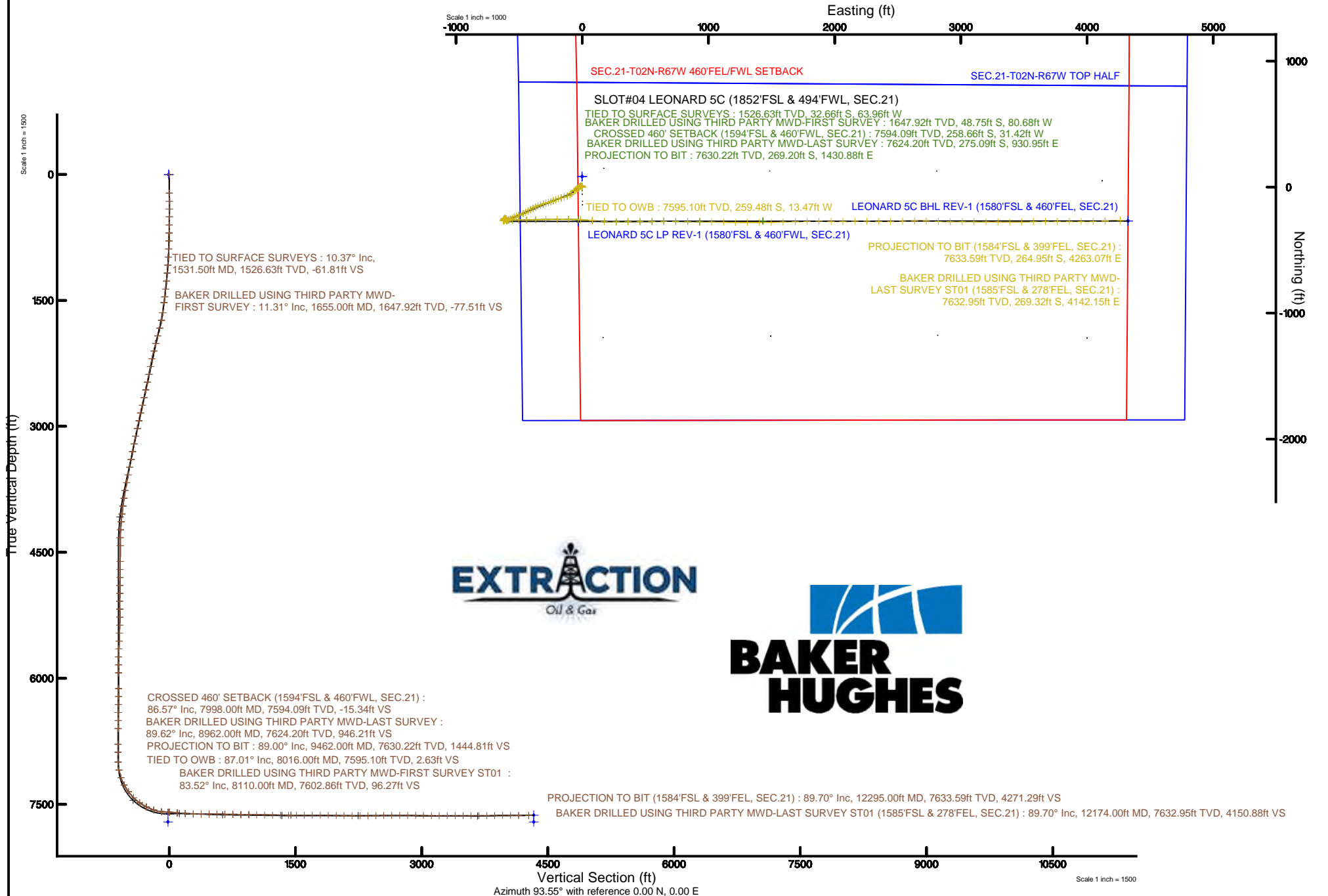


# EXTRACTION OIL & GAS

Location: COLORADO Slot: SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)  
Field: WELD COUNTY (NAD83/TRUE NORTH) Well: LEONARD 5C  
Facility: SEC.21-T02N-R67W Wellbore: LEONARD 5C PWB

Plot reference wellpath is LEONARD 5C PWB (REV-B.0)	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to CYCLONE 37 (28'KB) (RKB)	North Reference: True north
Measured depths are referenced to CYCLONE 37 (28'KB) (RKB)	Scale: True distance
CYCLONE 37 (28'KB) (RKB) to Mean Sea Level: 5031 feet	Depths are in feet
Mean Sea Level to Mud line (At Slot: SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)): 0 feet	Created by: ingmjamm on 2017-10-05
Coordinates are in feet referenced to Slot	Database: WA_DEN_Denver_Defn





# Actual Wellpath Report

LEONARD 5C AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWP
Facility	SEC.21-T02N-R67W		

## REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	True	User	Ingmjmr
Scale	0.999959	Report Generated	10/5/2017 at 10:20:42 AM
Convergence at slot	0.39° East	Database/Source file	WA_DEN_Denver_Defn/LEONARD_5C_AWP.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-83.79	1.12	3166873.99	1287693.01	40°07'17.648"N	104°54'11.808"W
Facility Reference Pt			3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W
Field Reference Pt			3185481.27	1419166.81	40°28'55.560"N	104°49'59.556"W

## WELLPATH DATUM

Calculation method	Minimum curvature	CYCLONE 37 (28'KB) (RKB) to Facility Vertical Datum	5031.00ft
Horizontal Reference Pt	Slot	CYCLONE 37 (28'KB) (RKB) to Mean Sea Level	5031.00ft
Vertical Reference Pt	CYCLONE 37 (28'KB) (RKB)	CYCLONE 37 (28'KB) (RKB) to Mud Line at Slot (SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21))	5031.00ft
MD Reference Pt	CYCLONE 37 (28'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	100.65°



# Actual Wellpath Report

LEONARD 5C AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWB
Facility	SEC.21-T02N-R67W		

## WELLPATH DATA (78 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
1531.50	10.370	228.840	1526.63	-56.82	-32.66	-63.96	40°07'17.326"N	104°54'12.631"W	1.02	TIED TO SURFACE SURVEYS
1655.00	11.310	223.610	1647.92	-70.28	-48.75	-80.68	40°07'17.167"N	104°54'12.847"W	1.10	BAKER DRILLED USING THIRD PARTY MWD-FIRST SURVEY
1749.00	12.420	238.550	1739.94	-82.79	-60.70	-95.67	40°07'17.049"N	104°54'13.039"W	3.46	
1844.00	16.390	253.440	1831.96	-102.31	-69.85	-117.25	40°07'16.958"N	104°54'13.317"W	5.68	
1939.00	15.820	252.830	1923.23	-125.68	-77.50	-142.46	40°07'16.883"N	104°54'13.642"W	0.63	
2033.00	14.980	251.420	2013.86	-147.61	-85.15	-166.22	40°07'16.807"N	104°54'13.948"W	0.98	
2127.00	14.490	250.620	2104.77	-168.40	-92.92	-188.83	40°07'16.730"N	104°54'14.239"W	0.56	
2222.00	13.300	249.740	2196.99	-188.06	-100.65	-210.30	40°07'16.654"N	104°54'14.515"W	1.27	
2317.00	12.280	247.850	2289.63	-205.93	-108.24	-229.90	40°07'16.579"N	104°54'14.767"W	1.16	
2411.00	11.620	247.320	2381.59	-222.24	-115.66	-247.90	40°07'16.505"N	104°54'14.999"W	0.71	
2505.00	13.300	253.440	2473.38	-239.77	-122.40	-267.00	40°07'16.439"N	104°54'15.245"W	2.27	
2600.00	12.110	253.310	2566.05	-258.34	-128.37	-287.02	40°07'16.380"N	104°54'15.503"W	1.25	
2695.00	14.410	252.120	2658.51	-277.57	-134.87	-307.82	40°07'16.316"N	104°54'15.770"W	2.44	
2789.00	13.300	251.420	2749.77	-297.29	-141.90	-329.20	40°07'16.246"N	104°54'16.046"W	1.19	
2884.00	14.720	243.440	2841.95	-316.44	-150.78	-350.35	40°07'16.158"N	104°54'16.318"W	2.52	
2978.00	11.400	248.950	2933.51	-333.86	-159.46	-369.71	40°07'16.073"N	104°54'16.567"W	3.77	
3073.00	14.720	243.440	3026.05	-351.46	-168.23	-389.28	40°07'15.986"N	104°54'16.819"W	3.73	
3167.00	14.010	242.650	3117.11	-369.94	-178.80	-410.07	40°07'15.881"N	104°54'17.087"W	0.78	
3262.00	12.680	241.630	3209.54	-387.10	-189.04	-429.46	40°07'15.780"N	104°54'17.336"W	1.42	
3357.00	13.390	242.120	3302.09	-403.80	-199.14	-448.35	40°07'15.680"N	104°54'17.579"W	0.76	
3451.00	12.200	243.530	3393.76	-420.24	-208.65	-466.87	40°07'15.586"N	104°54'17.818"W	1.31	
3546.00	12.810	247.010	3486.50	-437.01	-217.24	-485.55	40°07'15.502"N	104°54'18.058"W	1.02	
3641.00	11.620	250.320	3579.35	-454.03	-224.58	-504.25	40°07'15.429"N	104°54'18.299"W	1.45	
3735.00	11.890	245.120	3671.38	-470.09	-231.84	-521.95	40°07'15.357"N	104°54'18.527"W	1.16	
3830.00	11.000	245.500	3764.49	-485.46	-239.72	-539.08	40°07'15.279"N	104°54'18.747"W	0.94	
3924.00	9.500	242.820	3856.99	-498.92	-246.98	-554.14	40°07'15.208"N	104°54'18.941"W	1.67	
4019.00	8.220	243.040	3950.86	-510.49	-253.64	-567.17	40°07'15.142"N	104°54'19.109"W	1.35	
4114.00	6.890	244.320	4045.03	-520.46	-259.19	-578.36	40°07'15.087"N	104°54'19.253"W	1.41	
4208.00	5.790	246.440	4138.45	-528.92	-263.53	-587.78	40°07'15.044"N	104°54'19.374"W	1.20	
4303.00	5.210	245.910	4233.01	-536.43	-267.20	-596.11	40°07'15.008"N	104°54'19.481"W	0.61	



# Actual Wellpath Report

LEONARD 5C AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWB
Facility	SEC.21-T02N-R67W		

## WELLPATH DATA (78 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4397.00	0.400	349.510	4326.89	-540.06	-268.62	-600.07	40°07'14.994"N	104°54'19.532"W	5.66	
4492.00	0.800	6.610	4421.88	-540.23	-267.64	-600.06	40°07'15.004"N	104°54'19.532"W	0.46	
4681.00	1.100	349.110	4610.86	-540.99	-264.55	-600.25	40°07'15.034"N	104°54'19.535"W	0.22	
4776.00	1.280	334.310	4705.84	-541.95	-262.69	-600.88	40°07'15.052"N	104°54'19.543"W	0.37	
4871.00	1.280	327.740	4800.81	-543.30	-260.84	-601.91	40°07'15.071"N	104°54'19.556"W	0.15	
4965.00	1.280	324.610	4894.79	-544.77	-259.10	-603.07	40°07'15.088"N	104°54'19.571"W	0.07	
5060.00	1.020	328.840	4989.77	-546.10	-257.51	-604.13	40°07'15.104"N	104°54'19.585"W	0.29	
5154.00	1.280	334.130	5083.75	-547.28	-255.85	-605.02	40°07'15.120"N	104°54'19.596"W	0.30	
5249.00	1.100	64.130	5178.74	-547.18	-254.49	-604.66	40°07'15.133"N	104°54'19.591"W	1.78	
5343.00	1.280	6.740	5272.72	-546.53	-253.06	-603.72	40°07'15.148"N	104°54'19.579"W	1.23	
5438.00	1.990	292.540	5367.69	-548.21	-251.37	-605.12	40°07'15.164"N	104°54'19.597"W	2.16	
5533.00	1.680	283.720	5462.64	-551.22	-250.41	-608.00	40°07'15.174"N	104°54'19.634"W	0.44	
5627.00	2.120	270.720	5556.59	-554.31	-250.06	-611.08	40°07'15.177"N	104°54'19.674"W	0.65	
5722.00	2.300	280.630	5651.52	-557.94	-249.69	-614.71	40°07'15.181"N	104°54'19.721"W	0.44	
5816.00	1.680	202.720	5745.48	-560.12	-250.61	-617.09	40°07'15.172"N	104°54'19.751"W	2.71	
5911.00	1.190	192.540	5840.45	-560.44	-252.86	-617.85	40°07'15.150"N	104°54'19.761"W	0.58	
6006.00	0.880	192.410	5935.43	-560.50	-254.53	-618.22	40°07'15.133"N	104°54'19.766"W	0.33	
6194.00	0.880	187.610	6123.41	-560.46	-257.37	-618.72	40°07'15.105"N	104°54'19.772"W	0.04	
6289.00	1.020	214.710	6218.40	-560.77	-258.79	-619.30	40°07'15.091"N	104°54'19.780"W	0.49	
6384.00	1.100	235.820	6313.38	-561.76	-260.00	-620.53	40°07'15.079"N	104°54'19.796"W	0.42	
6478.00	1.280	232.250	6407.36	-563.10	-261.15	-622.11	40°07'15.068"N	104°54'19.816"W	0.21	
6573.00	1.280	221.140	6502.34	-564.34	-262.60	-623.65	40°07'15.053"N	104°54'19.836"W	0.26	
6668.00	1.100	219.120	6597.32	-565.31	-264.10	-624.92	40°07'15.038"N	104°54'19.852"W	0.19	
6857.00	0.310	109.920	6786.30	-565.67	-265.69	-625.58	40°07'15.023"N	104°54'19.861"W	0.65	
6952.00	0.310	286.720	6881.30	-565.68	-265.70	-625.59	40°07'15.023"N	104°54'19.861"W	0.65	
7069.00	0.710	112.210	6998.30	-565.28	-265.88	-625.22	40°07'15.021"N	104°54'19.856"W	0.87	
7164.00	11.310	89.250	7092.65	-555.54	-265.98	-615.33	40°07'15.020"N	104°54'19.729"W	11.22	
7258.00	19.000	83.610	7183.31	-531.84	-264.16	-590.87	40°07'15.038"N	104°54'19.414"W	8.32	
7353.00	28.280	88.320	7270.26	-494.99	-261.77	-552.92	40°07'15.061"N	104°54'18.925"W	9.96	
7448.00	36.280	89.510	7350.51	-445.34	-260.87	-502.24	40°07'15.070"N	104°54'18.273"W	8.45	



# Actual Wellpath Report

LEONARD 5C AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWB
Facility	SEC.21-T02N-R67W		

WELLPATH DATA (78 stations) † = interpolated/extrapolated station										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS °/100ft	Comments
7543.00	45.290	89.910	7422.37	-384.48	-260.58	-440.25	40°07'15.073"N	104°54'17.475"W	9.49	
7637.00	54.310	88.540	7482.98	-314.19	-259.55	-368.53	40°07'15.083"N	104°54'16.552"W	9.66	
7732.00	63.100	88.320	7532.28	-234.93	-257.32	-287.47	40°07'15.106"N	104°54'15.508"W	9.25	
7827.00	71.500	89.250	7568.90	-149.24	-255.48	-199.92	40°07'15.124"N	104°54'14.381"W	8.89	
7921.00	84.710	91.410	7588.24	-58.95	-256.05	-108.15	40°07'15.118"N	104°54'13.200"W	14.23	
7998.00†	86.574	92.480	7594.09	16.94	-258.66	-31.42	40°07'15.092"N	104°54'12.213"W	2.79	CROSSED 460' SETBACK (1594'FSL & 460'FWL, SEC.21)
8016.00	87.010	92.730	7595.10	34.74	-259.48	-13.47	40°07'15.084"N	104°54'11.981"W	2.79	
8110.00	83.520	96.210	7602.86	127.84	-266.77	79.89	40°07'15.012"N	104°54'10.780"W	5.23	
8205.00	86.480	92.510	7611.14	221.88	-273.96	174.23	40°07'14.941"N	104°54'09.565"W	4.98	
8300.00	87.890	89.340	7615.81	315.39	-275.49	269.09	40°07'14.926"N	104°54'08.344"W	3.65	
8394.00	90.280	88.940	7617.31	407.48	-274.08	363.06	40°07'14.940"N	104°54'07.135"W	2.58	
8489.00	89.220	90.040	7617.72	500.67	-273.23	458.05	40°07'14.948"N	104°54'05.912"W	1.61	
8583.00	89.220	89.730	7619.00	593.01	-273.04	552.04	40°07'14.950"N	104°54'04.702"W	0.33	
8677.00	89.620	88.810	7619.95	685.15	-271.84	646.03	40°07'14.962"N	104°54'03.492"W	1.07	
8772.00	88.820	91.410	7621.25	778.53	-272.03	741.01	40°07'14.960"N	104°54'02.269"W	2.86	
8867.00	89.000	91.320	7623.05	872.27	-274.29	835.97	40°07'14.938"N	104°54'01.047"W	0.21	
8962.00	89.620	89.650	7624.20	965.77	-275.09	930.95	40°07'14.930"N	104°53'59.824"W	1.88	BAKER DRILLED USING THIRD PARTY MWD-LAST SURVEY
9462.00	89.000	89.000	7630.22	1455.98	-269.20	1430.88	40°07'14.988"N	104°53'53.389"W	0.18	PROJECTION TO BIT



# Actual Wellpath Report

LEONARD 5C AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWB
Facility	SEC.21-T02N-R67W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.21-T02N-R67W BOTTOM HALF	2.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
SEC.21-T02N-R67W TOP HALF	2.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
SEC.21-T02N-R67W 460'FEL/FWL SETBACK	7462.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
LEONARD 5C LP REV-1 (1580'FSL & 460'FWL, SEC.21)	7614.00	-272.15	-30.76	3166845.06	1287420.67	40°07'14.959"N	104°54'12.204"W	point
LEONARD 5C BHL REV-1 (1580'FSL & 460'FEL, SEC.21)	7631.00	-268.43	4324.23	3171199.74	1287453.69	40°07'14.992"N	104°53'16.145"W	point
LEONARD 5C BHL (1580'FSL & 460'FEL, SEC.21)	7710.00	-268.47	4324.24	3171199.75	1287453.65	40°07'14.992"N	104°53'16.145"W	point
LEONARD 5C LP (1580'FSL & 460'FWL, SEC.21)	7710.00	-272.13	-30.76	3166845.06	1287420.69	40°07'14.959"N	104°54'12.204"W	point

WELLPATH COMPOSITION - Ref Wellbore: LEONARD 5C AWB    Ref Wellpath: LEONARD 5C AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1531.50	ISCWSA MWD, Rev. 4 (Standard)	TOTAL SURVEYS <225.5-1531.50>	LEONARD 5C AWB
1531.50	8962.00	ISCWSA MWD, Rev. 4 (Standard)	BAKER DRILLED USING THIRD PARTY MWD <1655-6289>	LEONARD 5C AWB
8962.00	9462.00	Blind Drilling (std)	Projection to bit	LEONARD 5C AWB



# Actual Wellpath Report

LEONARD 5C AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C AWB
Facility	SEC.21-T02N-R67W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1531.50	10.370	228.840	1526.63	TIED TO SURFACE SURVEYS
1655.00	11.310	223.610	1647.92	BAKER DRILLED USING THIRD PARTY MWD-FIRST SURVEY
7998.00	86.574	92.480	7594.09	CROSSED 460' SETBACK (1594'FSL & 460'FWL, SEC.21)
8962.00	89.620	89.650	7624.20	BAKER DRILLED USING THIRD PARTY MWD-LAST SURVEY
9462.00	89.000	89.000	7630.22	PROJECTION TO BIT



# Actual Wellpath Report

LEONARD 5C ST01 AWB\_awp

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## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C ST01 AWB
Facility	SEC.21-T02N-R67W	Sidetrack from	LEONARD 5C AWP at 8016.00 MD

## REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	True	User	Ingmjmr
Scale	0.999959	Report Generated	10/5/2017 at 10:22:10 AM
Convergence at slot	0.39° East	Database/Source file	WA_DEN_Denver_Defn/LEONARD_5C_ST01_AWB_awp.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-83.79	1.12	3166873.99	1287693.01	40°07'17.648"N	104°54'11.808"W
Facility Reference Pt			3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W
Field Reference Pt			3185481.27	1419166.81	40°28'55.560"N	104°49'59.556"W

## WELLPATH DATUM

Calculation method	Minimum curvature	CYCLONE 37 (28'KB) (RKB) to Facility Vertical Datum	5031.00ft
Horizontal Reference Pt	Slot	CYCLONE 37 (28'KB) (RKB) to Mean Sea Level	5031.00ft
Vertical Reference Pt	CYCLONE 37 (28'KB) (RKB)	CYCLONE 37 (28'KB) (RKB) to Mud Line at Slot (SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21))	5031.00ft
MD Reference Pt	CYCLONE 37 (28'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	93.55°



## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C ST01 AWP
Facility	SEC.21-T02N-R67W	Sidetrack from	LEONARD 5C AWP at 8016.00 MD

## WELLPATH DATA (46 stations)

MD (ft)	Inclination [°]	Azimuth [°]	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Latitude	Longitude	DLS [°/100ft]	Comments
8016.00	87.010	92.730	7595.10	2.63	-259.48	-13.47	40°07'15.084"N	104°54'11.981"W	2.79	TIED TO OWB
8110.00	83.520	96.210	7602.86	96.27	-266.77	79.89	40°07'15.012"N	104°54'10.780"W	5.23	BAKER DRILLED USING THIRD PARTY MWD-FIRST SURVEY ST01
8205.00	86.480	92.510	7611.14	190.87	-273.96	174.23	40°07'14.941"N	104°54'09.565"W	4.98	
8300.00	87.890	89.340	7615.81	285.64	-275.49	269.09	40°07'14.926"N	104°54'08.344"W	3.65	
8394.00	90.280	88.940	7617.31	379.34	-274.08	363.06	40°07'14.940"N	104°54'07.135"W	2.58	
8489.00	89.220	90.040	7617.72	474.10	-273.23	458.05	40°07'14.948"N	104°54'05.912"W	1.61	
8583.00	89.220	89.730	7619.00	567.90	-273.04	552.04	40°07'14.950"N	104°54'04.702"W	0.33	
8677.00	89.620	88.810	7619.95	661.63	-271.84	646.03	40°07'14.962"N	104°54'03.492"W	1.07	
8772.00	88.820	91.410	7621.25	756.44	-272.03	741.01	40°07'14.960"N	104°54'02.269"W	2.86	
8867.00	89.000	91.320	7623.05	851.36	-274.29	835.97	40°07'14.938"N	104°54'01.047"W	0.21	
8962.00	89.620	89.650	7624.20	946.21	-275.09	930.95	40°07'14.930"N	104°53'59.824"W	1.88	
9056.00	88.380	91.010	7625.84	1040.04	-275.63	1024.93	40°07'14.924"N	104°53'58.615"W	1.96	
9151.00	87.980	91.410	7628.86	1134.92	-277.64	1119.87	40°07'14.904"N	104°53'57.393"W	0.60	
9245.00	90.010	90.840	7630.50	1228.81	-279.48	1213.83	40°07'14.886"N	104°53'56.183"W	2.24	
9339.00	89.620	90.620	7630.81	1322.70	-280.68	1307.82	40°07'14.874"N	104°53'54.973"W	0.48	
9434.00	89.790	89.340	7631.30	1417.51	-280.65	1402.82	40°07'14.875"N	104°53'53.750"W	1.36	
9529.00	90.010	88.320	7631.46	1512.18	-278.71	1497.79	40°07'14.894"N	104°53'52.528"W	1.10	
9623.00	90.590	88.540	7630.97	1605.81	-276.13	1591.76	40°07'14.919"N	104°53'51.318"W	0.66	
9719.00	89.620	89.340	7630.79	1701.49	-274.36	1687.74	40°07'14.937"N	104°53'50.083"W	1.31	
9813.00	90.190	87.930	7630.95	1795.15	-272.12	1781.71	40°07'14.959"N	104°53'48.873"W	1.62	
9908.00	88.510	90.750	7632.03	1889.87	-271.02	1876.68	40°07'14.969"N	104°53'47.651"W	3.46	
10003.00	88.690	90.530	7634.35	1984.72	-272.08	1971.65	40°07'14.959"N	104°53'46.428"W	0.30	
10097.00	89.310	89.510	7635.99	2078.52	-272.12	2065.63	40°07'14.958"N	104°53'45.218"W	1.27	
10192.00	89.000	89.340	7637.39	2173.27	-271.16	2160.62	40°07'14.968"N	104°53'43.996"W	0.37	
10287.00	90.100	90.840	7638.14	2268.09	-271.31	2255.61	40°07'14.966"N	104°53'42.773"W	1.96	
10381.00	90.720	90.220	7637.46	2361.95	-272.18	2349.60	40°07'14.958"N	104°53'41.563"W	0.93	
10475.00	91.300	89.510	7635.81	2455.74	-271.96	2443.59	40°07'14.960"N	104°53'40.353"W	0.98	
10570.00	90.190	89.120	7634.57	2550.47	-270.82	2538.57	40°07'14.971"N	104°53'39.131"W	1.24	
10664.00	90.100	88.320	7634.33	2644.14	-268.73	2632.55	40°07'14.991"N	104°53'37.921"W	0.86	
10758.00	90.190	92.110	7634.10	2737.96	-269.08	2726.53	40°07'14.988"N	104°53'36.711"W	4.03	



# Actual Wellpath Report

LEONARD 5C ST01 AWP\_awp

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## REFERENCE WELLPATH IDENTIFICATION

Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C ST01 AWP
Facility	SEC.21-T02N-R67W	Sidetrack from	LEONARD 5C AWP at 8016.00 MD

## WELLPATH DATA (46 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
10853.00	90.900	91.720	7633.19	2832.92	-272.25	2821.47	40°07'14.956"N	104°53'35.489"W	0.85	
10948.00	90.010	90.350	7632.44	2927.82	-273.97	2916.45	40°07'14.939"N	104°53'34.266"W	1.72	
11042.00	88.290	90.130	7633.83	3021.65	-274.36	3010.43	40°07'14.935"N	104°53'33.057"W	1.84	
11136.00	88.380	90.840	7636.56	3115.47	-275.16	3104.39	40°07'14.927"N	104°53'31.847"W	0.76	
11230.00	90.720	90.350	7637.30	3209.34	-276.13	3198.38	40°07'14.918"N	104°53'30.637"W	2.54	
11325.00	91.300	90.220	7635.63	3304.17	-276.61	3293.36	40°07'14.913"N	104°53'29.415"W	0.63	
11419.00	89.220	91.010	7635.20	3398.04	-277.61	3387.35	40°07'14.903"N	104°53'28.205"W	2.37	
11513.00	89.620	88.020	7636.15	3491.79	-276.82	3481.33	40°07'14.910"N	104°53'26.995"W	3.21	
11607.00	90.010	87.930	7636.46	3585.35	-273.50	3575.27	40°07'14.943"N	104°53'25.786"W	0.43	
11702.00	90.100	90.130	7636.37	3680.04	-271.89	3670.25	40°07'14.959"N	104°53'24.563"W	2.32	
11796.00	90.990	90.440	7635.47	3773.89	-272.36	3764.24	40°07'14.954"N	104°53'23.353"W	1.00	
11891.00	91.600	89.910	7633.32	3868.70	-272.65	3859.22	40°07'14.951"N	104°53'22.131"W	0.85	
11985.00	89.790	90.530	7632.18	3962.53	-273.01	3953.21	40°07'14.947"N	104°53'20.921"W	2.04	
12079.00	89.790	88.540	7632.53	4056.29	-272.25	4047.20	40°07'14.955"N	104°53'19.711"W	2.12	
12174.00	89.700	87.930	7632.95	4150.88	-269.32	4142.15	40°07'14.984"N	104°53'18.489"W	0.65	BAKER DRILLED USING THIRD PARTY MWD-LAST SURVEY ST01 (1585'FSL & 278'FEL, SEC.21)
12295.00	89.700	87.930	7633.59	4271.29	-264.95	4263.07	40°07'15.027"N	104°53'16.932"W	0.00	PROJECTION TO BIT (1584'FSL & 399'FEL, SEC.21)

REFERENCE WELLPATH IDENTIFICATION			
Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C ST01 AWB
Facility	SEC.21-T02N-R67W	Sidetrack from	LEONARD 5C AWP at 8016.00 MD

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.21-T02N-R67W BOTTOM HALF	2.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
SEC.21-T02N-R67W TOP HALF	2.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
SEC.21-T02N-R67W 460'FEL/FWL SETBACK	7462.00	83.79	-1.12	3166872.30	1287776.78	40°07'18.476"N	104°54'11.822"W	polygon
LEONARD 5C LP REV-1 (1580'FSL & 460'FWL, SEC.21)	7614.00	-272.15	-30.76	3166845.06	1287420.67	40°07'14.959"N	104°54'12.204"W	point
LEONARD 5C BHL REV-1 (1580'FSL & 460'FEL, SEC.21)	7631.00	-268.43	4324.23	3171199.74	1287453.69	40°07'14.992"N	104°53'16.145"W	point
LEONARD 5C BHL (1580'FSL & 460'FEL, SEC.21)	7710.00	-268.47	4324.24	3171199.75	1287453.65	40°07'14.992"N	104°53'16.145"W	point
LEONARD 5C LP (1580'FSL & 460'FWL, SEC.21)	7710.00	-272.13	-30.76	3166845.06	1287420.69	40°07'14.959"N	104°54'12.204"W	point

WELLPATH COMPOSITION - Ref Wellbore: LEONARD 5C ST01 AWB Ref Wellpath: LEONARD 5C ST01 AWB_awp				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1531.50	ISCWSA MWD, Rev. 4 (Standard)	TOTAL SURVEYS <225.5-1531.50>	LEONARD 5C AWB
1531.50	8016.00	ISCWSA MWD, Rev. 4 (Standard)	BAKER DRILLED USING THIRD PARTY MWD <1655-6289>	LEONARD 5C AWB
8016.00	12174.00	ISCWSA MWD, Rev. 4 (Standard)	BAKER DRILLED USING THIRD PARTY MWD <8110-12174>	LEONARD 5C ST01 AWB
12174.00	12295.00	Blind Drilling (std)	Projection to bit	LEONARD 5C ST01 AWB



# Actual Wellpath Report

LEONARD 5C ST01 AWB\_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	EXTRACTION OIL & GAS	Slot	SLOT#04 LEONARD 5C (1852'FSL & 494'FWL, SEC.21)
Area	COLORADO	Well	LEONARD 5C
Field	WELD COUNTY (NAD83/TRUE NORTH)	Wellbore	LEONARD 5C ST01 AWB
Facility	SEC.21-T02N-R67W	Sidetrack from	LEONARD 5C AWP at 8016.00 MD

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1531.50	10.370	228.840	1526.63	TIED TO SURFACE SURVEYS
1655.00	11.310	223.610	1647.92	BAKER DRILLED USING THIRD PARTY MWD-FIRST SURVEY
7998.00	86.574	92.480	7594.09	CROSSED 460' SETBACK (1594'FSL & 460'FWL, SEC.21)
8016.00	87.010	92.730	7595.10	TIED TO OWB
8110.00	83.520	96.210	7602.86	BAKER DRILLED USING THIRD PARTY MWD-FIRST SURVEY ST01
12174.00	89.700	87.930	7632.95	BAKER DRILLED USING THIRD PARTY MWD-LAST SURVEY ST01 (1585'FSL & 278'FEL, SEC.21)
12295.00	89.700	87.930	7633.59	PROJECTION TO BIT (1584'FSL & 399'FEL, SEC.21)