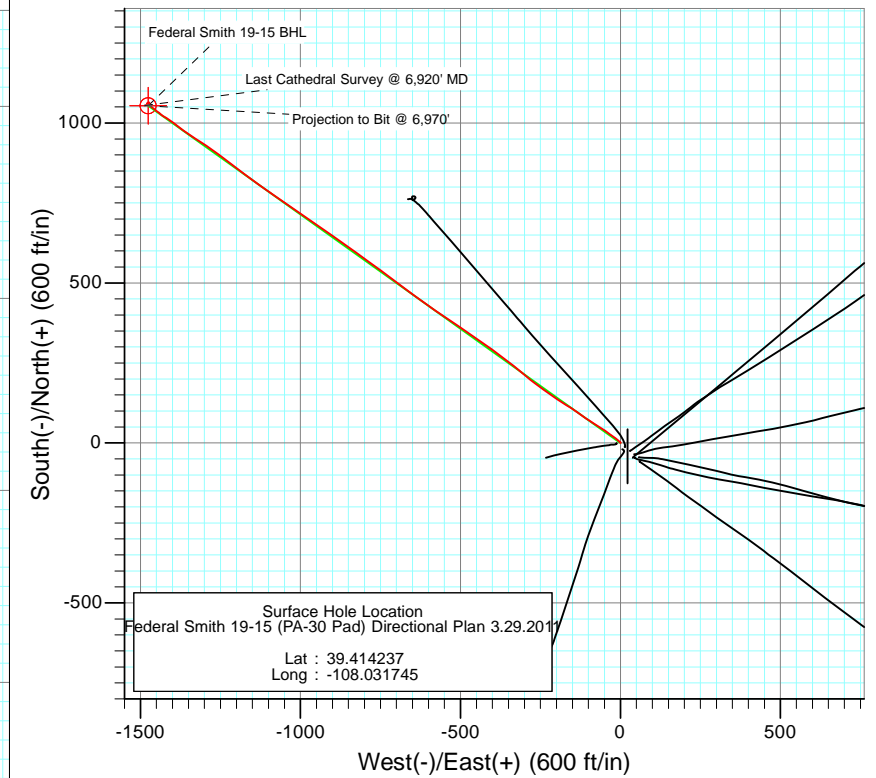
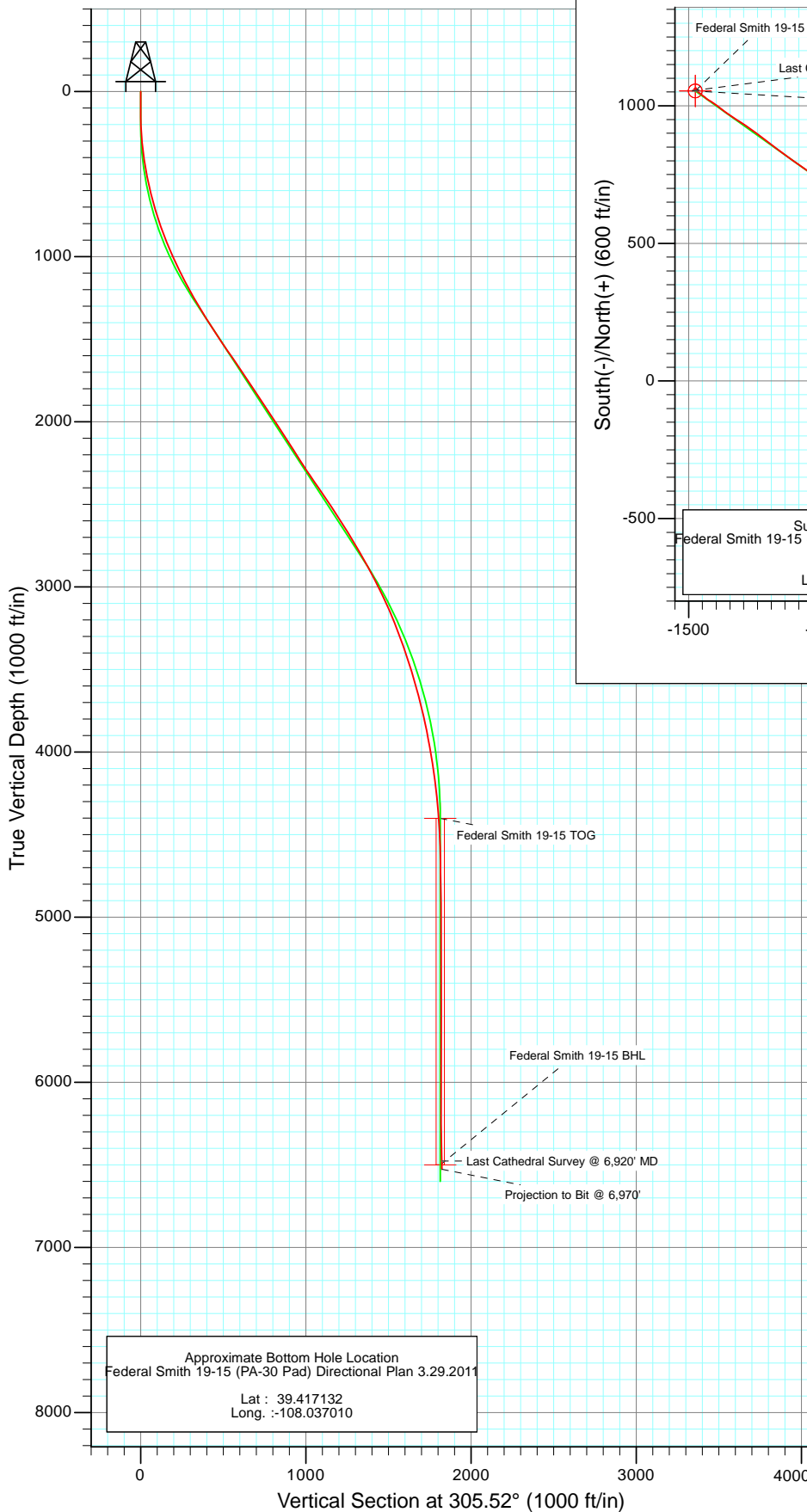




Project: S. Piceance (Parachute)
 Site: SESE 19-7S-95W (PA-30 Pad)
 Well: Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011
 Wellbore: DD
 Design: FINAL



Azimuths to True North
 Magnetic North: 10.38°

Magnetic Field
 Strength: 52223.7snT
 Dip Angle: 65.67°
 Date: 3/29/2011
 Model: IGRF2010

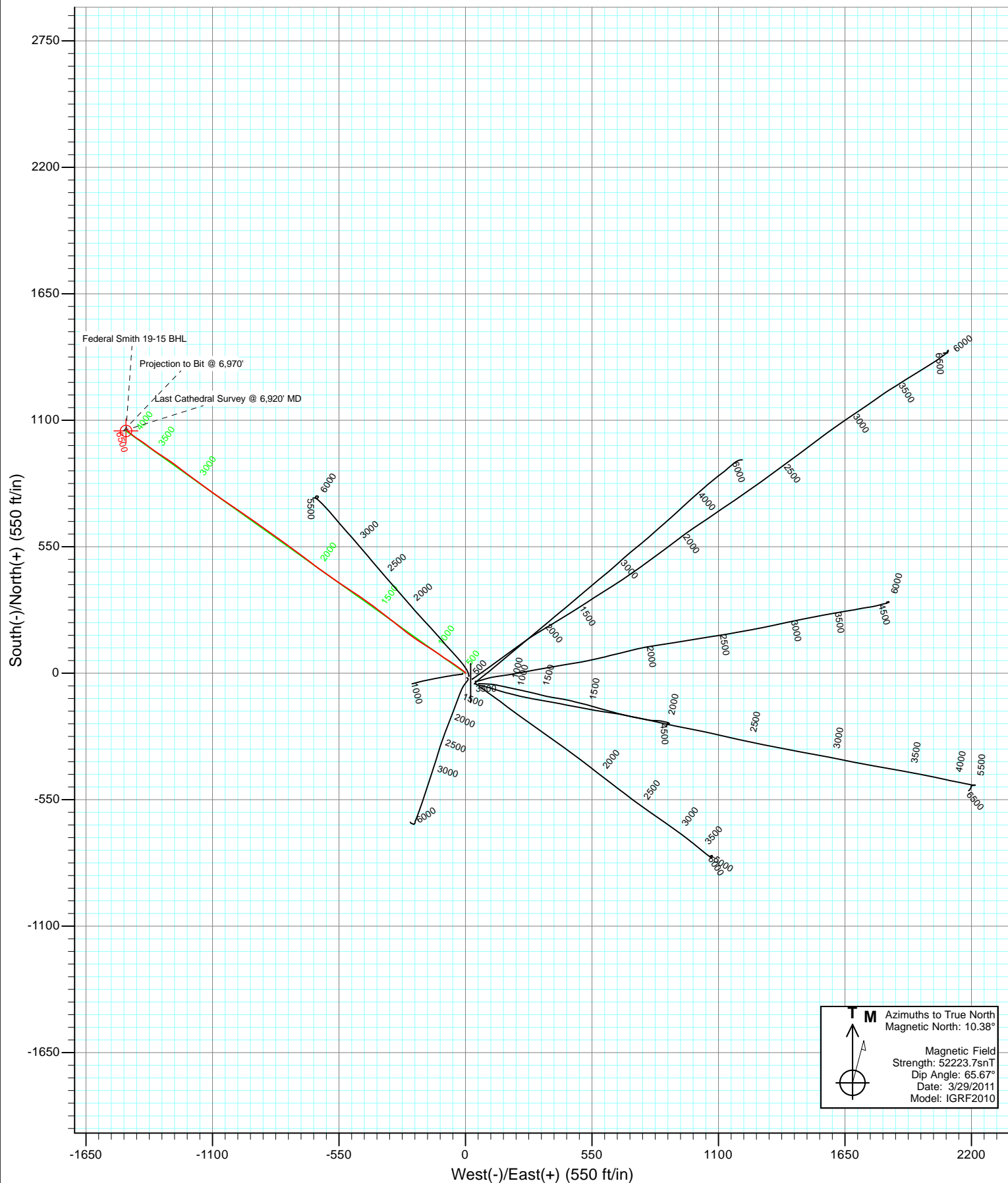
DESIGN DETAILS: DD

115381/109055 (SH): 115491/119355 (MH): SC
 WELL @ 5827.0ft (Original Well Elev)

Target	Azimuth	Origin	N/S	E/W	From TVD
Federal Smith 19-15 BH	05.52	Slot	0.0	0.0	0.0

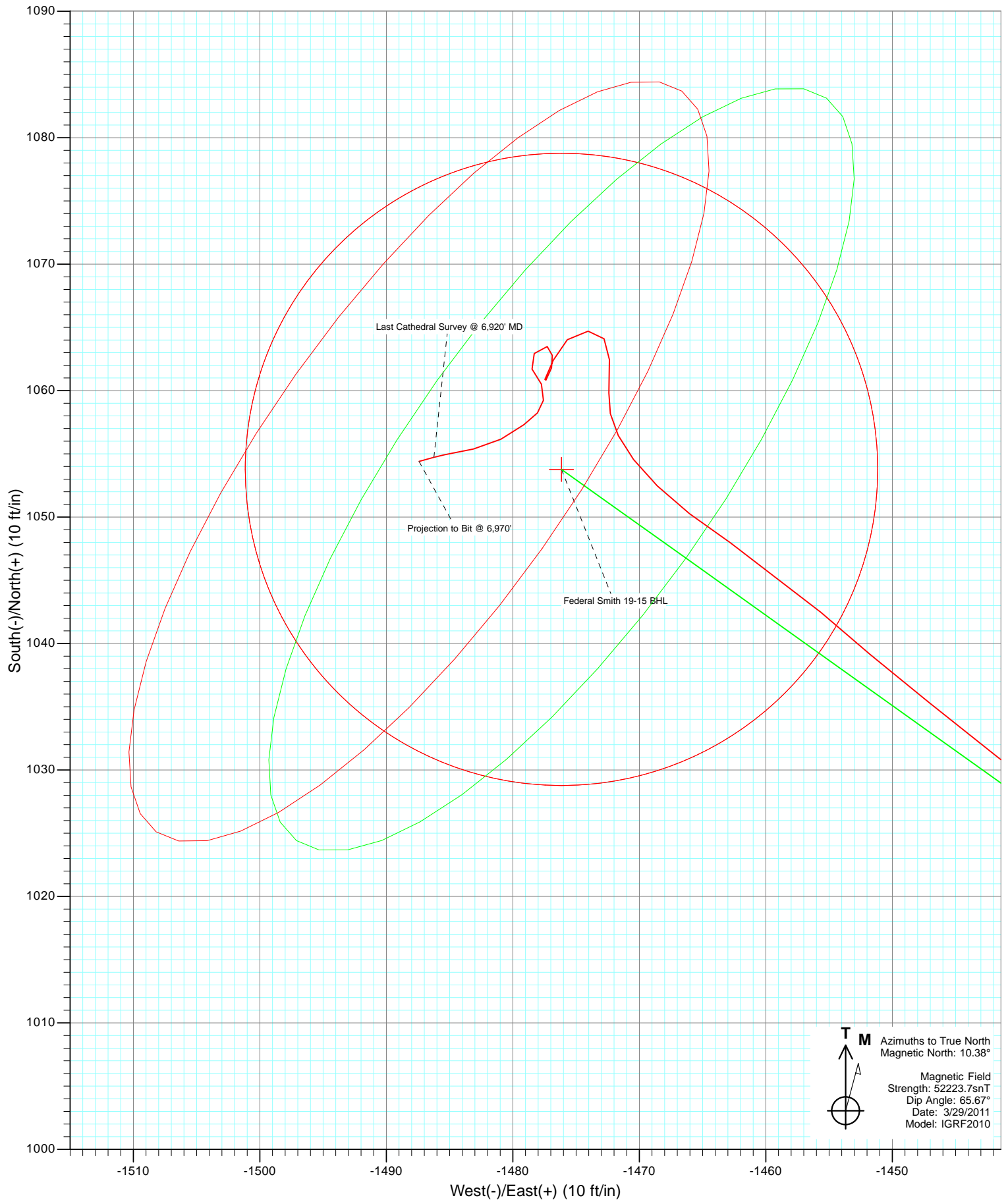


Project: S. Piceance (Parachute)
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Project: S. Piceance (Parachute)
Site: SESE 19-7S-95W (PA-30 Pad)
Well: Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal Smith 19-15 (PA-30 Pad) Directional
Project:	S. Piceance (Parachute)	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Well:	Federal Smith 19-15 (PA-30 Pad) Directional	North Reference:	True
Wellbore:	Plan 3.29.2011	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	SESE 19-7S-95W (PA-30 Pad)			
Site Position:		Northing:	1,585,669.17 ft	Latitude: 39.414060
From:	Lat/Long	Easting:	2,284,869.32 ft	Longitude: -108.031520
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.60 °

Well	Federal Smith 19-15 (PA-30 Pad) Directional Plan 3.29.2011			
Well Position	+N/-S	0.0 ft	Northing:	1,585,735.38 ft
	+E/-W	0.0 ft	Easting:	2,284,807.57 ft
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft
			Ground Level:	5,805.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/29/2011	10.39	65.67	52,224

Design	DD			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	305.52

Survey Program	Date	11/2/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
95.0	1,040.0	Survey #1 (DD)	MWD	Geolink MWD
1,162.0	6,970.0	Survey #2 (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	
95.0	0.70	25.30	95.0	0.5	0.2	0.1	0.74	0.74	
127.0	0.80	21.80	127.0	0.9	0.4	0.2	0.34	0.31	
158.0	1.00	301.60	158.0	1.3	0.3	0.5	3.77	0.65	
188.0	1.80	333.40	188.0	1.8	-0.2	1.2	3.62	2.67	
219.0	2.40	317.10	219.0	2.7	-0.8	2.3	2.71	1.94	
250.0	3.30	302.90	249.9	3.7	-2.0	3.8	3.67	2.90	
280.0	5.00	306.20	279.8	4.9	-3.8	6.0	5.72	5.67	
311.0	5.40	312.80	310.7	6.7	-6.0	8.8	2.32	1.29	
356.0	6.70	310.90	355.5	9.9	-9.5	13.5	2.92	2.89	
402.0	7.80	305.90	401.1	13.5	-14.1	19.3	2.75	2.39	
449.0	9.70	308.40	447.5	17.8	-19.7	26.4	4.12	4.04	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal Smith 19-15 (PA-30 Pad) Directional
Project:	S. Piceance (Parachute)	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Well:	Federal Smith 19-15 (PA-30 Pad) Directional	North Reference:	True
Wellbore:	Open 3.29.2011	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
495.0	10.50	304.10	492.8	22.5	-26.3	34.5	2.39	1.74	
541.0	12.50	305.80	537.9	27.8	-33.8	43.6	4.41	4.35	
587.0	13.10	304.60	582.8	33.7	-42.1	53.8	1.43	1.30	
679.0	15.40	304.00	671.9	46.4	-60.8	76.5	2.51	2.50	
771.0	17.00	301.50	760.3	60.3	-82.4	102.1	1.90	1.74	
863.0	20.50	304.90	847.4	76.5	-107.1	131.6	3.98	3.80	
956.0	22.80	304.80	933.8	96.1	-135.2	165.9	2.47	2.47	
1,040.0	24.50	301.50	1,010.8	114.5	-163.5	199.6	2.56	2.02	Last Cathedral Survey @ 1,040' MD
1,162.0	26.90	304.10	1,120.7	143.2	-207.9	252.4	2.17	1.97	
1,257.0	28.20	306.80	1,204.9	168.7	-243.7	296.3	1.90	1.37	
1,352.0	30.70	308.20	1,287.6	197.2	-280.7	343.0	2.73	2.63	
1,447.0	32.20	309.30	1,368.7	228.2	-319.3	392.5	1.69	1.58	
1,543.0	33.20	308.50	1,449.5	260.8	-359.7	444.3	1.13	1.04	
1,638.0	33.80	305.40	1,528.7	292.3	-401.6	496.7	1.91	0.63	
1,734.0	35.40	305.00	1,607.7	323.7	-446.2	551.2	1.68	1.67	
1,829.0	34.30	304.00	1,685.7	354.4	-490.9	605.5	1.30	-1.16	
1,925.0	32.90	303.10	1,765.6	383.8	-535.2	658.6	1.55	-1.46	
2,021.0	34.10	305.60	1,845.7	413.7	-578.9	711.5	1.90	1.25	
2,115.0	32.50	304.90	1,924.2	443.5	-621.0	763.1	1.75	-1.70	
2,210.0	33.40	307.20	2,004.0	473.9	-662.8	814.8	1.62	0.95	
2,305.0	34.40	307.00	2,082.8	505.9	-705.0	867.7	1.06	1.05	
2,401.0	32.30	306.50	2,163.0	537.5	-747.3	920.5	2.21	-2.19	
2,496.0	31.90	306.00	2,243.5	567.3	-788.0	971.0	0.51	-0.42	
2,592.0	34.10	305.50	2,324.0	597.8	-830.5	1,023.3	2.31	2.29	
2,687.0	35.30	305.40	2,402.1	629.2	-874.5	1,077.3	1.26	1.26	
2,783.0	34.00	305.20	2,481.1	660.8	-919.1	1,131.9	1.36	-1.35	
2,878.0	33.20	304.70	2,560.2	690.9	-962.2	1,184.5	0.89	-0.84	
2,973.0	31.60	303.90	2,640.4	719.6	-1,004.2	1,235.4	1.74	-1.68	
3,069.0	30.80	305.10	2,722.5	747.7	-1,045.2	1,285.1	1.06	-0.83	
3,165.0	29.70	304.90	2,805.4	775.5	-1,084.8	1,333.5	1.15	-1.15	
3,260.0	29.00	305.10	2,888.2	802.2	-1,122.9	1,380.0	0.74	-0.74	
3,356.0	26.80	307.20	2,973.1	828.6	-1,159.2	1,424.9	2.51	-2.29	
3,451.0	25.80	306.30	3,058.3	853.8	-1,192.9	1,467.0	1.13	-1.05	
3,547.0	23.10	307.20	3,145.6	877.6	-1,224.8	1,506.7	2.84	-2.81	
3,642.0	21.30	307.20	3,233.6	899.3	-1,253.4	1,542.6	1.89	-1.89	
3,738.0	19.90	305.50	3,323.4	919.3	-1,280.6	1,576.4	1.59	-1.46	
3,833.0	18.30	303.20	3,413.2	936.9	-1,306.2	1,607.5	1.86	-1.68	
3,929.0	17.80	302.00	3,504.5	952.9	-1,331.3	1,637.2	0.65	-0.52	
4,024.0	15.50	306.30	3,595.5	968.1	-1,353.8	1,664.4	2.74	-2.42	
4,120.0	14.40	306.90	3,688.3	982.9	-1,373.7	1,689.1	1.16	-1.15	
4,215.0	12.70	306.10	3,780.6	996.1	-1,391.6	1,711.4	1.80	-1.79	
4,310.0	11.40	304.30	3,873.5	1,007.6	-1,407.8	1,731.2	1.42	-1.37	
4,406.0	10.10	302.30	3,967.8	1,017.4	-1,422.7	1,749.1	1.41	-1.35	
4,502.0	9.40	307.50	4,062.4	1,026.7	-1,436.1	1,765.3	1.17	-0.73	
4,597.0	7.60	308.90	4,156.4	1,035.4	-1,447.1	1,779.4	1.91	-1.89	
4,693.0	5.70	311.20	4,251.7	1,042.5	-1,455.6	1,790.4	2.00	-1.98	
4,788.0	5.20	303.50	4,346.3	1,048.0	-1,462.8	1,799.4	0.93	-0.53	
4,883.0	3.70	314.30	4,441.0	1,052.5	-1,468.6	1,806.8	1.80	-1.58	
4,979.0	2.40	334.20	4,536.9	1,056.5	-1,471.7	1,811.6	1.73	-1.35	
5,074.0	1.90	4.50	4,631.8	1,059.8	-1,472.4	1,814.1	1.29	-0.53	
5,169.0	1.30	355.40	4,726.8	1,062.5	-1,472.4	1,815.7	0.68	-0.63	
5,264.0	0.80	329.80	4,821.8	1,064.1	-1,472.8	1,817.0	0.71	-0.53	
5,360.0	1.10	271.10	4,917.8	1,064.7	-1,474.0	1,818.3	1.01	0.31	

Cathedral Energy Services

Survey Report

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Site:	SESE 19-7S-95W (PA-30 Pad)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Well:	Federal Smith 19-15 (PA-30 Pad) Directional	North Reference:	True
Wellbore:	Open 3.29.2011	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
5,455.0	1.20	226.60	5,012.7	1,064.0	-1,475.7	1,819.3	0.92	0.11	
5,551.0	1.20	202.50	5,108.7	1,062.4	-1,476.8	1,819.2	0.52	0.00	
5,646.0	0.80	205.30	5,203.7	1,060.9	-1,477.5	1,818.9	0.42	-0.42	
5,742.0	0.80	34.00	5,299.7	1,060.8	-1,477.4	1,818.8	1.66	0.00	
5,837.0	0.50	9.10	5,394.7	1,061.8	-1,476.9	1,819.0	0.43	-0.32	
5,932.0	0.70	359.80	5,489.7	1,062.8	-1,476.9	1,819.5	0.23	0.21	
6,027.0	0.50	286.60	5,584.7	1,063.5	-1,477.3	1,820.2	0.77	-0.21	
6,123.0	1.10	223.60	5,680.7	1,062.9	-1,478.3	1,820.8	1.02	0.62	
6,218.0	0.90	141.50	5,775.7	1,061.7	-1,478.5	1,820.2	1.39	-0.21	
6,313.0	0.80	155.60	5,870.7	1,060.5	-1,477.7	1,818.9	0.24	-0.11	
6,409.0	0.80	190.30	5,966.7	1,059.2	-1,477.6	1,818.0	0.50	0.00	
6,504.0	0.60	225.60	6,061.6	1,058.2	-1,478.1	1,817.8	0.49	-0.21	
6,600.0	1.10	230.70	6,157.6	1,057.3	-1,479.1	1,818.2	0.53	0.52	
6,695.0	1.50	243.00	6,252.6	1,056.2	-1,480.9	1,819.0	0.51	0.42	
6,790.0	1.30	259.00	6,347.6	1,055.4	-1,483.1	1,820.3	0.46	-0.21	
6,886.0	1.50	258.30	6,443.6	1,054.9	-1,485.4	1,821.9	0.21	0.21	
6,920.0	1.40	254.40	6,477.5	1,054.7	-1,486.2	1,822.5	0.41	-0.29	Last Cathedral Survey @ 6,920' MD
6,970.0	1.40	254.40	6,527.5	1,054.4	-1,487.4	1,823.2	0.00	0.00	Projection to Bit @ 6,970'

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									
Federal Smith 19-15 TO	0.00	0.00	4,402.0	1,053.8	-1,476.2	1,586,829.88	2,283,361.36	39.417130	-108.036970
- actual wellpath misses target center by 10.1ft at 4844.6ft MD (4402.7 TVD, 1050.7 N, -1466.6 E)									
- Point									
Federal Smith 19-15 BH	0.00	0.00	6,500.0	1,053.8	-1,476.2	1,586,829.88	2,283,361.36	39.417130	-108.036970
- actual wellpath misses target center by 24.6ft at 6920.0ft MD (6477.5 TVD, 1054.7 N, -1486.2 E)									
- Circle (radius 25.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,040.0	1,010.8	114.5	-163.5	Last Cathedral Survey @ 1,040' MD	
6,920.0	6,477.5	1,054.7	-1,486.2	Last Cathedral Survey @ 6,920' MD	
6,970.0	6,527.5	1,054.4	-1,487.4	Projection to Bit @ 6,970'	

Checked By: _____ Approved By: _____ Date: _____