

Noble Energy

Weld County, CO (NAD 83)

Sec. 32-T6N-R62W (Wells Ranch AE32)

Wells Ranch AE32-635

05-123-41725

Plan A

Design: Actual Surveys

Sperry Drilling Services

Final Survey Report

06 October, 2015

Surface UWI : 05-123-41725

Well Coordinates: 1,405,727.55 N, 3,318,857.42 E (40° 26' 29.29" N, 104° 21' 15.84" W)

Ground Level: 4,722.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

Centered on Well Wells Ranch AE32-635

KB = 24 @ 4746.00usft (H&P 343)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

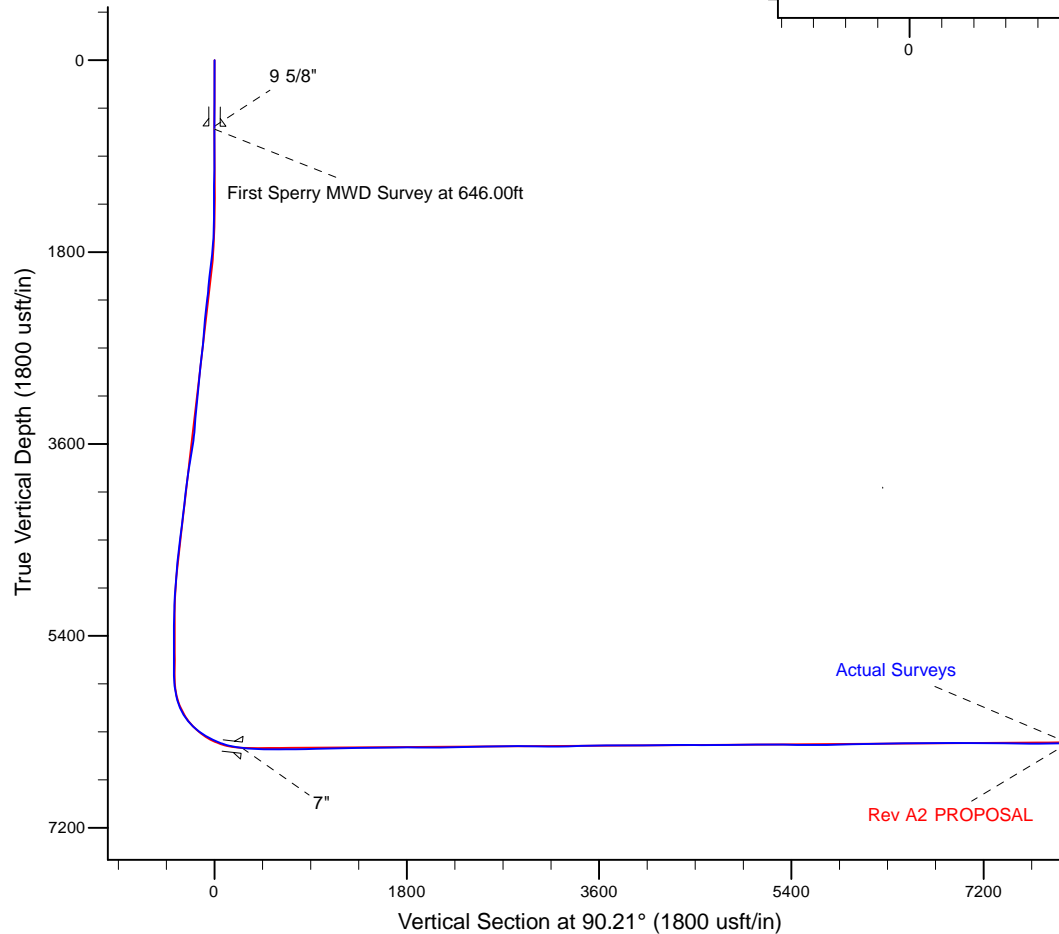
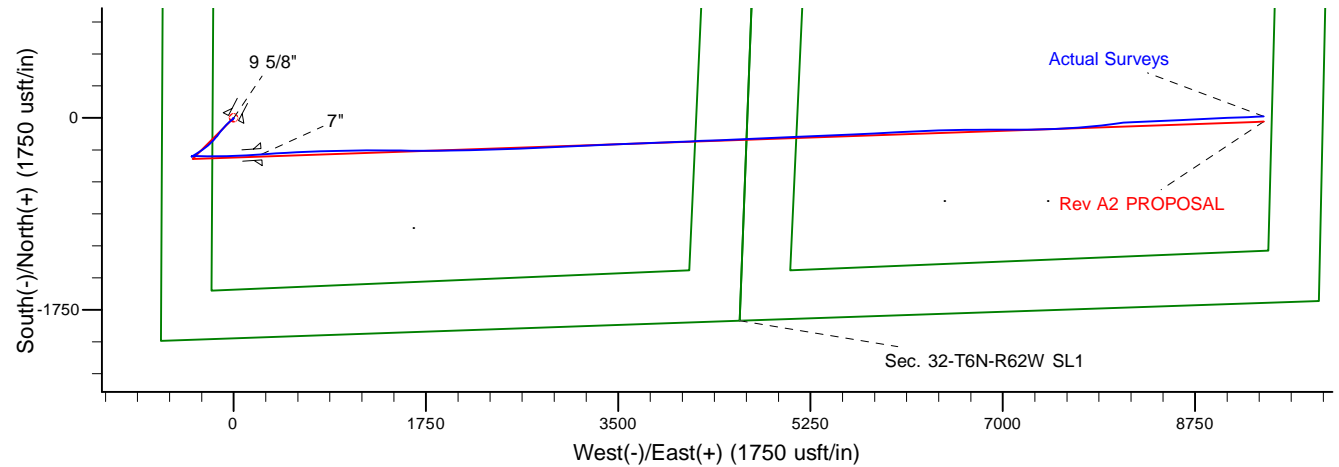
Project: Weld County, CO (NAD 83)
 Site: Sec. 32-T6N-R62W (Wells Ranch AE32)
 Well: Wells Ranch AE32-635
 Wellbore: Plan A
 Design: Actual Surveys



Platted SHL: 2010' FSL, 650' FWL
 Platted Lat/Long: 40.441470, -104.3544
 Location: Sec. 32-T6N-R62W

~7" Casing: 1671' FSL, 900' FWL
 Lat/Long: 40.440546 N, -104.353504 W
 State Planes - CO Northern: 1,405,394.34 N, 3,319,111.24 E
 Sec. 32-T6N-R62W

Platted BHL: 1650' FSL, 535' FEL
 Platted Lat/Long: 40.441172 N, -104.320726 W
 State Planes - CO Northern: 1,405,741.79 N, 3,328,230.86 E
 Location: Sec. 33-T6N-R62W



LEGEND

- Wells Ranch AE32-635, Plan A, Rev A2 PROPOSAL V0
- Actual Surveys

WELL DETAILS: Wells Ranch AE32-635

Ground Level: 4722.00

KB = 24 @ 4746.00usft (H&P 343)

Created By: Tatiana Gomez
 Created On: 10/6/2015

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wells Ranch AE32-635_Rev A0_SHL							
619.00	0.40	207.38	618.99	-1.93	-1.00	-0.99	0.07
9 5/8"							
646.00	0.42	207.38	645.99	-2.10	-1.09	-1.08	0.07
First Sperry MWD Survey at 646.00ft							
740.00	0.48	213.85	739.99	-2.74	-1.47	-1.46	0.08
835.00	0.63	210.87	834.99	-3.51	-1.96	-1.94	0.16
930.00	0.64	201.54	929.98	-4.46	-2.42	-2.40	0.11
1,024.00	0.54	207.88	1,023.98	-5.34	-2.82	-2.80	0.13
1,118.00	0.47	203.49	1,117.97	-6.08	-3.18	-3.16	0.09
1,211.00	0.56	212.13	1,210.97	-6.82	-3.57	-3.55	0.13
1,303.00	0.62	211.78	1,302.96	-7.62	-4.07	-4.05	0.07
1,397.00	0.74	215.31	1,396.96	-8.55	-4.69	-4.66	0.14
1,490.00	0.68	205.78	1,489.95	-9.53	-5.28	-5.25	0.14
1,583.00	2.50	233.63	1,582.91	-11.23	-7.15	-7.11	2.07
1,676.00	4.43	232.90	1,675.74	-14.60	-11.65	-11.60	2.08
1,768.00	5.89	233.84	1,767.36	-19.53	-18.30	-18.23	1.59
1,861.00	7.82	232.99	1,859.69	-26.16	-27.20	-27.11	2.08
1,953.00	9.47	229.98	1,950.64	-34.79	-38.00	-37.87	1.86
2,047.00	8.12	226.72	2,043.54	-44.32	-48.75	-48.59	1.53
2,140.00	8.07	219.28	2,135.61	-53.87	-57.67	-57.47	1.13
2,233.00	9.71	226.79	2,227.50	-64.30	-67.52	-67.29	2.16
2,326.00	8.79	223.10	2,319.29	-74.85	-78.09	-77.82	1.18
2,419.00	7.74	218.12	2,411.32	-84.97	-86.81	-86.51	1.37
2,510.00	8.66	221.14	2,501.39	-94.95	-95.10	-94.76	1.12
2,603.00	8.36	215.99	2,593.37	-105.69	-103.68	-103.30	0.88
2,694.00	7.86	214.10	2,683.46	-116.20	-111.06	-110.64	0.62
2,787.00	9.81	226.19	2,775.36	-126.95	-120.34	-119.88	2.88
2,880.00	9.95	220.21	2,866.98	-138.57	-131.25	-130.75	1.11
2,975.00	9.60	217.64	2,960.60	-151.11	-141.38	-140.84	0.59
3,070.00	8.86	210.55	3,054.37	-163.69	-149.94	-149.35	1.43
3,164.00	9.81	225.74	3,147.14	-175.51	-159.36	-158.72	2.80
3,259.00	8.36	218.87	3,240.95	-186.54	-169.49	-168.81	1.90
3,448.00	6.49	219.68	3,428.36	-205.46	-184.93	-184.19	0.99
3,543.00	9.11	227.29	3,522.47	-214.69	-193.89	-193.11	2.96
3,637.00	10.73	229.59	3,615.06	-225.41	-206.02	-205.21	1.77
3,732.00	11.89	228.68	3,708.22	-237.61	-220.10	-219.25	1.24
3,826.00	13.20	228.28	3,799.97	-251.15	-235.39	-234.48	1.40
3,921.00	11.55	227.62	3,892.76	-264.78	-250.51	-249.55	1.74
4,015.00	8.86	229.83	3,985.27	-275.79	-262.99	-262.00	2.89
4,110.00	7.86	233.61	4,079.26	-284.36	-273.81	-272.79	1.20
4,204.00	8.20	237.18	4,172.34	-291.81	-284.62	-283.57	0.64
4,299.00	8.17	237.63	4,266.37	-299.10	-296.02	-294.94	0.07
4,394.00	7.47	240.97	4,360.48	-305.71	-307.12	-306.02	0.88
4,488.00	8.79	236.11	4,453.54	-312.68	-318.42	-317.30	1.58
4,583.00	8.21	236.12	4,547.49	-320.51	-330.08	-328.92	0.61
4,678.00	7.56	238.63	4,641.60	-327.54	-341.05	-339.87	0.77
4,772.00	6.17	237.89	4,734.92	-333.44	-350.61	-349.40	1.48
4,867.00	4.96	235.28	4,829.47	-338.50	-358.31	-357.09	1.30

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,961.00	4.78	241.06	4,923.13	-342.71	-365.07	-363.84	0.56
5,151.00	3.39	238.74	5,112.64	-349.45	-376.80	-375.54	0.74
5,245.00	0.95	256.38	5,206.57	-351.08	-379.94	-378.67	2.66
5,340.00	0.75	272.32	5,301.56	-351.24	-381.32	-380.06	0.32
5,435.00	0.09	129.86	5,396.56	-351.26	-381.89	-380.62	0.87
5,529.00	0.26	136.32	5,490.56	-351.46	-381.68	-380.42	0.18
5,624.00	0.31	112.16	5,585.56	-351.72	-381.30	-380.03	0.14
5,718.00	0.19	130.72	5,679.56	-351.91	-380.94	-379.68	0.15
5,813.00	0.36	339.47	5,774.55	-351.74	-380.93	-379.66	0.56
5,908.00	6.76	79.00	5,869.34	-350.39	-375.54	-374.28	7.19
6,003.00	13.92	83.49	5,962.73	-348.02	-358.67	-357.42	7.58
6,097.00	19.06	94.05	6,052.86	-347.83	-332.11	-330.85	6.31
6,192.00	31.33	92.85	6,138.66	-350.16	-291.81	-290.55	12.93
6,287.00	41.88	89.13	6,214.82	-350.91	-235.27	-234.01	11.34
6,381.00	51.34	89.40	6,279.32	-350.04	-167.05	-165.78	10.07
6,476.00	57.76	89.79	6,334.39	-349.51	-89.70	-88.44	6.77
6,571.00	65.49	88.17	6,379.51	-347.98	-6.19	-4.94	8.27
6,665.00	71.82	86.55	6,413.71	-343.92	81.22	82.45	6.92
6,760.00	78.39	86.76	6,438.11	-338.57	172.82	174.03	6.92
6,788.00	82.28	86.14	6,442.81	-336.86	200.36	201.57	14.06
6,842.00	83.62	86.06	6,449.44	-333.22	253.83	255.03	2.49
7"							
6,973.00	86.88	85.88	6,460.28	-324.05	384.04	385.20	2.49
7,068.00	88.52	87.32	6,464.10	-318.42	478.79	479.93	2.30
7,163.00	90.55	87.60	6,464.87	-314.21	573.69	574.81	2.16
7,257.00	90.68	87.65	6,463.86	-310.31	667.60	668.71	0.15
7,352.00	90.49	87.30	6,462.89	-306.13	762.50	763.60	0.42
7,446.00	91.85	88.19	6,460.97	-302.43	856.41	857.49	1.73
7,541.00	91.17	89.00	6,458.46	-300.10	951.35	952.42	1.11
7,636.00	91.54	88.81	6,456.22	-298.29	1,046.30	1,047.37	0.44
7,730.00	91.14	90.07	6,454.02	-297.37	1,140.27	1,141.33	1.41
7,825.00	91.45	90.31	6,451.87	-297.68	1,235.24	1,236.31	0.41
7,920.00	90.25	90.02	6,450.46	-297.96	1,330.23	1,331.29	1.30
8,014.00	90.74	90.02	6,449.65	-297.99	1,424.23	1,425.29	0.52
8,109.00	91.05	90.44	6,448.17	-298.37	1,519.21	1,520.28	0.55
8,204.00	90.25	90.31	6,447.09	-298.99	1,614.21	1,615.27	0.85
8,298.00	90.62	90.24	6,446.38	-299.44	1,708.20	1,709.27	0.40
8,393.00	89.72	89.32	6,446.09	-299.08	1,803.20	1,804.26	1.35
8,488.00	89.85	89.28	6,446.45	-297.92	1,898.19	1,899.25	0.14
8,582.00	90.06	88.65	6,446.52	-296.22	1,992.17	1,993.23	0.71
8,677.00	90.28	88.70	6,446.24	-294.02	2,087.15	2,088.19	0.24
8,771.00	90.74	88.66	6,445.41	-291.86	2,181.12	2,182.16	0.49
8,865.00	90.99	88.98	6,443.99	-289.92	2,275.09	2,276.12	0.43
8,959.00	91.36	88.54	6,442.06	-287.89	2,369.05	2,370.07	0.61
9,148.00	91.57	88.48	6,437.23	-282.98	2,557.92	2,558.92	0.12
9,243.00	90.77	87.61	6,435.29	-279.74	2,652.84	2,653.83	1.24
9,338.00	91.14	87.74	6,433.70	-275.88	2,747.75	2,748.73	0.41
9,432.00	89.35	87.39	6,433.30	-271.89	2,841.66	2,842.62	1.94
9,527.00	88.74	87.09	6,434.89	-267.32	2,936.54	2,937.48	0.72
9,621.00	89.17	86.88	6,436.60	-262.37	3,030.39	3,031.32	0.51
9,715.00	89.20	86.65	6,437.94	-257.07	3,124.23	3,125.14	0.25

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
9,810.00	90.46	87.44	6,438.22	-252.17	3,219.10	3,219.99	1.57
9,904.00	91.73	87.80	6,436.42	-248.27	3,313.00	3,313.88	1.40
9,999.00	92.06	87.26	6,433.28	-244.18	3,407.86	3,408.72	0.67
10,094.00	92.81	87.15	6,429.24	-239.55	3,502.66	3,503.50	0.80
10,187.00	90.43	87.71	6,426.62	-235.38	3,595.53	3,596.35	2.63
10,281.00	89.75	88.35	6,426.47	-232.15	3,689.47	3,690.28	0.99
10,373.00	90.09	88.24	6,426.60	-229.41	3,781.43	3,782.23	0.39
10,652.00	90.18	87.62	6,425.94	-219.33	4,060.24	4,061.01	0.22
10,745.00	91.26	87.25	6,424.77	-215.17	4,153.14	4,153.89	1.23
10,837.00	90.25	87.03	6,423.56	-210.58	4,245.02	4,245.75	1.12
10,930.00	91.39	88.04	6,422.23	-206.58	4,337.92	4,338.64	1.64
11,022.00	89.69	87.73	6,421.36	-203.19	4,429.85	4,430.55	1.88
11,116.00	89.69	87.21	6,421.87	-199.04	4,523.76	4,524.44	0.55
11,396.00	90.31	87.31	6,421.87	-185.65	4,803.44	4,804.07	0.22
11,488.00	90.68	87.94	6,421.07	-181.84	4,895.35	4,895.97	0.79
11,580.00	91.14	87.82	6,419.61	-178.44	4,987.28	4,987.89	0.52
11,763.00	89.54	88.05	6,418.53	-171.85	5,170.15	5,170.73	0.88
11,857.00	89.23	87.15	6,419.54	-167.91	5,264.06	5,264.63	1.01
11,950.00	89.60	87.31	6,420.49	-163.42	5,356.95	5,357.50	0.43
12,044.00	89.48	87.20	6,421.24	-158.91	5,450.84	5,451.37	0.17
12,139.00	90.34	87.90	6,421.39	-154.85	5,545.75	5,546.27	1.17
12,233.00	89.63	87.55	6,421.41	-151.12	5,639.67	5,640.18	0.84
12,328.00	90.59	86.93	6,421.23	-146.55	5,734.56	5,735.05	1.20
12,423.00	91.63	87.41	6,419.39	-141.86	5,829.43	5,829.90	1.21
12,517.00	90.71	87.03	6,417.47	-137.30	5,923.29	5,923.75	1.06
12,612.00	91.60	87.10	6,415.56	-132.44	6,018.15	6,018.59	0.94
12,707.00	90.68	86.82	6,413.67	-127.40	6,113.00	6,113.41	1.01
12,801.00	91.60	86.67	6,411.80	-122.06	6,206.82	6,207.22	0.99
12,896.00	91.73	87.89	6,409.04	-117.56	6,301.68	6,302.06	1.29
13,085.00	89.78	89.16	6,406.55	-112.69	6,490.58	6,490.95	1.23
13,180.00	90.19	88.92	6,406.57	-111.10	6,585.57	6,585.93	0.50
13,274.00	91.64	89.68	6,405.07	-109.95	6,679.55	6,679.90	1.74
13,369.00	89.97	89.06	6,403.74	-108.91	6,774.53	6,774.88	1.88
13,464.00	90.71	89.35	6,403.17	-107.59	6,869.52	6,869.86	0.84
13,558.00	89.38	90.04	6,403.10	-107.09	6,963.51	6,963.85	1.59
13,653.00	89.57	89.97	6,403.97	-107.10	7,058.51	7,058.85	0.21
13,748.00	91.08	90.48	6,403.43	-107.47	7,153.50	7,153.84	1.68
13,842.00	88.95	88.79	6,403.40	-106.87	7,247.49	7,247.83	2.89
13,937.00	88.27	88.59	6,405.71	-104.70	7,342.44	7,342.77	0.75
14,032.00	88.40	88.22	6,408.47	-102.06	7,437.36	7,437.68	0.41
14,126.00	88.68	86.73	6,410.86	-97.92	7,531.24	7,531.54	1.61
14,221.00	90.22	86.19	6,411.78	-92.05	7,626.05	7,626.33	1.72
14,315.00	90.99	86.04	6,410.78	-85.68	7,719.83	7,720.09	0.83
14,410.00	91.17	84.96	6,408.99	-78.23	7,814.52	7,814.75	1.15
14,505.00	90.74	83.13	6,407.41	-68.38	7,908.99	7,909.18	1.98
14,599.00	89.88	81.71	6,406.90	-55.98	8,002.16	8,002.31	1.77
14,694.00	91.63	84.33	6,405.65	-44.44	8,096.44	8,096.54	3.32
14,788.00	91.76	87.75	6,402.87	-37.95	8,190.16	8,190.24	3.64
14,882.00	92.01	87.79	6,399.78	-34.29	8,284.03	8,284.10	0.27
14,977.00	91.54	88.19	6,396.83	-30.96	8,378.93	8,378.99	0.65
15,072.00	90.65	87.09	6,395.02	-27.05	8,473.83	8,473.87	1.49

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
15,167.00	90.62	87.17	6,393.96	-22.29	8,568.70	8,568.73	0.09
15,261.00	90.52	87.51	6,393.03	-17.93	8,662.60	8,662.61	0.38
15,356.00	90.12	87.24	6,392.50	-13.58	8,757.50	8,757.49	0.51
15,451.00	90.06	87.19	6,392.35	-8.97	8,852.38	8,852.36	0.08
15,545.00	90.06	87.37	6,392.25	-4.50	8,946.28	8,946.24	0.19
15,640.00	90.31	87.35	6,391.94	-0.13	9,041.18	9,041.12	0.26
15,735.00	90.74	87.65	6,391.07	4.01	9,136.08	9,136.01	0.55
15,829.00	90.89	87.85	6,389.74	7.70	9,230.00	9,229.91	0.27
15,906.00	90.49	87.23	6,388.81	11.01	9,306.92	9,306.82	0.96
Final Sperry MWD Survey at 15906.00ft							
15,972.95	90.49	87.23	6,388.24	14.24	9,373.79	9,373.68	0.00
Wells Ranch AE32-635_Rev A2_BHL - Wells Ranch AE32-635_Rev A0_BHL							
15,973.00	90.49	87.23	6,388.24	14.25	9,373.84	9,373.73	0.00
Straight Line Projection to TD at 15973.00ft							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
646.00	645.99	-2.10	-1.09	First Sperry MWD Survey at 646.00ft
15,906.00	6,388.81	11.01	9,306.92	Final Sperry MWD Survey at 15906.00ft
15,973.00	6,388.24	14.25	9,373.84	Straight Line Projection to TD at 15973.00ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	+E/-W (usft)	Start TVD (usft)
Target	Wells Ranch AE32-635_Rev A2_BHL	90.21	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
646.00	6,788.00	Intermediate Surveys	MWD
6,973.00	15,973.00	Production Surveys	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
619.00	618.99	9 5/8"	9-5/8	13-3/4
6,842.00	6,449.44	7"	7	8-3/4

Design Report for Wells Ranch AE32-635 - Actual Surveys

Wellbore 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
Wells Ranch AE32-635 - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	0.01	0.00	1,405,727.56	3,318,857.42	40.441470	-104.354400
Wells Ranch AE32-635 - actual wellpath misses target center by 48.04usft at 15972.95usft MD (6388.24 TVD, 14.24 N, 9373.79 E) - Point	0.00	0.00	6,389.00	-33.74	9,376.12	1,405,693.81	3,328,233.19	40.441040	-104.320720
Wells Ranch AE32-635 - actual wellpath misses target center by 48.04usft at 15972.95usft MD (6388.24 TVD, 14.24 N, 9373.79 E) - Point	0.00	0.00	6,389.00	-33.74	9,376.12	1,405,693.81	3,328,233.19	40.441040	-104.320720

Directional Difficulty Index

Average Dogleg over Survey:	1.45 °/100usft	Maximum Dogleg over Survey:	14.06 °/100usft at 6,788.00 usft
Net Tortousity applicable to Plans:	0.76 °/100usft	Directional Difficulty Index:	6.769

Audit Info

North Reference Sheet for Sec. 32-T6N-R62W (Wells Ranch AE32) - Wells Ranch
AE32-635 - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to KB = 24 @ 4746.00usft (H&P 343). Northing and Easting are relative to Wells Ranch AE32-635

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996237

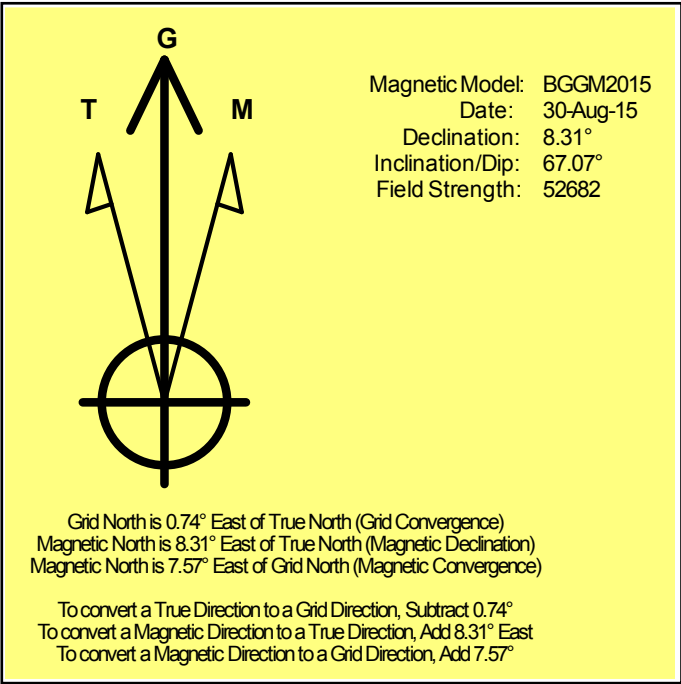
Grid Coordinates of Well: 1,405,727.55 usft N, 3,318,857.42 usft E

Geographical Coordinates of Well: 40° 26' 29.29" N, 104° 21' 15.84" W

Grid Convergence at Surface is: 0.74°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,973.00usft the Bottom Hole Displacement is 9,373.85usft in the Direction of 89.91° (Grid).

Magnetic Convergence at surface is: -7.57° (30 August 2015, , BGGM2015)



Noble Energy

Weld County, CO (NAD 83)

Sec. 32-T6N-R62W (Wells Ranch AE32)

Wells Ranch AE32-635

05-123-41725

Plan A

Design: Actual Surveys

Sperry Drilling Services

Geodetic Report

06 October, 2015

Well Coordinates: 1,405,727.55 N, 3,318,857.42 E (40° 26' 29.29" N, 104° 21' 15.84" W)

Ground Level: 4,722.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

Centered on Well Wells Ranch AE32-635

KB = 24 @ 4746.00usft (H&P 343)

N

Grid

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.441470	-104.354400	1,405,727.55	3,318,857.42
619.00	0.40	207.38	618.99	-1.93	-1.00	40.441465	-104.354404	1,405,725.62	3,318,856.42
646.00	0.42	207.38	645.99	-2.10	-1.09	40.441464	-104.354404	1,405,725.44	3,318,856.33
740.00	0.48	213.85	739.99	-2.74	-1.47	40.441463	-104.354406	1,405,724.81	3,318,855.95
835.00	0.63	210.87	834.99	-3.51	-1.96	40.441460	-104.354407	1,405,724.03	3,318,855.46
930.00	0.64	201.54	929.98	-4.46	-2.42	40.441458	-104.354409	1,405,723.09	3,318,855.00
1,024.00	0.54	207.88	1,023.98	-5.34	-2.82	40.441456	-104.354411	1,405,722.21	3,318,854.60
1,118.00	0.47	203.49	1,117.97	-6.08	-3.18	40.441453	-104.354412	1,405,721.47	3,318,854.24
1,211.00	0.56	212.13	1,210.97	-6.82	-3.57	40.441451	-104.354413	1,405,720.73	3,318,853.85
1,303.00	0.62	211.78	1,302.96	-7.62	-4.07	40.441449	-104.354415	1,405,719.93	3,318,853.35
1,397.00	0.74	215.31	1,396.96	-8.55	-4.69	40.441447	-104.354418	1,405,719.00	3,318,852.73
1,490.00	0.68	205.78	1,489.95	-9.53	-5.28	40.441444	-104.354420	1,405,718.01	3,318,852.14
1,583.00	2.50	233.63	1,582.91	-11.23	-7.15	40.441439	-104.354426	1,405,716.31	3,318,850.27
1,676.00	4.43	232.90	1,675.74	-14.60	-11.65	40.441430	-104.354443	1,405,712.94	3,318,845.77
1,768.00	5.89	233.84	1,767.36	-19.53	-18.30	40.441417	-104.354467	1,405,708.01	3,318,839.12
1,861.00	7.82	232.99	1,859.69	-26.16	-27.20	40.441399	-104.354499	1,405,701.39	3,318,830.22
1,953.00	9.47	229.98	1,950.64	-34.79	-38.00	40.441376	-104.354538	1,405,692.76	3,318,819.42
2,047.00	8.12	226.72	2,043.54	-44.32	-48.75	40.441350	-104.354577	1,405,683.23	3,318,808.67
2,140.00	8.07	219.28	2,135.61	-53.87	-57.67	40.441324	-104.354610	1,405,673.68	3,318,799.75
2,233.00	9.71	226.79	2,227.50	-64.30	-67.52	40.441296	-104.354646	1,405,663.25	3,318,789.90
2,326.00	8.79	223.10	2,319.29	-74.85	-78.09	40.441267	-104.354684	1,405,652.69	3,318,779.33
2,419.00	7.74	218.12	2,411.32	-84.97	-86.81	40.441240	-104.354716	1,405,642.58	3,318,770.61
2,510.00	8.66	221.14	2,501.39	-94.95	-95.10	40.441213	-104.354746	1,405,632.60	3,318,762.32
2,603.00	8.36	215.99	2,593.37	-105.69	-103.68	40.441184	-104.354778	1,405,621.86	3,318,753.74
2,694.00	7.86	214.10	2,683.46	-116.20	-111.06	40.441155	-104.354805	1,405,611.35	3,318,746.37
2,787.00	9.81	226.19	2,775.36	-126.95	-120.34	40.441126	-104.354838	1,405,600.60	3,318,737.08
2,880.00	9.95	220.21	2,866.98	-138.57	-131.25	40.441094	-104.354878	1,405,588.98	3,318,726.18
2,975.00	9.60	217.64	2,960.60	-151.11	-141.38	40.441060	-104.354915	1,405,576.44	3,318,716.04
3,070.00	8.86	210.55	3,054.37	-163.69	-149.94	40.441026	-104.354946	1,405,563.87	3,318,707.49
3,164.00	9.81	225.74	3,147.14	-175.51	-159.36	40.440994	-104.354981	1,405,552.04	3,318,698.07
3,259.00	8.36	218.87	3,240.95	-186.54	-169.49	40.440964	-104.355018	1,405,541.02	3,318,687.94
3,448.00	6.49	219.68	3,428.36	-205.46	-184.93	40.440913	-104.355074	1,405,522.10	3,318,672.50
3,543.00	9.11	227.29	3,522.47	-214.69	-193.89	40.440888	-104.355107	1,405,512.86	3,318,663.54
3,637.00	10.73	229.59	3,615.06	-225.41	-206.02	40.440859	-104.355151	1,405,502.14	3,318,651.41
3,732.00	11.89	228.68	3,708.22	-237.61	-220.10	40.440826	-104.355202	1,405,489.95	3,318,637.33
3,826.00	13.20	228.28	3,799.97	-251.15	-235.39	40.440789	-104.355257	1,405,476.41	3,318,622.04
3,921.00	11.55	227.62	3,892.76	-264.78	-250.51	40.440752	-104.355312	1,405,462.78	3,318,606.92
4,015.00	8.86	229.83	3,985.27	-275.79	-262.99	40.440722	-104.355358	1,405,451.77	3,318,594.44
4,110.00	7.86	233.61	4,079.26	-284.36	-273.81	40.440699	-104.355397	1,405,443.19	3,318,583.62
4,204.00	8.20	237.18	4,172.34	-291.81	-284.62	40.440679	-104.355436	1,405,435.75	3,318,572.81
4,299.00	8.17	237.63	4,266.37	-299.10	-296.02	40.440660	-104.355478	1,405,428.46	3,318,561.41
4,394.00	7.47	240.97	4,360.48	-305.71	-307.12	40.440642	-104.355518	1,405,421.85	3,318,550.31

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
4,488.00	8.79	236.11	4,453.54	-312.68	-318.42	40.440623	-104.355559	1,405,414.88	3,318,539.01
4,583.00	8.21	236.12	4,547.49	-320.51	-330.08	40.440602	-104.355601	1,405,407.05	3,318,527.35
4,678.00	7.56	238.63	4,641.60	-327.54	-341.05	40.440583	-104.355641	1,405,400.02	3,318,516.39
4,772.00	6.17	237.89	4,734.92	-333.44	-350.61	40.440567	-104.355675	1,405,394.11	3,318,506.83
4,867.00	4.96	235.28	4,829.47	-338.50	-358.31	40.440554	-104.355703	1,405,389.06	3,318,499.13
4,961.00	4.78	241.06	4,923.13	-342.71	-365.07	40.440542	-104.355728	1,405,384.85	3,318,492.36
5,151.00	3.39	238.74	5,112.64	-349.45	-376.80	40.440524	-104.355770	1,405,378.11	3,318,480.63
5,245.00	0.95	256.38	5,206.57	-351.08	-379.94	40.440520	-104.355781	1,405,376.48	3,318,477.50
5,340.00	0.75	272.32	5,301.56	-351.24	-381.32	40.440520	-104.355786	1,405,376.32	3,318,476.11
5,435.00	0.09	129.86	5,396.56	-351.26	-381.89	40.440519	-104.355788	1,405,376.30	3,318,475.55
5,529.00	0.26	136.32	5,490.56	-351.46	-381.68	40.440519	-104.355788	1,405,376.10	3,318,475.75
5,624.00	0.31	112.16	5,585.56	-351.72	-381.30	40.440518	-104.355786	1,405,375.84	3,318,476.14
5,718.00	0.19	130.72	5,679.56	-351.91	-380.94	40.440518	-104.355785	1,405,375.65	3,318,476.49
5,813.00	0.36	339.47	5,774.55	-351.74	-380.93	40.440518	-104.355785	1,405,375.82	3,318,476.50
5,908.00	6.76	79.00	5,869.34	-350.39	-375.54	40.440522	-104.355766	1,405,377.17	3,318,481.89
6,003.00	13.92	83.49	5,962.73	-348.02	-358.67	40.440528	-104.355705	1,405,379.54	3,318,498.76
6,097.00	19.06	94.05	6,052.86	-347.83	-332.11	40.440527	-104.355609	1,405,379.73	3,318,525.32
6,192.00	31.33	92.85	6,138.66	-350.16	-291.81	40.440519	-104.355465	1,405,377.40	3,318,565.62
6,287.00	41.88	89.13	6,214.82	-350.91	-235.27	40.440515	-104.355262	1,405,376.65	3,318,622.16
6,381.00	51.34	89.40	6,279.32	-350.04	-167.05	40.440515	-104.355017	1,405,377.52	3,318,690.38
6,476.00	57.76	89.79	6,334.39	-349.51	-89.70	40.440514	-104.354739	1,405,378.05	3,318,767.72
6,571.00	65.49	88.17	6,379.51	-347.98	-6.19	40.440515	-104.354439	1,405,379.58	3,318,851.23
6,665.00	71.82	86.55	6,413.71	-343.92	81.22	40.440523	-104.354124	1,405,383.64	3,318,938.63
6,760.00	78.39	86.76	6,438.11	-338.57	172.82	40.440535	-104.353795	1,405,388.99	3,319,030.23
6,788.00	82.28	86.14	6,442.81	-336.86	200.36	40.440538	-104.353696	1,405,390.70	3,319,057.77
6,842.00	83.62	86.06	6,449.44	-333.22	253.83	40.440546	-104.353504	1,405,394.34	3,319,111.24
6,973.00	86.88	85.88	6,460.28	-324.05	384.04	40.440567	-104.353036	1,405,403.51	3,319,241.44
7,068.00	88.52	87.32	6,464.10	-318.42	478.79	40.440579	-104.352695	1,405,409.14	3,319,336.19
7,163.00	90.55	87.60	6,464.87	-314.21	573.69	40.440587	-104.352354	1,405,413.35	3,319,431.09
7,257.00	90.68	87.65	6,463.86	-310.31	667.60	40.440595	-104.352016	1,405,417.24	3,319,525.00
7,352.00	90.49	87.30	6,462.89	-306.13	762.50	40.440603	-104.351675	1,405,421.43	3,319,619.89
7,446.00	91.85	88.19	6,460.97	-302.43	856.41	40.440610	-104.351338	1,405,425.13	3,319,713.80
7,541.00	91.17	89.00	6,458.46	-300.10	951.35	40.440613	-104.350997	1,405,427.46	3,319,808.73
7,636.00	91.54	88.81	6,456.22	-298.29	1,046.30	40.440614	-104.350656	1,405,429.27	3,319,903.68
7,730.00	91.14	90.07	6,454.02	-297.37	1,140.27	40.440613	-104.350318	1,405,430.19	3,319,997.65
7,825.00	91.45	90.31	6,451.87	-297.68	1,235.24	40.440609	-104.349977	1,405,429.87	3,320,092.62
7,920.00	90.25	90.02	6,450.46	-297.96	1,330.23	40.440605	-104.349636	1,405,429.60	3,320,187.60
8,014.00	90.74	90.02	6,449.65	-297.99	1,424.23	40.440602	-104.349298	1,405,429.57	3,320,281.59
8,109.00	91.05	90.44	6,448.17	-298.37	1,519.21	40.440597	-104.348957	1,405,429.19	3,320,376.58
8,204.00	90.25	90.31	6,447.09	-298.99	1,614.21	40.440592	-104.348616	1,405,428.56	3,320,471.56
8,298.00	90.62	90.24	6,446.38	-299.44	1,708.20	40.440587	-104.348278	1,405,428.11	3,320,565.56
8,393.00	89.72	89.32	6,446.09	-299.08	1,803.20	40.440585	-104.347937	1,405,428.48	3,320,660.55

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
8,488.00	89.85	89.28	6,446.45	-297.92	1,898.19	40.440585	-104.347595	1,405,429.64	3,320,755.54
8,582.00	90.06	88.65	6,446.52	-296.22	1,992.17	40.440586	-104.347258	1,405,431.34	3,320,849.52
8,677.00	90.28	88.70	6,446.24	-294.02	2,087.15	40.440589	-104.346916	1,405,433.53	3,320,944.49
8,771.00	90.74	88.66	6,445.41	-291.86	2,181.12	40.440591	-104.346579	1,405,435.70	3,321,038.46
8,865.00	90.99	88.98	6,443.99	-289.92	2,275.09	40.440593	-104.346241	1,405,437.63	3,321,132.42
8,959.00	91.36	88.54	6,442.06	-287.89	2,369.05	40.440596	-104.345903	1,405,439.67	3,321,226.38
9,148.00	91.57	88.48	6,437.23	-282.98	2,557.92	40.440602	-104.345225	1,405,444.58	3,321,415.24
9,243.00	90.77	87.61	6,435.29	-279.74	2,652.84	40.440608	-104.344884	1,405,447.82	3,321,510.16
9,338.00	91.14	87.74	6,433.70	-275.88	2,747.75	40.440615	-104.344542	1,405,451.67	3,321,605.07
9,432.00	89.35	87.39	6,433.30	-271.89	2,841.66	40.440623	-104.344205	1,405,455.67	3,321,698.98
9,527.00	88.74	87.09	6,434.89	-267.32	2,936.54	40.440632	-104.343864	1,405,460.24	3,321,793.85
9,621.00	89.17	86.88	6,436.60	-262.37	3,030.39	40.440642	-104.343527	1,405,465.18	3,321,887.70
9,715.00	89.20	86.65	6,437.94	-257.07	3,124.23	40.440653	-104.343189	1,405,470.49	3,321,981.54
9,810.00	90.46	87.44	6,438.22	-252.17	3,219.10	40.440663	-104.342848	1,405,475.38	3,322,076.40
9,904.00	91.73	87.80	6,436.42	-248.27	3,313.00	40.440671	-104.342511	1,405,479.29	3,322,170.30
9,999.00	92.06	87.26	6,433.28	-244.18	3,407.86	40.440678	-104.342170	1,405,483.38	3,322,265.16
10,094.00	92.81	87.15	6,429.24	-239.55	3,502.66	40.440688	-104.341829	1,405,488.01	3,322,359.95
10,187.00	90.43	87.71	6,426.62	-235.38	3,595.53	40.440696	-104.341495	1,405,492.17	3,322,452.81
10,281.00	89.75	88.35	6,426.47	-232.15	3,689.47	40.440701	-104.341158	1,405,495.41	3,322,546.75
10,373.00	90.09	88.24	6,426.60	-229.41	3,781.43	40.440706	-104.340827	1,405,498.14	3,322,638.71
10,652.00	90.18	87.62	6,425.94	-219.33	4,060.24	40.440723	-104.339825	1,405,508.22	3,322,917.51
10,745.00	91.26	87.25	6,424.77	-215.17	4,153.14	40.440731	-104.339491	1,405,512.38	3,323,010.41
10,837.00	90.25	87.03	6,423.56	-210.58	4,245.02	40.440741	-104.339161	1,405,516.97	3,323,102.28
10,930.00	91.39	88.04	6,422.23	-206.58	4,337.92	40.440748	-104.338827	1,405,520.97	3,323,195.18
11,022.00	89.69	87.73	6,421.36	-203.19	4,429.85	40.440754	-104.338497	1,405,524.37	3,323,287.10
11,116.00	89.69	87.21	6,421.87	-199.04	4,523.76	40.440762	-104.338159	1,405,528.51	3,323,381.01
11,396.00	90.31	87.31	6,421.87	-185.65	4,803.44	40.440789	-104.337154	1,405,541.90	3,323,660.67
11,488.00	90.68	87.94	6,421.07	-181.84	4,895.35	40.440796	-104.336823	1,405,545.71	3,323,752.59
11,580.00	91.14	87.82	6,419.61	-178.44	4,987.28	40.440802	-104.336493	1,405,549.11	3,323,844.51
11,763.00	89.54	88.05	6,418.53	-171.85	5,170.15	40.440814	-104.335836	1,405,555.71	3,324,027.37
11,857.00	89.23	87.15	6,419.54	-167.91	5,264.06	40.440821	-104.335498	1,405,559.64	3,324,121.28
11,950.00	89.60	87.31	6,420.49	-163.42	5,356.95	40.440830	-104.335164	1,405,564.14	3,324,214.16
12,044.00	89.48	87.20	6,421.24	-158.91	5,450.84	40.440839	-104.334827	1,405,568.64	3,324,308.05
12,139.00	90.34	87.90	6,421.39	-154.85	5,545.75	40.440847	-104.334486	1,405,572.70	3,324,402.96
12,233.00	89.63	87.55	6,421.41	-151.12	5,639.67	40.440854	-104.334148	1,405,576.43	3,324,496.88
12,328.00	90.59	86.93	6,421.23	-146.55	5,734.56	40.440863	-104.333807	1,405,581.01	3,324,591.76
12,423.00	91.63	87.41	6,419.39	-141.86	5,829.43	40.440872	-104.333466	1,405,585.69	3,324,686.63
12,517.00	90.71	87.03	6,417.47	-137.30	5,923.29	40.440881	-104.333129	1,405,590.25	3,324,780.49
12,612.00	91.60	87.10	6,415.56	-132.44	6,018.15	40.440891	-104.332788	1,405,595.12	3,324,875.34
12,707.00	90.68	86.82	6,413.67	-127.40	6,113.00	40.440902	-104.332447	1,405,600.15	3,324,970.19
12,801.00	91.60	86.67	6,411.80	-122.06	6,206.82	40.440913	-104.332109	1,405,605.49	3,325,064.01
12,896.00	91.73	87.89	6,409.04	-117.56	6,301.68	40.440922	-104.331768	1,405,609.99	3,325,158.86

Design Report for Wells Ranch AE32-635 - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
13,085.00	89.78	89.16	6,406.55	-112.69	6,490.58	40.440928	-104.331090	1,405,614.86	3,325,347.76
13,180.00	90.19	88.92	6,406.57	-111.10	6,585.57	40.440929	-104.330748	1,405,616.45	3,325,442.74
13,274.00	91.64	89.68	6,405.07	-109.95	6,679.55	40.440929	-104.330411	1,405,617.60	3,325,536.72
13,369.00	89.97	89.06	6,403.74	-108.91	6,774.53	40.440928	-104.330069	1,405,618.64	3,325,631.69
13,464.00	90.71	89.35	6,403.17	-107.59	6,869.52	40.440929	-104.329728	1,405,619.96	3,325,726.68
13,558.00	89.38	90.04	6,403.10	-107.09	6,963.51	40.440927	-104.329390	1,405,620.46	3,325,820.67
13,653.00	89.57	89.97	6,403.97	-107.10	7,058.51	40.440923	-104.329049	1,405,620.45	3,325,915.66
13,748.00	91.08	90.48	6,403.43	-107.47	7,153.50	40.440919	-104.328708	1,405,620.08	3,326,010.65
13,842.00	88.95	88.79	6,403.40	-106.87	7,247.49	40.440917	-104.328370	1,405,620.68	3,326,104.64
13,937.00	88.27	88.59	6,405.71	-104.70	7,342.44	40.440919	-104.328029	1,405,622.85	3,326,199.58
14,032.00	88.40	88.22	6,408.47	-102.06	7,437.36	40.440923	-104.327688	1,405,625.49	3,326,294.50
14,126.00	88.68	86.73	6,410.86	-97.92	7,531.24	40.440931	-104.327351	1,405,629.63	3,326,388.37
14,221.00	90.22	86.19	6,411.78	-92.05	7,626.05	40.440944	-104.327010	1,405,635.50	3,326,483.18
14,315.00	90.99	86.04	6,410.78	-85.68	7,719.83	40.440958	-104.326673	1,405,641.87	3,326,576.96
14,410.00	91.17	84.96	6,408.99	-78.23	7,814.52	40.440975	-104.326332	1,405,649.32	3,326,671.64
14,505.00	90.74	83.13	6,407.41	-68.38	7,908.99	40.440998	-104.325992	1,405,659.17	3,326,766.11
14,599.00	89.88	81.71	6,406.90	-55.98	8,002.16	40.441029	-104.325657	1,405,671.57	3,326,859.28
14,694.00	91.63	84.33	6,405.65	-44.44	8,096.44	40.441057	-104.325318	1,405,683.11	3,326,953.55
14,788.00	91.76	87.75	6,402.87	-37.95	8,190.16	40.441072	-104.324981	1,405,689.60	3,327,047.27
14,882.00	92.01	87.79	6,399.78	-34.29	8,284.03	40.441078	-104.324643	1,405,693.26	3,327,141.14
14,977.00	91.54	88.19	6,396.83	-30.96	8,378.93	40.441084	-104.324302	1,405,696.59	3,327,236.03
15,072.00	90.65	87.09	6,395.02	-27.05	8,473.83	40.441091	-104.323961	1,405,700.50	3,327,330.93
15,167.00	90.62	87.17	6,393.96	-22.29	8,568.70	40.441101	-104.323620	1,405,705.25	3,327,425.80
15,261.00	90.52	87.51	6,393.03	-17.93	8,662.60	40.441109	-104.323283	1,405,709.62	3,327,519.69
15,356.00	90.12	87.24	6,392.50	-13.58	8,757.50	40.441118	-104.322942	1,405,713.97	3,327,614.59
15,451.00	90.06	87.19	6,392.35	-8.97	8,852.38	40.441127	-104.322600	1,405,718.58	3,327,709.47
15,545.00	90.06	87.37	6,392.25	-4.50	8,946.28	40.441136	-104.322263	1,405,723.04	3,327,803.36
15,640.00	90.31	87.35	6,391.94	-0.13	9,041.18	40.441145	-104.321922	1,405,727.42	3,327,898.26
15,735.00	90.74	87.65	6,391.07	4.01	9,136.08	40.441152	-104.321581	1,405,731.56	3,327,993.16
15,829.00	90.89	87.85	6,389.74	7.70	9,230.00	40.441159	-104.321243	1,405,735.25	3,328,087.07
15,906.00	90.49	87.23	6,388.81	11.01	9,306.92	40.441165	-104.320967	1,405,738.56	3,328,163.99
15,972.95	90.49	87.23	6,388.24	14.24	9,373.79	40.441172	-104.320726	1,405,741.79	3,328,230.86
15,973.00	90.49	87.23	6,388.24	14.25	9,373.84	40.441172	-104.320726	1,405,741.79	3,328,230.91

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
646.00	645.99	-2.10	-1.09	First Sperry MWD Survey at 646.00ft
15,906.00	6,388.81	11.01	9,306.92	Final Sperry MWD Survey at 15906.00ft
15,973.00	6,388.24	14.25	9,373.84	Straight Line Projection to TD at 15973.00ft

Design Report for Wells Ranch AE32-635 - Actual Surveys

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
Target	Wells Ranch AE32-635_Rev A2_BHL	90.21	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
646.00	6,788.00	Intermediate Surveys	MWD
6,973.00	15,973.00	Production Surveys	MWD+IFR1+MS_WY

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
619.00	618.99	9 5/8"	9-5/8	13-3/4
6,842.00	6,449.44	7"	7	8-3/4

Design Targets

Shape	Target Name	TVD ()	Northing ()	Easting ()	+N/-S	+E/-W	Created	Updated
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Directional Difficulty Index

Average Dogleg over Survey:	1.45 °/100usft	Maximum Dogleg over Survey:	14.06 °/100usft at 6,788.00 usft
Net Tortousity applicable to Plans:	0.76 °/100usft	Directional Difficulty Index:	6.769

Design Report for Wells Ranch AE32-635 - Actual Surveys

Audit Info

North Reference Sheet for Sec. 32-T6N-R62W (Wells Ranch AE32) - Wells Ranch AE32-635 - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to KB = 24 @ 4746.00usft (H&P 343). Northing and Easting are relative to Wells Ranch AE32-635

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996237

Grid Coordinates of Well: 1,405,727.55 usft N, 3,318,857.42 usft E

Geographical Coordinates of Well: 40° 26' 29.29" N, 104° 21' 15.84" W

Grid Convergence at Surface is: 0.74°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,973.00usft

the Bottom Hole Displacement is 9,373.85usft in the Direction of 89.91° (Grid).

Magnetic Convergence at surface is: -7.57° (30 August 2015, , BGGM2015)

