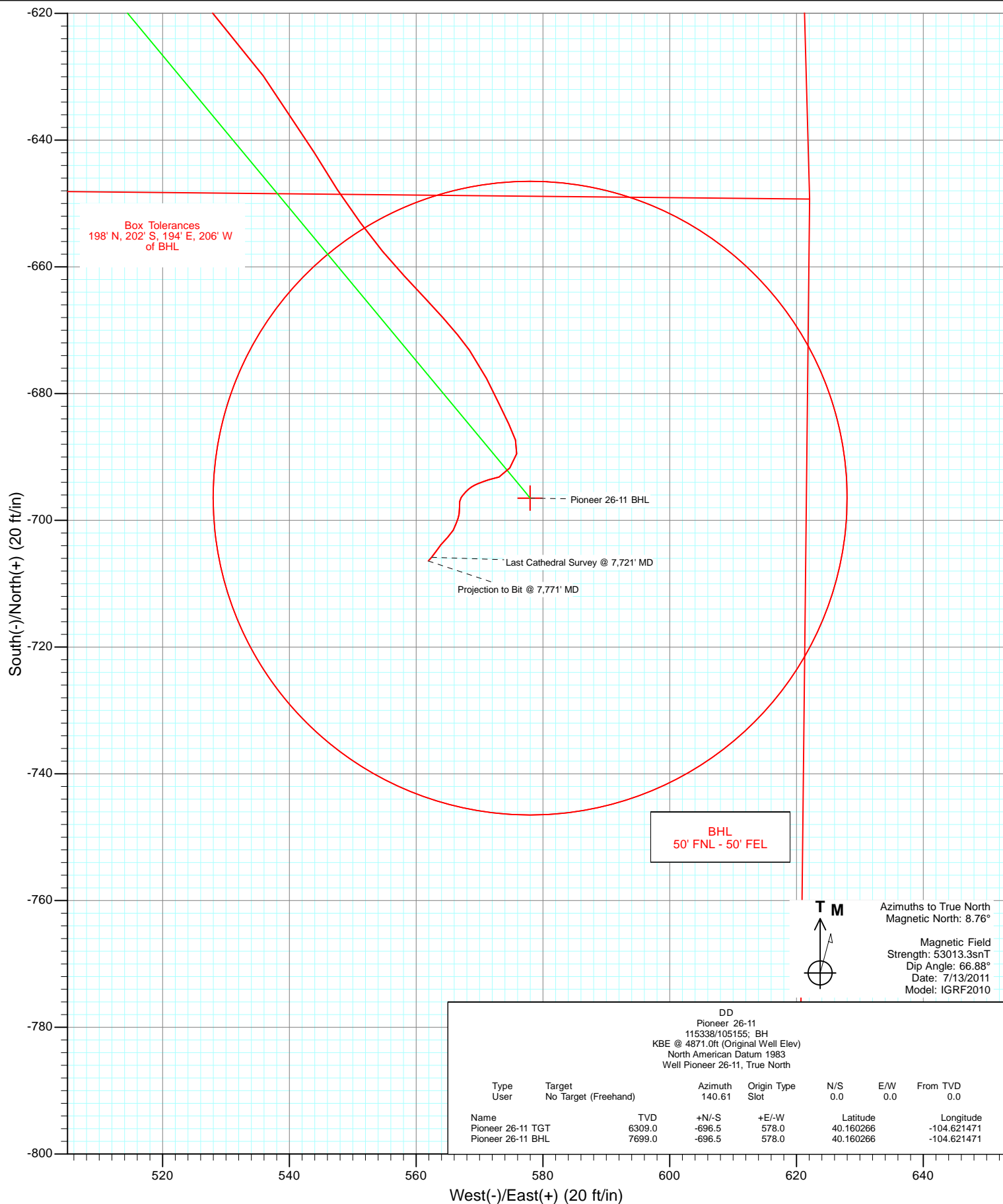


Azimuths to True North
Magnetic North: 8.76°

Magnetic Field
Strength: 53013.3snT
Dip Angle: 66.88°
Date: 7/13/2011
Model: IGRF2010

DD Pioneer 26-11 115338/105155; BH KBE @ 4871.0ft (Original Well Elev) North American Datum 1983 Well Pioneer 26-11, True North						
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
User	No Target (Freehand)	140.61	Slot	0.0	0.0	0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
Pioneer 26-11 TGT	6309.0	-696.5	578.0	40.160266	-104.621471	
Pioneer 26-11 BHL	7699.0	-696.5	578.0	40.160266	-104.621471	



Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Pioneer 26-11
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4871.0ft (Original Well Elev)
Site:	S2-T2N-R65W (Pioneer)	MD Reference:	KBE @ 4871.0ft (Original Well Elev)
Well:	Pioneer 26-11	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S2-T2N-R65W (Pioneer)			
Site Position:		Northing:	1,303,137.77 ft	Latitude:	40.162178
From:	Lat/Long	Easting:	3,244,962.27 ft	Longitude:	-104.623539
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.57 °

Well	Pioneer 26-11					
Well Position	+N/-S	0.0 ft	Northing:	1,303,137.76 ft	Latitude:	40.162178
	+E/-W	0.0 ft	Easting:	3,244,962.27 ft	Longitude:	-104.623539
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,849.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/13/2011	8.76	66.88	53,013

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	140.61	

Survey Program	Date	9/7/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
78.0	7,771.0	Survey #1 (DD)	MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
78.0	0.60	348.40	78.0	0.4	-0.1	-0.4	0.77	0.77		
172.0	0.80	159.90	172.0	0.3	0.0	-0.2	1.49	0.21		
265.0	1.80	158.80	265.0	-1.7	0.8	1.8	1.08	1.08		
358.0	3.60	155.30	357.9	-5.7	2.5	6.0	1.94	1.94		
449.0	5.40	157.40	448.6	-12.3	5.4	12.9	1.99	1.98		
539.0	7.20	154.30	538.0	-21.3	9.5	22.4	2.03	2.00		
627.0	7.90	145.70	625.3	-31.2	15.3	33.8	1.51	0.80		
715.0	9.10	141.00	712.3	-41.6	23.0	46.8	1.57	1.36		
807.0	9.80	136.00	803.1	-52.9	33.1	61.9	1.17	0.76		
906.0	9.60	136.90	900.6	-65.0	44.6	78.5	0.25	-0.20		
995.0	11.10	140.40	988.2	-77.0	55.1	94.5	1.83	1.69		
1,083.0	11.00	140.30	1,074.6	-90.0	65.9	111.4	0.12	-0.11		

Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Pioneer 26-11
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4871.0ft (Original Well Elev)
Site:	S2-T2N-R65W (Pioneer)	MD Reference:	KBE @ 4871.0ft (Original Well Elev)
Well:	Pioneer 26-11	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,173.0	11.00	140.00	1,162.9	-103.2	76.9	128.5	0.06	0.00	
1,261.0	10.90	139.40	1,249.3	-115.9	87.7	145.2	0.17	-0.11	
1,351.0	10.90	139.30	1,337.7	-128.9	98.8	162.3	0.02	0.00	
1,441.0	11.10	140.40	1,426.0	-142.0	109.8	179.4	0.32	0.22	
1,527.0	10.70	140.60	1,510.5	-154.5	120.2	195.7	0.47	-0.47	
1,615.0	10.60	140.70	1,597.0	-167.1	130.5	212.0	0.12	-0.11	
1,705.0	10.10	138.10	1,685.5	-179.4	141.0	228.1	0.76	-0.56	
1,792.0	10.80	134.20	1,771.1	-190.8	151.9	243.8	1.14	0.80	
1,882.0	9.80	132.70	1,859.6	-201.8	163.6	259.8	1.15	-1.11	
1,970.0	10.80	136.40	1,946.2	-212.9	174.8	275.4	1.36	1.14	
2,060.0	10.00	134.60	2,034.7	-224.5	186.2	291.6	0.96	-0.89	
2,149.0	9.10	137.90	2,122.5	-235.1	196.4	306.3	1.18	-1.01	
2,238.0	9.40	144.00	2,210.3	-246.2	205.4	320.6	1.15	0.34	
2,326.0	9.60	145.50	2,297.1	-258.1	213.8	335.1	0.36	0.23	
2,414.0	10.50	146.10	2,383.8	-270.8	222.4	350.4	1.03	1.02	
2,503.0	9.00	146.20	2,471.5	-283.3	230.8	365.4	1.69	-1.69	
2,590.0	9.40	141.90	2,557.4	-294.5	239.0	379.3	0.91	0.46	
2,678.0	9.50	142.70	2,644.2	-306.0	247.8	393.7	0.19	0.11	
2,767.0	9.90	138.30	2,731.9	-317.5	257.3	408.7	0.95	0.45	
2,856.0	10.20	144.10	2,819.5	-329.6	267.0	424.2	1.19	0.34	
2,945.0	11.10	145.00	2,907.0	-343.0	276.6	440.6	1.03	1.01	
3,033.0	11.20	141.70	2,993.3	-356.7	286.7	457.6	0.73	0.11	
3,122.0	12.00	139.30	3,080.5	-370.5	298.1	475.5	1.05	0.90	
3,210.0	11.00	139.10	3,166.7	-383.8	309.6	493.0	1.14	-1.14	
3,298.0	9.70	137.80	3,253.3	-395.6	320.1	508.8	1.50	-1.48	
3,386.0	9.80	139.20	3,340.0	-406.8	329.9	523.7	0.29	0.11	
3,475.0	9.40	137.50	3,427.8	-417.8	339.8	538.6	0.55	-0.45	
3,563.0	9.20	136.60	3,514.6	-428.3	349.5	552.8	0.28	-0.23	
3,653.0	9.20	134.90	3,603.5	-438.6	359.5	567.1	0.30	0.00	
3,741.0	9.50	140.00	3,690.3	-449.1	369.2	581.4	1.00	0.34	
3,829.0	9.80	137.80	3,777.1	-460.2	378.9	596.1	0.54	0.34	
3,917.0	10.50	136.50	3,863.7	-471.6	389.4	611.6	0.84	0.80	
4,006.0	10.60	136.00	3,951.2	-483.3	400.7	627.8	0.15	0.11	
4,094.0	10.20	132.20	4,037.7	-494.4	412.1	643.6	0.90	-0.45	
4,183.0	10.50	140.00	4,125.3	-505.9	423.1	659.5	1.61	0.34	
4,271.0	8.90	132.80	4,212.0	-516.7	433.3	674.3	2.28	-1.82	
4,357.0	10.20	138.30	4,296.9	-526.9	443.2	688.5	1.85	1.51	
4,445.0	9.20	139.30	4,383.6	-538.0	453.0	703.3	1.15	-1.14	
4,533.0	9.50	134.90	4,470.4	-548.5	462.7	717.5	0.88	0.34	
4,622.0	10.50	133.70	4,558.1	-559.3	473.8	732.9	1.15	1.12	
4,711.0	11.30	139.00	4,645.5	-571.5	485.4	749.7	1.44	0.90	
4,800.0	9.80	136.20	4,733.0	-583.5	496.4	765.9	1.78	-1.69	
4,887.0	9.90	142.40	4,818.7	-594.8	506.0	780.8	1.22	0.11	
4,977.0	10.50	137.50	4,907.3	-607.0	516.3	796.7	1.17	0.67	
5,063.0	9.70	138.30	4,991.9	-618.1	526.4	811.8	0.94	-0.93	
5,152.0	9.80	143.80	5,079.6	-629.8	535.9	826.8	1.05	0.11	
5,239.0	9.40	149.10	5,165.4	-641.9	543.9	841.3	1.11	-0.46	
5,327.0	8.00	143.80	5,252.4	-653.0	551.2	854.5	1.83	-1.59	
5,413.0	6.60	136.60	5,337.7	-661.4	558.1	865.4	1.94	-1.63	
5,502.0	4.90	137.90	5,426.3	-668.0	564.2	874.3	1.92	-1.91	
5,591.0	3.70	145.00	5,515.0	-673.2	568.4	881.0	1.47	-1.35	
5,679.0	3.10	152.80	5,602.9	-677.6	571.1	886.1	0.86	-0.68	
5,767.0	2.70	154.50	5,690.7	-681.6	573.1	890.4	0.46	-0.45	

Cathedral Energy Services

Survey Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Pioneer 26-11
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4871.0ft (Original Well Elev)
Site:	S2-T2N-R65W (Pioneer)	MD Reference:	KBE @ 4871.0ft (Original Well Elev)
Well:	Pioneer 26-11	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,854.0	2.00	154.90	5,777.7	-684.8	574.6	893.9	0.80	-0.80	
5,941.0	1.60	159.60	5,864.6	-687.3	575.7	896.5	0.49	-0.46	
6,031.0	1.30	195.00	5,954.6	-689.5	575.9	898.3	1.03	-0.33	
6,121.0	1.90	212.60	6,044.6	-691.7	574.8	899.4	0.85	0.67	
6,210.0	1.20	257.90	6,133.5	-693.2	573.1	899.4	1.53	-0.79	
6,298.0	1.00	252.50	6,221.5	-693.6	571.5	898.7	0.26	-0.23	
6,388.0	0.80	248.20	6,311.5	-694.1	570.1	898.2	0.23	-0.22	
6,477.0	0.70	242.20	6,400.5	-694.5	569.1	897.9	0.14	-0.11	
6,566.0	0.70	227.20	6,489.5	-695.2	568.2	897.8	0.21	0.00	
6,656.0	0.50	217.40	6,579.5	-695.9	567.5	898.0	0.25	-0.22	
6,744.0	0.40	222.30	6,667.5	-696.4	567.1	898.1	0.12	-0.11	
6,833.0	0.50	181.20	6,756.5	-697.0	566.9	898.4	0.37	0.11	
6,923.0	0.40	183.30	6,846.5	-697.7	566.9	899.0	0.11	-0.11	
7,012.0	0.40	182.30	6,935.5	-698.3	566.8	899.4	0.01	0.00	
7,100.0	0.50	185.50	7,023.5	-699.0	566.8	899.9	0.12	0.11	
7,188.0	0.40	204.10	7,111.5	-699.7	566.6	900.3	0.20	-0.11	
7,276.0	0.70	198.10	7,199.5	-700.5	566.3	900.7	0.35	0.34	
7,365.0	0.80	207.90	7,288.5	-701.5	565.9	901.3	0.18	0.11	
7,454.0	1.10	224.90	7,377.5	-702.7	565.0	901.6	0.46	0.34	
7,542.0	0.90	219.90	7,465.4	-703.8	563.9	901.8	0.25	-0.23	
7,630.0	0.70	210.60	7,553.4	-704.8	563.2	902.1	0.27	-0.23	
7,721.0	0.90	221.70	7,644.4	-705.8	562.5	902.4	0.28	0.22	Last Cathedral Survey @ 7,721' MD
7,771.0	0.90	221.70	7,694.4	-706.4	561.9	902.6	0.00	0.00	Projection to Bit @ 7,771' MD

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									
Pioneer 26-11 TGT	0.00	0.00	6,309.0	-696.5	578.0	1,302,447.02	3,245,547.13	40.160266	-104.621471
- survey misses target center by 8.2ft at 6385.4ft MD (6308.9 TVD, -694.1 N, 570.2 E)									
- Point									
Pioneer 26-11 BHL	0.00	0.00	7,699.0	-696.5	578.0	1,302,447.02	3,245,547.13	40.160266	-104.621471
- survey misses target center by 19.4ft at 7771.0ft MD (7694.4 TVD, -706.4 N, 561.9 E)									
- Circle (radius 50.0)									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
7,721.0	7,644.4	-705.8	562.5	Last Cathedral Survey @ 7,721' MD	
7,771.0	7,694.4	-706.4	561.9	Projection to Bit @ 7,771' MD	

Checked By: _____ Approved By: _____ Date: _____