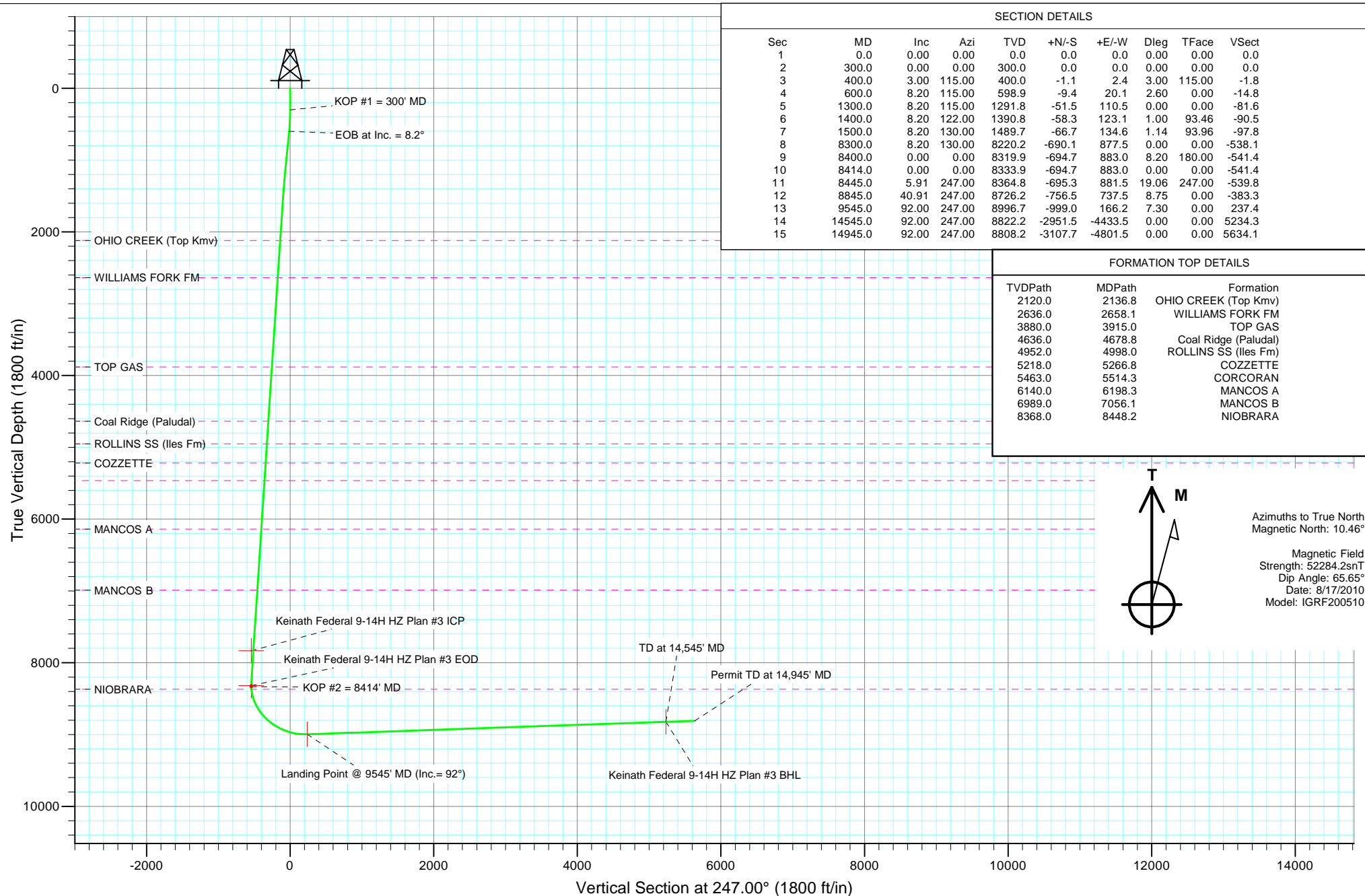


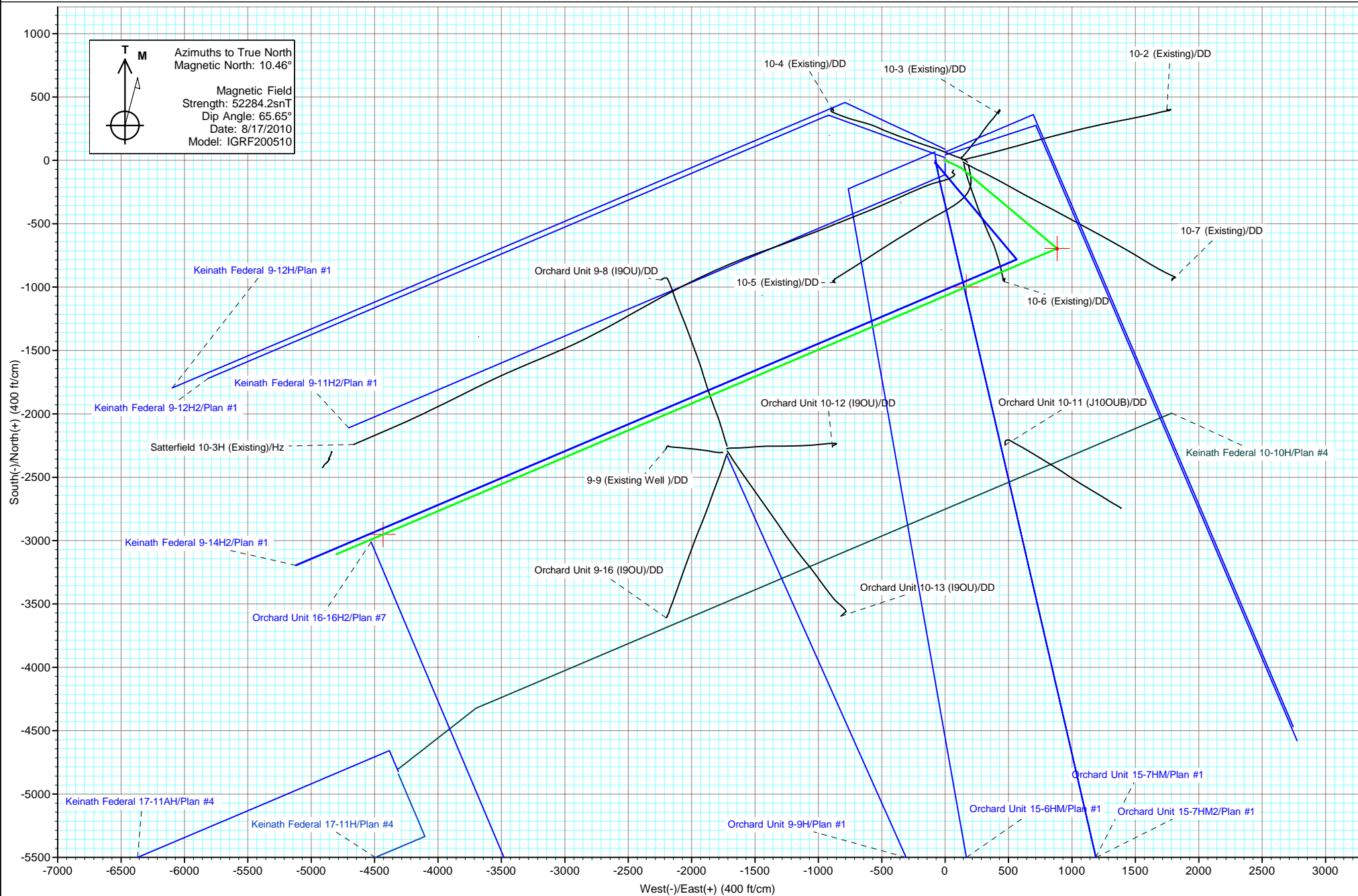


Project: Orchard
Site: NENW Sec10-T8S-R96W (C10OU)
Well: Keinath Federal 9-14H
Wellbore: HZ
Design: Plan #3





Project: Orchard
Site: NENW Sec10-T8S-R96W (C10OU)
Well: Keinath Federal 9-14H
Wellbore: HZ
Plan: Plan #3



Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Keinath Federal 9-14H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C100U)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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

Site		NENW Sec10-T8S-R96W (C10OU)			
Site Position:		Northing:	1,569,581.56 ft	Latitude:	39.368394
From:	Lat/Long	Easting:	2,265,333.69 ft	Longitude:	-108.099008
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.64 °

Well	Keinath Federal 9-14H					
Well Position	+N/-S	0.0 ft	Northing:	1,569,661.49 ft	Latitude:	39.368609
	+E/-W	0.0 ft	Easting:	2,265,269.89 ft	Longitude:	-108.099242
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,568.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	8/17/2010	10.47	65.65	52,284

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	247.00

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
400.0	3.00	115.00	400.0	-1.1	2.4	3.00	3.00	0.00	115.00	
600.0	8.20	115.00	598.9	-9.4	20.1	2.60	2.60	0.00	0.00	
1,300.0	8.20	115.00	1,291.8	-51.5	110.5	0.00	0.00	0.00	0.00	
1,400.0	8.20	122.00	1,390.8	-58.3	123.1	1.00	0.00	7.00	93.46	
1,500.0	8.20	130.00	1,489.7	-66.7	134.6	1.14	0.00	8.00	93.96	
8,300.0	8.20	130.00	8,220.2	-690.1	877.5	0.00	0.00	0.00	0.00	
8,400.0	0.00	0.00	8,319.9	-694.7	883.0	8.20	-8.20	0.00	180.00	
8,414.0	0.00	0.00	8,333.9	-694.7	883.0	0.00	0.00	0.00	0.00	
8,445.0	5.91	247.00	8,364.8	-695.3	881.5	19.06	19.06	0.00	247.00	
8,845.0	40.91	247.00	8,726.2	-756.5	737.5	8.75	8.75	0.00	0.00	
9,545.0	92.00	247.00	8,996.7	-999.0	166.2	7.30	7.30	0.00	0.00	
14,545.0	92.00	247.00	8,822.2	-2,951.5	-4,433.5	0.00	0.00	0.00	0.00	
14,945.0	92.00	247.00	8,808.2	-3,107.7	-4,801.5	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Keinath Federal 9-14H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C100U)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP #1 = 300' MD
400.0	3.00	115.00	400.0	-1.1	2.4	-1.8	3.00	3.00	
500.0	5.60	115.00	499.7	-4.3	9.2	-6.8	2.60	2.60	
600.0	8.20	115.00	598.9	-9.4	20.1	-14.8	2.60	2.60	EOB at Inc. = 8.2°
700.0	8.20	115.00	697.9	-15.4	33.0	-24.3	0.00	0.00	
800.0	8.20	115.00	796.9	-21.4	45.9	-33.9	0.00	0.00	
900.0	8.20	115.00	895.9	-27.4	58.8	-43.4	0.00	0.00	
1,000.0	8.20	115.00	994.8	-33.5	71.8	-53.0	0.00	0.00	
1,100.0	8.20	115.00	1,093.8	-39.5	84.7	-62.5	0.00	0.00	
1,200.0	8.20	115.00	1,192.8	-45.5	97.6	-72.1	0.00	0.00	
1,300.0	8.20	115.00	1,291.8	-51.5	110.5	-81.6	0.00	0.00	
1,400.0	8.20	122.00	1,390.8	-58.3	123.1	-90.5	1.00	0.00	
1,500.0	8.20	130.00	1,489.7	-66.7	134.6	-97.8	1.14	0.00	
1,600.0	8.20	130.00	1,588.7	-75.9	145.5	-104.3	0.00	0.00	
1,700.0	8.20	130.00	1,687.7	-85.0	156.4	-110.8	0.00	0.00	
1,800.0	8.20	130.00	1,786.7	-94.2	167.3	-117.2	0.00	0.00	
1,900.0	8.20	130.00	1,885.6	-103.4	178.3	-123.7	0.00	0.00	
2,000.0	8.20	130.00	1,984.6	-112.5	189.2	-130.2	0.00	0.00	
2,100.0	8.20	130.00	2,083.6	-121.7	200.1	-136.7	0.00	0.00	
2,136.8	8.20	130.00	2,120.0	-125.1	204.1	-139.0	0.00	0.00	OHIO CREEK (Top Kmv)
2,200.0	8.20	130.00	2,182.6	-130.9	211.0	-143.1	0.00	0.00	
2,300.0	8.20	130.00	2,281.6	-140.0	222.0	-149.6	0.00	0.00	
2,400.0	8.20	130.00	2,380.5	-149.2	232.9	-156.1	0.00	0.00	
2,500.0	8.20	130.00	2,479.5	-158.4	243.8	-162.6	0.00	0.00	
2,600.0	8.20	130.00	2,578.5	-167.6	254.7	-169.0	0.00	0.00	
2,658.1	8.20	130.00	2,636.0	-172.9	261.1	-172.8	0.00	0.00	WILLIAMS FORK FM
2,700.0	8.20	130.00	2,677.5	-176.7	265.7	-175.5	0.00	0.00	
2,800.0	8.20	130.00	2,776.4	-185.9	276.6	-182.0	0.00	0.00	
2,900.0	8.20	130.00	2,875.4	-195.1	287.5	-188.5	0.00	0.00	
3,000.0	8.20	130.00	2,974.4	-204.2	298.5	-194.9	0.00	0.00	
3,100.0	8.20	130.00	3,073.4	-213.4	309.4	-201.4	0.00	0.00	
3,200.0	8.20	130.00	3,172.4	-222.6	320.3	-207.9	0.00	0.00	
3,300.0	8.20	130.00	3,271.3	-231.7	331.2	-214.4	0.00	0.00	
3,400.0	8.20	130.00	3,370.3	-240.9	342.2	-220.8	0.00	0.00	
3,500.0	8.20	130.00	3,469.3	-250.1	353.1	-227.3	0.00	0.00	
3,600.0	8.20	130.00	3,568.3	-259.2	364.0	-233.8	0.00	0.00	
3,700.0	8.20	130.00	3,667.2	-268.4	374.9	-240.3	0.00	0.00	
3,800.0	8.20	130.00	3,766.2	-277.6	385.9	-246.7	0.00	0.00	
3,900.0	8.20	130.00	3,865.2	-286.7	396.8	-253.2	0.00	0.00	
3,915.0	8.20	130.00	3,880.0	-288.1	398.4	-254.2	0.00	0.00	TOP GAS
4,000.0	8.20	130.00	3,964.2	-295.9	407.7	-259.7	0.00	0.00	
4,100.0	8.20	130.00	4,063.2	-305.1	418.6	-266.2	0.00	0.00	
4,200.0	8.20	130.00	4,162.1	-314.2	429.6	-272.6	0.00	0.00	
4,300.0	8.20	130.00	4,261.1	-323.4	440.5	-279.1	0.00	0.00	
4,400.0	8.20	130.00	4,360.1	-332.6	451.4	-285.6	0.00	0.00	
4,500.0	8.20	130.00	4,459.1	-341.7	462.3	-292.1	0.00	0.00	
4,600.0	8.20	130.00	4,558.0	-350.9	473.3	-298.5	0.00	0.00	
4,678.8	8.20	130.00	4,636.0	-358.1	481.9	-303.6	0.00	0.00	Coal Ridge (Paludal)
4,700.0	8.20	130.00	4,657.0	-360.1	484.2	-305.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Keinath Federal 9-14H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C100U)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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)	Comments / Formations
4,800.0	8.20	130.00	4,756.0	-369.2	495.1	-311.5	0.00	0.00	
4,900.0	8.20	130.00	4,855.0	-378.4	506.0	-318.0	0.00	0.00	
4,998.0	8.20	130.00	4,952.0	-387.4	516.8	-324.3	0.00	0.00	ROLLINS SS (Iles Fm)
5,000.0	8.20	130.00	4,954.0	-387.6	517.0	-324.4	0.00	0.00	
5,100.0	8.20	130.00	5,052.9	-396.8	527.9	-330.9	0.00	0.00	
5,200.0	8.20	130.00	5,151.9	-405.9	538.8	-337.4	0.00	0.00	
5,266.8	8.20	130.00	5,218.0	-412.0	546.1	-341.7	0.00	0.00	COZZETTE
5,300.0	8.20	130.00	5,250.9	-415.1	549.8	-343.9	0.00	0.00	
5,400.0	8.20	130.00	5,349.9	-424.3	560.7	-350.3	0.00	0.00	
5,500.0	8.20	130.00	5,448.8	-433.4	571.6	-356.8	0.00	0.00	
5,514.3	8.20	130.00	5,463.0	-434.7	573.2	-357.7	0.00	0.00	CORCORAN
5,600.0	8.20	130.00	5,547.8	-442.6	582.5	-363.3	0.00	0.00	
5,700.0	8.20	130.00	5,646.8	-451.8	593.5	-369.8	0.00	0.00	
5,800.0	8.20	130.00	5,745.8	-460.9	604.4	-376.2	0.00	0.00	
5,900.0	8.20	130.00	5,844.8	-470.1	615.3	-382.7	0.00	0.00	
6,000.0	8.20	130.00	5,943.7	-479.3	626.2	-389.2	0.00	0.00	
6,100.0	8.20	130.00	6,042.7	-488.4	637.2	-395.7	0.00	0.00	
6,198.3	8.20	130.00	6,140.0	-497.4	647.9	-402.0	0.00	0.00	MANCOS A
6,200.0	8.20	130.00	6,141.7	-497.6	648.1	-402.1	0.00	0.00	
6,300.0	8.20	130.00	6,240.7	-506.8	659.0	-408.6	0.00	0.00	
6,400.0	8.20	130.00	6,339.6	-515.9	669.9	-415.1	0.00	0.00	
6,500.0	8.20	130.00	6,438.6	-525.1	680.9	-421.6	0.00	0.00	
6,600.0	8.20	130.00	6,537.6	-534.3	691.8	-428.0	0.00	0.00	
6,700.0	8.20	130.00	6,636.6	-543.4	702.7	-434.5	0.00	0.00	
6,800.0	8.20	130.00	6,735.5	-552.6	713.6	-441.0	0.00	0.00	
6,900.0	8.20	130.00	6,834.5	-561.8	724.6	-447.5	0.00	0.00	
7,000.0	8.20	130.00	6,933.5	-570.9	735.5	-453.9	0.00	0.00	
7,056.1	8.20	130.00	6,989.0	-576.1	741.6	-457.6	0.00	0.00	MANCOS B
7,100.0	8.20	130.00	7,032.5	-580.1	746.4	-460.4	0.00	0.00	
7,200.0	8.20	130.00	7,131.5	-589.3	757.3	-466.9	0.00	0.00	
7,300.0	8.20	130.00	7,230.4	-598.4	768.3	-473.4	0.00	0.00	
7,400.0	8.20	130.00	7,329.4	-607.6	779.2	-479.8	0.00	0.00	
7,500.0	8.20	130.00	7,428.4	-616.8	790.1	-486.3	0.00	0.00	
7,600.0	8.20	130.00	7,527.4	-626.0	801.0	-492.8	0.00	0.00	
7,700.0	8.20	130.00	7,626.3	-635.1	812.0	-499.3	0.00	0.00	
7,800.0	8.20	130.00	7,725.3	-644.3	822.9	-505.7	0.00	0.00	
7,900.0	8.20	130.00	7,824.3	-653.5	833.8	-512.2	0.00	0.00	
7,918.7	8.20	130.00	7,842.8	-655.2	835.9	-513.4	0.00	0.00	Keinath Federal 9-14H HZ Plan #3 ICP
8,000.0	8.20	130.00	7,923.3	-662.6	844.8	-518.7	0.00	0.00	Start Drop -2.05
8,100.0	8.20	130.00	8,022.3	-671.8	855.7	-525.2	0.00	0.00	
8,200.0	8.20	130.00	8,121.2	-681.0	866.6	-531.6	0.00	0.00	
8,300.0	8.20	130.00	8,220.2	-690.1	877.5	-538.1	0.00	0.00	
8,400.0	0.00	0.00	8,319.9	-694.7	883.0	-541.4	8.20	-8.20	EOD at Inc. = 0° - Keinath Federal 9-14H HZ PI
8,414.0	0.00	0.00	8,333.9	-694.7	883.0	-541.4	0.00	0.00	KOP #2 = 8414' MD
8,445.0	5.91	247.00	8,364.8	-695.3	881.5	-539.8	19.06	19.06	
8,448.2	6.19	247.00	8,368.0	-695.5	881.2	-539.4	8.75	8.75	NIOBRARA
8,500.0	10.72	247.00	8,419.2	-698.5	874.2	-531.8	8.75	8.75	
8,600.0	19.47	247.00	8,515.7	-708.6	850.3	-505.8	8.75	8.75	
8,700.0	28.22	247.00	8,607.1	-724.4	813.1	-465.4	8.75	8.75	
8,800.0	36.97	247.00	8,691.2	-745.4	763.5	-411.6	8.75	8.75	
8,845.0	40.91	247.00	8,726.2	-756.5	737.5	-383.3	8.75	8.75	
8,900.0	44.92	247.00	8,766.5	-771.1	703.0	-345.9	7.30	7.30	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C10OU)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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)	Comments / Formations
9,000.0	52.22	247.00	8,832.6	-800.4	634.1	-270.9	7.30	7.30	
9,100.0	59.52	247.00	8,888.7	-832.7	557.9	-188.2	7.30	7.30	
9,200.0	66.82	247.00	8,933.8	-867.6	475.8	-99.0	7.30	7.30	
9,300.0	74.12	247.00	8,967.2	-904.4	389.1	-4.8	7.30	7.30	
9,400.0	81.42	247.00	8,988.4	-942.5	299.2	92.8	7.30	7.30	
9,500.0	88.72	247.00	8,996.9	-981.4	207.6	192.4	7.30	7.30	
9,545.0	92.00	247.00	8,996.7	-999.0	166.2	237.4	7.30	7.30	Landing Point @ 9545' MD (Inc.= 92°) - Keinath
9,600.0	92.00	247.00	8,994.7	-1,020.5	115.6	292.3	0.00	0.00	
9,700.0	92.00	247.00	8,991.3	-1,059.5	23.6	392.3	0.00	0.00	
9,800.0	92.00	247.00	8,987.8	-1,098.6	-68.4	492.2	0.00	0.00	
9,900.0	92.00	247.00	8,984.3	-1,137.6	-160.4	592.2	0.00	0.00	
10,000.0	92.00	247.00	8,980.8	-1,176.7	-252.4	692.1	0.00	0.00	
10,100.0	92.00	247.00	8,977.3	-1,215.7	-344.4	792.0	0.00	0.00	
10,200.0	92.00	247.00	8,973.8	-1,254.8	-436.4	892.0	0.00	0.00	
10,300.0	92.00	247.00	8,970.3	-1,293.8	-528.4	991.9	0.00	0.00	
10,400.0	92.00	247.00	8,966.8	-1,332.9	-620.4	1,091.9	0.00	0.00	
10,500.0	92.00	247.00	8,963.3	-1,371.9	-712.4	1,191.8	0.00	0.00	
10,600.0	92.00	247.00	8,959.8	-1,411.0	-804.4	1,291.7	0.00	0.00	
10,700.0	92.00	247.00	8,956.4	-1,450.0	-896.4	1,391.7	0.00	0.00	
10,800.0	92.00	247.00	8,952.9	-1,489.1	-988.4	1,491.6	0.00	0.00	
10,900.0	92.00	247.00	8,949.4	-1,528.1	-1,080.3	1,591.5	0.00	0.00	
11,000.0	92.00	247.00	8,945.9	-1,567.2	-1,172.3	1,691.5	0.00	0.00	
11,100.0	92.00	247.00	8,942.4	-1,606.2	-1,264.3	1,791.4	0.00	0.00	
11,200.0	92.00	247.00	8,938.9	-1,645.3	-1,356.3	1,891.4	0.00	0.00	
11,300.0	92.00	247.00	8,935.4	-1,684.3	-1,448.3	1,991.3	0.00	0.00	
11,400.0	92.00	247.00	8,931.9	-1,723.4	-1,540.3	2,091.2	0.00	0.00	
11,500.0	92.00	247.00	8,928.4	-1,762.4	-1,632.3	2,191.2	0.00	0.00	
11,600.0	92.00	247.00	8,924.9	-1,801.5	-1,724.3	2,291.1	0.00	0.00	
11,700.0	92.00	247.00	8,921.5	-1,840.5	-1,816.3	2,391.1	0.00	0.00	
11,800.0	92.00	247.00	8,918.0	-1,879.6	-1,908.3	2,491.0	0.00	0.00	
11,900.0	92.00	247.00	8,914.5	-1,918.6	-2,000.3	2,590.9	0.00	0.00	
12,000.0	92.00	247.00	8,911.0	-1,957.7	-2,092.3	2,690.9	0.00	0.00	
12,100.0	92.00	247.00	8,907.5	-1,996.7	-2,184.3	2,790.8	0.00	0.00	
12,200.0	92.00	247.00	8,904.0	-2,035.8	-2,276.3	2,890.8	0.00	0.00	
12,300.0	92.00	247.00	8,900.5	-2,074.8	-2,368.3	2,990.7	0.00	0.00	
12,400.0	92.00	247.00	8,897.0	-2,113.9	-2,460.3	3,090.6	0.00	0.00	
12,500.0	92.00	247.00	8,893.5	-2,152.9	-2,552.3	3,190.6	0.00	0.00	
12,600.0	92.00	247.00	8,890.0	-2,192.0	-2,644.3	3,290.5	0.00	0.00	
12,700.0	92.00	247.00	8,886.6	-2,231.0	-2,736.2	3,390.5	0.00	0.00	
12,800.0	92.00	247.00	8,883.1	-2,270.0	-2,828.2	3,490.4	0.00	0.00	
12,900.0	92.00	247.00	8,879.6	-2,309.1	-2,920.2	3,590.3	0.00	0.00	
13,000.0	92.00	247.00	8,876.1	-2,348.1	-3,012.2	3,690.3	0.00	0.00	
13,100.0	92.00	247.00	8,872.6	-2,387.2	-3,104.2	3,790.2	0.00	0.00	
13,200.0	92.00	247.00	8,869.1	-2,426.2	-3,196.2	3,890.1	0.00	0.00	
13,300.0	92.00	247.00	8,865.6	-2,465.3	-3,288.2	3,990.1	0.00	0.00	
13,400.0	92.00	247.00	8,862.1	-2,504.3	-3,380.2	4,090.0	0.00	0.00	
13,500.0	92.00	247.00	8,858.6	-2,543.4	-3,472.2	4,190.0	0.00	0.00	
13,600.0	92.00	247.00	8,855.2	-2,582.4	-3,564.2	4,289.9	0.00	0.00	
13,700.0	92.00	247.00	8,851.7	-2,621.5	-3,656.2	4,389.8	0.00	0.00	
13,800.0	92.00	247.00	8,848.2	-2,660.5	-3,748.2	4,489.8	0.00	0.00	
13,900.0	92.00	247.00	8,844.7	-2,699.6	-3,840.2	4,589.7	0.00	0.00	
14,000.0	92.00	247.00	8,841.2	-2,738.6	-3,932.2	4,689.7	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Keinath Federal 9-14H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C10OU)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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)	Comments / Formations
14,100.0	92.00	247.00	8,837.7	-2,777.7	-4,024.2	4,789.6	0.00	0.00	
14,200.0	92.00	247.00	8,834.2	-2,816.7	-4,116.2	4,889.5	0.00	0.00	
14,300.0	92.00	247.00	8,830.7	-2,855.8	-4,208.2	4,989.5	0.00	0.00	
14,400.0	92.00	247.00	8,827.2	-2,894.8	-4,300.2	5,089.4	0.00	0.00	
14,500.0	92.00	247.00	8,823.7	-2,933.9	-4,392.1	5,189.4	0.00	0.00	
14,545.0	92.00	247.00	8,822.2	-2,951.5	-4,433.5	5,234.3	0.00	0.00	TD at 14,545' MD - Keinath Federal 9-14H HZ F
14,600.0	92.00	247.00	8,820.3	-2,972.9	-4,484.1	5,289.3	0.00	0.00	
14,700.0	92.00	247.00	8,816.8	-3,012.0	-4,576.1	5,389.2	0.00	0.00	
14,800.0	92.00	247.00	8,813.3	-3,051.0	-4,668.1	5,489.2	0.00	0.00	
14,900.0	92.00	247.00	8,809.8	-3,090.1	-4,760.1	5,589.1	0.00	0.00	
14,945.0	92.00	247.00	8,808.2	-3,107.7	-4,801.5	5,634.1	0.00	0.00	Permit TD at 14,945' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Keinath Federal 9-14H F - plan hits target center - Point	0.00	0.00	8,822.2	-2,951.5	-4,433.5	1,566,838.07	2,260,753.73	39.360504	-108.114922
Keinath Federal 9-14H F - plan hits target center - Point	0.00	0.00	8,996.7	-999.0	166.2	1,568,658.15	2,265,407.42	39.365866	-108.098654
Keinath Federal 9-14H F - plan hits target center - Point	0.00	0.00	8,319.9	-694.7	883.0	1,568,941.80	2,266,132.66	39.366701	-108.096119
Keinath Federal 9-14H F - plan misses target center by 62.2ft at 7918.7ft MD (7842.8 TVD, -655.2 N, 835.9 E) - Point	0.00	0.00	7,833.9	-694.7	883.0	1,568,941.80	2,266,132.66	39.366701	-108.096119

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,136.8	2,120.0	OHIO CREEK (Top Kmv)			
2,658.1	2,636.0	WILLIAMS FORK FM			
3,915.0	3,880.0	TOP GAS			
4,678.8	4,636.0	Coal Ridge (Paludal)			
4,998.0	4,952.0	ROLLINS SS (Iles Fm)			
5,266.8	5,218.0	COZZETTE			
5,514.3	5,463.0	CORCORAN			
6,198.3	6,140.0	MANCOS A			
7,056.1	6,989.0	MANCOS B			
8,448.2	8,368.0	NIOBRARA			

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5590.0ft (Original Well Elev)
Project:	Orchard	MD Reference:	KBE @ 5590.0ft (Original Well Elev)
Site:	NENW Sec10-T8S-R96W (C10OU)	North Reference:	True
Well:	Keinath Federal 9-14H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.0	300.0	0.0	0.0	KOP #1 = 300' MD
600.0	598.9	-9.4	20.1	EOB at Inc. = 8.2°
8,000.0	7,923.3	-662.6	844.8	Start Drop -2.05
8,400.0	8,319.9	-694.7	883.0	EOD at Inc. = 0°
8,414.0	8,333.9	-694.7	883.0	KOP #2 = 8414' MD
9,545.0	8,996.7	-999.0	166.2	Landing Point @ 9545' MD (Inc.= 92°)
14,545.0	8,822.2	-2,951.5	-4,433.5	TD at 14,545' MD
14,945.0	8,808.2	-3,107.7	-4,801.5	Permit TD at 14,945' MD