

EXTRACTION OIL & GAS

BROOMFIELD COUNTY

Sec 10-T1S-R68W

INTERCHANGE A S22-30-21N

OWB

Design: FINAL SURVEY

Standard Survey Report

14 April, 2022



Project: BROOMFIELD COUNTY
Site: Sec 10-T1S-R68W
Well: INTERCHANGE A S22-30-21N
Wellbore: OWB
Design: FINAL SURVEY

PROJECT DETAILS: BROOMFIELD COUNTY
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level



Azimuths to True North
Magnetic North: 7.87°
Magnetic Field
Strength: 51647.6snT
Dip Angle: 66.26°
Date: 1/5/2022
Model: IGRF2020

WELL DETAILS: INTERCHANGE A S22-30-21N

		5236.00						Slot			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude						
0.00	0.00	1236311.83	3141839.70	39.980949°N	104.993846°W						

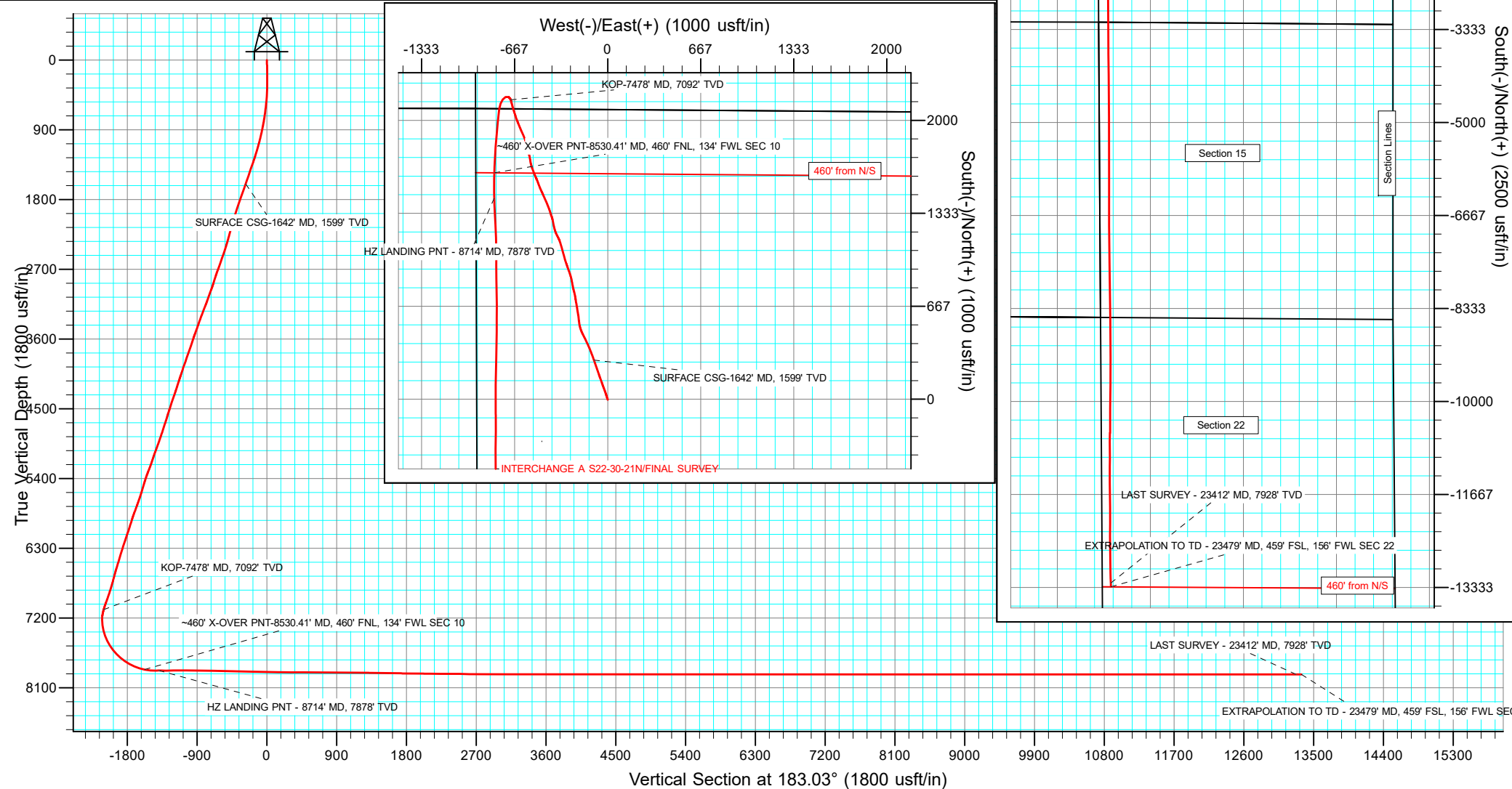
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
1642.00	20.95	340.81	1599.16	280.55	-98.63	-274.94	305.31	SURFACE CSG-1642' MD, 1599' TVD
7478.00	17.19	341.70	7091.54	2146.27	-695.02	-2106.46	2273.16	KOP-7478' MD, 7092' TVD
8530.41	80.49	180.81	7864.72	1623.25	-812.40	-1577.97	2884.11	~460' X-OVER PNT-8530.41' MD, 460' FNL, 134' FWL SEC 10
8714.00	89.37	178.18	7877.66	1440.34	-813.49	-1395.25	3067.00	HZ LANDING PNT - 8714' MD, 7878' TVD
23412.00	90.01	177.90	7928.22	-13254.44	-708.71	13273.37	17764.57	LAST SURVEY - 23412' MD, 7928' TVD
23479.00	90.01	177.90	7928.21	-13321.40	-706.25	13340.11	17831.57	EXTRAPOLATION TO TD - 23479' MD, 459' FSL, 156' FWL SEC 22

SHL:
2077' FNL, 938' FWL
Sec 10-T1S-R68W

~460' X-OVER PNT:
460' FNL, 134' FWL
Sec 10-T1S-R68W

BHL:
459' FSL, 156' FWL
Sec 22-T1S-R68W



Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

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

Site		Sec 10-T1S-R68W			
Site Position:		Northing:	1,238,390.57 usft	Latitude:	39.986670°N
From:	Lat/Long	Easting:	3,140,881.15 usft	Longitude:	104.997225°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	INTERCHANGE A S22-30-21N					
Well Position	+N/-S	0.00 usft	Northing:	1,236,311.83 usft	Latitude:	39.980949°N
	+E/-W	0.00 usft	Easting:	3,141,839.70 usft	Longitude:	104.993846°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,236.00 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	1/5/2022	7.87	66.26	51,647.64254514

Design	FINAL SURVEY				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	183.03	

Survey Program	Date	4/14/2022			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
119.00	1,599.00	SURFACE (OWB)	MWD OWSG	OWSG MWD - Standard	
1,676.00	23,479.00	FINAL SURVEY (OWB)	MWD OWSG	OWSG MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
119.00	0.88	166.21	119.00	-0.89	0.22	0.87	0.74	0.74	0.00	
206.00	0.75	175.79	205.99	-2.10	0.42	2.08	0.22	-0.15	11.01	
293.00	0.79	177.29	292.98	-3.27	0.49	3.24	0.05	0.05	1.72	
381.00	2.33	331.89	380.96	-2.30	-0.33	2.31	3.48	1.75	175.68	
468.00	4.44	343.93	467.80	2.50	-2.09	-2.38	2.55	2.43	13.84	
555.00	6.30	343.40	554.42	10.31	-4.39	-10.06	2.14	2.14	-0.61	
642.00	7.56	342.17	640.78	20.33	-7.50	-19.91	1.46	1.45	-1.41	
729.00	8.70	342.70	726.90	32.06	-11.21	-31.42	1.31	1.31	0.61	
816.00	11.16	342.17	812.59	46.36	-15.75	-45.46	2.83	2.83	-0.61	

Survey Report

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Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
904.00	12.92	339.71	898.66	63.70	-21.77	-62.46	2.08	2.00	-2.80
991.00	14.41	338.57	983.19	82.90	-29.10	-81.24	1.74	1.71	-1.31
1,078.00	16.04	340.68	1,067.14	104.32	-37.03	-102.21	1.98	1.87	2.43
1,165.00	17.67	340.32	1,150.40	128.10	-45.45	-125.51	1.88	1.87	-0.41
1,253.00	18.50	340.32	1,234.05	153.82	-54.65	-150.71	0.94	0.94	0.00
1,340.00	21.14	341.03	1,315.89	181.66	-64.40	-177.99	3.05	3.03	0.82
1,427.00	20.43	341.16	1,397.22	210.86	-74.40	-206.63	0.82	-0.82	0.15
1,514.00	19.20	340.85	1,479.07	238.75	-84.00	-233.97	1.42	-1.41	-0.36
1,599.00	20.70	340.59	1,558.97	266.12	-93.58	-260.80	1.77	1.76	-0.31
1,642.00	20.95	340.81	1,599.16	280.55	-98.63	-274.94	0.61	0.58	0.51
SURFACE CSG-1642' MD, 1599' TVD									
1,676.00	21.15	340.98	1,630.89	292.09	-102.63	-286.25	0.61	0.58	0.50
1,770.00	21.45	339.20	1,718.47	324.19	-114.26	-317.69	0.76	0.32	-1.89
1,865.00	21.24	337.57	1,806.95	356.34	-126.99	-349.11	0.66	-0.22	-1.72
1,960.00	20.53	335.70	1,895.71	387.42	-140.41	-379.45	1.03	-0.75	-1.97
2,055.00	19.78	334.78	1,984.89	417.15	-154.12	-408.41	0.86	-0.79	-0.97
2,150.00	18.93	332.83	2,074.53	445.40	-168.01	-435.88	1.12	-0.89	-2.05
2,245.00	17.44	334.06	2,164.78	471.91	-181.27	-461.66	1.62	-1.57	1.29
2,340.00	16.19	340.14	2,255.72	497.18	-192.00	-486.31	2.27	-1.32	6.40
2,434.00	16.85	346.55	2,345.85	522.75	-199.62	-511.45	2.06	0.70	6.82
2,530.00	17.93	352.80	2,437.47	550.95	-204.71	-539.34	2.25	1.12	6.51
2,624.00	19.72	354.29	2,526.44	581.09	-208.10	-569.26	1.97	1.90	1.59
2,718.00	19.60	349.23	2,614.96	612.36	-212.62	-600.24	1.81	-0.13	-5.38
2,813.00	21.11	352.17	2,704.03	644.96	-217.93	-632.52	1.92	1.59	3.09
2,908.00	18.25	349.07	2,793.47	676.52	-223.09	-663.76	3.20	-3.01	-3.26
3,002.00	17.63	351.03	2,882.91	705.04	-228.10	-691.97	0.92	-0.66	2.09
3,096.00	21.25	350.28	2,971.53	735.90	-233.19	-722.52	3.86	3.85	-0.80
3,217.00	20.10	344.17	3,084.75	777.52	-242.57	-763.59	2.02	-0.95	-5.05
3,312.00	22.25	349.61	3,173.34	810.92	-250.27	-796.54	3.06	2.26	5.73
3,406.00	21.27	349.24	3,260.64	845.18	-256.66	-830.40	1.05	-1.04	-0.39
3,501.00	20.69	344.90	3,349.35	878.31	-264.25	-863.09	1.75	-0.61	-4.57
3,596.00	20.84	339.32	3,438.19	910.33	-274.59	-894.51	2.09	0.16	-5.87
3,691.00	22.15	341.16	3,526.58	943.09	-286.34	-926.61	1.55	1.38	1.94
3,786.00	18.84	339.98	3,615.55	974.46	-297.38	-957.35	3.51	-3.48	-1.24
3,881.00	20.00	344.51	3,705.15	1,004.53	-306.97	-986.87	2.00	1.22	4.77
3,975.00	20.64	344.55	3,793.30	1,035.99	-315.68	-1,017.82	0.68	0.68	0.04
4,070.00	20.01	344.87	3,882.39	1,067.82	-324.38	-1,049.15	0.67	-0.66	0.34
4,165.00	20.02	343.94	3,971.65	1,099.14	-333.12	-1,079.96	0.34	0.01	-0.98
4,260.00	19.62	342.33	4,061.02	1,129.96	-342.46	-1,110.25	0.71	-0.42	-1.69
4,355.00	20.58	331.24	4,150.27	1,159.81	-355.34	-1,139.37	4.13	1.01	-11.67
4,450.00	19.86	336.44	4,239.42	1,189.24	-369.82	-1,167.99	2.04	-0.76	5.47
4,544.00	19.69	344.62	4,327.89	1,219.15	-380.41	-1,197.30	2.95	-0.18	8.70
4,639.00	19.07	349.19	4,417.51	1,249.83	-387.56	-1,227.55	1.72	-0.65	4.81

Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,734.00	19.03	348.91	4,507.31	1,280.27	-393.45	-1,257.64	0.11	-0.04	-0.29	
4,829.00	17.78	339.26	4,597.47	1,309.04	-401.57	-1,285.94	3.46	-1.32	-10.16	
4,924.00	19.43	343.63	4,687.51	1,337.77	-411.16	-1,314.13	2.27	1.74	4.60	
5,019.00	19.50	339.36	4,777.08	1,367.77	-421.21	-1,343.55	1.50	0.07	-4.49	
5,113.00	20.80	337.80	4,865.33	1,397.91	-433.04	-1,373.02	1.50	1.38	-1.66	
5,207.00	21.80	335.49	4,952.91	1,429.24	-446.59	-1,403.59	1.39	1.06	-2.46	
5,301.00	23.26	336.52	5,039.73	1,462.15	-461.23	-1,435.68	1.61	1.55	1.10	
5,396.00	19.89	334.34	5,128.06	1,493.93	-475.70	-1,466.65	3.65	-3.55	-2.29	
5,490.00	21.48	338.96	5,216.01	1,524.41	-488.81	-1,496.39	2.42	1.69	4.91	
5,585.00	23.61	339.95	5,303.74	1,558.52	-501.58	-1,529.78	2.28	2.24	1.04	
5,680.00	20.50	334.50	5,391.79	1,591.42	-515.27	-1,561.90	3.92	-3.27	-5.74	
5,775.00	18.06	339.24	5,481.46	1,620.21	-527.65	-1,590.00	3.05	-2.57	4.99	
5,869.00	18.13	339.35	5,570.81	1,647.52	-537.97	-1,616.72	0.08	0.07	0.12	
5,965.00	20.06	344.28	5,661.53	1,677.35	-547.70	-1,646.00	2.62	2.01	5.14	
6,059.00	20.28	351.55	5,749.78	1,708.98	-554.46	-1,677.23	2.68	0.23	7.73	
6,154.00	21.49	348.40	5,838.54	1,742.32	-560.38	-1,710.20	1.74	1.27	-3.32	
6,248.00	17.82	345.12	5,927.05	1,773.09	-567.54	-1,740.56	4.08	-3.90	-3.49	
6,342.00	18.46	347.55	6,016.38	1,801.53	-574.44	-1,768.59	1.05	0.68	2.59	
6,437.00	19.69	344.61	6,106.16	1,831.65	-581.93	-1,798.27	1.64	1.29	-3.09	
6,532.00	19.95	337.83	6,195.55	1,862.09	-592.30	-1,828.12	2.43	0.27	-7.14	
6,627.00	20.03	337.51	6,284.82	1,892.13	-604.64	-1,857.47	0.14	0.08	-0.34	
6,722.00	19.06	335.04	6,374.35	1,921.23	-617.41	-1,885.85	1.34	-1.02	-2.60	
6,817.00	17.92	338.40	6,464.45	1,948.88	-629.33	-1,912.83	1.64	-1.20	3.54	
6,911.00	19.23	337.51	6,553.55	1,976.63	-640.58	-1,939.94	1.43	1.39	-0.95	
7,006.00	15.76	338.62	6,644.14	2,003.11	-651.27	-1,965.82	3.67	-3.65	1.17	
7,101.00	16.49	343.11	6,735.41	2,028.02	-659.89	-1,990.24	1.52	0.77	4.73	
7,195.00	18.48	342.04	6,825.06	2,054.96	-668.36	-2,016.70	2.14	2.12	-1.14	
7,290.00	19.85	342.64	6,914.79	2,084.68	-677.82	-2,045.87	1.46	1.44	0.63	
7,385.00	21.27	346.31	7,003.74	2,116.82	-686.71	-2,077.50	2.02	1.49	3.86	
7,478.00	17.19	341.70	7,091.54	2,146.27	-695.02	-2,106.46	4.68	-4.39	-4.95	
KOP-7478' MD, 7092' TVD										
7,480.00	17.10	341.58	7,093.45	2,146.83	-695.20	-2,107.01	4.68	-4.32	-6.11	
7,575.00	14.25	298.79	7,185.21	2,165.78	-709.91	-2,125.15	12.23	-3.00	-45.04	
7,670.00	14.82	245.99	7,277.55	2,166.47	-731.35	-2,124.71	13.50	0.60	-55.58	
7,764.00	18.70	217.90	7,367.69	2,149.65	-751.63	-2,106.84	9.43	4.13	-29.88	
7,859.00	24.03	199.65	7,456.22	2,119.36	-767.52	-2,075.76	8.91	5.61	-19.21	
7,954.00	29.75	187.35	7,540.98	2,077.70	-777.05	-2,033.65	8.37	6.02	-12.95	
8,049.00	38.08	185.44	7,619.75	2,025.07	-782.86	-1,980.78	8.84	8.77	-2.01	
8,144.00	47.27	188.20	7,689.53	1,961.23	-790.63	-1,916.62	9.87	9.67	2.91	
8,239.00	54.60	183.19	7,749.38	1,887.90	-797.77	-1,843.02	8.73	7.72	-5.27	
8,334.00	62.34	182.90	7,799.02	1,807.10	-802.06	-1,762.11	8.15	8.15	-0.31	
8,429.00	68.90	184.83	7,838.22	1,720.83	-807.93	-1,675.64	7.15	6.91	2.03	
8,524.00	80.03	180.78	7,863.63	1,629.57	-812.31	-1,584.28	12.41	11.72	-4.26	
8,530.41	80.49	180.81	7,864.72	1,623.25	-812.40	-1,577.97	7.16	7.15	0.49	

Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
~460' X-OVER PNT-8530.41' MD, 460' FNL, 134' FWL SEC 10									
8,619.00	86.82	181.24	7,874.50	1,535.26	-813.98	-1,490.02	7.16	7.15	0.48
8,714.00	89.37	178.18	7,877.66	1,440.34	-813.49	-1,395.25	4.19	2.68	-3.22
HZ LANDING PNT - 8714' MD, 7878' TVD									
8,808.00	89.38	177.22	7,878.69	1,346.42	-809.72	-1,301.66	1.02	0.01	-1.02
8,902.00	91.49	176.71	7,877.97	1,252.56	-804.74	-1,208.20	2.31	2.24	-0.54
8,997.00	89.51	178.22	7,877.14	1,157.66	-800.54	-1,113.66	2.62	-2.08	1.59
9,040.00	90.05	177.80	7,877.31	1,114.69	-799.05	-1,070.82	1.59	1.26	-0.98
9,100.00	89.88	179.75	7,877.35	1,054.71	-797.77	-1,010.99	3.26	-0.28	3.25
9,195.00	89.75	180.80	7,877.65	959.71	-798.22	-916.10	1.11	-0.14	1.11
9,291.00	88.83	178.61	7,878.84	863.73	-797.73	-820.28	2.47	-0.96	-2.28
9,481.00	88.91	179.69	7,882.59	673.79	-794.91	-630.76	0.57	0.04	0.57
9,575.00	88.84	180.51	7,884.43	579.81	-795.08	-536.90	0.88	-0.07	0.87
9,670.00	88.70	180.30	7,886.47	484.83	-795.75	-442.02	0.27	-0.15	-0.22
9,860.00	88.67	181.33	7,890.83	294.90	-798.45	-252.22	0.54	-0.02	0.54
10,050.00	88.93	181.04	7,894.81	104.98	-802.38	-62.36	0.20	0.14	-0.15
10,239.00	88.91	178.95	7,898.38	-83.97	-802.36	126.33	1.11	-0.01	-1.11
10,521.00	90.02	181.51	7,901.01	-365.93	-803.49	407.95	0.99	0.39	0.91
10,711.00	89.40	177.66	7,901.97	-555.89	-802.12	597.57	2.05	-0.33	-2.03
10,806.00	89.54	178.91	7,902.85	-650.84	-799.27	692.24	1.32	0.15	1.32
10,901.00	89.58	177.24	7,903.58	-745.78	-796.08	786.88	1.76	0.04	-1.76
11,091.00	89.80	175.67	7,904.61	-935.40	-784.34	975.62	0.83	0.12	-0.83
11,185.00	89.65	175.93	7,905.06	-1,029.15	-777.45	1,068.87	0.32	-0.16	0.28
11,280.00	89.61	177.14	7,905.67	-1,123.97	-771.71	1,163.25	1.27	-0.04	1.27
11,375.00	89.71	179.20	7,906.24	-1,218.92	-768.68	1,257.90	2.17	0.11	2.17
11,470.00	88.90	179.11	7,907.39	-1,313.90	-767.28	1,352.68	0.86	-0.85	-0.09
11,660.00	88.94	178.02	7,910.97	-1,503.80	-762.52	1,542.06	0.57	0.02	-0.57
11,753.00	89.33	176.83	7,912.37	-1,596.70	-758.34	1,634.61	1.35	0.42	-1.28
11,848.00	89.03	178.49	7,913.73	-1,691.61	-754.46	1,729.18	1.78	-0.32	1.75
11,942.00	89.36	178.16	7,915.05	-1,785.56	-751.71	1,822.85	0.50	0.35	-0.35
12,132.00	89.18	178.89	7,917.48	-1,975.48	-746.82	2,012.24	0.40	-0.09	0.38
12,227.00	89.46	181.05	7,918.60	-2,070.46	-746.77	2,107.10	2.29	0.29	2.27
12,321.00	89.41	180.42	7,919.53	-2,164.45	-747.98	2,201.02	0.67	-0.05	-0.67
12,416.00	89.72	181.28	7,920.25	-2,259.44	-749.39	2,295.94	0.96	0.33	0.91
12,511.00	89.37	181.28	7,921.01	-2,354.41	-751.51	2,390.89	0.37	-0.37	0.00
12,605.00	89.55	180.80	7,921.89	-2,448.39	-753.22	2,484.83	0.55	0.19	-0.51
12,700.00	89.27	181.25	7,922.87	-2,543.37	-754.92	2,579.77	0.56	-0.29	0.47
12,795.00	89.71	182.43	7,923.72	-2,638.31	-757.97	2,674.74	1.33	0.46	1.24
12,890.00	89.78	179.71	7,924.14	-2,733.29	-759.74	2,769.68	2.86	0.07	-2.86
13,080.00	89.68	178.44	7,925.03	-2,923.26	-756.67	2,959.22	0.67	-0.05	-0.67
13,174.00	89.83	179.66	7,925.44	-3,017.24	-755.12	3,052.99	1.31	0.16	1.30
13,269.00	89.60	178.25	7,925.91	-3,112.22	-753.38	3,147.74	1.50	-0.24	-1.48
13,365.00	90.16	179.67	7,926.11	-3,208.20	-751.64	3,243.50	1.59	0.58	1.48

Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
13,459.00	89.98	179.89	7,925.99	-3,302.20	-751.28	3,337.35	0.30	-0.19	0.23	
13,554.00	90.12	179.58	7,925.91	-3,397.20	-750.84	3,432.19	0.36	0.15	-0.33	
13,649.00	89.95	179.86	7,925.85	-3,492.20	-750.38	3,527.03	0.34	-0.18	0.29	
13,839.00	90.15	180.70	7,925.69	-3,682.20	-751.30	3,716.81	0.45	0.11	0.44	
14,029.00	90.37	179.89	7,924.83	-3,872.19	-752.28	3,906.59	0.44	0.12	-0.43	
14,124.00	90.21	178.83	7,924.34	-3,967.18	-751.22	4,001.39	1.13	-0.17	-1.12	
14,218.00	89.85	179.21	7,924.30	-4,061.17	-749.61	4,095.16	0.56	-0.38	0.40	
14,314.00	90.19	178.54	7,924.26	-4,157.15	-747.73	4,190.90	0.78	0.35	-0.70	
14,504.00	89.98	179.10	7,923.98	-4,347.11	-743.82	4,380.39	0.31	-0.11	0.29	
14,599.00	89.83	178.96	7,924.14	-4,442.09	-742.21	4,475.16	0.22	-0.16	-0.15	
14,694.00	89.75	178.92	7,924.49	-4,537.08	-740.45	4,569.91	0.09	-0.08	-0.04	
14,789.00	90.03	180.67	7,924.67	-4,632.07	-740.11	4,664.76	1.87	0.29	1.84	
14,883.00	89.64	179.64	7,924.94	-4,726.07	-740.37	4,758.64	1.17	-0.41	-1.10	
14,977.00	89.81	180.09	7,925.39	-4,820.07	-740.14	4,852.49	0.51	0.18	0.48	
15,072.00	89.82	179.52	7,925.70	-4,915.07	-739.82	4,947.34	0.60	0.01	-0.60	
15,168.00	89.87	180.06	7,925.96	-5,011.06	-739.47	5,043.19	0.56	0.05	0.56	
15,262.00	89.85	180.56	7,926.19	-5,105.06	-739.98	5,137.08	0.53	-0.02	0.53	
15,356.00	90.24	180.12	7,926.11	-5,199.06	-740.54	5,230.98	0.63	0.41	-0.47	
15,451.00	89.83	179.64	7,926.05	-5,294.06	-740.34	5,325.83	0.66	-0.43	-0.51	
15,545.00	89.83	179.69	7,926.33	-5,388.06	-739.79	5,419.67	0.05	0.00	0.05	
15,639.00	89.85	180.01	7,926.60	-5,482.06	-739.54	5,513.52	0.34	0.02	0.34	
15,734.00	89.58	179.31	7,927.07	-5,577.05	-738.98	5,608.36	0.79	-0.28	-0.74	
15,828.00	89.79	180.20	7,927.58	-5,671.05	-738.57	5,702.20	0.97	0.22	0.95	
15,923.00	89.99	180.63	7,927.77	-5,766.05	-739.26	5,797.10	0.50	0.21	0.45	
16,018.00	89.95	180.33	7,927.82	-5,861.04	-740.06	5,892.00	0.32	-0.04	-0.32	
16,110.00	90.07	180.12	7,927.80	-5,953.04	-740.42	5,983.89	0.26	0.13	-0.23	
16,199.00	90.00	179.44	7,927.75	-6,042.04	-740.08	6,072.75	0.77	-0.08	-0.76	
16,288.00	89.86	179.55	7,927.86	-6,131.04	-739.29	6,161.58	0.20	-0.16	0.12	
16,377.00	89.83	179.74	7,928.10	-6,220.04	-738.74	6,250.42	0.22	-0.03	0.21	
16,467.00	89.88	180.06	7,928.32	-6,310.04	-738.59	6,340.29	0.36	0.06	0.36	
16,556.00	89.78	179.21	7,928.59	-6,399.03	-738.02	6,429.13	0.96	-0.11	-0.96	
16,645.00	90.36	179.82	7,928.48	-6,488.03	-737.27	6,517.96	0.95	0.65	0.69	
16,734.00	90.26	180.84	7,928.00	-6,577.03	-737.78	6,606.86	1.15	-0.11	1.15	
16,823.00	90.31	179.59	7,927.56	-6,666.02	-738.11	6,695.75	1.41	0.06	-1.40	
16,913.00	89.84	179.83	7,927.44	-6,756.02	-737.66	6,785.60	0.59	-0.52	0.27	
17,002.00	90.08	180.29	7,927.50	-6,845.02	-737.75	6,874.48	0.58	0.27	0.52	
17,091.00	90.07	179.50	7,927.38	-6,934.02	-737.59	6,963.34	0.89	-0.01	-0.89	
17,180.00	89.79	178.92	7,927.49	-7,023.01	-736.36	7,052.14	0.72	-0.31	-0.65	
17,269.00	89.96	179.38	7,927.69	-7,112.00	-735.04	7,140.94	0.55	0.19	0.52	
17,358.00	89.43	178.98	7,928.16	-7,200.99	-733.77	7,229.74	0.75	-0.60	-0.45	
17,447.00	90.03	179.89	7,928.58	-7,289.98	-732.89	7,318.56	1.22	0.67	1.02	
17,536.00	89.94	178.99	7,928.60	-7,378.98	-732.02	7,407.38	1.02	-0.10	-1.01	
17,625.00	89.92	179.38	7,928.71	-7,467.97	-730.75	7,496.18	0.44	-0.02	0.44	
17,714.00	89.79	178.88	7,928.94	-7,556.96	-729.40	7,584.97	0.58	-0.15	-0.56	

Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,803.00	90.12	180.13	7,929.01	-7,645.95	-728.63	7,673.80	1.45	0.37	1.40
17,892.00	90.04	179.34	7,928.88	-7,734.95	-728.22	7,762.66	0.89	-0.09	-0.89
17,981.00	90.10	179.76	7,928.77	-7,823.95	-727.52	7,851.49	0.48	0.07	0.47
18,071.00	89.86	178.81	7,928.80	-7,913.94	-726.40	7,941.30	1.09	-0.27	-1.06
18,160.00	90.25	179.37	7,928.72	-8,002.93	-724.98	8,030.09	0.77	0.44	0.63
18,338.00	90.01	179.11	7,928.32	-8,180.91	-722.62	8,207.69	0.20	-0.13	-0.15
18,427.00	89.76	179.07	7,928.49	-8,269.90	-721.21	8,296.48	0.28	-0.28	-0.04
18,516.00	90.35	179.61	7,928.41	-8,358.89	-720.18	8,385.30	0.90	0.66	0.61
18,605.00	89.84	178.96	7,928.26	-8,447.88	-719.07	8,474.11	0.93	-0.57	-0.73
18,694.00	89.96	179.22	7,928.42	-8,536.87	-717.66	8,562.90	0.32	0.13	0.29
18,783.00	89.88	179.33	7,928.54	-8,625.87	-716.53	8,651.70	0.15	-0.09	0.12
18,872.00	89.97	179.40	7,928.66	-8,714.86	-715.55	8,740.52	0.13	0.10	0.08
19,050.00	90.22	179.73	7,928.36	-8,892.85	-714.20	8,918.19	0.23	0.14	0.19
19,139.00	90.25	179.47	7,928.00	-8,981.85	-713.58	9,007.03	0.29	0.03	-0.29
19,228.00	90.09	179.32	7,927.73	-9,070.85	-712.64	9,095.85	0.25	-0.18	-0.17
19,317.00	90.11	179.95	7,927.58	-9,159.84	-712.07	9,184.70	0.71	0.02	0.71
19,406.00	90.24	180.36	7,927.31	-9,248.84	-712.31	9,273.58	0.48	0.15	0.46
19,495.00	90.03	179.74	7,927.10	-9,337.84	-712.39	9,362.46	0.74	-0.24	-0.70
19,584.00	90.08	180.27	7,927.01	-9,426.84	-712.39	9,451.34	0.60	0.06	0.60
19,852.00	89.89	180.52	7,927.08	-9,694.83	-714.24	9,719.05	0.12	-0.07	0.09
20,030.00	89.86	181.02	7,927.47	-9,872.82	-716.63	9,896.91	0.28	-0.02	0.28
20,386.00	90.31	180.43	7,926.94	-10,228.79	-721.14	10,252.62	0.21	0.13	-0.17
20,475.00	90.29	180.19	7,926.47	-10,317.78	-721.62	10,341.52	0.27	-0.02	-0.27
20,564.00	90.42	180.11	7,925.92	-10,406.78	-721.85	10,430.40	0.17	0.15	-0.09
20,653.00	90.35	179.67	7,925.33	-10,495.78	-721.68	10,519.27	0.50	-0.08	-0.49
20,742.00	89.75	182.29	7,925.25	-10,584.76	-723.20	10,608.20	3.02	-0.67	2.94
20,831.00	89.87	181.09	7,925.54	-10,673.72	-725.83	10,697.18	1.36	0.13	-1.35
20,920.00	90.19	180.92	7,925.50	-10,762.70	-727.39	10,786.12	0.41	0.36	-0.19
21,009.00	89.92	178.86	7,925.41	-10,851.70	-727.22	10,874.98	2.33	-0.30	-2.31
21,098.00	89.91	179.17	7,925.54	-10,940.69	-725.69	10,963.76	0.35	-0.01	0.35
21,187.00	89.96	178.96	7,925.64	-11,029.67	-724.24	11,052.55	0.24	0.06	-0.24
21,276.00	89.75	181.16	7,925.87	-11,118.67	-724.33	11,141.42	2.48	-0.24	2.47
21,365.00	89.89	180.70	7,926.15	-11,207.65	-725.78	11,230.36	0.54	0.16	-0.52
21,454.00	89.88	180.49	7,926.33	-11,296.65	-726.70	11,319.28	0.24	-0.01	-0.24
21,543.00	89.88	179.18	7,926.51	-11,385.65	-726.44	11,408.14	1.47	0.00	-1.47
21,632.00	89.90	179.48	7,926.68	-11,474.64	-725.40	11,496.95	0.34	0.02	0.34
21,721.00	90.08	179.07	7,926.70	-11,563.63	-724.28	11,585.76	0.50	0.20	-0.46
21,809.00	89.85	180.26	7,926.75	-11,651.63	-723.76	11,673.61	1.38	-0.26	1.35
21,898.00	89.97	179.17	7,926.89	-11,740.63	-723.32	11,762.46	1.23	0.13	-1.22
21,987.00	90.03	179.46	7,926.89	-11,829.62	-722.25	11,851.27	0.33	0.07	0.33
22,165.00	89.88	179.74	7,927.03	-12,007.62	-721.01	12,028.95	0.18	-0.08	0.16
22,433.00	89.88	180.61	7,927.59	-12,275.61	-721.83	12,296.61	0.32	0.00	0.32
22,522.00	89.78	180.32	7,927.86	-12,364.61	-722.55	12,385.52	0.34	-0.11	-0.33

Survey Report

Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well INTERCHANGE A S22-30-21N
Project:	BROOMFIELD COUNTY	TVD Reference:	KB 28' @ 5264.00usft
Site:	Sec 10-T1S-R68W	MD Reference:	KB 28' @ 5264.00usft
Well:	INTERCHANGE A S22-30-21N	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
22,610.00	90.01	179.65	7,928.02	-12,452.61	-722.53	12,473.40	0.80	0.26	-0.76	
22,700.00	89.92	180.25	7,928.07	-12,542.61	-722.45	12,563.27	0.67	-0.10	0.67	
22,789.00	89.94	179.69	7,928.18	-12,631.61	-722.40	12,652.14	0.63	0.02	-0.63	
22,967.00	89.92	178.50	7,928.40	-12,809.58	-719.59	12,829.71	0.67	-0.01	-0.67	
23,056.00	90.01	178.16	7,928.46	-12,898.54	-717.00	12,918.41	0.40	0.10	-0.38	
23,145.00	90.01	178.65	7,928.44	-12,987.51	-714.52	13,007.12	0.55	0.00	0.55	
23,234.00	90.10	178.93	7,928.35	-13,076.49	-712.64	13,095.88	0.33	0.10	0.31	
23,323.00	90.03	179.05	7,928.25	-13,165.48	-711.07	13,184.66	0.16	-0.08	0.13	
23,412.00	90.01	177.90	7,928.22	-13,254.44	-708.71	13,273.37	1.29	-0.02	-1.29	
LAST SURVEY - 23412' MD, 7928' TVD										
23,479.00	90.01	177.90	7,928.21	-13,321.40	-706.25	13,340.11	0.00	0.00	0.00	
EXTRAPOLATION TO TD - 23479' MD, 459' FSL, 156' FWL SEC 22										

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	Latitude	Longitude
INTERCHANGE A S22-30-21N	0.00	0.00	7,883.00	1,623.25	-836.43	1,237,930.27	3,140,994.02	39.985405°N	104.996831°W
- actual wellpath misses target center by 30.02usft at 8532.86usft MD (7865.12 TVD, 1620.83 N, -812.43 E)									
- Point									
INTERCHANGE A S22-30-21N	0.00	0.00	7,933.00	-13,322.13	-751.14	1,222,985.63	3,141,164.61	39.944377°N	104.996525°W
- actual wellpath misses target center by 45.14usft at 23478.09usft MD (7928.21 TVD, -13320.48 N, -706.28 E)									
- Point									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,642.00	1,599.16	280.55	-98.63	SURFACE CSG-1642' MD, 1599' TVD	
7,478.00	7,091.54	2,146.27	-695.02	KOP-7478' MD, 7092' TVD	
8,530.41	7,864.72	1,623.25	-812.40	~460' X-OVER PNT-8530.41' MD, 460' FNL, 134' FWL SEC 10	
8,714.00	7,877.66	1,440.34	-813.49	HZ LANDING PNT - 8714' MD, 7878' TVD	
23,412.00	7,928.22	-13,254.44	-708.71	LAST SURVEY - 23412' MD, 7928' TVD	
23,479.00	7,928.21	-13,321.40	-706.25	EXTRAPOLATION TO TD - 23479' MD, 459' FSL, 156' FWL SEC 22	

Checked By: _____ Approved By: _____ Date: _____