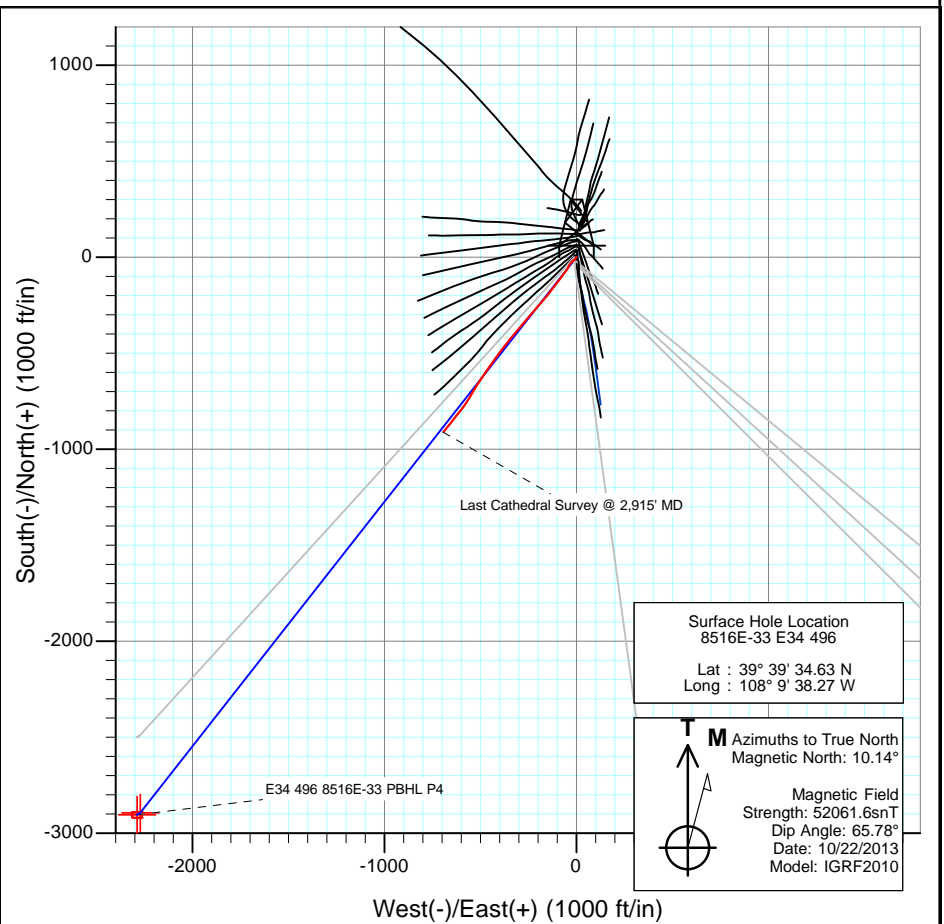
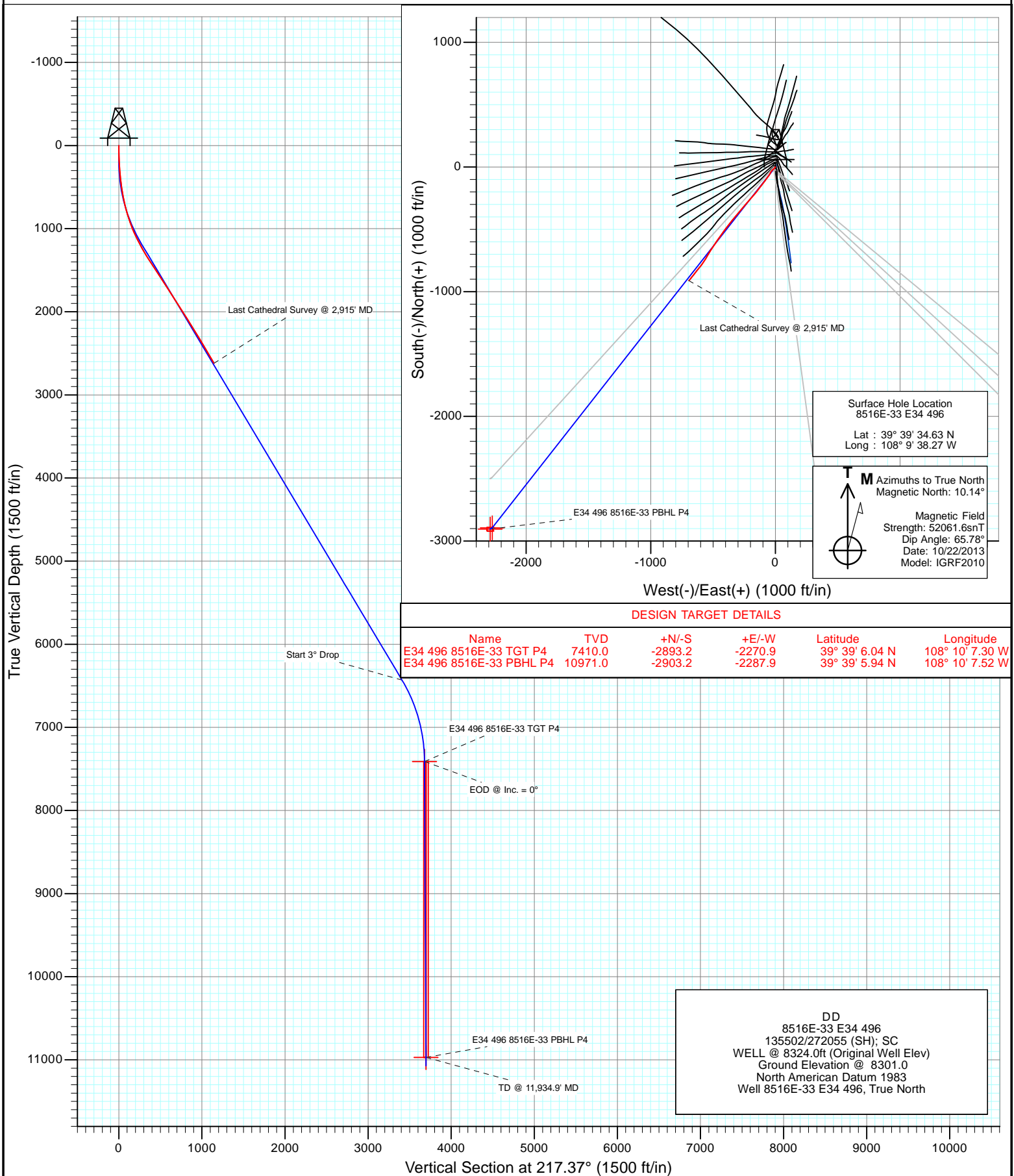




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8516E-33 E34 496
Wellbore: DD
Design: DD



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
E34 496 8516E-33 TGT P4	7410.0	-2893.2	-2270.9	39° 39' 6.04 N	108° 10' 7.30 W
E34 496 8516E-33 PBHL P4	10971.0	-2903.2	-2287.9	39° 39' 5.94 N	108° 10' 7.52 W

DD
8516E-33 E34 496
135502/272055 (SH); SC
WELL @ 8324.0ft (Original Well Elev)
Ground Elevation @ 8301.0
North American Datum 1983
Well 8516E-33 E34 496, True North

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8516E-33 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Original Well Elev)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Original Well Elev)
Well:	8516E-33 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	Story Gulch		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	E34 496 S33-T4S-R96W				
Site Position:		Northing:	1,676,257.20 ft	Latitude:	39° 39' 36.02 N
From:	Lat/Long	Easting:	2,251,040.13 ft	Longitude:	108° 9' 38.14 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.68 °

Well	8516E-33 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,116.89 ft	Latitude:	39° 39' 34.63 N
	+E/-W	0.0 ft	Easting:	2,251,025.85 ft	Longitude:	108° 9' 38.27 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,301.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/22/2013	10.14	65.78	52,062

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	217.37	

Survey Program	Date	10/24/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
328.0	2,915.0	Survey #1 (DD)	Geolink 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		
328.0	4.50	218.60	327.7	-10.1	-8.0	12.9	1.37	1.37		
419.0	6.90	228.50	418.2	-16.5	-14.4	21.8	2.84	2.64		
514.0	9.00	230.70	512.3	-25.0	-24.4	34.6	2.23	2.21		
603.0	10.30	210.40	600.1	-36.2	-33.8	49.3	4.07	1.46		
694.0	12.60	205.20	689.2	-52.2	-42.1	67.1	2.77	2.53		
786.0	15.60	218.50	778.5	-71.0	-54.1	89.3	4.78	3.26		
877.0	17.80	215.20	865.6	-92.0	-69.8	115.4	2.63	2.42		
971.0	20.40	217.30	954.5	-116.7	-88.0	146.2	2.86	2.77		
1,063.0	23.90	217.80	1,039.7	-144.2	-109.1	180.8	3.81	3.80		
1,154.0	26.30	216.80	1,122.1	-174.9	-132.5	219.4	2.68	2.64		
1,246.0	28.20	220.60	1,203.8	-207.8	-158.9	261.5	2.80	2.07		
1,337.0	30.50	220.80	1,283.2	-241.6	-187.9	306.1	2.53	2.53		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8516E-33 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Original Well Elev)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Original Well Elev)
Well:	8516E-33 E34 496	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
1,429.0	32.90	219.50	1,361.4	-278.5	-219.1	354.3	2.71	2.61	
1,520.0	33.00	222.10	1,437.8	-316.0	-251.4	403.7	1.56	0.11	
1,611.0	32.50	221.40	1,514.3	-352.7	-284.2	452.8	0.69	-0.55	
1,703.0	32.90	217.70	1,591.8	-391.0	-315.8	502.5	2.22	0.43	
1,794.0	33.40	219.10	1,668.0	-430.0	-346.7	552.2	1.00	0.55	
1,886.0	33.80	218.60	1,744.6	-469.7	-378.7	603.1	0.53	0.43	
1,977.0	33.10	216.50	1,820.5	-509.4	-409.3	653.3	1.49	-0.77	
2,069.0	33.20	215.20	1,897.5	-550.2	-438.7	703.6	0.78	0.11	
2,161.0	33.00	214.20	1,974.6	-591.5	-467.3	753.7	0.63	-0.22	
2,252.0	31.40	213.70	2,051.6	-631.7	-494.4	802.1	1.78	-1.76	
2,344.0	30.90	211.90	2,130.3	-671.7	-520.2	849.6	1.15	-0.54	
2,436.0	31.80	210.90	2,208.9	-712.6	-545.1	897.2	1.13	0.98	
2,527.0	31.70	213.10	2,286.3	-753.2	-570.5	944.8	1.28	-0.11	
2,619.0	31.60	218.30	2,364.6	-792.4	-598.6	993.1	2.97	-0.11	
2,711.0	31.00	218.00	2,443.2	-829.9	-628.2	1,040.8	0.67	-0.65	
2,802.0	30.50	217.90	2,521.4	-866.6	-656.8	1,087.4	0.55	-0.55	
2,894.0	30.90	219.90	2,600.6	-903.2	-686.3	1,134.3	1.19	0.43	
2,915.0	31.10	219.80	2,618.6	-911.5	-693.2	1,145.1	0.98	0.95	Last Cathedral Survey @ 2,915' 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									
E34 496 8516E-33 PBH	0.00	0.00	11,963.0	-2,998.9	-2,290.2	1,673,186.30	2,248,648.85	39° 39' 4.99 N	108° 10' 7.55 W
- survey misses target center by 9707.0ft at 2915.0ft MD (2618.6 TVD, -911.5 N, -693.2 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8516E-33 PBH	0.00	0.00	10,971.0	-2,903.2	-2,287.9	1,673,281.95	2,248,653.88	39° 39' 5.94 N	108° 10' 7.52 W
- survey misses target center by 8733.5ft at 2915.0ft MD (2618.6 TVD, -911.5 N, -693.2 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8516E-33 TGT	0.00	0.00	7,410.0	-2,893.2	-2,270.9	1,673,291.44	2,248,671.20	39° 39' 6.04 N	108° 10' 7.30 W
- survey misses target center by 5419.8ft at 2915.0ft MD (2618.6 TVD, -911.5 N, -693.2 E)									
- Point									
E34 496 8516E-33 TGT	0.00	0.00	7,331.0	-2,988.9	-2,275.2	1,673,195.89	2,248,664.15	39° 39' 5.09 N	108° 10' 7.36 W
- survey misses target center by 5387.5ft at 2915.0ft MD (2618.6 TVD, -911.5 N, -693.2 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,915.0	2,618.6	-911.5	-693.2	Last Cathedral Survey @ 2,915' MD

Checked By: _____ Approved By: _____ Date: _____