	187.0	141.9	45.11	4.145			
6,200.0	5,944.5	6,574.6	5,737.0	28.4	29.2	-40.15	-1,203.2	50.6	247.3	206.9	40.44	6.116			
6,300.0	5,995.0	6,489.4	5,737.0	28.7	29.1	-33.23	-1,203.7	135.8	297.2	262.4	34.83	8.535			
6,400.0	6,031.9	6,397.1	5,737.0	29.1	29.2	-29.43	-1,204.2	228.1	334.2	305.3	28.96	11.541			
6,500.0	6,054.5	6,318.3	5,736.1	29.5	29.3	-27.58	-1,204.3	306.8	358.2	334.6	23.57	15.197			
6,600.0	6,062.0	6,250.0	5,729.1	30.1	29.5	-26.65	-1,202.8	374.7	375.8	356.3	19.43	19.336			
6,700.0	6,062.0	6,200.0	5,719.6	30.9	29.6	-26.35	-1,200.6	423.7	395.3	375.2	20.08	19.687			
6,800.0	6,062.0	6,135.2	5,701.7	31.9	29.8	-25.82	-1,196.2	485.8	423.7	403.0	20.70	20.465			
6,900.0	6,062.0	6,080.2	5,681.8	33.2	29.9	-25.28	-1,191.2	536.9	460.6	439.1	21.45	21.471			
7,000.0	6,062.0	6,029.1	5,659.6	34.8	30.0	-24.74	-1,185.5	582.5	505.1	482.8	22.27	22.681			
7,100.0	6,062.0	5,982.2	5,636.1	36.6	30.1	-24.23	-1,179.5	622.7	556.3	533.2	23.14	24.039			
7,200.0	6,062.0	5,950.0	5,618.4	38.6	30.2	-23.88	-1,175.0	649.2	613.7	589.5	24.12	25.437			
7,300.0	6,062.0	5,900.0	5,588.4	40.7	30.3	-23.34	-1,167.2	688.4	675.8	650.8	25.01	27.020			
7,400.0	6,062.0	5,865.4	5,565.9	42.9	30.4	-22.97	-1,161.4	714.0	742.6	716.6	26.00	28.558			
7,500.0	6,062.0	5,833.6	5,544.1	45.2	30.4	-22.64	-1,155.7	736.4	813.3	786.3	27.01	30.107			
7,600.0	6,062.0	5,800.0	5,519.9	47.6	30.5	-22.31	-1,149.4	758.9	887.3	859.3	28.01	31.675			
7,700.0	6,062.0	5,778.8	5,504.1	50.0	30.5	-22.11	-1,145.3	772.3	964.0	935.0	29.08	33.146			

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 17 - Wellbore #1 - Plan #1 (7-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
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	
0.0	0.0	0.0	0.0	0.0	0.0	-179.43	-28.1	-0.3	28.1					
100.0	100.0	100.0	100.0	0.1	0.1	-179.43	-28.1	-0.3	28.1	27.8	0.22	124.810		
200.0	200.0	200.0	200.0	0.3	0.3	-179.43	-28.1	-0.3	28.1	27.4	0.67	41.603 CC, ES		
300.0	300.0	299.2	299.1	0.6	0.5	178.65	-29.5	0.7	29.5	28.4	1.10	26.730		
400.0	400.0	398.1	397.9	0.8	0.8	173.89	-33.7	3.6	33.9	32.4	1.54	22.073		
500.0	500.0	496.7	496.1	1.0	1.0	-22.57	-40.7	8.4	40.1	38.2	1.95	20.546		
600.0	599.8	594.8	593.6	1.2	1.3	-30.37	-50.4	15.1	46.9	44.6	2.36	19.856		
700.0	699.5	692.5	690.1	1.4	1.6	-38.65	-62.8	23.7	55.0	52.2	2.80	19.659		
800.0	798.7	789.6	785.4	1.7	2.0	-46.72	-77.8	34.0	65.0	61.7	3.28	19.820		
900.0	897.5	886.0	879.5	2.0	2.4	-54.10	-95.3	46.1	77.2	73.4	3.83	20.136		
1,000.0	995.6	981.7	972.0	2.3	2.9	-60.56	-115.3	59.9	91.9	87.4	4.49	20.448		
1,100.0	1,093.1	1,076.5	1,062.9	2.7	3.4	-66.05	-137.6	75.3	109.1	103.8	5.27	20.687		
1,200.0	1,189.8	1,171.7	1,153.2	3.2	4.0	-70.68	-162.3	92.3	129.0	122.8	6.18	20.881		
1,300.0	1,286.6	1,269.1	1,245.4	3.7	4.6	-74.17	-188.1	110.1	150.1	143.0	7.14	21.021		
1,400.0	1,383.3	1,366.5	1,337.6	4.2	5.3	-76.81	-214.0	127.9	171.6	163.5	8.13	21.103		
1,500.0	1,480.0	1,463.9	1,429.8	4.7	5.9	-78.85	-239.8	145.8	193.4	184.3	9.15	21.143		
1,600.0	1,576.8	1,561.3	1,522.0	5.2	6.6	-80.48	-265.7	163.6	215.4	205.2	10.18	21.165		
1,700.0	1,673.5	1,658.7	1,614.2	5.7	7.2	-81.81	-291.5	181.4	237.5	226.3	11.22	21.175		
1,800.0	1,770.2	1,756.0	1,706.4	6.2	7.9	-82.91	-317.4	199.2	259.7	247.5	12.26	21.180		
1,900.0	1,866.9	1,853.4	1,798.6	6.8	8.5	-83.84	-343.2	217.1	282.0	268.7	13.31	21.181		
2,000.0	1,963.7	1,950.8	1,890.8	7.3	9.2	-84.64	-369.1	234.9	304.4	290.0	14.37	21.181		
2,100.0	2,060.4	2,048.2	1,983.0	7.8	9.8	-85.32	-394.9	252.7	326.8	311.3	15.43	21.179		
2,200.0	2,157.1	2,145.6	2,075.1	8.3	10.5	-85.92	-420.7	270.5	349.2	332.7	16.49	21.176		
2,300.0	2,253.9	2,243.0	2,167.3	8.9	11.1	-86.44	-446.6	288.3	371.7	354.1	17.55	21.173		
2,400.0	2,350.6	2,340.4	2,259.5	9.4	11.8	-86.91	-472.4	306.2	394.2	375.6	18.62	21.170		
2,500.0	2,447.3	2,437.8	2,351.7	9.9	12.5	-87.32	-498.3	324.0	416.7	397.0	19.69	21.167		
2,600.0	2,544.1	2,535.2	2,443.9	10.5	13.1	-87.69	-524.1	341.8	439.2	418.5	20.75	21.164		
2,700.0	2,640.8	2,632.6	2,536.1	11.0	13.8	-88.03	-550.0	359.6	461.8	440.0	21.82	21.161		
2,800.0	2,737.5	2,729.9	2,628.3	11.5	14.4	-88.33	-575.8	377.5	484.3	461.5	22.89	21.159		
2,900.0	2,834.3	2,827.3	2,720.5	12.0	15.1	-88.61	-601.7	395.3	506.9	483.0	23.96	21.156		
3,000.0	2,931.0	2,924.7	2,812.7	12.6	15.8	-88.87	-627.5	413.1	529.5	504.5	25.03	21.154		
3,100.0	3,027.7	3,022.1	2,904.9	13.1	16.4	-89.10	-653.4	430.9	552.1	526.0	26.10	21.151		
3,200.0	3,124.4	3,119.5	2,997.0	13.6	17.1	-89.31	-679.2	448.8	574.7	547.5	27.17	21.149		
3,300.0	3,221.2	3,216.9	3,089.2	14.2	17.7	-89.51	-705.1	466.6	597.3	569.1	28.25	21.147		
3,400.0	3,317.9	3,314.3	3,181.4	14.7	18.4	-89.70	-730.9	484.4	620.0	590.6	29.32	21.145		
3,500.0	3,414.6	3,411.7	3,273.6	15.2	19.1	-89.87	-756.7	502.2	642.6	612.2	30.39	21.143		
3,600.0	3,511.4	3,509.1	3,365.8	15.8	19.7	-90.03	-782.6	520.0	665.2	633.7	31.46	21.141		
3,700.0	3,608.1	3,606.5	3,458.0	16.3	20.4	-90.18	-808.4	537.9	687.8	655.3	32.54	21.140		
3,800.0	3,704.8	3,703.8	3,550.2	16.8	21.0	-90.31	-834.3	555.7	710.5	676.9	33.61	21.138		
3,900.0	3,801.6	3,801.2	3,642.4	17.4	21.7	-90.45	-860.1	573.5	733.1	698.4	34.69	21.136		
4,000.0	3,898.3	3,898.6	3,734.6	17.9	22.4	-90.57	-886.0	591.3	755.8	720.0	35.76	21.135		
4,100.0	3,995.0	3,996.0	3,826.8	18.4	23.0	-90.68	-911.8	609.2	778.4	741.6	36.83	21.134		
4,200.0	4,091.7	4,093.4	3,919.0	19.0	23.7	-90.79	-937.7	627.0	801.1	763.2	37.91	21.132		
4,300.0	4,188.5	4,190.8	4,011.1	19.5	24.3	-90.90	-963.5	644.8	823.7	784.7	38.98	21.131		
4,400.0	4,285.2	4,288.2	4,103.3	20.0	25.0	-90.99	-989.4	662.6	846.4	806.3	40.06	21.130		
4,500.0	4,381.9	4,385.6	4,195.5	20.6	25.7	-91.09	-1,015.2	680.5	869.0	827.9	41.13	21.129		
4,600.0	4,478.7	4,483.0	4,287.7	21.1	26.3	-91.18	-1,041.0	698.3	891.7	849.5	42.21	21.127		
4,700.0	4,575.4	4,580.3	4,379.9	21.6	27.0	-91.26	-1,066.9	716.1	914.4	871.1	43.28	21.126		
4,800.0	4,672.1	4,677.7	4,472.1	22.2	27.6	-91.34	-1,092.7	733.9	937.0	892.7	44.36	21.125		
4,900.0	4,768.9	4,775.1	4,564.3	22.7	28.3	-91.41	-1,118.6	751.7	959.7	914.3	45.43	21.124		
5,000.0	4,865.6	4,872.5	4,656.5	23.2	29.0	-91.49	-1,144.4	769.6	982.4	935.9	46.51	21.123		
5,300.0	5,155.8	7,184.0	6,062.0	24.8	32.7	-24.01	-1,532.0	-201.7	990.3	942.5	47.81	20.714		

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

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Offset Design Kennedy Pad Sec.18-T4N-R68W - Kennedy 17 - Wellbore #1 - Plan #1 (7-18-14)													Offset Site Error:	0.0 ft
Survey Program: 0-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		
5,400.0	5,252.5	7,188.3	6,062.0	25.4	32.8	-22.57	-1,531.9	-205.9	891.8	843.8	48.03	18.569		
5,500.0	5,349.2	7,192.5	6,062.0	25.9	32.8	-21.11	-1,531.9	-210.2	793.7	745.5	48.24	16.453		
5,600.0	5,446.0	7,196.2	6,062.0	26.4	32.8	0.27	-1,531.9	-213.9	696.2	648.8	47.39	14.690		
5,700.0	5,542.4	7,188.3	6,062.0	26.8	32.8	60.87	-1,531.9	-206.0	599.7	550.0	49.63	12.082		
5,800.0	5,636.4	7,164.9	6,062.0	27.2	32.7	93.11	-1,532.1	-182.6	506.7	454.9	51.80	9.781		
5,900.0	5,725.8	7,126.7	6,062.0	27.5	32.7	108.23	-1,532.3	-144.3	420.2	368.7	51.50	8.159		
6,000.0	5,808.2	7,074.4	6,062.0	27.8	32.7	114.44	-1,532.5	-92.1	343.0	293.3	49.68	6.903		
6,100.0	5,881.7	7,009.5	6,062.0	28.1	32.8	115.14	-1,532.9	-27.1	278.0	230.8	47.21	5.889		
6,200.0	5,944.5	6,933.5	6,062.0	28.4	33.0	111.77	-1,533.3	48.9	228.1	183.1	44.96	5.072		
6,300.0	5,995.0	6,848.3	6,062.0	28.7	33.2	105.48	-1,533.7	134.1	194.3	150.6	43.69	4.448		
6,400.0	6,031.9	6,756.0	6,062.0	29.1	33.4	98.10	-1,534.2	226.4	175.4	132.0	43.48	4.035		
6,500.0	6,054.5	6,654.5	6,059.8	29.5	33.7	91.27	-1,534.1	327.7	166.6	122.7	43.89	3.795		
6,600.0	6,062.0	6,551.3	6,043.5	30.1	34.0	83.39	-1,530.1	429.5	161.1	116.2	44.94	3.585		
6,684.6	6,062.0	6,469.0	6,019.2	30.7	34.2	74.40	-1,523.7	507.8	159.0	112.8	46.20	3.442		
6,700.0	6,062.0	6,454.8	6,014.1	30.9	34.2	72.47	-1,522.4	520.9	159.1	112.8	46.30	3.437 SF		
6,800.0	6,062.0	6,369.2	5,977.1	31.9	34.4	59.02	-1,512.4	597.5	166.9	121.2	45.67	3.655		
6,900.0	6,062.0	6,295.2	5,937.5	33.2	34.6	46.29	-1,501.7	658.9	191.4	148.5	42.90	4.462		
7,000.0	6,062.0	6,232.3	5,898.5	34.8	34.7	36.15	-1,491.1	707.2	233.4	194.1	39.38	5.928		
7,100.0	6,062.0	6,179.1	5,862.1	36.6	34.8	28.67	-1,481.1	744.7	289.5	253.3	36.22	7.994		
7,200.0	6,062.0	6,134.1	5,829.1	38.6	34.8	23.25	-1,472.0	773.9	355.7	321.9	33.78	10.531		
7,300.0	6,062.0	6,100.0	5,802.8	40.7	34.9	19.68	-1,464.8	794.3	429.1	396.8	32.31	13.281		
7,400.0	6,062.0	6,063.4	5,773.5	42.9	34.9	16.32	-1,456.7	814.6	507.5	476.7	30.82	16.466		
7,500.0	6,062.0	6,035.4	5,750.3	45.2	34.9	14.05	-1,450.3	829.0	589.8	559.8	30.04	19.637		
7,600.0	6,062.0	6,000.0	5,720.1	47.6	34.9	11.51	-1,442.0	845.5	675.2	646.2	28.99	23.293		
7,700.0	6,062.0	6,000.0	5,720.1	50.0	34.9	11.51	-1,442.0	845.5	762.5	732.7	29.81	25.580		
7,800.0	6,062.0	5,971.6	5,695.3	52.5	34.9	9.70	-1,435.1	857.6	851.6	822.4	29.25	29.117		
7,900.0	6,062.0	5,950.0	5,676.2	55.0	34.9	8.45	-1,429.8	865.9	942.3	913.2	29.10	32.382		

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4984.0ft (Frontier 10 RKB - Coordinates are relative to: Kennedy 16

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.30°



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 16
Project:	SEC.18-T4N-R68W	TVD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Reference Site:	Kennedy Pad Sec.18-T4N-R68W	MD Reference:	WELL @ 4984.0ft (Frontier 10 RKB - 22')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Kennedy 16	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 (7-18-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4984.0ft (Frontier 10 RKB - Coordinates are relative to: Kennedy 16
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.30°

