

EXTRACTION OIL & GAS

WELD COUNTY, COLORADO (NAD 83)

SW SE SEC. 17 T2N R68W 6th P.M. (RVE PAD)

RINN VALLEY EAST N17-20-8N

ORIGINAL WELLBORE

24 September, 2018

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO (NAD 83)
 Site: SW SE SEC. 17 T2N R68W 6th P.M. (RVE PAD)
 Well: RINN VALLEY EAST N17-20-8N
 Wellbore: ORIGINAL WELLBORE
 Design: FINAL SURVEYS

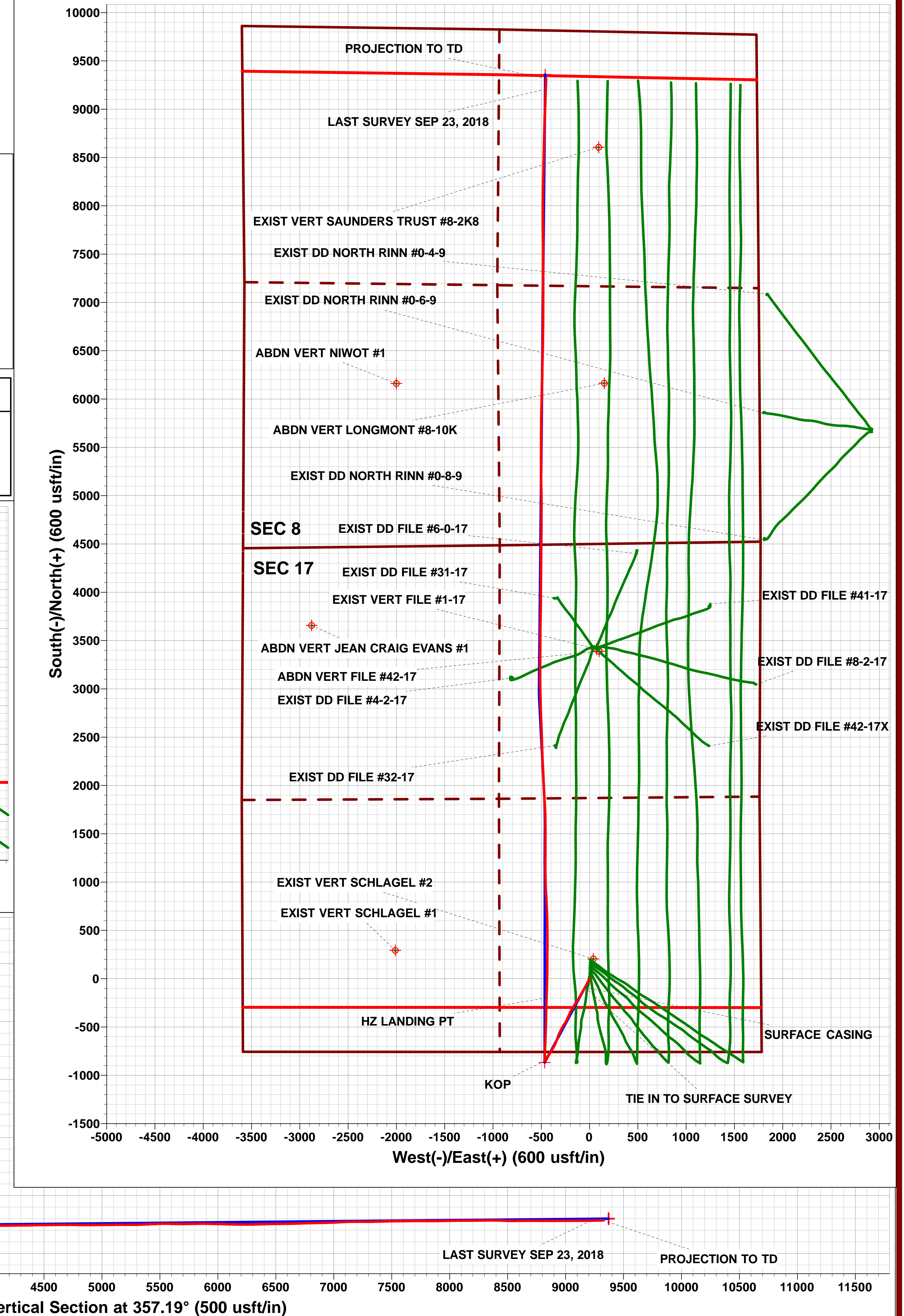
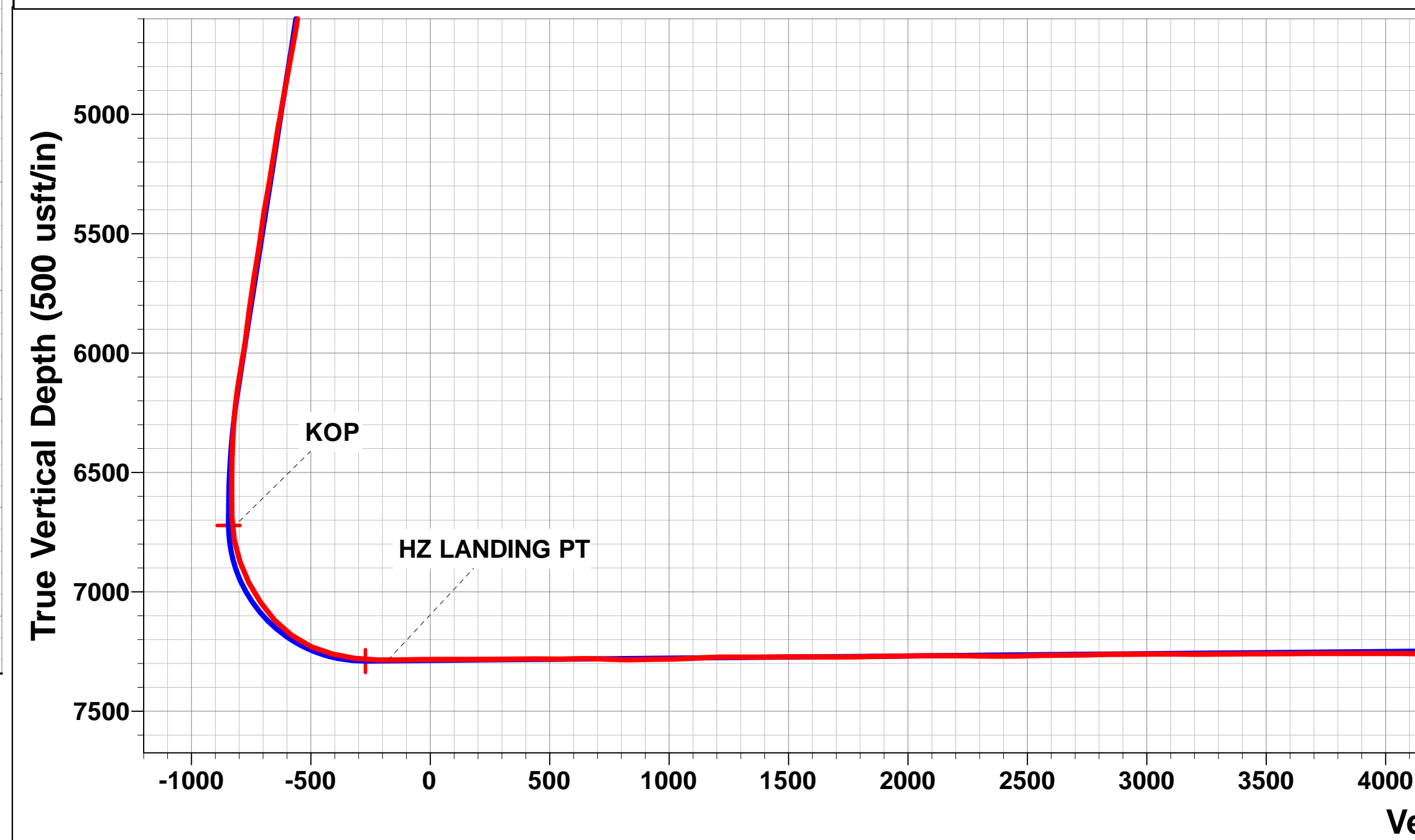
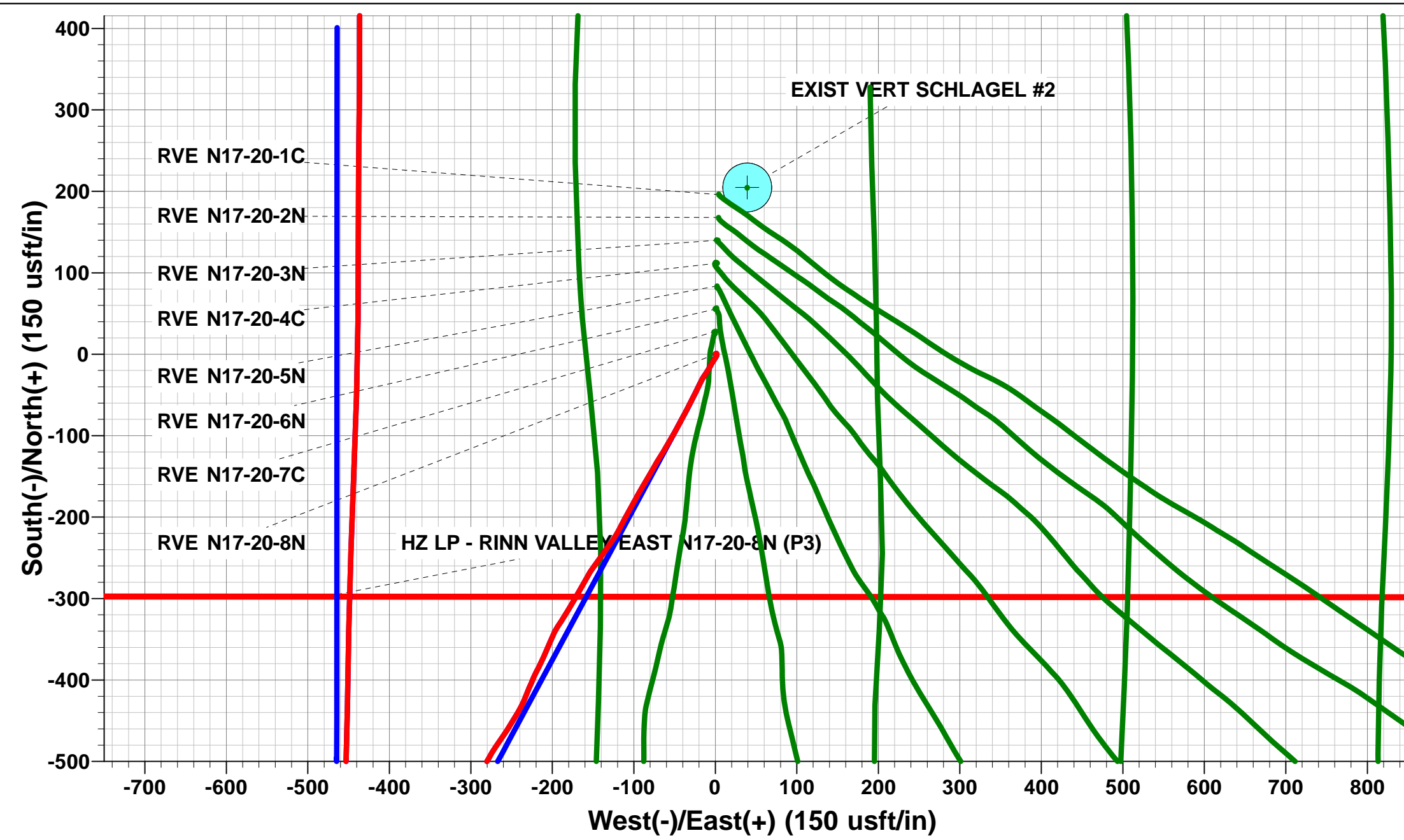
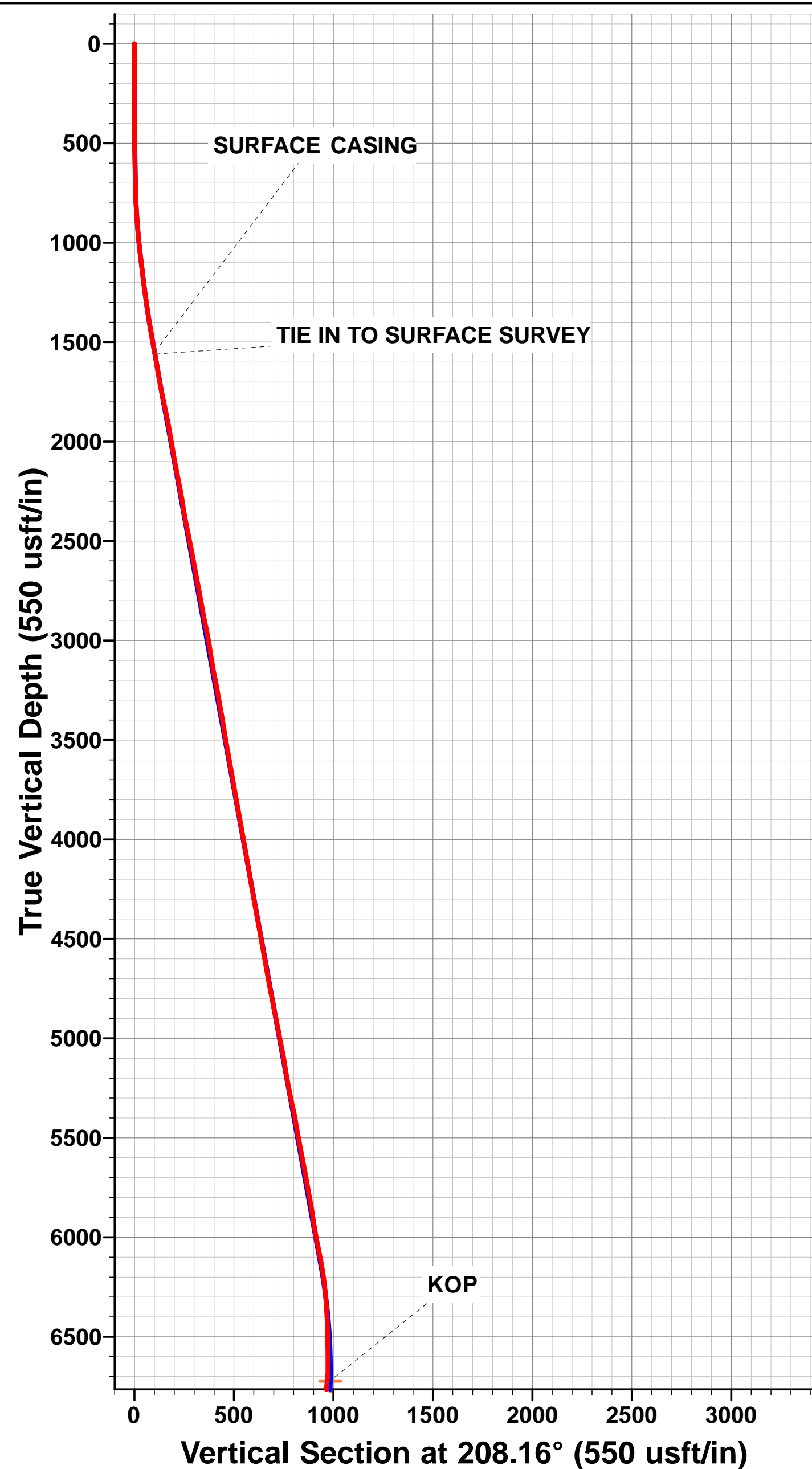
ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
1550.62	1557.00	10.29	208.57	-89.28	-46.49	-86.90	104.59	SURFACE CASING
1560.46	1567.00	10.10	207.91	-90.84	-47.32	-88.41	106.39	TIE IN TO SURFACE SURVEY
6732.65	6818.00	5.63	2.12	-851.68	-464.47	-827.89	986.25	KOP
7285.53	7771.00	90.40	2.09	-198.69	-445.53	-176.62	1637.52	HZ LANDING PT
7217.09	17180.00	90.99	2.23	9205.94	-454.19	9217.14	11044.71	LAST SURVEY SEP 23, 2018
7214.49	17290.00	91.72	2.62	9315.81	-449.54	9326.65	11154.68	PROJECTION TO TD

AS DRILLED LOCAL COORDINATES:
 SHL: 758ft FSL & 1775ft FEL Sec 17
 LANDING PNT: 556.38ft FSL & 2238.08ft FEL Sec 17
 BHL: 504.04ft FNL & 2230.3ft FEL Sec 8

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - RINN VALLEY EAST N17-20-8N (P3)	6722.35	-868.03	-464.75	40.131186	-105.025657
BHL - RINN VALLEY EAST N17-20-8N (P3)	7200.00	9359.85	-459.24	40.159262	-105.025638
HZ LP - RINN VALLEY EAST N17-20-8N (P3)	7290.00	-295.07	-464.45	40.132759	-105.025656



Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RVE)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	SW SE SEC. 17 T2N R68W 6th P.M. (RVE PAD)				
Site Position:		Northing:	1,292,056.11 usft	Latitude:	40.134107
From:	Lat/Long	Easting:	3,133,096.11 usft	Longitude:	-105.023979
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.31 °

Well	RINN VALLEY EAST N17-20-8N					
Well Position	+N/-S	0.00 usft	Northing:	1,291,860.10 usft	Latitude:	40.133569
	+E/-W	0.00 usft	Easting:	3,133,092.69 usft	Longitude:	-105.023995
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,924.00 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/08/2018	8.20	66.57	52,095

Design	FINAL SURVEYS				
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	357.19

Survey Program	Date	24/09/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
15.00	17,290.00	FINAL SURVEYS (ORIGINAL WELLBORE)	OWSG (Rev2) MWD	OWSG MWD - Standard

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	4,953.00	0.00	0.00	0.00	0.00	0.00	0.00	
15.00	0.00	0.00	15.00	4,938.00	0.00	0.00	0.00	0.00	0.00	0.00	
87.00	0.05	318.98	87.00	4,866.00	0.02	-0.02	0.02	0.07	0.07	0.00	
118.00	0.08	12.23	118.00	4,835.00	0.06	-0.02	0.06	0.21	0.10	171.77	
148.00	0.44	68.21	148.00	4,805.00	0.12	0.09	0.11	1.34	1.20	186.60	
179.00	0.51	37.73	179.00	4,774.00	0.27	0.28	0.26	0.83	0.23	-98.32	
209.00	0.66	43.73	209.00	4,744.00	0.50	0.48	0.48	0.54	0.50	20.00	
240.00	0.95	49.13	239.99	4,713.01	0.80	0.80	0.76	0.97	0.94	17.42	
270.00	0.60	91.68	269.99	4,683.01	0.96	1.15	0.90	2.17	-1.17	141.83	
301.00	0.21	93.02	300.99	4,652.01	0.95	1.36	0.88	1.26	-1.26	4.32	
331.00	0.33	176.88	330.99	4,622.01	0.86	1.42	0.79	1.24	0.40	279.53	
362.00	0.47	145.06	361.99	4,591.01	0.67	1.50	0.59	0.83	0.45	-102.65	
392.00	0.66	158.20	391.99	4,561.01	0.41	1.64	0.33	0.76	0.63	43.80	

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RV)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey											
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
423.00	0.69	173.53	422.99	4,530.01	0.05	1.72	-0.03	0.59	0.10	49.45	
453.00	0.91	179.44	452.98	4,500.02	-0.36	1.75	-0.45	0.78	0.73	19.70	
484.00	1.35	192.71	483.98	4,469.02	-0.97	1.67	-1.05	1.64	1.42	42.81	
515.00	1.60	195.72	514.97	4,438.03	-1.74	1.47	-1.81	0.84	0.81	9.71	
545.00	1.46	199.17	544.96	4,408.04	-2.50	1.23	-2.56	0.56	-0.47	11.50	
588.00	1.15	211.07	587.94	4,365.06	-3.39	0.83	-3.43	0.95	-0.72	27.67	
629.00	1.02	218.78	628.94	4,324.06	-4.03	0.39	-4.04	0.48	-0.32	18.80	
671.00	0.99	217.18	670.93	4,282.07	-4.61	-0.07	-4.60	0.10	-0.07	-3.81	
714.00	1.38	211.30	713.92	4,239.08	-5.35	-0.56	-5.31	0.95	0.91	-13.67	
757.00	1.42	213.75	756.91	4,196.09	-6.23	-1.12	-6.17	0.17	0.09	5.70	
842.00	3.49	211.92	841.83	4,111.17	-9.30	-3.08	-9.14	2.44	2.44	-2.15	
883.00	4.40	210.27	882.73	4,070.27	-11.72	-4.53	-11.48	2.24	2.22	-4.02	
926.00	4.65	208.08	925.59	4,027.41	-14.68	-6.18	-14.36	0.71	0.58	-5.09	
969.00	5.31	211.56	968.43	3,984.57	-17.92	-8.04	-17.50	1.69	1.53	8.09	
1,001.00	5.62	212.45	1,000.29	3,952.71	-20.50	-9.66	-20.00	1.00	0.97	2.78	
1,032.00	6.19	212.70	1,031.12	3,921.88	-23.19	-11.38	-22.60	1.84	1.84	0.81	
1,064.00	6.88	213.47	1,062.91	3,890.09	-26.24	-13.37	-25.55	2.17	2.16	2.41	
1,095.00	6.97	209.45	1,093.69	3,859.31	-29.42	-15.31	-28.64	1.59	0.29	-12.97	
1,127.00	6.64	210.12	1,125.46	3,827.54	-32.72	-17.20	-31.83	1.06	-1.03	2.09	
1,159.00	6.63	206.35	1,157.25	3,795.75	-35.97	-18.95	-35.00	1.36	-0.03	-11.78	
1,222.00	7.33	205.37	1,219.78	3,733.22	-42.86	-22.28	-41.72	1.13	1.11	-1.56	
1,254.00	7.70	205.05	1,251.51	3,701.49	-46.65	-24.06	-45.41	1.16	1.16	-1.00	
1,286.00	7.99	206.50	1,283.21	3,669.79	-50.58	-25.96	-49.25	1.10	0.91	4.53	
1,317.00	8.44	206.48	1,313.89	3,639.11	-54.55	-27.94	-53.11	1.45	1.45	-0.06	
1,381.00	8.89	207.65	1,377.16	3,575.84	-63.13	-32.33	-61.47	0.76	0.70	1.83	
1,412.00	9.13	207.65	1,407.78	3,545.22	-67.43	-34.58	-65.65	0.77	0.77	0.00	
1,443.00	9.46	208.87	1,438.37	3,514.63	-71.84	-36.95	-69.94	1.24	1.06	3.94	
1,475.00	9.73	208.53	1,469.92	3,483.08	-76.52	-39.51	-74.49	0.86	0.84	-1.06	
1,507.00	10.09	207.81	1,501.44	3,451.56	-81.37	-42.11	-79.21	1.19	1.12	-2.25	
1,538.00	10.66	209.75	1,531.94	3,421.06	-86.26	-44.80	-83.97	2.16	1.84	6.26	
SURFACE CASING											
1,557.00	10.29	208.57	1,550.62	3,402.38	-89.28	-46.49	-86.90	2.24	-1.94	-6.23	
TIE IN TO SURFACE SURVEY											
1,567.00	10.10	207.91	1,560.46	3,392.54	-90.84	-47.32	-88.41	2.24	-1.92	-6.57	
1,688.00	9.41	210.02	1,679.71	3,273.29	-108.78	-57.24	-105.85	0.64	-0.57	1.74	
1,783.00	12.46	212.44	1,772.98	3,180.02	-124.16	-66.63	-120.74	3.25	3.21	2.55	
1,879.00	11.00	208.87	1,866.97	3,086.03	-140.92	-76.60	-137.00	1.70	-1.52	-3.72	
1,974.00	10.34	210.94	1,960.33	2,992.67	-156.17	-85.36	-151.80	0.80	-0.69	2.18	
2,070.00	9.24	209.62	2,054.93	2,898.07	-170.26	-93.60	-165.47	1.17	-1.15	-1.37	
2,165.00	11.58	208.70	2,148.36	2,804.64	-185.26	-101.95	-180.04	2.47	2.46	-0.97	
2,260.00	10.38	208.17	2,241.62	2,711.38	-201.17	-110.57	-195.51	1.27	-1.26	-0.56	
2,356.00	9.15	207.51	2,336.22	2,616.78	-215.56	-118.18	-209.51	1.29	-1.28	-0.69	
2,451.00	11.93	215.17	2,429.62	2,523.38	-230.29	-127.33	-223.77	3.27	2.93	8.06	
2,547.00	11.14	214.95	2,523.68	2,429.32	-246.00	-138.36	-238.93	0.82	-0.82	-0.23	
2,642.00	10.30	217.11	2,617.02	2,335.98	-260.30	-148.74	-252.70	0.98	-0.88	2.27	
2,738.00	10.96	208.34	2,711.38	2,241.62	-275.18	-158.25	-267.09	1.82	0.69	-9.14	
2,833.00	9.54	209.36	2,804.86	2,148.14	-289.99	-166.40	-281.48	1.51	-1.49	1.07	
2,929.00	11.98	211.16	2,899.16	2,053.84	-305.45	-175.45	-296.48	2.57	2.54	1.87	
3,024.00	10.21	211.21	2,992.38	1,960.62	-321.09	-184.92	-311.64	1.86	-1.86	0.05	
3,120.00	8.44	213.85	3,087.11	1,865.89	-334.22	-193.25	-324.34	1.90	-1.84	2.75	
3,215.00	11.67	203.10	3,180.65	1,772.35	-348.85	-200.91	-338.58	3.92	3.40	-11.32	
3,311.00	9.77	202.48	3,274.97	1,678.03	-365.31	-207.83	-354.68	1.98	-1.98	-0.65	
3,406.00	10.52	207.33	3,368.49	1,584.51	-380.46	-214.90	-369.47	1.20	0.79	5.11	

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RV)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,502.00	8.48	204.69	3,463.16	1,489.84	-394.68	-221.88	-383.33	2.17	-2.12	-2.75
3,597.00	11.14	202.48	3,556.77	1,396.23	-409.53	-228.31	-397.85	2.83	2.80	-2.33
3,693.00	9.37	202.75	3,651.23	1,301.77	-425.30	-234.88	-413.28	1.84	-1.84	0.28
3,788.00	10.52	210.86	3,744.81	1,208.19	-439.88	-242.32	-427.48	1.90	1.21	8.54
3,884.00	9.28	211.12	3,839.37	1,113.63	-454.03	-250.82	-441.19	1.29	-1.29	0.27
3,979.00	11.00	214.65	3,932.89	1,020.11	-468.05	-259.93	-454.74	1.92	1.81	3.72
4,075.00	9.68	214.03	4,027.33	925.67	-482.27	-269.65	-468.48	1.38	-1.37	-0.65
4,170.00	11.05	208.56	4,120.78	832.22	-496.89	-278.48	-482.64	1.77	1.44	-5.76
4,265.00	8.62	208.70	4,214.37	738.63	-511.13	-286.25	-496.49	2.56	-2.56	0.15
4,361.00	10.69	202.88	4,309.01	643.99	-525.64	-293.17	-510.65	2.38	2.16	-6.06
4,456.00	9.81	206.05	4,402.49	550.51	-541.03	-300.15	-525.67	1.10	-0.93	3.34
4,552.00	10.91	208.21	4,496.93	456.07	-556.39	-308.03	-540.62	1.21	1.15	2.25
4,648.00	9.10	209.23	4,591.46	361.54	-571.02	-316.04	-554.85	1.89	-1.89	1.06
4,743.00	11.71	198.12	4,684.90	268.10	-586.74	-322.70	-570.22	3.45	2.75	-11.69
4,839.00	9.72	195.08	4,779.23	173.77	-603.83	-327.84	-587.04	2.15	-2.07	-3.17
4,933.00	12.59	202.75	4,871.45	81.55	-620.94	-333.87	-603.83	3.43	3.05	8.16
5,029.00	10.34	200.10	4,965.52	-12.52	-638.68	-340.88	-621.21	2.41	-2.34	-2.76
5,124.00	11.62	204.95	5,058.79	-105.79	-655.37	-347.85	-637.53	1.66	1.35	5.11
5,220.00	8.44	199.27	5,153.31	-200.31	-670.79	-354.25	-652.62	3.47	-3.31	-5.92
5,316.00	11.27	204.47	5,247.88	-294.88	-685.98	-360.46	-667.49	3.09	2.95	5.42
5,411.00	12.55	211.61	5,340.84	-387.84	-703.22	-369.72	-684.26	2.05	1.35	7.52
5,507.00	9.99	208.96	5,434.98	-481.98	-719.39	-379.22	-699.94	2.72	-2.67	-2.76
5,603.00	10.12	217.03	5,529.51	-576.51	-733.41	-388.33	-713.50	1.47	0.14	8.41
5,698.00	11.67	209.09	5,622.80	-669.80	-748.47	-398.03	-728.07	2.27	1.63	-8.36
5,793.00	9.32	208.61	5,716.21	-763.21	-763.62	-406.38	-742.79	2.48	-2.47	-0.51
5,889.00	11.00	215.22	5,810.70	-857.70	-777.93	-415.39	-756.64	2.13	1.75	6.89
5,984.00	8.26	217.29	5,904.36	-951.36	-790.77	-424.75	-769.00	2.91	-2.88	2.18
6,080.00	10.83	204.29	5,999.03	-1,046.03	-804.48	-432.64	-782.31	3.48	2.68	-13.54
6,198.00	11.05	209.75	6,114.89	-1,161.89	-824.40	-442.82	-801.71	0.90	0.19	4.63
6,294.00	7.56	211.61	6,209.61	-1,256.61	-837.77	-450.69	-814.68	3.65	-3.64	1.94
6,390.00	4.82	213.02	6,305.04	-1,352.04	-846.53	-456.20	-823.16	2.86	-2.85	1.47
6,485.00	2.87	215.17	6,399.82	-1,446.82	-851.82	-459.75	-828.27	2.06	-2.05	2.26
6,580.00	1.28	235.40	6,494.76	-1,541.76	-854.37	-461.99	-830.70	1.82	-1.67	21.29
6,676.00	0.71	280.88	6,590.75	-1,637.75	-854.87	-463.46	-831.13	0.97	-0.59	47.37
6,771.00	0.75	326.05	6,685.74	-1,732.74	-854.24	-464.38	-830.45	0.59	0.04	47.55
KOP										
6,818.00	5.63	2.12	6,732.65	-1,779.65	-851.68	-464.47	-827.89	10.72	10.38	76.74
6,867.00	10.87	4.56	6,781.13	-1,828.13	-844.67	-464.01	-820.91	10.72	10.70	4.98
6,963.00	18.16	0.33	6,874.01	-1,921.01	-820.65	-463.21	-796.97	7.67	7.59	-4.41
7,058.00	27.88	359.94	6,961.34	-2,008.34	-783.55	-463.14	-759.91	10.23	10.23	-0.41
7,154.00	34.11	2.98	7,043.59	-2,090.59	-734.17	-461.77	-710.66	6.69	6.49	3.17
7,249.00	42.33	1.79	7,118.17	-2,165.17	-675.49	-459.38	-652.17	8.69	8.65	-1.25
7,344.00	54.04	2.71	7,181.40	-2,228.40	-604.87	-456.55	-581.77	12.35	12.33	0.97
7,440.00	65.58	1.61	7,229.59	-2,276.59	-522.09	-453.48	-499.24	12.06	12.02	-1.15
7,535.00	76.23	1.08	7,260.62	-2,307.62	-432.47	-451.39	-409.83	11.22	11.21	-0.56
7,630.00	81.62	0.99	7,278.87	-2,325.87	-339.29	-449.70	-316.85	5.67	5.67	-0.09
7,726.00	90.15	2.05	7,285.75	-2,332.75	-243.66	-447.16	-221.46	8.95	8.89	1.10
HZ LANDING PT										
7,771.00	90.40	2.09	7,285.53	-2,332.53	-198.69	-445.53	-176.62	0.56	0.55	0.09
7,822.00	90.68	2.14	7,285.05	-2,332.05	-147.73	-443.65	-125.81	0.56	0.55	0.09
7,917.00	90.90	1.96	7,283.74	-2,330.74	-52.80	-440.25	-31.16	0.30	0.23	-0.19
8,012.00	89.40	0.33	7,283.49	-2,330.49	42.17	-438.35	63.61	2.33	-1.58	-1.72
8,108.00	90.99	359.94	7,283.17	-2,330.17	138.17	-438.13	159.48	1.71	1.66	-0.41

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RV)	KB Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,203.00	89.48	0.68	7,282.78	-2,329.78	233.16	-437.61	254.33	1.77	-1.59	0.78
8,299.00	91.74	0.55	7,281.76	-2,328.76	329.15	-436.58	350.15	2.36	2.35	-0.14
8,394.00	88.60	359.67	7,281.47	-2,328.47	424.13	-436.40	445.01	3.43	-3.31	-0.93
8,490.00	91.07	359.32	7,281.75	-2,328.75	520.12	-437.25	540.93	2.60	2.57	-0.36
8,586.00	90.63	358.48	7,280.33	-2,327.33	616.09	-439.09	636.87	0.99	-0.46	-0.87
8,681.00	87.23	357.51	7,282.10	-2,329.10	711.00	-442.41	731.83	3.72	-3.58	-1.02
8,777.00	89.84	357.34	7,284.55	-2,331.55	806.87	-446.72	827.79	2.72	2.72	-0.18
8,873.00	91.47	356.10	7,283.46	-2,330.46	902.70	-452.22	923.77	2.13	1.70	-1.29
8,968.00	90.77	359.27	7,281.60	-2,328.60	997.59	-456.05	1,018.74	3.42	-0.74	3.34
9,063.00	93.95	358.75	7,277.69	-2,324.69	1,092.48	-457.69	1,113.60	3.39	3.35	-0.55
9,159.00	90.81	0.68	7,273.70	-2,320.70	1,188.38	-458.17	1,209.41	3.84	-3.27	2.01
9,254.00	89.00	0.07	7,273.86	-2,320.86	1,283.38	-457.54	1,304.26	2.01	-1.91	-0.64
9,350.00	90.85	359.94	7,273.99	-2,320.99	1,379.37	-457.54	1,400.14	1.93	1.93	-0.14
9,445.00	90.99	0.20	7,272.46	-2,319.46	1,474.36	-457.42	1,495.00	0.31	0.15	0.27
9,540.00	89.13	359.58	7,272.36	-2,319.36	1,569.35	-457.60	1,589.89	2.06	-1.96	-0.65
9,636.00	90.10	359.63	7,273.01	-2,320.01	1,665.35	-458.26	1,685.80	1.01	1.01	0.05
9,731.00	89.97	356.54	7,272.95	-2,319.95	1,760.28	-461.44	1,780.78	3.26	-0.14	-3.25
9,827.00	92.36	356.37	7,271.00	-2,318.00	1,856.07	-467.37	1,876.75	2.50	2.49	-0.18
9,923.00	89.79	357.25	7,269.19	-2,316.19	1,951.90	-472.71	1,972.72	2.83	-2.68	0.92
10,018.00	91.12	357.86	7,268.44	-2,315.44	2,046.81	-476.77	2,067.71	1.54	1.40	0.64
10,114.00	89.57	356.81	7,267.86	-2,314.86	2,142.70	-481.23	2,163.71	1.95	-1.61	-1.09
10,209.00	89.13	357.69	7,268.94	-2,315.94	2,237.58	-485.79	2,258.70	1.04	-0.46	0.93
10,305.00	89.66	357.82	7,269.95	-2,316.95	2,333.50	-489.55	2,354.69	0.57	0.55	0.14
10,400.00	91.12	358.13	7,269.31	-2,316.31	2,428.44	-492.90	2,449.67	1.57	1.54	0.33
10,496.00	91.69	358.70	7,266.95	-2,313.95	2,524.37	-495.56	2,545.62	0.84	0.59	0.59
10,592.00	89.84	357.42	7,265.67	-2,312.67	2,620.30	-498.81	2,641.60	2.34	-1.93	-1.33
10,688.00	91.52	357.29	7,264.53	-2,311.53	2,716.19	-503.24	2,737.59	1.76	1.75	-0.14
10,783.00	91.38	359.10	7,262.13	-2,309.13	2,811.11	-506.23	2,832.54	1.91	-0.15	1.91
10,878.00	89.17	358.39	7,261.67	-2,308.67	2,906.08	-508.31	2,927.49	2.44	-2.33	-0.75
10,974.00	91.21	358.35	7,261.35	-2,308.35	3,002.03	-511.04	3,023.47	2.13	2.12	-0.04
11,070.00	88.73	359.72	7,261.40	-2,308.40	3,098.01	-512.66	3,119.41	2.95	-2.58	1.43
11,165.00	90.81	359.98	7,261.79	-2,308.79	3,193.00	-512.91	3,214.30	2.21	2.19	0.27
11,261.00	89.93	0.99	7,261.17	-2,308.17	3,288.99	-512.09	3,310.14	1.40	-0.92	1.05
11,357.00	91.30	0.99	7,260.13	-2,307.13	3,384.97	-510.43	3,405.92	1.43	1.43	0.00
11,452.00	89.31	359.80	7,259.63	-2,306.63	3,479.96	-509.78	3,500.76	2.44	-2.09	-1.25
11,548.00	91.25	0.11	7,259.16	-2,306.16	3,575.96	-509.85	3,596.65	2.05	2.02	0.32
11,643.00	89.13	1.21	7,258.84	-2,305.84	3,670.94	-508.76	3,691.46	2.51	-2.23	1.16
11,739.00	90.81	1.26	7,258.90	-2,305.90	3,766.92	-506.69	3,787.22	1.75	1.75	0.05
11,834.00	89.35	0.29	7,258.76	-2,305.76	3,861.90	-505.41	3,882.03	1.85	-1.54	-1.02
11,929.00	90.90	0.07	7,258.56	-2,305.56	3,956.90	-505.11	3,976.90	1.65	1.63	-0.23
12,025.00	88.86	0.68	7,258.76	-2,305.76	4,052.89	-504.48	4,072.75	2.22	-2.12	0.64
12,120.00	90.23	0.91	7,259.51	-2,306.51	4,147.88	-503.16	4,167.55	1.46	1.44	0.24
12,216.00	91.30	0.99	7,258.23	-2,305.23	4,243.85	-501.57	4,263.34	1.12	1.11	0.08
12,311.00	90.15	359.85	7,257.03	-2,304.03	4,338.84	-500.87	4,358.17	1.70	-1.21	-1.20
12,407.00	91.96	0.07	7,255.26	-2,302.26	4,434.82	-500.94	4,454.04	1.90	1.89	0.23
12,502.00	89.48	0.46	7,254.07	-2,301.07	4,529.81	-500.50	4,548.89	2.64	-2.61	0.41
12,597.00	91.38	1.13	7,253.35	-2,300.35	4,624.79	-499.18	4,643.69	2.12	2.00	0.71
12,693.00	88.64	0.42	7,253.34	-2,300.34	4,720.77	-497.89	4,739.50	2.95	-2.85	-0.74
12,788.00	89.44	0.02	7,254.93	-2,301.93	4,815.75	-497.52	4,834.35	0.94	0.84	-0.42
12,884.00	91.16	0.29	7,254.43	-2,301.43	4,911.75	-497.26	4,930.22	1.81	1.79	0.28
12,979.00	89.62	358.31	7,253.78	-2,300.78	5,006.73	-498.42	5,025.14	2.64	-1.62	-2.08
13,074.00	91.47	358.44	7,252.87	-2,299.87	5,101.69	-501.12	5,120.11	1.95	1.95	0.14
13,170.00	89.00	0.07	7,252.48	-2,299.48	5,197.67	-502.36	5,216.04	3.08	-2.57	1.70

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RV)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,265.00	91.25	359.98	7,252.27	-2,299.27	5,292.66	-502.32	5,310.92	2.37	2.37	-0.09
13,361.00	93.73	359.85	7,248.10	-2,295.10	5,388.56	-502.46	5,406.71	2.59	2.58	-0.14
13,456.00	91.34	0.33	7,243.90	-2,290.90	5,483.46	-502.31	5,501.49	2.57	-2.52	0.51
13,552.00	88.03	0.29	7,244.43	-2,291.43	5,579.45	-501.80	5,597.33	3.45	-3.45	-0.04
13,647.00	90.06	0.33	7,246.01	-2,293.01	5,674.43	-501.28	5,692.17	2.14	2.14	0.04
13,743.00	92.00	0.38	7,244.29	-2,291.29	5,770.40	-500.69	5,788.01	2.02	2.02	0.05
13,838.00	89.09	1.39	7,243.38	-2,290.38	5,865.38	-499.22	5,882.79	3.24	-3.06	1.06
13,934.00	88.60	1.39	7,245.32	-2,292.32	5,961.33	-496.89	5,978.52	0.51	-0.51	0.00
14,030.00	88.56	1.26	7,247.70	-2,294.70	6,057.27	-494.67	6,074.24	0.14	-0.04	-0.14
14,125.00	88.60	1.17	7,250.05	-2,297.05	6,152.22	-492.66	6,168.97	0.10	0.04	-0.09
14,220.00	90.46	1.30	7,250.83	-2,297.83	6,247.19	-490.61	6,263.73	1.96	1.96	0.14
14,316.00	92.14	1.04	7,248.65	-2,295.65	6,343.15	-488.65	6,359.47	1.77	1.75	-0.27
14,411.00	91.78	1.39	7,245.40	-2,292.40	6,438.07	-486.64	6,454.18	0.53	-0.38	0.37
14,506.00	89.84	1.04	7,244.06	-2,291.06	6,533.03	-484.62	6,548.93	2.08	-2.04	-0.37
14,602.00	91.30	0.91	7,243.11	-2,290.11	6,629.01	-482.99	6,644.72	1.53	1.52	-0.14
14,697.00	92.71	0.99	7,239.78	-2,286.78	6,723.94	-481.42	6,739.45	1.49	1.48	0.08
14,793.00	90.23	0.07	7,237.32	-2,284.32	6,819.89	-480.53	6,835.25	2.76	-2.58	-0.96
14,889.00	91.52	359.80	7,235.85	-2,282.85	6,915.88	-480.64	6,931.12	1.37	1.34	-0.28
14,984.00	93.64	359.58	7,231.58	-2,278.58	7,010.78	-481.15	7,025.93	2.24	2.23	-0.23
15,080.00	91.83	0.20	7,227.00	-2,274.00	7,106.66	-481.34	7,121.71	1.99	-1.89	0.65
15,175.00	88.78	0.82	7,226.49	-2,273.49	7,201.65	-480.49	7,216.54	3.28	-3.21	0.65
15,270.00	90.77	0.11	7,226.86	-2,273.86	7,296.64	-479.72	7,311.38	2.22	2.09	-0.75
15,366.00	92.49	359.58	7,224.13	-2,271.13	7,392.59	-479.98	7,407.23	1.87	1.79	-0.55
15,461.00	90.19	359.94	7,221.91	-2,268.91	7,487.56	-480.38	7,502.11	2.45	-2.42	0.38
15,557.00	90.54	359.67	7,221.30	-2,268.30	7,583.56	-480.70	7,598.00	0.46	0.36	-0.28
15,652.00	91.30	359.32	7,219.78	-2,266.78	7,678.54	-481.54	7,692.91	0.88	0.80	-0.37
15,747.00	88.91	359.85	7,219.60	-2,266.60	7,773.53	-482.23	7,787.82	2.58	-2.52	0.56
15,842.00	90.23	359.98	7,220.31	-2,267.31	7,868.53	-482.37	7,882.71	1.40	1.39	0.14
15,938.00	91.87	359.36	7,218.56	-2,265.56	7,964.50	-482.92	7,978.60	1.83	1.71	-0.65
16,033.00	90.59	0.64	7,216.52	-2,263.52	8,059.48	-482.92	8,073.46	1.91	-1.35	1.35
16,129.00	89.26	0.51	7,216.64	-2,263.64	8,155.47	-481.96	8,169.29	1.39	-1.39	-0.14
16,224.00	91.47	1.13	7,216.04	-2,263.04	8,250.45	-480.60	8,264.09	2.42	2.33	0.65
16,320.00	89.93	1.52	7,214.86	-2,261.86	8,346.42	-478.38	8,359.83	1.65	-1.60	0.41
16,415.00	87.63	1.35	7,216.89	-2,263.89	8,441.36	-476.00	8,454.54	2.43	-2.42	-0.18
16,511.00	89.35	1.17	7,219.42	-2,266.42	8,537.30	-473.89	8,550.27	1.80	1.79	-0.19
16,606.00	91.78	0.73	7,218.48	-2,265.48	8,632.27	-472.32	8,645.05	2.60	2.56	-0.46
16,702.00	88.60	1.48	7,218.16	-2,265.16	8,728.24	-470.46	8,740.81	3.40	-3.31	0.78
16,798.00	90.59	1.83	7,218.84	-2,265.84	8,824.20	-467.69	8,836.51	2.10	2.07	0.36
16,893.00	89.70	2.05	7,218.60	-2,265.60	8,919.14	-464.48	8,931.19	0.97	-0.94	0.23
16,989.00	90.99	2.54	7,218.02	-2,265.02	9,015.06	-460.63	9,026.80	1.44	1.34	0.51
17,085.00	89.57	1.48	7,217.55	-2,264.55	9,111.00	-457.26	9,122.46	1.85	-1.48	-1.10
LAST SURVEY SEP 23, 2018										
17,180.00	90.99	2.23	7,217.09	-2,264.09	9,205.94	-454.19	9,217.14	1.69	1.49	0.79
PROJECTION TO TD										
17,290.00	91.72	2.62	7,214.49	-2,261.49	9,315.81	-449.54	9,326.65	0.75	0.66	0.35

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RVI)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP - RINN VALLEY EA - survey misses target center by 14.76usft at 6797.52usft MD (6712.24 TVD, -853.30 N, -464.49 E) - Point	0.00	0.00	6,713.04	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
EXIST VERT SCHLAGE - survey misses target center by 1728.24usft at 8237.96usft MD (7282.84 TVD, 268.12 N, -437.21 E) - Circle (radius 30.00)	0.00	0.00	7,996.00	292.61	-2,011.26	1,292,141.90	3,131,079.97	40.134372	-105.031188
EXIST VERT FILE #1-17 - survey misses target center by 993.40usft at 11382.63usft MD (7259.67 TVD, 3410.60 N, -510.06 E) - Circle (radius 30.00)	0.00	0.00	8,066.00	3,410.89	70.17	1,295,271.18	3,133,144.55	40.142932	-105.023744
HZ LP - RINN VALLEY E - survey misses target center by 15.85usft at 7674.26usft MD (7283.81 TVD, -295.33 N, -448.75 E) - Point	0.00	0.00	7,286.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
EXIST VERT SCHLAGE - survey misses target center by 930.90usft at 8173.87usft MD (7282.63 TVD, 204.04 N, -437.90 E) - Circle (radius 30.00)	0.00	0.00	8,082.00	204.73	39.15	1,292,065.03	3,133,130.73	40.134131	-105.023855
HZ LP - RINN VALLEY E - survey misses target center by 16.87usft at 7674.55usft MD (7283.83 TVD, -295.04 N, -448.75 E) - Point	0.00	0.00	7,290.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
ABDN VERT NIWOT #1 - survey misses target center by 1696.20usft at 14120.74usft MD (7249.95 TVD, 6147.96 N, -492.75 E) - Circle (radius 30.00)	0.00	0.00	8,027.00	6,160.67	-2,000.44	1,298,009.69	3,131,059.29	40.150480	-105.031151
EXIST VERT SAUNDEF - survey misses target center by 961.07usft at 16581.58usft MD (7219.10 TVD, 8607.86 N, -472.65 E) - Circle (radius 30.00)	0.00	0.00	7,995.00	8,606.11	94.48	1,300,466.24	3,133,140.96	40.157193	-105.023657
ABDN VERT LONGMO - survey misses target center by 1011.01usft at 14156.95usft MD (7250.66 TVD, 6184.16 N, -491.99 E) - Circle (radius 30.00)	0.00	0.00	8,029.00	6,163.87	152.91	1,298,024.45	3,133,212.50	40.150489	-105.023448
BHL - RINN VALLEY EA - survey misses target center by 47.36usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,200.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
ABDN VERT JEAN CRA - survey misses target center by 3338.23usft at 11609.16usft MD (7258.55 TVD, 3637.11 N, -509.36 E) - Circle (radius 30.00)	0.00	0.00	4,906.00	3,656.59	-2,877.67	1,295,501.04	3,130,195.55	40.143606	-105.034288
BHL - RINN VALLEY EA - survey misses target center by 84.54usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,286.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
KOP - RINN VALLEY EA - survey misses target center by 15.40usft at 6806.82usft MD (6721.51 TVD, -852.66 N, -464.50 E) - Point	0.00	0.00	6,722.35	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
ABDN VERT FILE #42-1 - survey misses target center by 3407.14usft at 873.65usft MD (873.40 TVD, -11.12 N, -4.17 E) - Circle (radius 30.00)	0.00	0.00	1,078.00	3,388.31	99.25	1,295,248.75	3,133,173.74	40.142870	-105.023640

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RV)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
KOP - RINN VALLEY EA - survey misses target center by 14.76usft at 6797.52usft MD (6712.24 TVD, -853.30 N, -464.49 E) - Point	0.00	0.00	6,713.04	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
EXIST VERT SCHLAGE - survey misses target center by 1728.24usft at 8237.96usft MD (7282.84 TVD, 268.12 N, -437.21 E) - Circle (radius 30.00)	0.00	0.00	7,996.00	292.61	-2,011.26	1,292,141.90	3,131,079.97	40.134372	-105.031188
EXIST VERT FILE #1-17 - survey misses target center by 993.40usft at 11382.63usft MD (7259.67 TVD, 3410.60 N, -510.06 E) - Circle (radius 30.00)	0.00	0.00	8,066.00	3,410.89	70.17	1,295,271.18	3,133,144.55	40.142932	-105.023744
HZ LP - RINN VALLEY E - survey misses target center by 15.85usft at 7674.26usft MD (7283.81 TVD, -295.33 N, -448.75 E) - Point	0.00	0.00	7,286.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
EXIST VERT SCHLAGE - survey misses target center by 930.90usft at 8173.87usft MD (7282.63 TVD, 204.04 N, -437.90 E) - Circle (radius 30.00)	0.00	0.00	8,082.00	204.73	39.15	1,292,065.03	3,133,130.73	40.134131	-105.023855
HZ LP - RINN VALLEY E - survey misses target center by 16.87usft at 7674.55usft MD (7283.83 TVD, -295.04 N, -448.75 E) - Point	0.00	0.00	7,290.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
ABDN VERT NIWOT #1 - survey misses target center by 1696.20usft at 14120.74usft MD (7249.95 TVD, 6147.96 N, -492.75 E) - Circle (radius 30.00)	0.00	0.00	8,027.00	6,160.67	-2,000.44	1,298,009.69	3,131,059.29	40.150480	-105.031151
EXIST VERT SAUNDEF - survey misses target center by 961.07usft at 16581.58usft MD (7219.10 TVD, 8607.86 N, -472.65 E) - Circle (radius 30.00)	0.00	0.00	7,995.00	8,606.11	94.48	1,300,466.24	3,133,140.96	40.157193	-105.023657
ABDN VERT LONGMO - survey misses target center by 1011.01usft at 14156.95usft MD (7250.66 TVD, 6184.16 N, -491.99 E) - Circle (radius 30.00)	0.00	0.00	8,029.00	6,163.87	152.91	1,298,024.45	3,133,212.50	40.150489	-105.023448
BHL - RINN VALLEY EA - survey misses target center by 47.36usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,200.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
ABDN VERT JEAN CRA - survey misses target center by 3338.23usft at 11609.16usft MD (7258.55 TVD, 3637.11 N, -509.36 E) - Circle (radius 30.00)	0.00	0.00	4,906.00	3,656.59	-2,877.67	1,295,501.04	3,130,195.55	40.143606	-105.034288
BHL - RINN VALLEY EA - survey misses target center by 84.54usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,286.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
KOP - RINN VALLEY EA - survey misses target center by 15.40usft at 6806.82usft MD (6721.51 TVD, -852.66 N, -464.50 E) - Point	0.00	0.00	6,722.35	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
ABDN VERT FILE #42-1 - survey misses target center by 3407.14usft at 873.65usft MD (873.40 TVD, -11.12 N, -4.17 E) - Circle (radius 30.00)	0.00	0.00	1,078.00	3,388.31	99.25	1,295,248.75	3,133,173.74	40.142870	-105.023640

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
1,557.00	1,550.62	-89.28	-46.49	SURFACE CASING
1,567.00	1,560.46	-90.84	-47.32	TIE IN TO SURFACE SURVEY
6,818.00	6,732.65	-851.68	-464.47	KOP
7,771.00	7,285.53	-198.69	-445.53	HZ LANDING PT

Survey Report



Company:	EXTRACTION OIL & GAS	Local Co-ordinate Reference:	Well RINN VALLEY EAST N17-20-8N
Project:	WELD COUNTY, COLORADO (NAD 83)	TVD Reference:	KB 29' @ 4953.00usft (PATT 901)
Site:	SW SE SEC. 17 T2N R68W 6th P.M. (RVL)	MD Reference:	KB 29' @ 4953.00usft (PATT 901)
Well:	RINN VALLEY EAST N17-20-8N	North Reference:	True
Wellbore:	ORIGINAL WELLBORE	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N-S (usft)	+E-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP - RINN VALLEY EA - survey misses target center by 14.76usft at 6797.52usft MD (6712.24 TVD, -853.30 N, -464.49 E) - Point	0.00	0.00	6,713.04	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
EXIST VERT SCHLAGE - survey misses target center by 1728.24usft at 8237.96usft MD (7282.84 TVD, 268.12 N, -437.21 E) - Circle (radius 30.00)	0.00	0.00	7,996.00	292.61	-2,011.26	1,292,141.90	3,131,079.97	40.134372	-105.031188
EXIST VERT FILE #1-17 - survey misses target center by 993.40usft at 11382.63usft MD (7259.67 TVD, 3410.60 N, -510.06 E) - Circle (radius 30.00)	0.00	0.00	8,066.00	3,410.89	70.17	1,295,271.18	3,133,144.55	40.142932	-105.023744
HZ LP - RINN VALLEY E - survey misses target center by 15.85usft at 7674.26usft MD (7283.81 TVD, -295.33 N, -448.75 E) - Point	0.00	0.00	7,286.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
EXIST VERT SCHLAGE - survey misses target center by 930.90usft at 8173.87usft MD (7282.63 TVD, 204.04 N, -437.90 E) - Circle (radius 30.00)	0.00	0.00	8,082.00	204.73	39.15	1,292,065.03	3,133,130.73	40.134131	-105.023855
HZ LP - RINN VALLEY E - survey misses target center by 16.87usft at 7674.55usft MD (7283.83 TVD, -295.04 N, -448.75 E) - Point	0.00	0.00	7,290.00	-295.07	-464.45	1,291,562.56	3,132,629.85	40.132759	-105.025656
ABDN VERT NIWOT #1 - survey misses target center by 1696.20usft at 14120.74usft MD (7249.95 TVD, 6147.96 N, -492.75 E) - Circle (radius 30.00)	0.00	0.00	8,027.00	6,160.67	-2,000.44	1,298,009.69	3,131,059.29	40.150480	-105.031151
EXIST VERT SAUNDEF - survey misses target center by 961.07usft at 16581.58usft MD (7219.10 TVD, 8607.86 N, -472.65 E) - Circle (radius 30.00)	0.00	0.00	7,995.00	8,606.11	94.48	1,300,466.24	3,133,140.96	40.157193	-105.023657
ABDN VERT LONGMO - survey misses target center by 1011.01usft at 14156.95usft MD (7250.66 TVD, 6184.16 N, -491.99 E) - Circle (radius 30.00)	0.00	0.00	8,029.00	6,163.87	152.91	1,298,024.45	3,133,212.50	40.150489	-105.023448
BHL - RINN VALLEY EA - survey misses target center by 47.36usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,200.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
ABDN VERT JEAN CRA - survey misses target center by 3338.23usft at 11609.16usft MD (7258.55 TVD, 3637.11 N, -509.36 E) - Circle (radius 30.00)	0.00	0.00	4,906.00	3,656.59	-2,877.67	1,295,501.04	3,130,195.55	40.143606	-105.034288
BHL - RINN VALLEY EA - survey misses target center by 84.54usft at 17290.00usft MD (7214.49 TVD, 9315.81 N, -449.54 E) - Point	0.00	0.00	7,286.00	9,359.85	-459.24	1,301,216.96	3,132,583.23	40.159262	-105.025638
KOP - RINN VALLEY EA - survey misses target center by 15.40usft at 6806.82usft MD (6721.51 TVD, -852.66 N, -464.50 E) - Point	0.00	0.00	6,722.35	-868.03	-464.75	1,290,989.62	3,132,632.62	40.131186	-105.025657
ABDN VERT FILE #42-1 - survey misses target center by 3407.14usft at 873.65usft MD (873.40 TVD, -11.12 N, -4.17 E) - Circle (radius 30.00)	0.00	0.00	1,078.00	3,388.31	99.25	1,295,248.75	3,133,173.74	40.142870	-105.023640
	17,180.00	7,217.09	9,205.94	-454.19		LAST SURVEY SEP 23, 2018			
	17,290.00	7,214.49	9,315.81	-449.54		PROJECTION TO TD			

Checked By: _____ Approved By: _____ Date: _____