

Extraction Oil & Gas

Well Name: **Kennedy 17**

Surface Location: Kennedy Pad Sec.18-T4N-R68W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

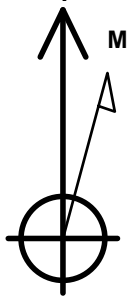
Ground Elevation: 4962.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1358702.08	3128800.35	40.317117	-105.038101	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1129'FNL & 345'FEL	1.0	0.0	0.0	Point
BHL 2530'FNL & 460'FWL	6062.0	-1482.3	-4310.1	Point
Landing Pt. 2640'FNL & 75'FEL	6062.0	-1506.4	274.4	Point



Azimuths to True North
Magnetic North: 8.59°

Magnetic Field
Strength: 52732.2srT
Dip Angle: 66.83°
Date: 7/18/2014
Model: IGRF2010

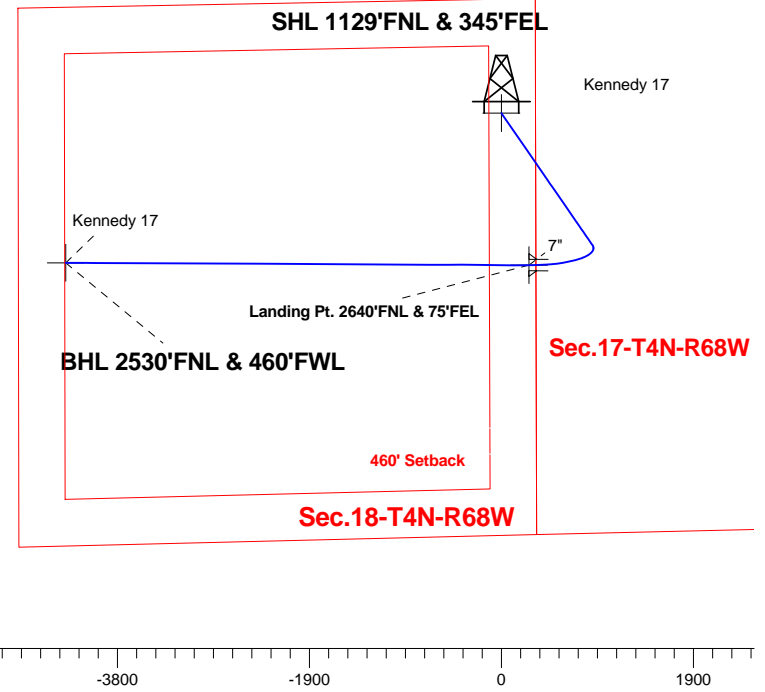
ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 2.00
1123.5	1140.3	Start 4449.8 hold at 1140.3 MD
5335.8	5590.1	Start DLS 9.00 TFO 123.43
6062.0	6708.2	Start 4584.6 hold at 6708.2 MD
6062.0	11292.8	TD at 11292.8

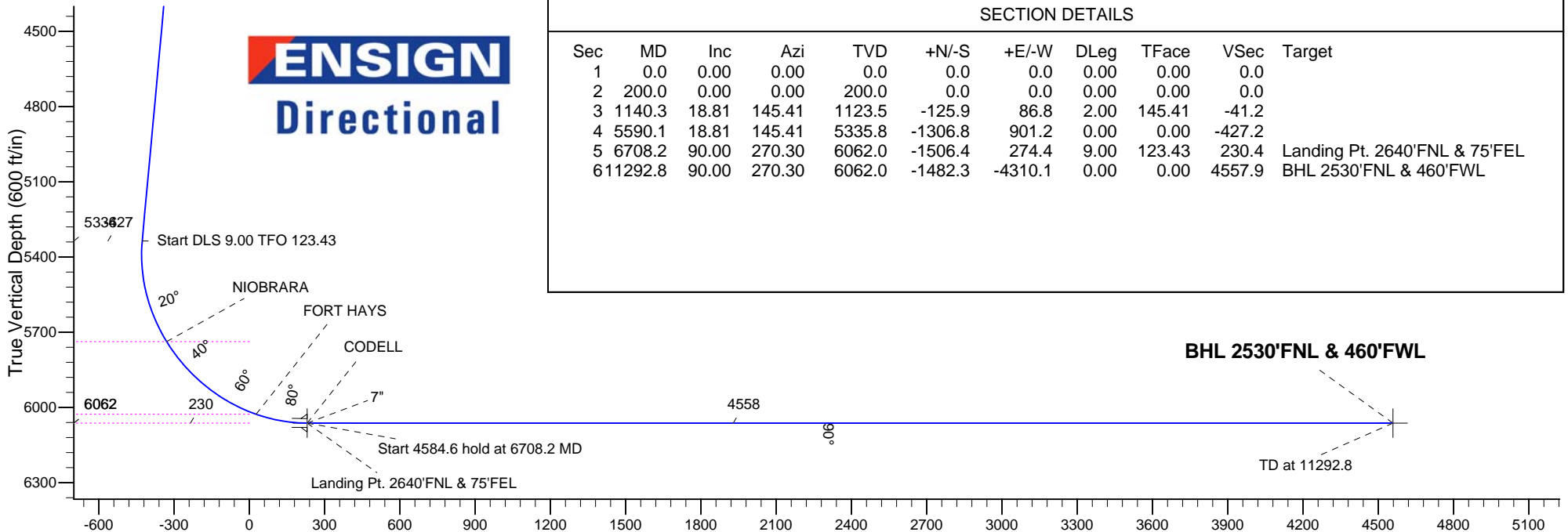
Kennedy Pad Sec.18-T4N-R68W
Kennedy 17
Plan #1 (7-18-14)
13:32, July 23 2014

South(-)/North(+) (1900 ft/in)

West(-)/East(+) (1900 ft/in)



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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1140.3	18.81	145.41	1123.5	-125.9	86.8	2.00	145.41	-41.2	
4	5590.1	18.81	145.41	5335.8	-1306.8	901.2	0.00	0.00	-427.2	
5	6708.2	90.00	270.30	6062.0	-1506.4	274.4	9.00	123.43	230.4	Landing Pt. 2640'FNL & 75'FEL
6	11292.8	90.00	270.30	6062.0	-1482.3	-4310.1	0.00	0.00	4557.9	BHL 2530'FNL & 460'FWL

Vertical Section at 251.02° (600 ft/in)



Extraction Oil & Gas

SEC.18-T4N-R68W

Kennedy Pad Sec.18-T4N-R68W

Kennedy 17

Wellbore #1

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

Standard Planning Report

23 July, 2014



Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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:	1,359,150.18ft	Latitude:	40.318347
From:	Lat/Long	Easting:	3,128,800.53ft	Longitude:	-105.038092
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.30 °

Well	Kennedy 17					
Well Position	+N-S	-448.1 ft	Northing:	1,358,702.08 ft	Latitude:	40.317117
	+E-W	-2.5 ft	Easting:	3,128,800.35 ft	Longitude:	-105.038101
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	251.02

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,140.3	18.81	145.41	1,123.5	-125.9	86.8	2.00	2.00	0.00	145.41	
5,590.1	18.81	145.41	5,335.8	-1,306.8	901.2	0.00	0.00	0.00	0.00	
6,708.2	90.00	270.30	6,062.0	-1,506.4	274.4	9.00	6.37	11.17	123.43	Landing Pt. 2640'Ft
11,292.8	90.00	270.30	6,062.0	-1,482.3	-4,310.1	0.00	0.00	0.00	0.00	BHL 2530'FNL & 46

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Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 17	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
KOP - Start Build 2.00									
300.0	2.00	145.41	300.0	-1.4	1.0	-0.5	2.00	2.00	0.00
400.0	4.00	145.41	399.8	-5.7	4.0	-1.9	2.00	2.00	0.00
500.0	6.00	145.41	499.5	-12.9	8.9	-4.2	2.00	2.00	0.00
600.0	8.00	145.41	598.7	-23.0	15.8	-7.5	2.00	2.00	0.00
700.0	10.00	145.41	697.5	-35.8	24.7	-11.7	2.00	2.00	0.00
800.0	12.00	145.41	795.6	-51.5	35.5	-16.8	2.00	2.00	0.00
900.0	14.00	145.41	893.1	-70.1	48.3	-22.9	2.00	2.00	0.00
1,000.0	16.00	145.41	989.6	-91.4	63.0	-29.9	2.00	2.00	0.00
1,100.0	18.00	145.41	1,085.3	-115.4	79.6	-37.7	2.00	2.00	0.00
1,140.3	18.81	145.41	1,123.5	-125.9	86.8	-41.2	2.00	2.00	0.00
Start 4449.8 hold at 1140.3 MD									
1,200.0	18.81	145.41	1,180.0	-141.7	97.7	-46.3	0.00	0.00	0.00
1,300.0	18.81	145.41	1,274.7	-168.3	116.0	-55.0	0.00	0.00	0.00
1,400.0	18.81	145.41	1,369.3	-194.8	134.3	-63.7	0.00	0.00	0.00
1,500.0	18.81	145.41	1,464.0	-221.4	152.6	-72.4	0.00	0.00	0.00
1,600.0	18.81	145.41	1,558.7	-247.9	170.9	-81.0	0.00	0.00	0.00
1,700.0	18.81	145.41	1,653.3	-274.4	189.3	-89.7	0.00	0.00	0.00
1,800.0	18.81	145.41	1,748.0	-301.0	207.6	-98.4	0.00	0.00	0.00
1,900.0	18.81	145.41	1,842.6	-327.5	225.9	-107.1	0.00	0.00	0.00
2,000.0	18.81	145.41	1,937.3	-354.1	244.2	-115.7	0.00	0.00	0.00
2,100.0	18.81	145.41	2,032.0	-380.6	262.5	-124.4	0.00	0.00	0.00
2,200.0	18.81	145.41	2,126.6	-407.1	280.8	-133.1	0.00	0.00	0.00
2,300.0	18.81	145.41	2,221.3	-433.7	299.1	-141.8	0.00	0.00	0.00
2,306.0	18.81	145.41	2,227.0	-435.3	300.2	-142.3	0.00	0.00	0.00
PARKMAN									
2,400.0	18.81	145.41	2,316.0	-460.2	317.4	-150.4	0.00	0.00	0.00
2,500.0	18.81	145.41	2,410.6	-486.7	335.7	-159.1	0.00	0.00	0.00
2,600.0	18.81	145.41	2,505.3	-513.3	354.0	-167.8	0.00	0.00	0.00
2,700.0	18.81	145.41	2,599.9	-539.8	372.3	-176.5	0.00	0.00	0.00
2,800.0	18.81	145.41	2,694.6	-566.4	390.6	-185.1	0.00	0.00	0.00
2,900.0	18.81	145.41	2,789.3	-592.9	408.9	-193.8	0.00	0.00	0.00
2,939.9	18.81	145.41	2,827.0	-603.5	416.2	-197.3	0.00	0.00	0.00
SUSSEX									
3,000.0	18.81	145.41	2,883.9	-619.4	427.2	-202.5	0.00	0.00	0.00
3,100.0	18.81	145.41	2,978.6	-646.0	445.5	-211.2	0.00	0.00	0.00
3,200.0	18.81	145.41	3,073.2	-672.5	463.8	-219.8	0.00	0.00	0.00
3,300.0	18.81	145.41	3,167.9	-699.1	482.1	-228.5	0.00	0.00	0.00
3,400.0	18.81	145.41	3,262.6	-725.6	500.4	-237.2	0.00	0.00	0.00
3,404.7	18.81	145.41	3,267.0	-726.8	501.2	-237.6	0.00	0.00	0.00
SHANNON									
3,500.0	18.81	145.41	3,357.2	-752.1	518.7	-245.9	0.00	0.00	0.00
3,600.0	18.81	145.41	3,451.9	-778.7	537.0	-254.5	0.00	0.00	0.00
3,700.0	18.81	145.41	3,546.6	-805.2	555.3	-263.2	0.00	0.00	0.00
3,800.0	18.81	145.41	3,641.2	-831.7	573.6	-271.9	0.00	0.00	0.00
3,900.0	18.81	145.41	3,735.9	-858.3	591.9	-280.6	0.00	0.00	0.00
4,000.0	18.81	145.41	3,830.5	-884.8	610.2	-289.2	0.00	0.00	0.00
4,100.0	18.81	145.41	3,925.2	-911.4	628.5	-297.9	0.00	0.00	0.00
4,200.0	18.81	145.41	4,019.9	-937.9	646.8	-306.6	0.00	0.00	0.00
4,300.0	18.81	145.41	4,114.5	-964.4	665.1	-315.3	0.00	0.00	0.00
4,400.0	18.81	145.41	4,209.2	-991.0	683.4	-323.9	0.00	0.00	0.00

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Site:	Kennedy Pad Sec.18-T4N-R68W	North Reference:	True
Well:	Kennedy 17	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	18.81	145.41	4,303.8	-1,017.5	701.7	-332.6	0.00	0.00	0.00
4,600.0	18.81	145.41	4,398.5	-1,044.1	720.0	-341.3	0.00	0.00	0.00
4,700.0	18.81	145.41	4,493.2	-1,070.6	738.3	-350.0	0.00	0.00	0.00
4,800.0	18.81	145.41	4,587.8	-1,097.1	756.6	-358.6	0.00	0.00	0.00
4,900.0	18.81	145.41	4,682.5	-1,123.7	774.9	-367.3	0.00	0.00	0.00
5,000.0	18.81	145.41	4,777.2	-1,150.2	793.2	-376.0	0.00	0.00	0.00
5,100.0	18.81	145.41	4,871.8	-1,176.8	811.5	-384.7	0.00	0.00	0.00
5,200.0	18.81	145.41	4,966.5	-1,203.3	829.8	-393.3	0.00	0.00	0.00
5,300.0	18.81	145.41	5,061.1	-1,229.8	848.1	-402.0	0.00	0.00	0.00
5,400.0	18.81	145.41	5,155.8	-1,256.4	866.4	-410.7	0.00	0.00	0.00
5,500.0	18.81	145.41	5,250.5	-1,282.9	884.7	-419.4	0.00	0.00	0.00
5,590.1	18.81	145.41	5,335.8	-1,306.8	901.2	-427.2	0.00	0.00	0.00
Start DLS 9.00 TFO 123.43									
5,600.0	18.33	147.77	5,345.1	-1,309.4	902.9	-428.0	9.00	-4.81	23.89
5,700.0	15.62	177.56	5,440.9	-1,336.3	911.9	-427.7	9.00	-2.71	29.79
5,800.0	17.61	208.66	5,537.0	-1,363.0	905.2	-412.7	9.00	1.99	31.10
5,900.0	23.11	229.41	5,630.8	-1,389.1	883.0	-383.2	9.00	5.50	20.76
6,000.0	30.26	241.70	5,720.1	-1,413.9	845.8	-340.0	9.00	7.15	12.28
6,019.7	31.77	243.49	5,737.0	-1,418.6	836.8	-330.0	9.00	7.67	9.12
NIOBRARA									
6,100.0	38.15	249.47	5,802.8	-1,436.7	794.6	-284.1	9.00	7.94	7.44
6,200.0	46.39	254.87	5,876.8	-1,457.1	730.6	-217.0	9.00	8.24	5.40
6,300.0	54.82	258.95	5,940.2	-1,474.4	655.4	-140.3	9.00	8.43	4.08
6,400.0	63.37	262.25	5,991.5	-1,488.3	570.8	-55.8	9.00	8.54	3.30
6,492.1	71.29	264.87	6,027.0	-1,497.7	486.5	27.1	9.00	8.61	2.85
FORT HAYS									
6,500.0	71.98	265.09	6,029.5	-1,498.4	479.0	34.4	9.00	8.63	2.69
6,600.0	80.62	267.66	6,053.2	-1,504.5	382.1	128.0	9.00	8.65	2.57
6,700.0	89.29	270.10	6,061.9	-1,506.4	282.6	222.7	9.00	8.66	2.44
6,708.1	89.99	270.30	6,062.0	-1,506.4	274.5	230.3	9.00	8.67	2.42
CODELL									
6,708.2	90.00	270.30	6,062.0	-1,506.4	274.4	230.4	9.00	8.67	2.42
Start 4584.6 hold at 6708.2 MD - 7"									
6,800.0	90.00	270.30	6,062.0	-1,505.9	182.6	317.1	0.00	0.00	0.00
6,900.0	90.00	270.30	6,062.0	-1,505.4	82.6	411.5	0.00	0.00	0.00
7,000.0	90.00	270.30	6,062.0	-1,504.9	-17.4	505.8	0.00	0.00	0.00
7,100.0	90.00	270.30	6,062.0	-1,504.3	-117.4	600.2	0.00	0.00	0.00
7,200.0	90.00	270.30	6,062.0	-1,503.8	-217.4	694.6	0.00	0.00	0.00
7,300.0	90.00	270.30	6,062.0	-1,503.3	-317.4	789.0	0.00	0.00	0.00
7,400.0	90.00	270.30	6,062.0	-1,502.8	-417.4	883.4	0.00	0.00	0.00
7,500.0	90.00	270.30	6,062.0	-1,502.2	-517.4	977.8	0.00	0.00	0.00
7,600.0	90.00	270.30	6,062.0	-1,501.7	-617.4	1,072.2	0.00	0.00	0.00
7,700.0	90.00	270.30	6,062.0	-1,501.2	-717.4	1,166.6	0.00	0.00	0.00
7,800.0	90.00	270.30	6,062.0	-1,500.7	-817.4	1,261.0	0.00	0.00	0.00
7,900.0	90.00	270.30	6,062.0	-1,500.1	-917.4	1,355.4	0.00	0.00	0.00
8,000.0	90.00	270.30	6,062.0	-1,499.6	-1,017.4	1,449.8	0.00	0.00	0.00
8,100.0	90.00	270.30	6,062.0	-1,499.1	-1,117.4	1,544.2	0.00	0.00	0.00
8,200.0	90.00	270.30	6,062.0	-1,498.6	-1,217.4	1,638.5	0.00	0.00	0.00
8,300.0	90.00	270.30	6,062.0	-1,498.0	-1,317.4	1,732.9	0.00	0.00	0.00
8,400.0	90.00	270.30	6,062.0	-1,497.5	-1,417.3	1,827.3	0.00	0.00	0.00
8,500.0	90.00	270.30	6,062.0	-1,497.0	-1,517.3	1,921.7	0.00	0.00	0.00
8,600.0	90.00	270.30	6,062.0	-1,496.5	-1,617.3	2,016.1	0.00	0.00	0.00
8,700.0	90.00	270.30	6,062.0	-1,495.9	-1,717.3	2,110.5	0.00	0.00	0.00

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Well:	Kennedy 17	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)	
8,800.0	90.00	270.30	6,062.0	-1,495.4	-1,817.3	2,204.9	0.00	0.00	0.00	
8,900.0	90.00	270.30	6,062.0	-1,494.9	-1,917.3	2,299.3	0.00	0.00	0.00	
9,000.0	90.00	270.30	6,062.0	-1,494.4	-2,017.3	2,393.7	0.00	0.00	0.00	
9,100.0	90.00	270.30	6,062.0	-1,493.8	-2,117.3	2,488.1	0.00	0.00	0.00	
9,200.0	90.00	270.30	6,062.0	-1,493.3	-2,217.3	2,582.5	0.00	0.00	0.00	
9,300.0	90.00	270.30	6,062.0	-1,492.8	-2,317.3	2,676.9	0.00	0.00	0.00	
9,400.0	90.00	270.30	6,062.0	-1,492.3	-2,417.3	2,771.2	0.00	0.00	0.00	
9,500.0	90.00	270.30	6,062.0	-1,491.8	-2,517.3	2,865.6	0.00	0.00	0.00	
9,600.0	90.00	270.30	6,062.0	-1,491.2	-2,617.3	2,960.0	0.00	0.00	0.00	
9,700.0	90.00	270.30	6,062.0	-1,490.7	-2,717.3	3,054.4	0.00	0.00	0.00	
9,800.0	90.00	270.30	6,062.0	-1,490.2	-2,817.3	3,148.8	0.00	0.00	0.00	
9,900.0	90.00	270.30	6,062.0	-1,489.7	-2,917.3	3,243.2	0.00	0.00	0.00	
10,000.0	90.00	270.30	6,062.0	-1,489.1	-3,017.3	3,337.6	0.00	0.00	0.00	
10,100.0	90.00	270.30	6,062.0	-1,488.6	-3,117.3	3,432.0	0.00	0.00	0.00	
10,200.0	90.00	270.30	6,062.0	-1,488.1	-3,217.3	3,526.4	0.00	0.00	0.00	
10,300.0	90.00	270.30	6,062.0	-1,487.6	-3,317.3	3,620.8	0.00	0.00	0.00	
10,400.0	90.00	270.30	6,062.0	-1,487.0	-3,417.3	3,715.2	0.00	0.00	0.00	
10,500.0	90.00	270.30	6,062.0	-1,486.5	-3,517.3	3,809.6	0.00	0.00	0.00	
10,600.0	90.00	270.30	6,062.0	-1,486.0	-3,617.3	3,903.9	0.00	0.00	0.00	
10,700.0	90.00	270.30	6,062.0	-1,485.5	-3,717.3	3,998.3	0.00	0.00	0.00	
10,800.0	90.00	270.30	6,062.0	-1,484.9	-3,817.3	4,092.7	0.00	0.00	0.00	
10,900.0	90.00	270.30	6,062.0	-1,484.4	-3,917.3	4,187.1	0.00	0.00	0.00	
11,000.0	90.00	270.30	6,062.0	-1,483.9	-4,017.3	4,281.5	0.00	0.00	0.00	
11,100.0	90.00	270.30	6,062.0	-1,483.4	-4,117.3	4,375.9	0.00	0.00	0.00	
11,200.0	90.00	270.30	6,062.0	-1,482.8	-4,217.3	4,470.3	0.00	0.00	0.00	
11,292.8	90.00	270.30	6,062.0	-1,482.3	-4,310.1	4,557.9	0.00	0.00	0.00	
TD at 11292.8										

Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
BHL 2530'FNL & 460' - hit/miss target - Shape - Point	0.00	0.00	6,062.0	-1,482.3	-4,310.1	1,357,197.37	3,124,498.23	40.313047	-105.053556	
SHL 1129'FNL & 345' - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,358,702.09	3,128,800.35	40.317117	-105.038101	
Landing Pt. 2640'FNL - plan hits target center - Point	0.00	0.00	6,062.0	-1,506.4	274.4	1,357,197.20	3,129,082.60	40.312982	-105.037117	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
6,708.2	6,062.0	7"	7	7-1/2	

Database:	Landmark	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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 (°)	
2,306.0	2,227.0	PARKMAN		0.00		
2,939.9	2,827.0	SUSSEX		0.00		
3,404.7	3,267.0	SHANNON		0.00		
6,019.7	5,737.0	NIOBRARA		0.00		
6,492.1	6,027.0	FORT HAYS		0.00		
6,708.1	6,062.0	CODELL		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	
1,140.3	1,123.5	-125.9	86.8	Start 4449.8 hold at 1140.3 MD	
5,590.1	5,335.8	-1,306.8	901.2	Start DLS 9.00 TFO 123.43	
6,708.2	6,062.0	-1,506.4	274.4	Start 4584.6 hold at 6708.2 MD	
11,292.8	6,062.0	-1,482.3	-4,310.1	TD at 11292.8	

Extraction Oil & Gas

SEC.18-T4N-R68W

Kennedy Pad Sec.18-T4N-R68W

Kennedy 17

Wellbore #1

Plan #1 (7-18-14)

Anticollision Report

23 July, 2014

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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	11,292.8	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 15 - Wellbore #1 - Plan #1 (7-18-14)	200.0	200.0	56.1	55.4	83.203	CC, ES
Kennedy 15 - Wellbore #1 - Plan #1 (7-18-14)	11,292.8	10,933.9	463.2	260.2	2.281	SF
Kennedy 16 - Wellbore #1 - Plan #1 (7-18-14)	200.0	200.0	28.1	27.4	41.603	CC, ES
Kennedy 16 - Wellbore #1 - Plan #1 (7-18-14)	6,400.0	6,747.3	161.6	113.6	3.365	SF

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	
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	83.203 CC, ES
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	0.5	0.6	-146.10	56.1	0.3	57.5	56.4	1.11	51.932	
400.0	399.8	399.8	399.8	0.8	0.8	-148.76	56.1	0.3	62.0	60.4	1.54	40.108	
500.0	499.5	499.5	499.5	1.0	1.0	-152.41	56.1	0.3	69.6	67.6	2.00	34.819	
600.0	598.7	598.7	598.7	1.3	1.2	-156.33	56.1	0.3	80.6	78.1	2.46	32.757	
700.0	697.5	700.4	700.4	1.6	1.4	-159.64	54.8	1.4	93.6	90.7	2.90	32.248	
800.0	795.6	802.7	802.5	2.0	1.6	-161.93	50.7	5.0	106.9	103.6	3.33	32.084	
900.0	893.1	905.5	904.9	2.5	1.9	-163.52	43.8	10.9	120.4	116.6	3.78	31.817	
1,000.0	989.6	1,008.8	1,007.4	3.0	2.1	-164.61	34.1	19.3	134.0	129.7	4.26	31.452	
1,100.0	1,085.3	1,112.6	1,109.9	3.6	2.4	-165.33	21.5	30.2	147.6	142.9	4.76	30.992	
1,200.0	1,180.0	1,217.0	1,212.2	4.2	2.8	-165.76	6.0	43.5	160.6	155.3	5.31	30.259	
1,300.0	1,274.7	1,322.2	1,314.6	4.8	3.2	-165.73	-12.4	59.5	170.5	164.6	5.90	28.891	
1,400.0	1,369.3	1,428.0	1,416.5	5.5	3.7	-165.27	-33.8	77.9	177.0	170.4	6.54	27.048	
1,500.0	1,464.0	1,534.1	1,517.6	6.2	4.3	-164.39	-58.1	98.9	180.0	172.8	7.24	24.867	
1,600.0	1,558.7	1,636.0	1,613.9	6.8	4.9	-163.22	-83.6	120.9	180.4	172.4	7.99	22.594	
1,700.0	1,653.3	1,736.0	1,708.2	7.5	5.6	-162.06	-108.7	142.6	180.7	172.0	8.76	20.642	
1,800.0	1,748.0	1,835.9	1,802.4	8.2	6.2	-160.90	-133.7	164.2	181.1	171.6	9.57	18.928	
1,900.0	1,842.6	1,935.8	1,896.7	8.8	6.9	-159.75	-158.8	185.9	181.6	171.2	10.42	17.431	
2,000.0	1,937.3	2,035.8	1,991.0	9.5	7.6	-158.60	-183.9	207.5	182.1	170.8	11.30	16.117	
2,100.0	2,032.0	2,135.7	2,085.3	10.2	8.2	-157.46	-209.0	229.2	182.7	170.5	12.22	14.957	
2,200.0	2,126.6	2,235.6	2,179.5	10.9	8.9	-156.33	-234.1	250.9	183.4	170.3	13.17	13.929	

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 17
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 17	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		
2,300.0	2,221.3	2,335.6	2,273.8	11.5	9.6	-155.21	-259.2	272.5	184.2	170.0	14.15	13.015		
2,400.0	2,316.0	2,435.5	2,368.1	12.2	10.3	-154.10	-284.2	294.2	185.0	169.8	15.17	12.198		
2,500.0	2,410.6	2,535.4	2,462.4	12.9	11.0	-152.99	-309.3	315.8	185.9	169.7	16.21	11.467		
2,600.0	2,505.3	2,635.4	2,556.7	13.6	11.7	-151.90	-334.4	337.5	186.8	169.6	17.29	10.809		
2,700.0	2,599.9	2,735.3	2,650.9	14.2	12.4	-150.82	-359.5	359.1	187.9	169.5	18.39	10.216		
2,800.0	2,694.6	2,835.2	2,745.2	14.9	13.1	-149.75	-384.6	380.8	189.0	169.4	19.52	9.679		
2,900.0	2,789.3	2,935.2	2,839.5	15.6	13.7	-148.70	-409.6	402.5	190.1	169.4	20.68	9.192		
3,000.0	2,883.9	3,035.1	2,933.8	16.3	14.4	-147.66	-434.7	424.1	191.3	169.5	21.87	8.750		
3,100.0	2,978.6	3,135.0	3,028.0	16.9	15.1	-146.63	-459.8	445.8	192.6	169.6	23.08	8.347		
3,200.0	3,073.2	3,235.0	3,122.3	17.6	15.8	-145.61	-484.9	467.4	194.0	169.7	24.31	7.979		
3,300.0	3,167.9	3,334.9	3,216.6	18.3	16.5	-144.61	-510.0	489.1	195.4	169.8	25.57	7.642		
3,400.0	3,262.6	3,434.8	3,310.9	19.0	17.2	-143.63	-535.1	510.8	196.8	170.0	26.84	7.333		
3,500.0	3,357.2	3,534.8	3,405.2	19.7	17.9	-142.65	-560.1	532.4	198.4	170.2	28.14	7.049		
3,600.0	3,451.9	3,634.7	3,499.4	20.3	18.6	-141.70	-585.2	554.1	199.9	170.5	29.45	6.788		
3,700.0	3,546.6	3,734.6	3,593.7	21.0	19.3	-140.76	-610.3	575.7	201.6	170.8	30.79	6.547		
3,800.0	3,641.2	3,834.6	3,688.0	21.7	20.0	-139.83	-635.4	597.4	203.3	171.1	32.14	6.325		
3,900.0	3,735.9	3,934.5	3,782.3	22.4	20.7	-138.92	-660.5	619.1	205.0	171.5	33.50	6.119		
4,000.0	3,830.5	4,034.4	3,876.5	23.0	21.4	-138.03	-685.5	640.7	206.8	171.9	34.88	5.928		
4,100.0	3,925.2	4,134.4	3,970.8	23.7	22.1	-137.15	-710.6	662.4	208.6	172.4	36.28	5.751		
4,200.0	4,019.9	4,234.3	4,065.1	24.4	22.8	-136.28	-735.7	684.0	210.5	172.8	37.68	5.586		
4,300.0	4,114.5	4,334.2	4,159.4	25.1	23.5	-135.44	-760.8	705.7	212.5	173.3	39.10	5.433		
4,400.0	4,209.2	4,434.1	4,253.7	25.8	24.2	-134.60	-785.9	727.3	214.4	173.9	40.53	5.291		
4,500.0	4,303.8	4,534.1	4,347.9	26.4	24.9	-133.79	-811.0	749.0	216.5	174.5	41.97	5.158		
4,600.0	4,398.5	4,634.0	4,442.2	27.1	25.6	-132.98	-836.0	770.7	218.5	175.1	43.41	5.033		
4,700.0	4,493.2	4,733.9	4,536.5	27.8	26.3	-132.20	-861.1	792.3	220.6	175.8	44.87	4.917		
4,800.0	4,587.8	4,833.9	4,630.8	28.5	27.0	-131.43	-886.2	814.0	222.8	176.5	46.33	4.808		
4,900.0	4,682.5	4,933.8	4,725.0	29.1	27.7	-130.67	-911.3	835.6	225.0	177.2	47.80	4.706		
5,000.0	4,777.2	5,033.7	4,819.3	29.8	28.4	-129.93	-936.4	857.3	227.2	177.9	49.28	4.611		
5,100.0	4,871.8	5,133.7	4,913.6	30.5	29.1	-129.20	-961.4	879.0	229.5	178.7	50.76	4.521		
5,200.0	4,966.5	5,236.3	5,010.5	31.2	29.8	-128.58	-987.2	900.7	231.6	179.4	52.20	4.438		
5,300.0	5,061.1	5,347.6	5,117.5	31.9	30.3	-131.10	-1,015.6	911.0	230.3	178.3	51.96	4.432		
5,400.0	5,155.8	5,452.4	5,218.4	32.5	30.5	-137.81	-1,042.3	903.0	226.0	176.8	49.21	4.593		
5,474.9	5,226.7	5,523.8	5,285.8	33.0	30.6	-144.88	-1,060.1	887.7	224.2	178.5	45.70	4.906		
5,500.0	5,250.5	5,546.2	5,306.6	33.2	30.6	-147.48	-1,065.5	881.4	224.5	180.2	44.35	5.062		
5,600.0	5,345.1	5,627.4	5,379.7	33.9	30.6	-160.52	-1,084.7	852.0	233.0	194.1	38.88	5.992		
5,700.0	5,440.9	5,700.0	5,441.6	34.3	30.6	159.97	-1,101.0	817.8	253.4	218.8	34.63	7.317		
5,800.0	5,537.0	5,771.5	5,498.5	34.6	30.5	120.61	-1,115.8	777.1	281.1	248.2	32.90	8.542		
5,900.0	5,630.8	5,839.7	5,548.4	34.8	30.4	93.55	-1,128.8	732.5	311.8	279.3	32.49	9.598		
6,000.0	5,720.1	5,900.0	5,588.4	34.9	30.3	76.94	-1,139.2	688.6	342.9	311.0	31.87	10.757		
6,100.0	5,802.8	5,970.9	5,630.1	34.9	30.2	65.68	-1,149.9	632.3	372.1	341.5	30.62	12.152		
6,200.0	5,876.8	6,034.7	5,662.2	34.8	30.0	58.25	-1,158.1	577.8	398.4	369.8	28.63	13.916		
6,300.0	5,940.2	6,100.0	5,689.5	34.6	29.8	53.06	-1,165.0	519.0	420.9	394.4	26.49	15.891		
6,400.0	5,991.5	6,160.1	5,709.3	34.4	29.7	49.57	-1,170.0	462.5	439.0	414.0	25.00	17.556		
6,500.0	6,029.5	6,222.0	5,724.3	34.1	29.6	47.24	-1,173.6	402.5	452.2	427.1	25.08	18.029		
6,600.0	6,053.2	6,283.7	5,733.5	33.9	29.4	45.91	-1,175.8	341.6	460.3	433.2	27.18	16.936		
6,700.0	6,061.9	6,351.9	5,737.0	33.6	29.3	45.44	-1,176.3	273.6	463.3	432.2	31.09	14.900		
6,738.4	6,062.3	6,379.5	5,737.0	33.5	29.2	45.42	-1,176.2	246.0	463.5	431.8	31.74	14.605		
6,800.0	6,062.0	6,441.1	5,737.0	33.3	29.1	45.44	-1,175.9	184.4	463.2	430.2	32.98	14.044		
6,900.0	6,062.0	6,541.1	5,737.0	33.0	29.1	45.44	-1,175.3	84.4	463.2	428.2	35.05	13.215		
7,000.0	6,062.0	6,641.1	5,737.0	32.8	29.4	45.44	-1,174.8	-15.6	463.2	425.7	37.46	12.364		
7,100.0	6,062.0	6,741.1	5,737.0	32.7	30.2	45.44	-1,174.3	-115.6	463.2	423.0	40.16	11.534		
7,200.0	6,062.0	6,841.1	5,737.0	32.8	31.7	45.44	-1,173.8	-215.6	463.2	420.1	43.09	10.751		

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 17
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 17	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						
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	6,941.1	5,737.0	33.9	33.6	45.44	-1,173.2	-315.6	463.2	417.0	46.20	10.027	
7,400.0	6,062.0	7,041.1	5,737.0	36.0	35.7	45.44	-1,172.7	-415.6	463.2	413.7	49.46	9.365	
7,500.0	6,062.0	7,141.1	5,737.0	38.2	38.0	45.44	-1,172.2	-515.6	463.2	410.4	52.85	8.765	
7,600.0	6,062.0	7,241.1	5,737.0	40.6	40.3	45.44	-1,171.7	-615.6	463.2	406.9	56.33	8.223	
7,700.0	6,062.0	7,341.1	5,737.0	43.0	42.8	45.44	-1,171.1	-715.6	463.2	403.3	59.90	7.733	
7,800.0	6,062.0	7,441.1	5,737.0	45.5	45.2	45.44	-1,170.6	-815.6	463.2	399.7	63.54	7.290	
7,900.0	6,062.0	7,541.1	5,737.0	47.9	47.7	45.44	-1,170.1	-915.6	463.2	396.0	67.24	6.889	
8,000.0	6,062.0	7,641.1	5,737.0	50.5	50.3	45.44	-1,169.6	-1,015.6	463.2	392.2	70.98	6.525	
8,100.0	6,062.0	7,741.1	5,737.0	53.0	52.8	45.44	-1,169.0	-1,115.6	463.2	388.4	74.77	6.195	
8,200.0	6,062.0	7,841.1	5,737.0	55.6	55.4	45.44	-1,168.5	-1,215.6	463.2	384.6	78.60	5.894	
8,300.0	6,062.0	7,941.1	5,737.0	58.2	58.0	45.44	-1,168.0	-1,315.6	463.2	380.8	82.45	5.618	
8,400.0	6,062.0	8,041.1	5,737.0	60.8	60.6	45.44	-1,167.5	-1,415.6	463.2	376.9	86.33	5.366	
8,500.0	6,062.0	8,141.1	5,737.0	63.4	63.3	45.44	-1,166.9	-1,515.6	463.2	373.0	90.23	5.134	
8,600.0	6,062.0	8,241.1	5,737.0	66.0	65.9	45.44	-1,166.4	-1,615.6	463.2	369.1	94.15	4.920	
8,700.0	6,062.0	8,341.1	5,737.0	68.7	68.6	45.44	-1,165.9	-1,715.6	463.2	365.1	98.10	4.722	
8,800.0	6,062.0	8,441.1	5,737.0	71.3	71.2	45.44	-1,165.4	-1,815.6	463.2	361.2	102.05	4.539	
8,900.0	6,062.0	8,541.1	5,737.0	74.0	73.9	45.44	-1,164.9	-1,915.6	463.2	357.2	106.02	4.369	
9,000.0	6,062.0	8,641.1	5,737.0	76.7	76.6	45.44	-1,164.3	-2,015.6	463.2	353.2	110.01	4.211	
9,100.0	6,062.0	8,741.1	5,737.0	79.4	79.3	45.44	-1,163.8	-2,115.6	463.2	349.2	114.00	4.063	
9,200.0	6,062.0	8,841.1	5,737.0	82.0	82.0	45.44	-1,163.3	-2,215.6	463.2	345.2	118.00	3.925	
9,300.0	6,062.0	8,941.1	5,737.0	84.7	84.7	45.44	-1,162.8	-2,315.6	463.2	341.2	122.02	3.796	
9,400.0	6,062.0	9,041.1	5,737.0	87.4	87.4	45.44	-1,162.2	-2,415.6	463.2	337.2	126.04	3.675	
9,500.0	6,062.0	9,141.1	5,737.0	90.2	90.1	45.44	-1,161.7	-2,515.6	463.2	333.1	130.07	3.561	
9,600.0	6,062.0	9,241.1	5,737.0	92.9	92.9	45.44	-1,161.2	-2,615.6	463.2	329.1	134.10	3.454	
9,700.0	6,062.0	9,341.1	5,737.0	95.6	95.6	45.44	-1,160.7	-2,715.6	463.2	325.1	138.14	3.353	
9,800.0	6,062.0	9,441.1	5,737.0	98.3	98.3	45.44	-1,160.1	-2,815.6	463.2	321.0	142.19	3.258	
9,900.0	6,062.0	9,541.1	5,737.0	101.0	101.1	45.44	-1,159.6	-2,915.6	463.2	317.0	146.24	3.167	
10,000.0	6,062.0	9,641.1	5,737.0	103.8	103.8	45.44	-1,159.1	-3,015.6	463.2	312.9	150.30	3.082	
10,100.0	6,062.0	9,741.1	5,737.0	106.5	106.5	45.44	-1,158.6	-3,115.6	463.2	308.8	154.36	3.001	
10,200.0	6,062.0	9,841.1	5,737.0	109.2	109.3	45.44	-1,158.0	-3,215.6	463.2	304.8	158.43	2.924	
10,300.0	6,062.0	9,941.1	5,737.0	112.0	112.0	45.44	-1,157.5	-3,315.6	463.2	300.7	162.49	2.851	
10,400.0	6,062.0	10,041.1	5,737.0	114.7	114.8	45.44	-1,157.0	-3,415.6	463.2	296.6	166.57	2.781	
10,500.0	6,062.0	10,141.1	5,737.0	117.5	117.6	45.44	-1,156.5	-3,515.6	463.2	292.6	170.64	2.714	
10,600.0	6,062.0	10,241.1	5,737.0	120.2	120.3	45.44	-1,155.9	-3,615.6	463.2	288.5	174.72	2.651	
10,700.0	6,062.0	10,341.1	5,737.0	123.0	123.1	45.44	-1,155.4	-3,715.6	463.2	284.4	178.80	2.591	
10,800.0	6,062.0	10,441.1	5,737.0	125.7	125.8	45.44	-1,154.9	-3,815.6	463.2	280.3	182.89	2.533	
10,900.0	6,062.0	10,541.1	5,737.0	128.5	128.6	45.44	-1,154.4	-3,915.6	463.2	276.2	186.97	2.477	
11,000.0	6,062.0	10,641.1	5,737.0	131.3	131.4	45.44	-1,153.8	-4,015.6	463.2	272.1	191.06	2.424	
11,100.0	6,062.0	10,741.1	5,737.0	134.0	134.1	45.44	-1,153.3	-4,115.6	463.2	268.1	195.15	2.374	
11,200.0	6,062.0	10,841.1	5,737.0	136.8	136.9	45.44	-1,152.8	-4,215.6	463.2	264.0	199.25	2.325	
11,292.8	6,062.0	10,933.9	5,737.0	139.3	139.5	45.44	-1,152.3	-4,308.4	463.2	260.2	203.04	2.281 SF	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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 16 - 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)	Semi Major Axis 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	0.57	28.1	0.3	28.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.57	28.1	0.3	28.1	27.8	0.22	124.810		
200.0	200.0	200.0	200.0	0.3	0.3	0.57	28.1	0.3	28.1	27.4	0.67	41.603 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.6	-146.78	28.1	0.3	29.5	28.4	1.11	26.618		
400.0	399.8	399.8	399.8	0.8	0.8	-151.57	28.1	0.3	34.0	32.5	1.55	22.003		
500.0	499.5	500.8	500.8	1.0	1.0	-158.21	26.3	0.0	40.3	38.3	1.97	20.465		
600.0	598.7	601.7	601.6	1.3	1.2	-166.27	21.1	-1.0	47.2	44.8	2.38	19.840		
700.0	697.5	702.6	702.0	1.6	1.4	-174.86	12.3	-2.5	55.5	52.7	2.81	19.721		
800.0	795.6	803.2	801.8	2.0	1.7	176.73	0.2	-4.6	65.8	62.5	3.29	19.969		
900.0	893.1	903.5	900.9	2.5	2.0	169.00	-15.4	-7.4	78.4	74.6	3.85	20.367		
1,000.0	989.6	1,003.4	998.9	3.0	2.3	162.17	-34.3	-10.7	93.7	89.2	4.52	20.741		
1,100.0	1,085.3	1,102.8	1,095.7	3.6	2.7	156.29	-56.4	-14.6	111.7	106.3	5.31	21.021		
1,200.0	1,180.0	1,200.7	1,190.5	4.2	3.2	151.63	-80.7	-18.9	132.1	125.8	6.23	21.198		
1,300.0	1,274.7	1,298.1	1,284.7	4.8	3.7	148.28	-105.0	-23.2	153.2	146.0	7.21	21.265		
1,400.0	1,369.3	1,395.4	1,378.9	5.5	4.2	145.75	-129.3	-27.5	174.8	166.6	8.21	21.286		
1,500.0	1,464.0	1,492.8	1,473.1	6.2	4.7	143.78	-153.7	-31.7	196.6	187.4	9.24	21.287		
1,600.0	1,558.7	1,590.2	1,567.3	6.8	5.2	142.20	-178.0	-36.0	218.6	208.4	10.27	21.279		
1,700.0	1,653.3	1,687.6	1,661.5	7.5	5.7	140.90	-202.3	-40.3	240.8	229.4	11.32	21.267		
1,800.0	1,748.0	1,785.0	1,755.7	8.2	6.2	139.83	-226.7	-44.6	263.0	250.6	12.37	21.255		
1,900.0	1,842.6	1,882.4	1,849.9	8.8	6.7	138.92	-251.0	-48.9	285.3	271.9	13.43	21.242		
2,000.0	1,937.3	1,979.8	1,944.1	9.5	7.2	138.15	-275.3	-53.2	307.6	293.2	14.49	21.231		
2,100.0	2,032.0	2,077.2	2,038.3	10.2	7.7	137.48	-299.6	-57.5	330.1	314.5	15.55	21.220		
2,200.0	2,126.6	2,174.6	2,132.5	10.9	8.2	136.89	-324.0	-61.7	352.5	335.9	16.62	21.210		
2,300.0	2,221.3	2,271.9	2,226.7	11.5	8.7	136.38	-348.3	-66.0	375.0	357.3	17.69	21.201		
2,400.0	2,316.0	2,369.3	2,320.9	12.2	9.2	135.92	-372.6	-70.3	397.5	378.7	18.76	21.192		
2,500.0	2,410.6	2,466.7	2,415.1	12.9	9.7	135.51	-396.9	-74.6	420.0	400.2	19.83	21.185		
2,600.0	2,505.3	2,564.1	2,509.4	13.6	10.3	135.15	-421.3	-78.9	442.5	421.6	20.90	21.178		
2,700.0	2,599.9	2,661.5	2,603.6	14.2	10.8	134.81	-445.6	-83.2	465.1	443.1	21.97	21.172		
2,800.0	2,694.6	2,758.9	2,697.8	14.9	11.3	134.51	-469.9	-87.5	487.7	464.6	23.04	21.166		
2,900.0	2,789.3	2,856.3	2,792.0	15.6	11.8	134.24	-494.2	-91.7	510.2	486.1	24.11	21.160		
3,000.0	2,883.9	2,953.7	2,886.2	16.3	12.3	133.99	-518.6	-96.0	532.8	507.6	25.19	21.155		
3,100.0	2,978.6	3,051.1	2,980.4	16.9	12.8	133.76	-542.9	-100.3	555.4	529.2	26.26	21.151		
3,200.0	3,073.2	3,148.5	3,074.6	17.6	13.4	133.55	-567.2	-104.6	578.0	550.7	27.33	21.147		
3,300.0	3,167.9	3,245.8	3,168.8	18.3	13.9	133.35	-591.5	-108.9	600.6	572.2	28.41	21.143		
3,400.0	3,262.6	3,343.2	3,263.0	19.0	14.4	133.17	-615.9	-113.2	623.3	593.8	29.48	21.139		
3,500.0	3,357.2	3,440.6	3,357.2	19.7	14.9	133.00	-640.2	-117.5	645.9	615.3	30.56	21.136		
3,600.0	3,451.9	3,538.0	3,451.4	20.3	15.4	132.84	-664.5	-121.7	668.5	636.9	31.64	21.132		
3,700.0	3,546.6	3,635.4	3,545.6	21.0	16.0	132.69	-688.8	-126.0	691.2	658.5	32.71	21.129		
3,800.0	3,641.2	3,732.8	3,639.8	21.7	16.5	132.56	-713.2	-130.3	713.8	680.0	33.79	21.127		
3,900.0	3,735.9	3,830.2	3,734.0	22.4	17.0	132.43	-737.5	-134.6	736.4	701.6	34.86	21.124		
4,000.0	3,830.5	3,927.6	3,828.2	23.0	17.5	132.30	-761.8	-138.9	759.1	723.2	35.94	21.121		
4,100.0	3,925.2	4,025.0	3,922.4	23.7	18.0	132.19	-786.1	-143.2	781.7	744.7	37.02	21.119		
4,200.0	4,019.9	4,122.4	4,016.6	24.4	18.5	132.08	-810.5	-147.5	804.4	766.3	38.09	21.117		
4,300.0	4,114.5	4,219.7	4,110.8	25.1	19.1	131.98	-834.8	-151.7	827.0	787.9	39.17	21.115		
4,400.0	4,209.2	4,317.1	4,205.0	25.8	19.6	131.88	-859.1	-156.0	849.7	809.5	40.25	21.113		
4,500.0	4,303.8	4,414.5	4,299.3	26.4	20.1	131.79	-883.4	-160.3	872.4	831.0	41.32	21.111		
4,600.0	4,398.5	4,511.9	4,393.5	27.1	20.6	131.70	-907.8	-164.6	895.0	852.6	42.40	21.109		
4,700.0	4,493.2	4,609.3	4,487.7	27.8	21.1	131.62	-932.1	-168.9	917.7	874.2	43.48	21.107		
4,800.0	4,587.8	4,706.7	4,581.9	28.5	21.7	131.54	-956.4	-173.2	940.4	895.8	44.55	21.106		
4,900.0	4,682.5	4,804.1	4,676.1	29.1	22.2	131.47	-980.7	-177.5	963.0	917.4	45.63	21.104		
5,000.0	4,777.2	4,901.5	4,770.3	29.8	22.7	131.39	-1,005.1	-181.7	985.7	939.0	46.71	21.102		
5,400.0	5,155.8	7,041.7	6,062.0	32.5	35.5	167.32	-1,344.4	865.9	910.5	870.3	40.17	22.667		

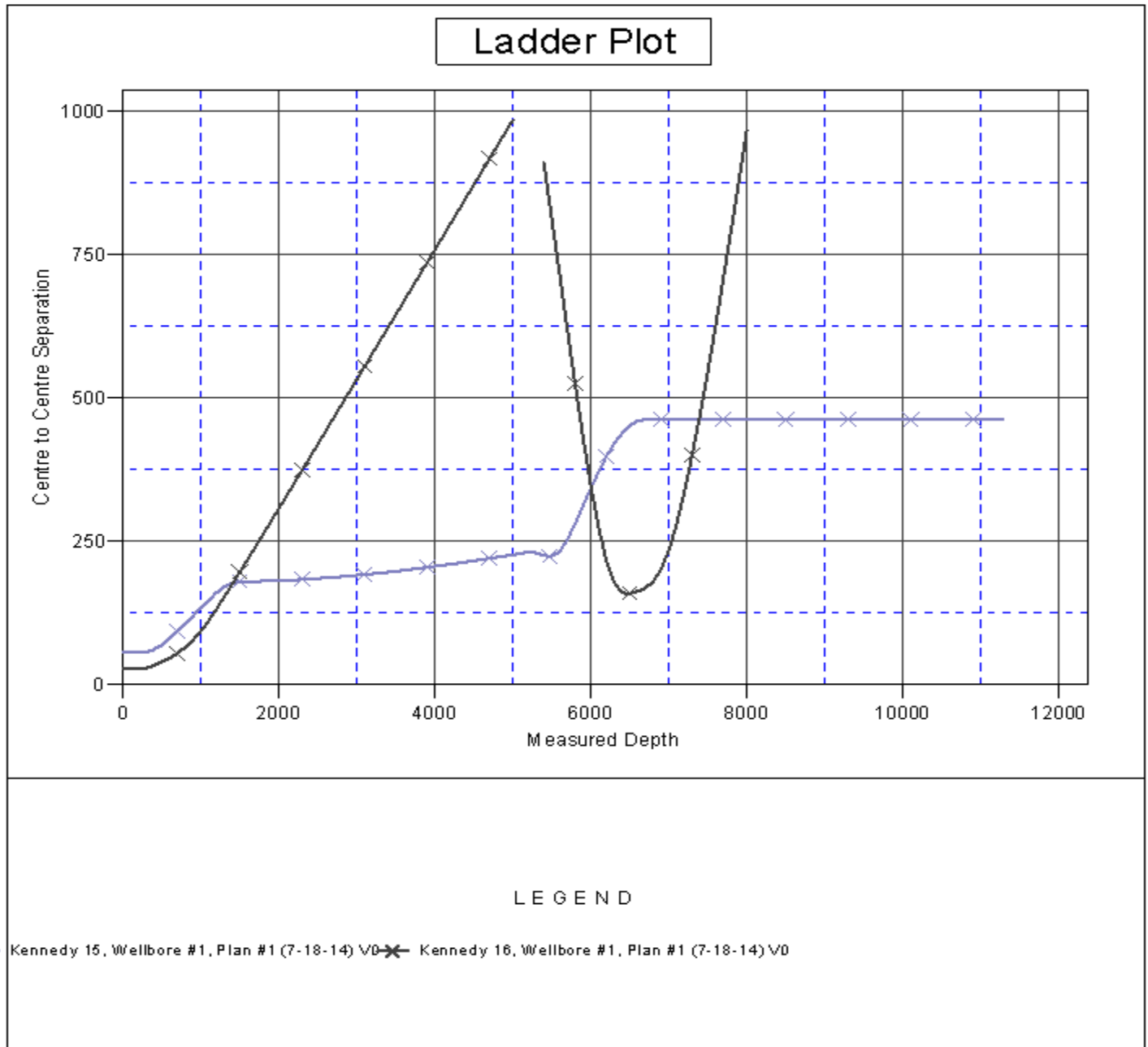
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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 16 - 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	
5,500.0	5,250.5	7,060.1	6,062.0	33.2	35.9	170.64	-1,344.5	884.4	813.9	773.7	40.21	20.242	
5,600.0	5,345.1	7,078.5	6,062.0	33.9	36.2	174.53	-1,344.6	902.7	717.7	677.1	40.65	17.654	
5,700.0	5,440.9	7,087.6	6,062.0	34.3	36.4	179.86	-1,344.6	911.8	621.1	567.5	53.59	11.591	
5,800.0	5,537.0	7,081.0	6,062.0	34.6	36.3	177.12	-1,344.6	905.3	525.4	460.5	64.83	8.103	
5,900.0	5,630.8	7,059.0	6,062.0	34.8	35.9	170.24	-1,344.5	883.2	433.5	368.0	65.47	6.622	
6,000.0	5,720.1	7,021.9	6,062.0	34.9	35.2	163.09	-1,344.3	846.2	348.9	286.3	62.52	5.580	
6,100.0	5,802.8	6,970.8	6,062.0	34.9	34.3	155.03	-1,344.0	795.1	275.3	216.7	58.56	4.700	
6,200.0	5,876.8	6,906.9	6,062.0	34.8	33.3	144.80	-1,343.7	731.2	217.1	162.6	54.53	3.982	
6,300.0	5,940.2	6,831.8	6,062.0	34.6	32.3	131.68	-1,343.3	656.1	178.9	127.9	50.98	3.509	
6,400.0	5,991.5	6,747.3	6,062.0	34.4	31.3	116.61	-1,342.9	571.6	161.6	113.6	48.02	3.365 SF	
6,469.0	6,019.2	6,684.6	6,062.0	34.2	30.7	106.71	-1,342.5	508.9	159.0	112.8	46.22	3.440	
6,500.0	6,029.5	6,655.5	6,062.0	34.1	30.5	102.80	-1,342.4	479.8	159.4	113.9	45.45	3.506	
6,600.0	6,053.2	6,560.7	6,060.8	33.9	29.8	93.22	-1,341.6	385.0	163.1	119.5	43.57	3.744	
6,700.0	6,061.9	6,469.6	6,049.2	33.6	29.4	85.72	-1,338.1	294.8	169.2	126.8	42.43	3.989	
6,800.0	6,062.0	6,382.7	6,026.6	33.3	29.0	78.50	-1,331.8	211.2	179.9	139.2	40.74	4.417	
6,900.0	6,062.0	6,300.0	5,995.0	33.0	28.7	69.82	-1,323.3	135.3	201.1	162.6	38.49	5.225	
7,000.0	6,062.0	6,232.9	5,962.5	32.8	28.5	62.46	-1,314.6	77.2	234.6	198.0	36.64	6.404	
7,100.0	6,062.0	6,171.2	5,927.6	32.7	28.3	56.07	-1,305.3	27.3	280.4	245.3	35.09	7.989	
7,200.0	6,062.0	6,117.7	5,893.7	32.8	28.2	51.10	-1,296.3	-13.0	336.4	302.2	34.13	9.855	
7,300.0	6,062.0	6,071.6	5,861.9	33.9	28.0	47.29	-1,287.9	-45.4	400.5	366.8	33.70	11.886	
7,400.0	6,062.0	6,031.8	5,832.6	36.0	27.9	44.37	-1,280.2	-71.3	471.1	437.4	33.69	13.982	
7,500.0	6,062.0	6,000.0	5,808.2	38.2	27.8	42.27	-1,273.8	-90.6	546.6	512.5	34.10	16.028	
7,600.0	6,062.0	5,967.3	5,782.1	40.6	27.7	40.31	-1,267.0	-109.1	625.9	591.4	34.55	18.118	
7,700.0	6,062.0	5,950.0	5,768.0	43.0	27.7	39.35	-1,263.3	-118.3	708.5	672.9	35.57	19.916	
7,800.0	6,062.0	5,918.1	5,741.2	45.5	27.6	37.71	-1,256.3	-134.3	793.2	757.1	36.12	21.961	
7,900.0	6,062.0	5,900.0	5,725.8	47.9	27.5	36.85	-1,252.2	-142.7	880.1	843.0	37.15	23.693	
8,000.0	6,062.0	5,879.7	5,708.1	50.5	27.5	35.94	-1,247.6	-151.6	968.6	930.5	38.10	25.421	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well Kennedy 17
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 17	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 17
 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°



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