

Extraction Oil & Gas

Well Name: **WAAG 22**

Surface Location: WAAG South Pad Sec.19-T7N-R65W

North American Datum 1983 , US State Plane 1983, Colorado Northern Zone

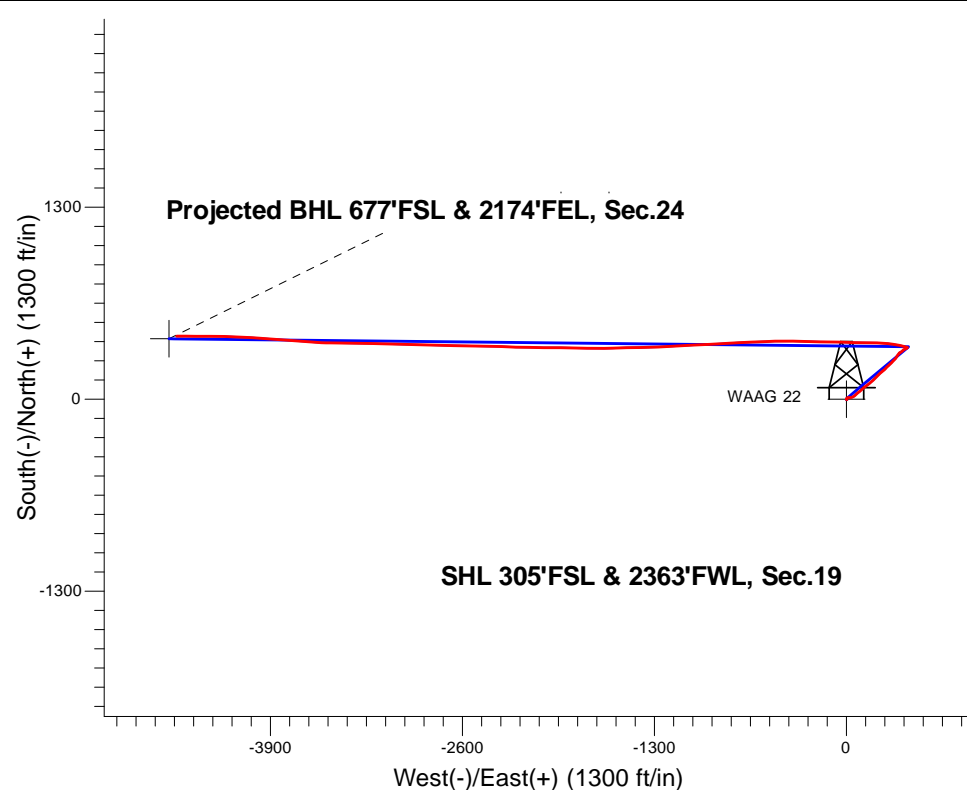
Ground Elevation: 4868.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445760.45	3220253.02	40.554310	-104.707360	
Paterson 320 WELL @ 4892.5ft (Paterson 320)						

FINAL SURVEY

Projected Bottom Hole Location

12063'MD 7367'TVD 426'N & 4536'W of SHL
89.2 degree Incl @ 270.2 degree AZM



ENSIGN
Directional

WAAG South Pad Sec.19-T7N-R65W
WAAG 22

10:24, August 07 2015

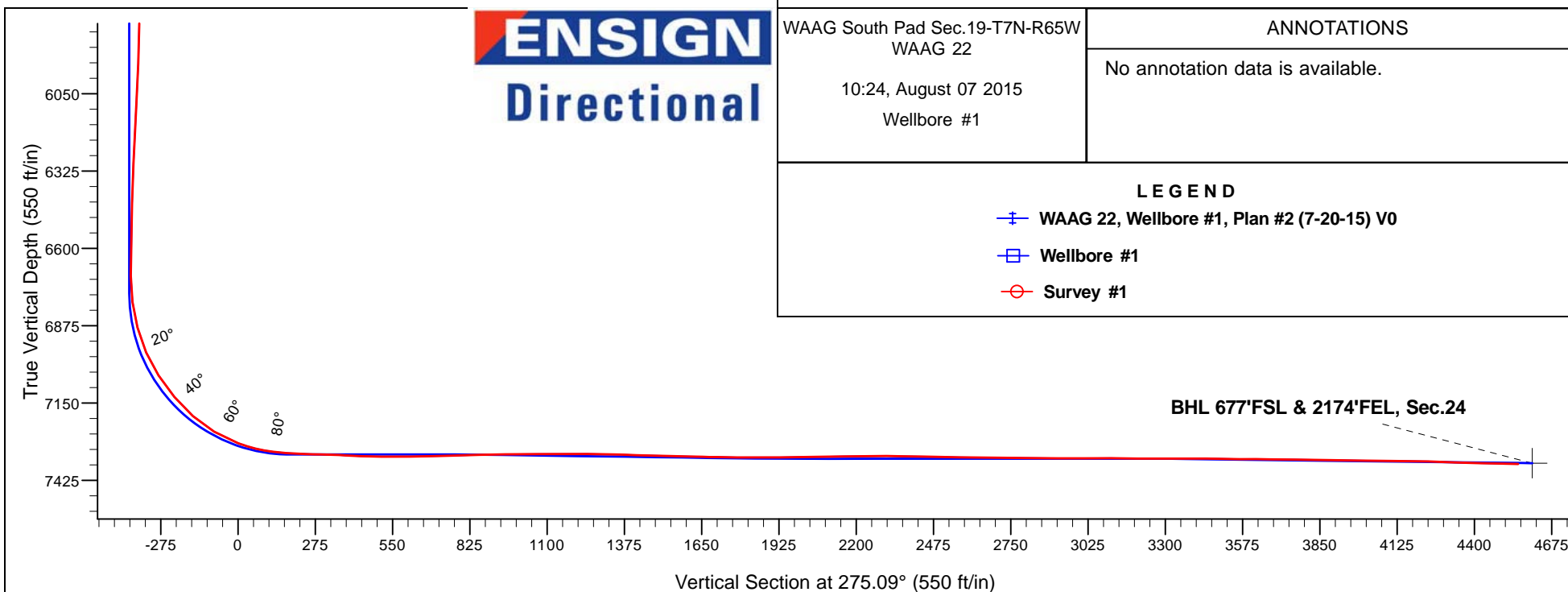
Wellbore #1

ANNOTATIONS

No annotation data is available.

LEGEND

- WAAG 22, Wellbore #1, Plan #2 (7-20-15) V0
- Wellbore #1
- Survey #1





Extraction Oil & Gas

SEC.19-T7N-R65W

WAAG South Pad Sec.19-T7N-R65W

WAAG 22

Wellbore #1

Survey: Survey #1

Standard Survey Report

07 August, 2015



Survey	Survey Data									
	Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	141.0	1.40	161.10	141.0	-1.6	0.6	-0.7	0.99	0.99	0.00
	231.0	0.50	138.60	231.0	-3.0	1.2	-1.4	1.06	-1.00	-25.00
	321.0	0.50	122.30	321.0	-3.5	1.8	-2.1	0.16	0.00	-18.11
	411.0	0.80	131.50	411.0	-4.1	2.6	-2.9	0.35	0.33	10.22
	501.0	1.00	329.50	501.0	-3.8	2.6	-3.0	1.98	0.22	-180.00
	591.0	1.10	334.40	590.9	-2.4	1.9	-2.1	0.15	0.11	5.44
	681.0	1.20	330.70	680.9	-0.8	1.0	-1.1	0.14	0.11	-4.11
	771.0	0.90	346.90	770.9	0.7	0.4	-0.3	0.47	-0.33	18.00
	859.0	0.40	352.10	858.9	1.7	0.2	-0.1	0.57	-0.57	5.91

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well WAAG 22
Project:	SEC.19-T7N-R65W	TVD Reference:	WELL @ 4892.5ft (Paterson 320)
Site:	WAAG South Pad Sec.19-T7N-R65W	MD Reference:	WELL @ 4892.5ft (Paterson 320)
Well:	WAAG 22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
987.0	1.10	28.00	986.9	3.2	0.7	-0.4	0.63	0.55	28.05
1,258.0	1.20	61.40	1,257.8	6.9	4.4	-3.8	0.25	0.04	12.32
1,438.0	1.20	51.40	1,437.8	9.0	7.6	-6.7	0.12	0.00	-5.56
1,618.0	5.50	94.50	1,617.5	9.5	17.6	-16.7	2.61	2.39	23.94
1,798.0	7.90	69.80	1,796.3	13.1	37.9	-36.6	2.05	1.33	-13.72
1,979.0	11.40	48.90	1,974.7	29.1	63.0	-60.2	2.71	1.93	-11.55
2,161.0	9.80	47.30	2,153.6	51.5	88.0	-83.1	0.89	-0.88	-0.88
2,343.0	9.10	48.20	2,333.1	71.6	110.1	-103.3	0.39	-0.38	0.49
2,524.0	8.40	56.00	2,512.0	88.5	131.7	-123.3	0.76	-0.39	4.31
2,707.0	8.70	50.70	2,693.0	104.7	153.5	-143.6	0.46	0.16	-2.90
2,888.0	7.60	48.20	2,872.2	121.4	173.0	-161.6	0.64	-0.61	-1.38
3,068.0	9.50	45.10	3,050.2	139.8	192.4	-179.3	1.09	1.06	-1.72
3,249.0	8.30	42.40	3,229.0	160.0	211.8	-196.8	0.70	-0.66	-1.49
3,438.0	7.40	53.30	3,416.2	177.3	230.8	-214.1	0.92	-0.48	5.77
3,626.0	6.20	47.00	3,602.9	191.5	247.9	-229.9	0.75	-0.64	-3.35
3,813.0	7.20	44.70	3,788.6	206.7	263.5	-244.2	0.55	0.53	-1.23
4,002.0	9.50	47.70	3,975.6	225.6	283.4	-262.3	1.24	1.22	1.59
4,190.0	9.00	44.90	4,161.2	246.5	305.3	-282.2	0.36	-0.27	-1.49
4,378.0	7.20	43.10	4,347.3	265.5	323.7	-298.9	0.97	-0.96	-0.96
4,567.0	6.20	33.10	4,535.0	282.7	337.4	-311.0	0.81	-0.53	-5.29
4,754.0	7.20	33.80	4,720.7	300.9	349.4	-321.3	0.54	0.53	0.37
4,942.0	3.10	56.30	4,907.9	313.5	360.2	-331.0	2.39	-2.18	11.97
5,130.0	0.20	9.60	5,095.8	316.7	364.5	-334.9	1.58	-1.54	-24.84
5,318.0	1.90	69.10	5,283.8	318.1	367.4	-337.8	0.96	0.90	31.65
5,507.0	1.40	58.40	5,472.7	320.4	372.3	-342.4	0.31	-0.26	-5.66
5,694.0	3.10	42.90	5,659.6	325.3	377.7	-347.4	0.96	0.91	-8.29
5,788.0	2.40	35.90	5,753.5	328.8	380.6	-349.9	0.82	-0.74	-7.45
5,978.0	2.10	71.40	5,943.3	333.1	386.2	-355.2	0.74	-0.16	18.68
6,167.0	4.00	61.90	6,132.1	337.3	395.3	-363.8	1.04	1.01	-5.03
6,355.0	2.60	60.20	6,319.7	342.5	404.8	-372.8	0.75	-0.74	-0.90
6,544.0	1.60	51.70	6,508.6	346.3	410.6	-378.3	0.55	-0.53	-4.50
6,732.0	0.80	61.80	6,696.6	348.6	413.8	-381.3	0.44	-0.43	5.37
6,826.0	7.80	279.20	6,790.3	349.9	408.1	-375.4	8.99	7.45	-151.70
6,919.0	14.90	292.20	6,881.4	355.4	390.8	-357.7	8.07	7.63	13.98
7,013.0	23.90	281.80	6,970.0	363.9	360.9	-327.2	10.22	9.57	-11.06
7,106.0	33.40	277.80	7,051.6	371.2	317.0	-282.8	10.42	10.22	-4.30
7,201.0	39.80	275.90	7,127.8	377.9	260.7	-226.2	6.84	6.74	-2.00
7,296.0	48.10	269.90	7,196.2	381.0	195.0	-160.4	9.77	8.74	-6.32
7,390.0	59.50	270.20	7,251.6	381.1	119.3	-85.0	12.13	12.13	0.32
7,484.0	69.20	272.50	7,292.2	383.1	34.7	-0.6	10.55	10.32	2.45
7,579.0	79.10	271.30	7,318.1	386.1	-56.6	90.6	10.49	10.42	-1.26
7,610.0	83.80	270.80	7,322.7	386.7	-87.2	121.1	15.24	15.16	-1.61
7,785.0	89.30	271.30	7,333.3	389.9	-261.8	295.3	3.16	3.14	0.29
7,880.0	86.70	270.80	7,336.6	391.6	-356.7	390.0	2.79	-2.74	-0.53

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Well:	WAAG 22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,974.0	88.50	269.20	7,340.5	391.6	-450.6	483.6	2.56	1.91	-1.70
8,069.0	90.90	267.60	7,341.0	389.0	-545.6	577.9	3.04	2.53	-1.68
8,163.0	91.60	267.60	7,339.0	385.1	-639.5	671.1	0.74	0.74	0.00
8,257.0	91.10	267.80	7,336.8	381.3	-733.4	764.3	0.57	-0.53	0.21
8,352.0	91.90	266.90	7,334.3	376.9	-828.2	858.4	1.27	0.84	-0.95
8,446.0	90.10	266.50	7,332.6	371.5	-922.0	951.4	1.96	-1.91	-0.43
8,541.0	90.90	266.50	7,331.8	365.7	-1,016.9	1,045.3	0.84	0.84	0.00
8,636.0	90.00	267.60	7,331.1	360.8	-1,111.7	1,139.3	1.50	-0.95	1.16
8,730.0	90.00	267.20	7,331.1	356.5	-1,205.6	1,232.5	0.43	0.00	-0.43
8,824.0	87.90	267.60	7,332.8	352.3	-1,299.5	1,325.6	2.27	-2.23	0.43
8,918.0	88.50	269.40	7,335.7	349.8	-1,393.4	1,419.0	2.02	0.64	1.91
9,012.0	88.60	268.70	7,338.1	348.3	-1,487.4	1,512.4	0.75	0.11	-0.74
9,107.0	88.50	267.20	7,340.5	344.9	-1,582.3	1,606.6	1.58	-0.11	-1.58
9,201.0	89.60	270.80	7,342.1	343.2	-1,676.2	1,700.1	4.00	1.17	3.83
9,295.0	89.30	271.10	7,343.0	344.8	-1,770.2	1,793.8	0.45	-0.32	0.32
9,390.0	90.00	270.40	7,343.6	346.0	-1,865.2	1,888.6	1.04	0.74	-0.74
9,482.0	90.30	270.80	7,343.3	347.0	-1,957.2	1,980.3	0.54	0.33	0.43
9,576.0	91.80	270.80	7,341.6	348.3	-2,051.2	2,074.0	1.60	1.60	0.00
9,670.0	90.70	271.60	7,339.5	350.3	-2,145.1	2,167.8	1.45	-1.17	0.85
9,764.0	90.30	270.90	7,338.7	352.3	-2,239.1	2,261.5	0.86	-0.43	-0.74
9,858.0	89.30	272.50	7,339.1	355.1	-2,333.1	2,355.4	2.01	-1.06	1.70
9,952.0	88.40	271.10	7,340.9	358.1	-2,427.0	2,449.2	1.77	-0.96	-1.49
10,046.0	89.40	270.90	7,342.7	359.7	-2,521.0	2,542.9	1.08	1.06	-0.21
10,141.0	89.20	271.30	7,343.9	361.5	-2,615.9	2,637.7	0.47	-0.21	0.42
10,236.0	89.70	271.10	7,344.8	363.5	-2,710.9	2,732.5	0.57	0.53	-0.21
10,329.0	88.80	270.90	7,346.0	365.1	-2,803.9	2,825.2	0.99	-0.97	-0.22
10,423.0	90.00	271.60	7,347.0	367.2	-2,897.9	2,919.0	1.48	1.28	0.74
10,517.0	90.50	272.70	7,346.6	370.7	-2,991.8	3,012.9	1.29	0.53	1.17
10,612.0	89.80	271.30	7,346.4	374.0	-3,086.7	3,107.7	1.65	-0.74	-1.47
10,705.0	89.10	270.60	7,347.2	375.6	-3,179.7	3,200.5	1.06	-0.75	-0.75
10,893.0	90.80	270.90	7,347.4	378.0	-3,367.7	3,387.9	0.92	0.90	0.16
10,987.0	88.30	270.60	7,348.2	379.3	-3,461.7	3,481.7	2.68	-2.66	-0.32
11,081.0	90.10	272.90	7,349.5	382.1	-3,555.6	3,575.5	3.11	1.91	2.45
11,176.0	89.00	273.40	7,350.2	387.3	-3,650.5	3,670.4	1.27	-1.16	0.53
11,270.0	89.60	275.30	7,351.4	394.5	-3,744.2	3,764.4	2.12	0.64	2.02
11,364.0	88.90	275.50	7,352.6	403.3	-3,837.8	3,858.4	0.77	-0.74	0.21
11,458.0	89.00	273.40	7,354.3	410.6	-3,931.4	3,952.4	2.24	0.11	-2.23
11,552.0	89.40	273.20	7,355.6	416.0	-4,025.3	4,046.3	0.48	0.43	-0.21
11,647.0	90.00	272.20	7,356.1	420.5	-4,120.2	4,141.2	1.23	0.63	-1.05
11,742.0	87.90	270.80	7,357.9	423.0	-4,215.1	4,236.0	2.66	-2.21	-1.47
11,836.0	88.10	270.90	7,361.1	424.4	-4,309.1	4,329.7	0.24	0.21	0.11
11,931.0	88.30	270.10	7,364.1	425.2	-4,404.0	4,424.4	0.87	0.21	-0.84
12,003.0	89.20	270.20	7,365.7	425.4	-4,476.0	4,496.1	1.26	1.25	0.14

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Site:	WAAG South Pad Sec.19-T7N-R65W	MD Reference:	WELL @ 4892.5ft (Paterson 320)
Well:	WAAG 22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	US_EDM

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,063.0	89.20	270.20	7,366.5	425.6	-4,536.0	4,555.8	0.00	0.00	0.00

Checked By: _____	Approved By: _____	Date: _____
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