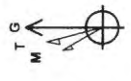




Stalnaker Unit 1H
Ritchie County WV
Northing: 14236720.88
Easting: 1663169.80
As Drilled



Azimuths to Grid North
 True North: -0.05°
 Magnetic North: -8.42°
 Magnetic Field
 Strength: 52184.9snT
 Dip Angle: 66.79°
 Date: 11/3/2014
 Model: BGGM2014

To convert Magnetic North to Grid, Subtract 8.42°
 To convert True North to Grid, Subtract 0.05°

Frontier 23; GL 1025; *K5.23 @ 1048.0usft
 Gr: 1025.0

SITE DETAILS: John Richards Pad: Duckworth/Stalnaker

Site Centre Northing: 14236693.67
 Easting: 1663157.25

Positional Uncertainty: 0.0
 Convergence: 0.05
 Local North: Grid

PROJECT DETAILS: Ritchie County WV

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: Zone 17N (84 W to 78 W)
 System Datum: Mean Sea Level

WELL DETAILS Stalnaker Unit 1H

Ground Level: 1025.0
 Easting: 1663169.80 39° 12' 19.313 N 80° 55' 10.844 W

DESIGN TARGET DETAILS

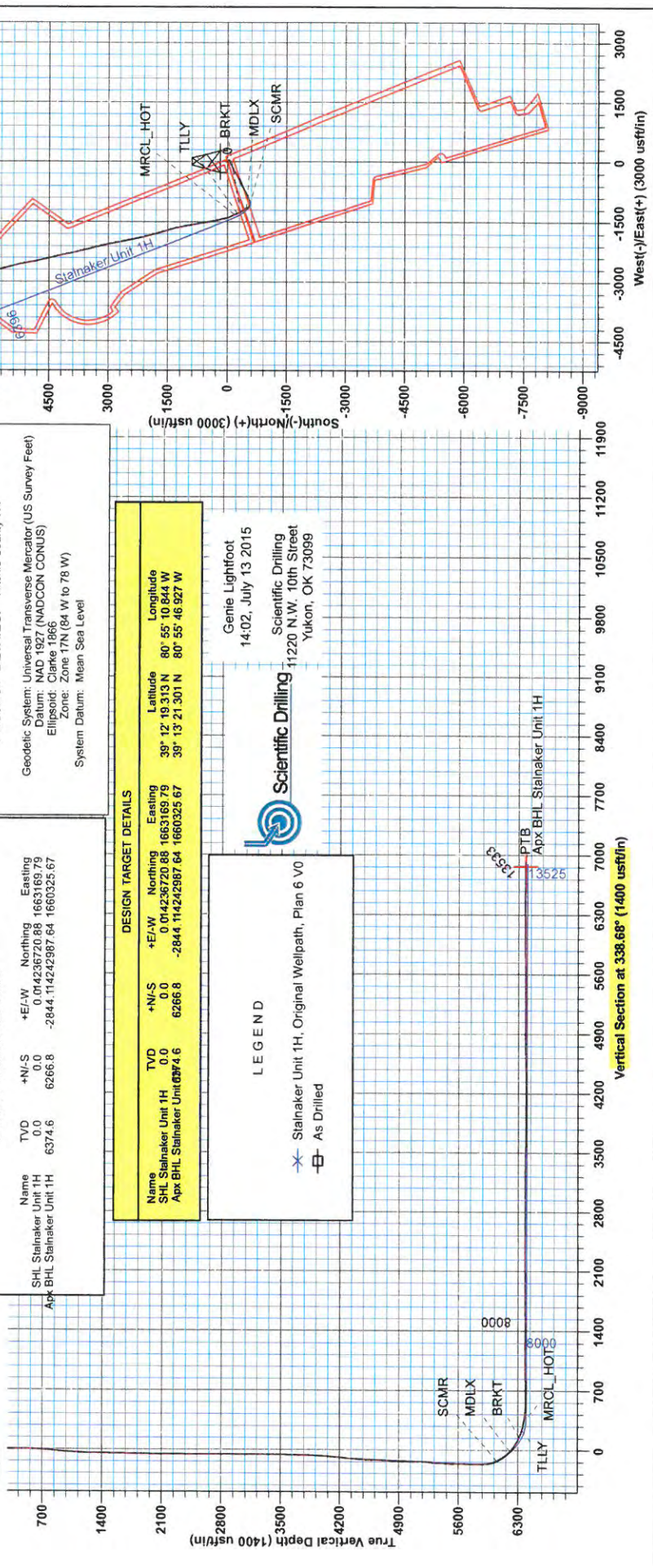
Name	TVD	+N/-S	+E/-W	Northing	Easting
SHL Stalnaker Unit 1H	0.0	0.0	0.0	14236720.88	1663169.79
Apk BHL Stalnaker Unit 1H	6374.6	6266.8	-2844.1	14242987.64	1660325.67

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Stalnaker Unit 1H	0.0	0.0	0.0	14236720.88	1663169.79	39° 12' 19.313 N	80° 55' 10.844 W
Apk BHL Stalnaker Unit 1H	6374.6	6266.8	-2844.1	14242987.64	1660325.67	39° 13' 21.301 N	80° 55' 46.927 W

LEGEND

- Stalnaker Unit 1H, Original Wellpath, Plan 6 V0
- As Drilled



Vertical Section at 338.68° (1400 usft/in)



Antero

**Ritchie County WV
John Richards Pad: Duckworth/Stalnaker
Stalnaker Unit 1H
Original Wellpath**

Design: As Drilled

EOW Completion Report

13 July, 2015



Company: Antero
Project: Ritchie County WV
Site: John Richards Pad: Duckworth/Stalnaker
Well: Stalnaker Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Stalnaker Unit 1H
TVD Reference: Frontier 23: GL 1025' + KB 23 @ 1048.0usft
MD Reference: Frontier 23: GL 1025' + KB 23 @ 1048.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

Project	Ritchie County WV, Ritchie County WV, WV North		
Map System:	Universal Transverse Mercator (US Survey Fee	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site John Richards Pad: Duckworth/Stalnaker

Site Position: **From:** Map **Northing:** 14,236,693.67 usft **Latitude:** 39° 12' 19.044 N
Position Uncertainty: 0.0 usft **Easting:** 1,663,157.25usft **Longitude:** 80° 55' 11.004 W
Slot Radius: 13-3/16" **Grid Convergence:** 0.05 °

Well Stalnaker Unit 1H, Marcellus

Well Position **+N/-S** 0.0 usft **Northing:** 14,236,720.88 usft **Latitude:** 39° 12' 19.313 N
+E/-W 0.0 usft **Easting:** 1,663,169.80 usft **Longitude:** 80° 55' 10.844 W
Position Uncertainty 2.0 usft **Wellhead Elevation:** 1,048.0 usft **Ground Level:** 1,025.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/3/2014	-8.37	66.79	52,185

Design As Drilled

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	338.68

Survey Program Date 7/13/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
25.0	5,971.7	Survey #5 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
5,971.7	13,533.0	Survey #7 Corrected (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
25.0	0.25	24.59	25.0	0.0	0.0	0.0	1.00
50.0	0.51	55.88	50.0	0.2	0.1	0.1	1.29
75.0	0.45	49.44	75.0	0.3	0.3	0.2	0.32
100.0	0.18	44.41	100.0	0.4	0.4	0.2	1.08
125.0	0.24	46.25	125.0	0.4	0.5	0.2	0.24
150.0	0.10	76.32	150.0	0.5	0.5	0.3	0.65
175.0	0.10	61.27	175.0	0.5	0.6	0.3	0.10
200.0	0.02	252.29	200.0	0.5	0.6	0.3	0.48
225.0	0.18	22.48	225.0	0.5	0.6	0.3	0.77
250.0	0.22	28.74	250.0	0.6	0.6	0.4	0.18



Company: Antero
Project: Ritchie County WV
Site: John Richards Pad: Duckworth/Stalnaker
Well: Stalnaker Unit 1H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Stalnaker Unit 1H
TVD Reference: Frontier 23: GL 1025' + KB 23 @ 1048.0usft
MD Reference: Frontier 23: GL 1025' + KB 23 @ 1048.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
275.0	0.09	90.38	275.0	0.7	0.7	0.4	0.78
300.0	0.13	36.08	300.0	0.7	0.7	0.4	0.43
325.0	0.12	339.98	325.0	0.7	0.7	0.4	0.47
350.0	0.05	326.39	350.0	0.8	0.7	0.5	0.29
375.0	0.12	298.24	375.0	0.8	0.7	0.5	0.32
400.0	0.13	310.32	400.0	0.8	0.6	0.5	0.11
425.0	0.20	252.59	425.0	0.8	0.6	0.6	0.68
450.0	0.20	243.96	450.0	0.8	0.5	0.6	0.12
475.0	0.56	172.89	475.0	0.7	0.5	0.4	2.12
500.0	0.76	152.82	500.0	0.4	0.6	0.2	1.21
525.0	1.22	146.27	525.0	0.0	0.8	-0.3	1.89
550.0	1.49	150.32	550.0	-0.5	1.1	-0.8	1.15
575.0	2.34	148.14	575.0	-1.2	1.5	-1.7	3.41
600.0	2.92	141.66	599.9	-2.1	2.2	-2.8	2.60
625.0	3.58	140.34	624.9	-3.2	3.1	-4.1	2.66
650.0	3.91	139.22	649.8	-4.5	4.1	-5.7	1.35
675.0	4.26	140.44	674.8	-5.8	5.3	-7.4	1.44
700.0	4.60	142.09	699.7	-7.4	6.5	-9.2	1.45
725.0	4.85	139.88	724.6	-8.9	7.8	-11.2	1.24
750.0	4.73	141.71	749.5	-10.6	9.1	-13.2	0.78
775.0	4.81	143.32	774.5	-12.2	10.4	-15.1	0.62
800.0	4.82	144.17	799.4	-13.9	11.6	-17.2	0.29
825.0	4.95	141.59	824.3	-15.6	12.9	-19.2	1.02
850.0	4.96	136.81	849.2	-17.2	14.3	-21.3	1.65
875.0	4.94	130.21	874.1	-18.7	15.9	-23.2	2.28
900.0	4.93	126.96	899.0	-20.1	17.5	-25.1	1.12
925.0	4.89	124.68	923.9	-21.3	19.3	-26.9	0.80
950.0	4.41	122.87	948.8	-22.4	21.0	-28.5	2.01
975.0	3.97	122.00	973.8	-23.4	22.5	-30.0	1.78
1,000.0	3.90	122.26	998.7	-24.3	24.0	-31.4	0.29
1,025.0	3.84	120.81	1,023.6	-25.2	25.4	-32.7	0.46
1,050.0	3.73	121.43	1,048.6	-26.1	26.8	-34.0	0.47
1,075.0	3.48	118.67	1,073.5	-26.9	28.2	-35.3	1.22
1,100.0	3.26	120.66	1,098.5	-27.6	29.4	-36.4	1.00
1,125.0	3.23	121.22	1,123.5	-28.3	30.7	-37.5	0.17
1,150.0	3.20	119.75	1,148.4	-29.0	31.9	-38.6	0.35
1,175.0	2.83	117.71	1,173.4	-29.7	33.0	-39.6	1.54
1,200.0	2.68	118.83	1,198.3	-30.2	34.1	-40.5	0.64
1,225.0	2.46	116.35	1,223.3	-30.7	35.1	-41.4	0.99
1,250.0	2.44	115.23	1,248.3	-31.2	36.0	-42.2	0.21
1,275.0	2.34	114.51	1,273.3	-31.6	37.0	-42.9	0.42
1,300.0	2.19	114.60	1,298.3	-32.1	37.9	-43.6	0.60
1,325.0	2.21	116.95	1,323.2	-32.5	38.7	-44.3	0.37
1,350.0	1.98	117.35	1,348.2	-32.9	39.6	-45.0	0.92



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Antero NE

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,375.0	1.91	119.97	1,373.2	-33.3	40.3	-45.7	0.45
1,400.0	1.65	118.18	1,398.2	-33.7	41.0	-46.3	1.06
1,425.0	1.64	116.81	1,423.2	-34.0	41.6	-46.8	0.16
1,450.0	1.41	114.30	1,448.2	-34.3	42.2	-47.3	0.96
1,475.0	1.29	116.88	1,473.2	-34.6	42.7	-47.7	0.54
1,500.0	1.31	113.53	1,498.2	-34.8	43.3	-48.1	0.31
1,525.0	1.30	116.21	1,523.2	-35.0	43.8	-48.6	0.25
1,550.0	1.38	111.89	1,548.2	-35.3	44.3	-49.0	0.52
1,575.0	1.31	112.84	1,573.1	-35.5	44.9	-49.4	0.29
1,600.0	1.38	117.93	1,598.1	-35.7	45.4	-49.8	0.55
1,625.0	1.24	115.36	1,623.1	-36.0	45.9	-50.2	0.61
1,650.0	1.17	122.38	1,648.1	-36.3	46.4	-50.6	0.65
1,675.0	0.98	121.13	1,673.1	-36.5	46.7	-51.0	0.77
1,700.0	0.93	120.17	1,698.1	-36.7	47.1	-51.3	0.21
1,725.0	0.99	124.76	1,723.1	-36.9	47.5	-51.7	0.39
1,750.0	0.89	129.31	1,748.1	-37.2	47.8	-52.0	0.50
1,775.0	0.82	134.61	1,773.1	-37.4	48.1	-52.3	0.42
1,800.0	0.87	129.27	1,798.1	-37.7	48.3	-52.7	0.37
1,825.0	0.92	135.28	1,823.1	-37.9	48.6	-53.0	0.43
1,850.0	0.89	133.12	1,848.1	-38.2	48.9	-53.4	0.18
1,875.0	0.83	132.43	1,873.1	-38.5	49.2	-53.7	0.24
1,900.0	0.89	140.98	1,898.1	-38.7	49.4	-54.1	0.57
1,925.0	0.79	138.53	1,923.1	-39.0	49.7	-54.4	0.42
1,950.0	0.84	146.62	1,948.1	-39.3	49.9	-54.8	0.50
1,975.0	0.69	141.36	1,973.1	-39.6	50.1	-55.1	0.66
2,000.0	0.79	138.70	1,998.1	-39.8	50.3	-55.4	0.42
2,025.0	0.71	138.89	2,023.1	-40.1	50.5	-55.7	0.32
2,050.0	0.60	139.68	2,048.1	-40.3	50.7	-56.0	0.44
2,075.0	0.58	148.90	2,073.1	-40.5	50.8	-56.2	0.39
2,100.0	0.53	145.47	2,098.1	-40.7	51.0	-56.4	0.24
2,125.0	0.45	152.12	2,123.1	-40.9	51.1	-56.7	0.39
2,150.0	0.36	146.94	2,148.1	-41.0	51.2	-56.8	0.39
2,175.0	0.34	145.41	2,173.1	-41.2	51.3	-57.0	0.09
2,200.0	0.35	149.80	2,198.1	-41.3	51.3	-57.1	0.11
2,225.0	0.34	145.01	2,223.1	-41.4	51.4	-57.3	0.12
2,250.0	0.28	164.58	2,248.1	-41.5	51.5	-57.4	0.48
2,275.0	0.30	157.29	2,273.1	-41.7	51.5	-57.5	0.17
2,300.0	0.31	136.30	2,298.1	-41.8	51.6	-57.7	0.45
2,325.0	0.27	140.21	2,323.1	-41.9	51.7	-57.8	0.18
2,350.0	0.23	134.68	2,348.1	-41.9	51.8	-57.9	0.19
2,375.0	0.18	141.64	2,373.1	-42.0	51.8	-58.0	0.22
2,400.0	0.27	187.72	2,398.1	-42.1	51.8	-58.1	0.78
2,425.0	0.30	184.74	2,423.1	-42.2	51.8	-58.2	0.13
2,450.0	0.07	185.74	2,448.1	-42.3	51.8	-58.2	0.92
2,475.0	0.09	124.10	2,473.1	-42.3	51.8	-58.3	0.34



Company: Antero
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
2,500.0	0.17	240.97	2,498.1	-42.4	51.8	-58.3	0.90
2,525.0	0.17	230.79	2,523.1	-42.4	51.7	-58.3	0.12
2,550.0	0.20	225.80	2,548.1	-42.4	51.7	-58.3	0.14
2,575.0	0.30	268.31	2,573.1	-42.5	51.6	-58.3	0.82
2,600.0	0.19	268.17	2,598.1	-42.5	51.5	-58.3	0.44
2,625.0	0.21	261.03	2,623.1	-42.5	51.4	-58.3	0.13
2,650.0	0.33	247.50	2,648.1	-42.5	51.3	-58.3	0.54
2,675.0	0.34	248.45	2,673.1	-42.6	51.2	-58.3	0.05
2,700.0	0.36	258.89	2,698.1	-42.6	51.0	-58.3	0.27
2,725.0	0.49	261.82	2,723.1	-42.7	50.8	-58.2	0.53
2,750.0	0.47	267.81	2,748.1	-42.7	50.6	-58.2	0.22
2,775.0	0.56	267.64	2,773.1	-42.7	50.4	-58.1	0.36
2,800.0	0.49	270.01	2,798.1	-42.7	50.2	-58.0	0.29
2,825.0	0.59	266.22	2,823.1	-42.7	49.9	-57.9	0.42
2,850.0	0.65	251.51	2,848.1	-42.7	49.7	-57.9	0.68
2,875.0	0.64	252.19	2,873.1	-42.8	49.4	-57.9	0.05
2,900.0	0.65	252.60	2,898.1	-42.9	49.1	-57.8	0.04
2,925.0	0.45	265.01	2,923.1	-43.0	48.9	-57.8	0.93
2,950.0	0.52	261.03	2,948.1	-43.0	48.7	-57.8	0.31
2,975.0	0.51	264.96	2,973.1	-43.0	48.5	-57.7	0.15
3,000.0	0.54	270.98	2,998.1	-43.0	48.2	-57.6	0.25
3,025.0	0.55	264.63	3,023.1	-43.0	48.0	-57.5	0.24
3,050.0	0.76	258.01	3,048.1	-43.1	47.7	-57.5	0.89
3,075.0	1.60	246.32	3,073.0	-43.3	47.2	-57.5	3.48
3,100.0	2.25	247.05	3,098.0	-43.6	46.5	-57.5	2.60
3,125.0	2.80	245.91	3,123.0	-44.0	45.5	-57.5	2.21
3,150.0	3.50	245.10	3,148.0	-44.6	44.2	-57.6	2.81
3,175.0	4.19	245.69	3,172.9	-45.3	42.7	-57.7	2.76
3,200.0	4.96	245.86	3,197.8	-46.1	40.9	-57.8	3.08
3,225.0	5.90	246.29	3,222.7	-47.1	38.7	-57.9	3.76
3,250.0	6.83	245.94	3,247.6	-48.2	36.2	-58.1	3.72
3,275.0	7.87	245.42	3,272.4	-49.5	33.2	-58.2	4.17
3,300.0	8.69	246.31	3,297.1	-51.0	30.0	-58.4	3.32
3,325.0	9.69	246.32	3,321.8	-52.6	26.3	-58.6	4.00
3,350.0	10.79	247.06	3,346.4	-54.4	22.2	-58.7	4.43
3,375.0	11.80	247.57	3,370.9	-56.2	17.7	-58.8	4.06
3,400.0	12.67	248.61	3,395.3	-58.2	12.8	-58.9	3.59
3,425.0	13.31	249.75	3,419.7	-60.2	7.5	-58.8	2.76
3,450.0	13.81	249.60	3,444.0	-62.2	2.0	-58.7	2.00
3,475.0	14.42	249.29	3,468.2	-64.4	-3.7	-58.6	2.46
3,500.0	14.85	249.64	3,492.4	-66.6	-9.6	-58.6	1.76
3,525.0	15.22	249.39	3,516.6	-68.9	-15.7	-58.5	1.50
3,550.0	15.52	249.64	3,540.7	-71.2	-21.9	-58.4	1.23
3,575.0	16.00	249.53	3,564.7	-73.6	-28.2	-58.3	1.92



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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
3,600.0	16.36	248.94	3,588.7	-76.0	-34.7	-58.2	1.58
3,625.0	16.68	248.00	3,612.7	-78.6	-41.4	-58.2	1.67
3,650.0	17.25	244.42	3,636.6	-81.6	-48.0	-58.5	4.76
3,675.0	17.58	243.53	3,660.5	-84.9	-54.7	-59.2	1.70
3,700.0	18.08	243.24	3,684.3	-88.3	-61.6	-59.9	2.03
3,725.0	18.56	242.72	3,708.0	-91.9	-68.6	-60.6	2.03
3,750.0	19.27	242.32	3,731.7	-95.6	-75.8	-61.5	2.89
3,775.0	19.82	242.11	3,755.2	-99.5	-83.2	-62.5	2.22
3,800.0	20.59	241.92	3,778.7	-103.6	-90.8	-63.5	3.09
3,825.0	21.35	241.46	3,802.0	-107.8	-98.7	-64.5	3.11
3,850.0	22.35	241.50	3,825.2	-112.2	-106.9	-65.7	4.00
3,875.0	23.09	241.40	3,848.3	-116.9	-115.3	-66.9	2.96
3,900.0	23.62	241.65	3,871.2	-121.6	-124.1	-68.2	2.16
3,925.0	24.34	241.97	3,894.1	-126.4	-133.0	-69.4	2.93
3,950.0	24.84	242.01	3,916.8	-131.3	-142.2	-70.6	2.00
3,975.0	25.36	242.34	3,939.5	-136.2	-151.6	-71.8	2.15
4,000.0	25.75	242.52	3,962.0	-141.2	-161.1	-73.0	1.59
4,025.0	25.84	242.76	3,984.5	-146.2	-170.8	-74.1	0.55
4,050.0	25.67	242.26	4,007.0	-151.2	-180.4	-75.3	1.10
4,075.0	25.49	241.47	4,029.6	-156.3	-189.9	-76.6	1.54
4,100.0	25.44	240.63	4,052.2	-161.5	-199.4	-78.0	1.46
4,125.0	25.59	239.66	4,074.7	-166.9	-208.7	-79.6	1.78
4,150.0	25.92	238.97	4,097.2	-172.4	-218.0	-81.4	1.78
4,175.0	25.90	238.15	4,119.7	-178.1	-227.4	-83.3	1.44
4,200.0	25.08	237.59	4,142.3	-183.8	-236.5	-85.3	3.42
4,225.0	24.92	236.80	4,164.9	-189.6	-245.3	-87.4	1.48
4,250.0	24.91	236.33	4,187.6	-195.4	-254.1	-89.6	0.79
4,275.0	24.86	236.42	4,210.3	-201.2	-262.9	-91.8	0.25
4,300.0	24.74	237.16	4,233.0	-206.9	-271.7	-94.0	1.33
4,325.0	25.01	237.51	4,255.7	-212.6	-280.5	-96.1	1.23
4,350.0	24.90	237.44	4,278.3	-218.3	-289.4	-98.1	0.46
4,375.0	24.88	237.67	4,301.0	-223.9	-298.3	-100.2	0.40
4,400.0	24.87	238.61	4,323.7	-229.5	-307.2	-102.1	1.58
4,425.0	24.47	239.60	4,346.4	-234.8	-316.2	-103.8	2.30
4,450.0	24.30	240.25	4,369.2	-240.0	-325.1	-105.4	1.27
4,475.0	24.46	240.10	4,392.0	-245.1	-334.1	-106.9	0.69
4,500.0	24.56	241.24	4,414.7	-250.2	-343.1	-108.4	1.93
4,525.0	24.66	241.63	4,437.4	-255.2	-352.2	-109.7	0.76
4,550.0	24.60	241.64	4,460.2	-260.2	-361.4	-110.9	0.24
4,575.0	24.93	241.95	4,482.9	-265.1	-370.6	-112.2	1.42
4,600.0	25.42	242.25	4,505.5	-270.1	-380.0	-113.4	2.03
4,625.0	25.92	242.42	4,528.0	-275.1	-389.6	-114.6	2.02
4,650.0	26.08	242.85	4,550.5	-280.1	-399.4	-115.8	0.99
4,675.0	26.36	243.42	4,572.9	-285.1	-409.2	-116.8	1.51



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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
4,700.0	26.70	243.32	4,595.3	-290.1	-419.2	-117.9	1.37
4,725.0	27.16	243.75	4,617.6	-295.2	-429.3	-118.9	2.00
4,750.0	27.34	243.74	4,639.8	-300.2	-439.6	-119.9	0.72
4,775.0	26.60	244.34	4,662.1	-305.2	-449.8	-120.8	3.15
4,800.0	25.96	244.11	4,684.5	-310.0	-459.8	-121.6	2.59
4,825.0	25.79	243.97	4,707.0	-314.8	-469.6	-122.5	0.72
4,850.0	25.82	243.75	4,729.5	-319.6	-479.3	-123.4	0.40
4,875.0	25.30	243.54	4,752.0	-324.4	-489.0	-124.4	2.11
4,900.0	24.36	242.74	4,774.7	-329.1	-498.4	-125.4	3.99
4,925.0	24.05	241.90	4,797.5	-333.9	-507.5	-126.5	1.85
4,950.0	24.17	241.74	4,820.4	-338.7	-516.5	-127.8	0.55
4,975.0	24.15	241.81	4,843.2	-343.5	-525.5	-129.0	0.14
5,000.0	24.72	242.33	4,865.9	-348.4	-534.6	-130.2	2.44
5,025.0	25.02	244.19	4,888.6	-353.1	-544.0	-131.2	3.35
5,050.0	25.57	245.17	4,911.2	-357.7	-553.7	-131.9	2.76
5,075.0	26.42	246.01	4,933.7	-362.2	-563.6	-132.5	3.71
5,100.0	27.47	247.06	4,956.0	-366.7	-574.0	-132.9	4.61
5,125.0	28.22	247.57	4,978.1	-371.2	-584.8	-133.2	3.15
5,150.0	28.83	247.72	5,000.0	-375.8	-595.8	-133.4	2.46
5,175.0	29.13	247.41	5,021.9	-380.4	-607.0	-133.7	1.34
5,200.0	28.70	246.57	5,043.8	-385.1	-618.2	-134.0	2.37
5,225.0	28.09	246.00	5,065.8	-389.9	-629.0	-134.5	2.67
5,250.0	27.49	244.98	5,087.9	-394.7	-639.6	-135.2	3.06
5,275.0	27.04	244.37	5,110.1	-399.6	-650.0	-136.0	2.12
5,300.0	26.72	243.65	5,132.4	-404.6	-660.2	-136.9	1.83
5,325.0	26.11	243.05	5,154.8	-409.6	-670.1	-137.9	2.66
5,350.0	25.32	242.22	5,177.3	-414.6	-679.7	-139.0	3.47
5,375.0	24.59	241.21	5,200.0	-419.5	-689.0	-140.3	3.38
5,400.0	24.07	240.05	5,222.8	-424.6	-698.0	-141.8	2.82
5,425.0	23.82	238.91	5,245.6	-429.8	-706.7	-143.4	2.10
5,450.0	24.39	238.87	5,268.5	-435.0	-715.5	-145.1	2.28
5,475.0	25.07	238.68	5,291.2	-440.4	-724.4	-146.9	2.74
5,500.0	25.49	238.17	5,313.8	-446.0	-733.5	-148.8	1.89
5,525.0	25.96	238.36	5,336.3	-451.7	-742.7	-150.8	1.91
5,550.0	26.27	239.10	5,358.7	-457.5	-752.2	-152.7	1.80
5,575.0	25.63	240.32	5,381.2	-463.0	-761.6	-154.4	3.33
5,600.0	25.23	240.73	5,403.8	-468.3	-770.9	-155.9	1.75
5,625.0	25.13	241.67	5,426.4	-473.4	-780.3	-157.3	1.65
5,650.0	25.03	243.43	5,449.1	-478.3	-789.7	-158.4	3.01
5,675.0	25.42	244.69	5,471.7	-482.9	-799.3	-159.3	2.65
5,700.0	25.77	246.12	5,494.2	-487.4	-809.1	-159.9	2.84
5,725.0	26.32	246.61	5,516.7	-491.8	-819.1	-160.3	2.36
5,750.0	26.89	246.66	5,539.0	-496.3	-829.4	-160.7	2.28
5,775.0	27.23	246.14	5,561.3	-500.8	-839.8	-161.2	1.66

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
5,800.0	26.89	245.43	5,583.6	-505.5	-850.2	-161.8	1.88
5,825.0	26.49	245.29	5,605.9	-510.2	-860.4	-162.4	1.62
5,850.0	26.35	245.37	5,628.3	-514.8	-870.5	-163.1	0.58
5,875.0	26.47	246.67	5,650.7	-519.3	-880.7	-163.6	2.36
5,900.0	26.85	247.50	5,673.0	-523.7	-891.0	-163.9	2.13
5,925.0	26.75	247.86	5,695.3	-528.0	-901.4	-164.1	0.76
5,950.0	27.59	248.11	5,717.6	-532.2	-912.0	-164.2	3.39
5,971.7	28.25	256.58	5,736.8	-536.0	-921.5	-164.3	18.49
6,125.0	28.90	244.33	5,871.5	-560.5	-990.2	-162.1	3.84
6,158.0	28.10	247.71	5,900.5	-566.9	-1,004.6	-162.9	5.45
6,190.0	27.96	256.60	5,928.8	-571.5	-1,018.8	-162.0	13.05
6,222.0	28.63	267.50	5,957.0	-573.6	-1,033.8	-158.5	16.26
6,254.0	29.87	277.65	5,984.9	-572.9	-1,049.4	-152.1	15.96
6,286.0	31.90	285.43	6,012.4	-569.6	-1,065.4	-143.2	13.99
6,318.0	33.58	293.01	6,039.3	-563.8	-1,081.7	-132.0	13.84
6,331.0	33.71	296.44	6,050.1	-560.8	-1,088.3	-126.8	14.65
SCMR							
6,350.0	34.07	301.38	6,065.9	-555.7	-1,097.5	-118.6	14.62
6,382.0	35.11	309.98	6,092.3	-545.1	-1,112.3	-103.4	15.59
6,414.0	37.09	317.23	6,118.1	-532.1	-1,125.9	-86.4	14.70
6,446.0	39.73	320.91	6,143.2	-517.1	-1,138.9	-67.6	10.91
6,479.0	41.92	324.20	6,168.2	-500.0	-1,152.0	-46.9	9.30
6,511.0	44.33	327.84	6,191.5	-481.8	-1,164.2	-25.6	10.82
6,530.0	46.46	329.10	6,204.9	-470.3	-1,171.3	-12.3	12.16
MDLX							
6,543.0	47.92	329.91	6,213.7	-462.1	-1,176.1	-2.9	12.13
6,575.0	51.42	330.32	6,234.4	-440.9	-1,188.2	21.3	10.98
6,607.0	54.23	331.16	6,253.7	-418.7	-1,200.7	46.5	9.03
6,639.0	57.56	330.87	6,271.7	-395.5	-1,213.5	72.8	10.43
6,671.0	60.57	331.13	6,288.1	-371.5	-1,226.8	100.0	9.43
6,703.0	63.64	331.87	6,303.1	-346.7	-1,240.3	128.0	9.81
6,730.0	66.09	332.67	6,314.6	-325.0	-1,251.7	152.3	9.46
BRKT							
6,735.0	66.54	332.82	6,316.6	-320.9	-1,253.8	156.9	9.41
6,767.0	69.46	332.98	6,328.6	-294.5	-1,267.3	186.4	9.14
6,799.0	72.31	333.51	6,339.0	-267.5	-1,280.9	216.5	9.04
6,818.0	74.20	333.84	6,344.5	-251.2	-1,289.0	234.6	10.09
TLLY							
6,830.0	75.40	334.04	6,347.7	-240.8	-1,294.1	246.1	10.13
6,862.0	77.38	334.18	6,355.2	-212.9	-1,307.7	277.1	6.20
6,895.0	79.52	334.52	6,361.8	-183.7	-1,321.7	309.4	6.56
6,896.0	79.54	334.51	6,362.0	-182.8	-1,322.1	310.4	2.23
MRCL_HOT							
6,927.0	80.19	334.18	6,367.4	-155.3	-1,335.3	340.8	2.34
6,959.0	81.87	335.43	6,372.4	-126.7	-1,348.7	372.3	6.52



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6,992.0	82.75	337.21	6,376.8	-96.8	-1,361.9	405.0	5.97
7,000.6	82.87	337.15	6,377.9	-88.9	-1,365.2	413.5	1.56
7,024.0	83.20	336.97	6,380.8	-67.5	-1,374.2	436.7	1.60
7,056.0	84.61	338.64	6,384.2	-38.1	-1,386.3	468.6	6.81
7,088.0	86.63	342.44	6,386.6	-8.0	-1,396.9	500.4	13.42
7,144.0	88.37	349.89	6,389.0	46.3	-1,410.3	555.9	13.65
7,177.0	88.90	349.27	6,389.8	78.8	-1,416.2	588.3	2.47
7,273.0	91.36	348.40	6,389.6	172.9	-1,434.8	682.8	2.72
7,369.0	92.24	347.78	6,386.6	266.8	-1,454.6	777.4	1.12
7,465.0	90.66	348.04	6,384.2	360.7	-1,474.7	872.1	1.67
7,561.0	90.31	350.33	6,383.4	454.9	-1,492.7	966.5	2.41
7,656.0	89.87	351.30	6,383.2	548.7	-1,507.9	1,059.4	1.12
7,751.0	90.31	351.03	6,383.1	642.6	-1,522.5	1,152.2	0.54
7,847.0	89.60	349.19	6,383.1	737.2	-1,539.0	1,246.3	2.05
7,944.0	88.99	349.54	6,384.3	832.5	-1,556.9	1,341.6	0.73
8,040.0	90.13	350.68	6,385.1	927.1	-1,573.4	1,435.7	1.68
8,135.0	90.66	349.10	6,384.4	1,020.6	-1,590.0	1,528.8	1.75
8,232.0	89.78	349.45	6,384.0	1,115.9	-1,608.1	1,624.2	0.98
8,328.0	89.09	347.43	6,385.0	1,209.9	-1,627.3	1,718.8	2.22
8,424.0	93.03	347.43	6,383.2	1,303.6	-1,648.2	1,813.6	4.10
8,520.0	89.43	344.18	6,381.1	1,396.6	-1,671.7	1,908.8	5.05
8,617.0	88.02	342.77	6,383.3	1,489.6	-1,699.3	2,005.5	2.06
8,713.0	92.68	346.29	6,382.7	1,582.1	-1,724.9	2,100.9	6.08
8,809.0	90.57	345.67	6,380.0	1,675.2	-1,748.2	2,196.1	2.29
8,900.0	91.45	344.35	6,378.4	1,763.0	-1,771.7	2,286.5	1.74
8,991.0	89.60	343.83	6,377.6	1,850.5	-1,796.6	2,377.1	2.11
9,081.0	88.90	343.39	6,378.7	1,936.9	-1,822.0	2,466.8	0.92
9,172.0	88.90	345.93	6,380.5	2,024.6	-1,846.1	2,557.3	2.79
9,262.0	90.13	344.97	6,381.2	2,111.7	-1,868.7	2,646.6	1.73
9,353.0	89.43	347.78	6,381.6	2,200.2	-1,890.1	2,736.8	3.18
9,443.0	91.71	351.03	6,380.7	2,288.6	-1,906.7	2,825.2	4.41
9,534.0	90.48	348.48	6,379.0	2,378.1	-1,922.9	2,914.5	3.11
9,624.0	89.43	347.60	6,379.0	2,466.2	-1,941.5	3,003.3	1.52
9,715.0	88.81	346.20	6,380.4	2,554.8	-1,962.1	3,093.3	1.68
9,806.0	89.16	347.87	6,382.0	2,643.4	-1,982.5	3,183.3	1.87
9,897.0	91.80	350.77	6,381.3	2,732.8	-1,999.4	3,272.8	4.31
9,993.0	89.52	349.98	6,380.2	2,827.5	-2,015.5	3,366.8	2.51
10,088.0	88.55	348.90	6,381.8	2,920.9	-2,032.9	3,460.1	1.53
10,185.0	87.85	346.81	6,384.8	3,015.6	-2,053.3	3,555.8	2.27
10,281.0	89.25	346.46	6,387.2	3,109.0	-2,075.4	3,650.8	1.50
10,377.0	90.48	347.43	6,387.5	3,202.5	-2,097.1	3,745.8	1.63
10,473.0	90.48	347.17	6,386.7	3,296.2	-2,118.2	3,840.7	0.27
10,569.0	89.60	344.70	6,386.6	3,389.3	-2,141.6	3,936.0	2.73
10,761.0	90.84	344.70	6,385.9	3,574.5	-2,192.2	4,126.9	0.65



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10,857.0	89.87	344.88	6,385.3	3,667.1	-2,217.4	4,222.3	1.03
10,954.0	89.43	346.46	6,385.9	3,761.1	-2,241.4	4,318.6	1.69
11,050.0	89.96	347.52	6,386.4	3,854.6	-2,263.0	4,413.6	1.23
11,146.0	90.84	349.45	6,385.7	3,948.7	-2,282.2	4,508.2	2.21
11,243.0	90.13	347.60	6,384.9	4,043.7	-2,301.5	4,603.8	2.04
11,339.0	90.48	347.87	6,384.4	4,137.5	-2,321.9	4,698.6	0.46
11,435.0	90.57	347.34	6,383.5	4,231.3	-2,342.5	4,793.4	0.56
11,531.0	90.84	346.29	6,382.3	4,324.8	-2,364.4	4,888.4	1.13
11,627.0	89.69	346.64	6,381.9	4,418.1	-2,386.8	4,983.5	1.25
11,723.0	89.78	346.55	6,382.3	4,511.5	-2,409.1	5,078.6	0.13
11,819.0	90.48	345.93	6,382.1	4,604.7	-2,431.9	5,173.8	0.97
11,915.0	89.25	346.64	6,382.3	4,698.0	-2,454.7	5,268.9	1.48
12,011.0	89.60	348.22	6,383.3	4,791.7	-2,475.6	5,363.8	1.69
12,108.0	90.04	348.48	6,383.6	4,886.7	-2,495.2	5,459.4	0.53
12,204.0	91.01	349.89	6,382.7	4,981.0	-2,513.2	5,553.8	1.78
12,300.0	91.80	350.24	6,380.4	5,075.5	-2,529.7	5,647.9	0.90
12,396.0	90.66	349.10	6,378.3	5,169.9	-2,546.9	5,742.1	1.68
12,492.0	91.63	347.78	6,376.4	5,263.9	-2,566.2	5,836.7	1.71
12,588.0	88.81	343.83	6,376.0	5,357.0	-2,589.7	5,931.9	5.05
12,683.0	89.69	343.91	6,377.2	5,448.2	-2,616.1	6,026.5	0.93
12,779.0	90.22	345.32	6,377.3	5,540.8	-2,641.6	6,122.0	1.57
12,875.0	91.36	346.11	6,376.0	5,633.8	-2,665.3	6,217.3	1.44
12,971.0	90.57	346.90	6,374.4	5,727.1	-2,687.7	6,312.4	1.16
13,068.0	90.06	344.70	6,373.9	5,821.2	-2,711.5	6,408.6	2.33
13,163.0	89.96	342.42	6,373.8	5,912.3	-2,738.3	6,503.3	2.40
13,259.0	88.81	343.47	6,374.9	6,004.1	-2,766.5	6,599.0	1.62
13,356.0	89.60	343.83	6,376.2	6,097.1	-2,793.8	6,695.6	0.89
13,452.0	90.57	343.83	6,376.1	6,189.3	-2,820.5	6,791.2	1.01
13,472.0	91.10	342.95	6,375.8	6,208.5	-2,826.2	6,811.2	5.14
13,533.0	91.10	342.95	6,374.6	6,266.8	-2,844.1	6,872.0	0.00

PTB

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,331.0	6,050.1	-560.8	-1,088.3	SCMR
6,530.0	6,204.9	-470.3	-1,171.3	MDLX
6,730.0	6,314.6	-325.0	-1,251.7	BRKT
6,818.0	6,344.5	-251.2	-1,289.0	TLTY
6,896.0	6,362.0	-182.8	-1,322.1	MRCL_HOT
13,533.0	6,374.6	6,266.8	-2,844.1	PTB

Checked By: _____ Approved By: _____ Date: _____