

SPERRY-SUN DRILLING SERVICES


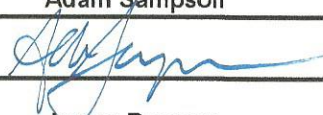

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko Petroleum Corp.
WELL:	Kerr 34C-25HZ
FIELD:	DJ Basin
RIG:	H&P 308
LEGALS:	Sec. 13-T2N-R67W
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Min Curv / True North
MAG. DECL. APPLIED:	8.54
VERTICAL SEC. DIR. :	180.30

SSDS Job Number :	901639966
Start Date of Job :	10/8/2014
End Date of Job :	10/15/2014
Lead Directional Driller:	Jesse Kysar
	Brian Saunders
Other SSDS DD's :	Brandon Watson
SSDS MWD Engineers :	Adam Sampson
	James Ramsay
	Wilson Holland

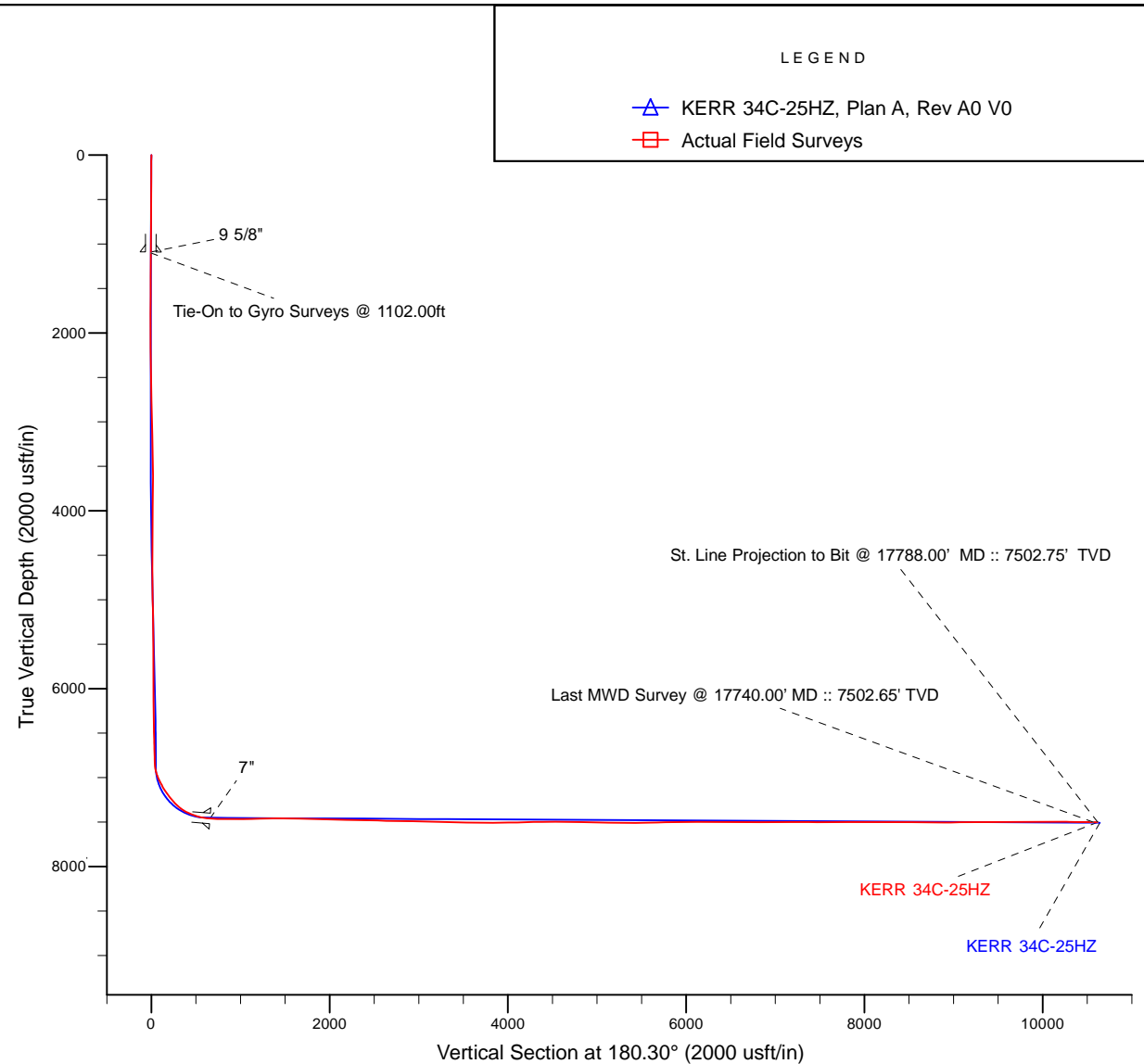
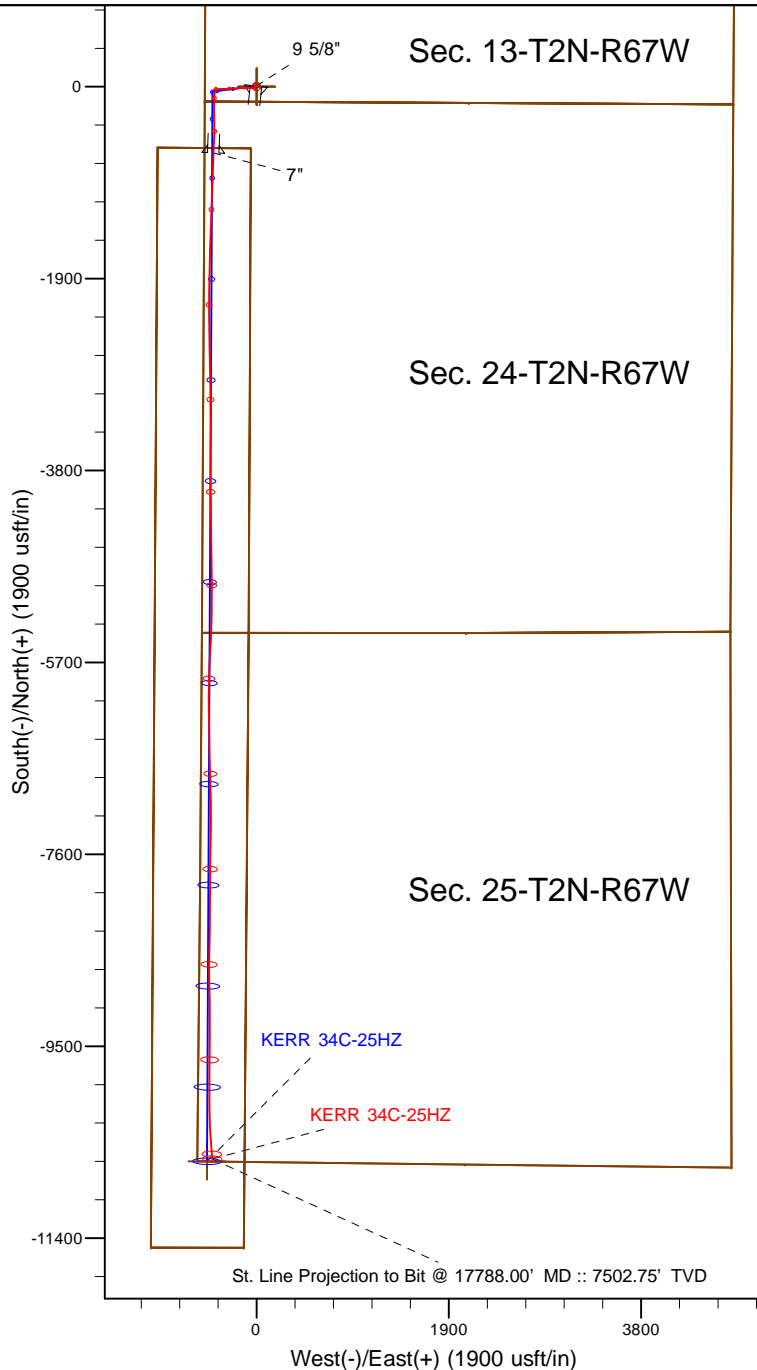
	Main Hole =====>		1st Side Track =====>		2nd Side Track =====>		3rd Side Track =====>		4th Side Track =====>	
		Tie On		Tie On		Tie On		Tie On		Tie On
ESS Survey		Gyro								
First Survey Depth	20.00									
Last Survey Depth	1102.00									
KOP Depth/Sidetrack MD	6875.00	KOP	KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4	
First Survey Depth	1192.00	MWD	MWD		MWD		MWD		MWD	
Last Survey Depth	17740.00	MWD	MWD		MWD		MWD		MWD	
Bit Extrapolation to TD	17788.00	T.D.	T.D.		T.D.		T.D.		T.D.	

The following Sperry Sun Drilling Services personnel listed below, do certify the above survey information to be accurate :

Print Name : Jesse Kysar	Print Name : Adam Sampson	Print Name :
Sign Name : 	Sign Name : 	Sign Name :
Print Name : Brian Saunders	Print Name : James Ramsay	Print Name :
Sign Name :	Sign Name :	Sign Name : 

<u>Examples of Survey Types:</u>	TieOn	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
	MWD	Sperry Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's
	ESS	Sperry Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's
	Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry Sun Drilling Services (SSDS)
	SS	Single Shot (SS) Survey's ; Provided by Sperry Sun Drilling Services (SSDS) or third party vendor.

Project: Weld County, CO (NAD 83)
 Site: Sec. 13-T2N-R67W
 Well: KERR 34C-25HZ
 Wellbore: Plan A
 Design: Actual Field Surveys



LEGEND

- ▲ KERR 34C-25HZ, Plan A, Rev A0 V0
- Actual Field Surveys

7" Casing: ~509.11' FNL, ~87.63' FWL
 Lat/Long: 40.129380 N, -104.848287 E
 State Planes - CO Northern: 1,290,646.44' N, 3,182,231.75' E
 Location: Sec. 24-T2N-R67W

BHL: ~25.36' FSL, ~147.16' FWL
 Lat/Long: 40.102039 N, -104.848328 E
 State Planes - CO Northern: 1,280,687.13' N, 3,182,293.63' E
 Location: Sec. 25-T2N-R67W

WELL DETAILS: KERR 34C-25HZ	
Ground Level:	4891.00
RKB = 25' @ 4916.00usft (H&P 308)	
Design: Actual Field Surveys (KERR 34C-25HZ/Plan A)	
Created By: Katie Benner	Date: 12/16/2014
Reviewed: _____	Date: _____

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 13-T2N-R67W

KERR 34C-25HZ

API: 05-123-39356 :: Job #: 901639966

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

16 December, 2014

Surface UWI : API: 05-123-39356 :: Job #: 901639966

Well Coordinates: 1,291,306.11 N, 3,182,653.85 E (40° 07' 52.25" N, 104° 50' 48.34" W)

Ground Level: 4,891.00 usft

Local Coordinate Origin:

Centered on Well KERR 34C-25HZ

Viewing Datum:

RKB = 25' @ 4916.00usft (H&P 308)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for KERR 34C-25HZ - Actual Field 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
KERR 34C-25HZ_SHL - KERR 34C-25HZ_LD - KERR 34C-25HZ_SEC							
20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
70.00	0.30	280.50	70.00	0.02	-0.13	-0.02	0.60
141.00	0.50	311.50	141.00	0.26	-0.54	-0.26	0.41
217.00	0.30	326.00	217.00	0.65	-0.90	-0.64	0.29
297.00	0.40	293.30	296.99	0.93	-1.28	-0.93	0.27
377.00	0.40	311.70	376.99	1.23	-1.74	-1.22	0.16
457.00	0.60	327.60	456.99	1.77	-2.17	-1.76	0.30
537.00	0.10	239.00	536.99	2.09	-2.46	-2.07	0.76
617.00	0.40	239.90	616.99	1.91	-2.76	-1.89	0.38
697.00	0.60	318.50	696.99	2.08	-3.28	-2.07	0.82
777.00	0.50	349.30	776.98	2.74	-3.62	-2.72	0.38
857.00	0.50	19.60	856.98	3.41	-3.57	-3.39	0.33
937.00	0.70	25.30	936.97	4.18	-3.24	-4.16	0.26
1,017.00	0.20	6.70	1,016.97	4.76	-3.02	-4.75	0.64
1,057.00	0.20	6.60	1,056.97	4.90	-3.00	-4.89	0.00
1,090.20	0.20	6.60	1,090.17	5.02	-2.99	-5.00	0.00
9 5/8"							
1,102.00	0.20	6.60	1,101.97	5.06	-2.98	-5.04	0.00
Tie-On to Gyro Surveys @ 1102.00ft							
1,192.00	0.44	312.88	1,191.97	5.45	-3.22	-5.43	0.40
1,283.00	0.56	295.74	1,282.97	5.88	-3.88	-5.86	0.21
1,373.00	0.37	291.51	1,372.96	6.18	-4.54	-6.15	0.21
1,465.00	0.45	289.55	1,464.96	6.41	-5.16	-6.38	0.09
1,588.00	0.68	276.25	1,587.95	6.65	-6.34	-6.61	0.21
1,680.00	0.59	288.67	1,679.95	6.86	-7.33	-6.82	0.18
1,771.00	0.65	283.67	1,770.94	7.13	-8.28	-7.09	0.09
1,863.00	0.76	294.83	1,862.94	7.51	-9.34	-7.46	0.19
1,954.00	0.81	307.48	1,953.93	8.16	-10.40	-8.10	0.20
2,046.00	1.05	311.87	2,045.92	9.11	-11.54	-9.05	0.27
2,137.00	1.71	239.46	2,136.90	8.98	-13.33	-8.91	1.88
2,229.00	1.52	244.99	2,228.86	7.77	-15.62	-7.68	0.27
2,320.00	1.44	253.06	2,319.83	6.92	-17.81	-6.83	0.25
2,412.00	1.29	256.86	2,411.80	6.35	-19.92	-6.25	0.19
2,594.00	2.07	173.96	2,593.74	2.62	-21.57	-2.50	1.26
2,687.00	1.69	179.30	2,686.69	-0.43	-21.38	0.54	0.45
2,779.00	1.68	175.68	2,778.65	-3.13	-21.26	3.24	0.12
2,871.00	1.55	170.82	2,870.62	-5.70	-20.96	5.81	0.21
2,964.00	1.29	162.45	2,963.59	-7.94	-20.44	8.05	0.36
3,149.00	1.27	157.12	3,148.54	-11.81	-19.02	11.91	0.07
3,240.00	1.04	163.20	3,239.52	-13.53	-18.39	13.63	0.29
3,333.00	0.94	164.61	3,332.51	-15.08	-17.94	15.17	0.11
3,518.00	0.53	164.88	3,517.50	-17.37	-17.31	17.46	0.22
3,610.00	0.22	162.98	3,609.49	-17.95	-17.15	18.04	0.34
3,701.00	0.51	179.43	3,700.49	-18.52	-17.10	18.61	0.34
3,793.00	2.44	287.12	3,792.46	-18.35	-18.96	18.45	2.87
3,886.00	4.21	283.13	3,885.30	-16.99	-24.18	17.12	1.92
3,978.00	5.27	280.92	3,976.99	-15.43	-31.62	15.59	1.17
4,070.00	7.28	277.92	4,068.43	-13.82	-41.54	14.04	2.21

Design Report for KERR 34C-25HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,162.00	8.64	274.25	4,159.54	-12.51	-54.21	12.79	1.58
4,255.00	8.63	273.51	4,251.49	-11.56	-68.14	11.92	0.12
4,349.00	9.74	267.68	4,344.29	-11.45	-83.12	11.89	1.54
4,443.00	9.58	267.96	4,436.95	-12.05	-98.88	12.57	0.18
4,537.00	9.25	268.59	4,529.69	-12.52	-114.25	13.11	0.37
4,631.00	9.31	270.07	4,622.46	-12.69	-129.41	13.37	0.26
4,725.00	9.28	269.54	4,715.22	-12.74	-144.59	13.50	0.10
4,819.00	8.69	267.37	4,808.07	-13.13	-159.26	13.96	0.72
4,913.00	9.56	266.50	4,900.88	-13.93	-174.15	14.84	0.94
5,007.00	9.75	266.58	4,993.55	-14.88	-189.89	15.88	0.20
5,101.00	9.60	266.12	5,086.21	-15.89	-205.65	16.97	0.18
5,195.00	9.35	263.27	5,178.93	-17.31	-221.05	18.47	0.57
5,289.00	9.06	259.97	5,271.72	-19.50	-235.93	20.73	0.64
5,383.00	10.00	269.81	5,364.43	-20.81	-251.38	22.13	2.00
5,477.00	9.77	268.25	5,457.03	-21.09	-267.51	22.49	0.38
5,571.00	9.53	268.96	5,549.70	-21.47	-283.26	22.95	0.28
5,665.00	9.04	271.14	5,642.47	-21.46	-298.43	23.03	0.64
5,760.00	8.66	272.26	5,736.34	-21.03	-313.03	22.67	0.44
5,854.00	8.45	269.33	5,829.29	-20.84	-327.01	22.55	0.51
5,949.00	9.43	265.91	5,923.14	-21.47	-341.75	23.26	1.17
6,043.00	8.56	265.01	6,015.98	-22.63	-356.41	24.50	0.94
6,137.00	7.63	264.86	6,109.04	-23.80	-369.59	25.73	0.99
6,232.00	6.71	265.70	6,203.30	-24.78	-381.41	26.78	0.97
6,326.00	6.22	265.62	6,296.70	-25.58	-391.96	27.63	0.52
6,421.00	5.56	264.56	6,391.20	-26.41	-401.67	28.51	0.70
6,516.00	3.53	256.39	6,485.90	-27.53	-409.10	29.68	2.24
6,610.00	3.01	219.60	6,579.75	-30.12	-413.48	32.28	2.26
6,705.00	0.85	190.03	6,674.69	-32.73	-415.20	34.91	2.43
6,799.00	0.89	164.94	6,768.68	-34.12	-415.13	36.30	0.40
6,893.00	4.24	172.88	6,862.58	-38.28	-414.51	40.45	3.58
6,940.00	10.55	181.53	6,909.16	-44.31	-414.41	46.48	13.60
6,987.00	18.62	183.01	6,954.61	-56.12	-414.92	58.30	17.19
7,034.00	24.15	183.09	6,998.36	-73.23	-415.83	75.41	11.77
7,082.00	25.27	182.29	7,041.96	-93.27	-416.77	95.45	2.44
7,129.00	27.97	183.16	7,083.98	-114.31	-417.78	116.49	5.80
7,176.00	31.27	182.16	7,124.83	-137.51	-418.85	139.70	7.10
7,223.00	33.57	182.48	7,164.50	-162.68	-419.87	164.88	4.91
7,271.00	37.65	181.25	7,203.52	-190.61	-420.76	192.81	8.63
7,318.00	40.29	180.90	7,240.06	-220.16	-421.31	222.36	5.64
7,366.00	42.32	178.53	7,276.11	-251.84	-421.14	254.04	5.34
7,413.00	45.14	177.23	7,310.07	-284.30	-419.93	286.49	6.30
7,460.00	51.31	176.36	7,341.37	-319.28	-417.96	321.46	13.20
7,507.00	58.46	178.31	7,368.39	-357.65	-416.20	359.83	15.59
7,555.00	63.66	180.15	7,391.61	-399.64	-415.66	401.81	11.34
7,602.00	67.45	182.18	7,411.06	-442.41	-416.54	444.58	8.97
7,648.00	70.61	182.42	7,427.52	-485.32	-418.26	487.50	6.89
7,695.00	75.19	184.15	7,441.34	-530.15	-420.84	532.35	10.36
7,753.00	80.96	182.51	7,453.32	-586.78	-424.13	588.99	10.33
7,788.00	84.07	182.33	7,457.88	-621.45	-425.59	623.67	8.90
7,823.30	85.38	182.14	7,461.12	-656.57	-426.96	658.80	3.75

7"

Design Report for KERR 34C-25HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,912.00	88.67	181.67	7,465.72	-745.09	-429.91	747.33	3.75
8,007.00	89.72	181.77	7,467.06	-840.04	-432.76	842.29	1.11
8,101.00	90.12	182.00	7,467.19	-933.98	-435.85	936.25	0.49
8,195.00	90.68	181.90	7,466.53	-1,027.93	-439.05	1,030.21	0.61
8,290.00	91.05	182.01	7,465.10	-1,122.86	-442.29	1,125.16	0.41
8,384.00	91.02	181.60	7,463.40	-1,216.80	-445.25	1,219.11	0.44
8,479.00	91.94	181.75	7,460.95	-1,311.73	-448.03	1,314.05	0.98
8,573.00	90.92	182.44	7,458.60	-1,405.63	-451.46	1,407.98	1.31
8,668.00	89.63	182.48	7,458.15	-1,500.54	-455.54	1,502.91	1.36
8,762.00	87.93	181.53	7,460.15	-1,594.46	-458.83	1,596.84	2.07
8,856.00	88.03	181.35	7,463.46	-1,688.37	-461.19	1,690.76	0.22
8,951.00	88.21	181.25	7,466.58	-1,783.29	-463.34	1,785.70	0.22
9,045.00	88.74	181.41	7,469.08	-1,877.24	-465.52	1,879.65	0.59
9,140.00	89.38	181.38	7,470.64	-1,972.19	-467.84	1,974.62	0.67
9,234.00	88.24	180.20	7,472.59	-2,066.16	-469.13	2,068.59	1.75
9,329.00	88.43	180.05	7,475.35	-2,161.12	-469.34	2,163.55	0.25
9,423.00	89.08	180.49	7,477.39	-2,255.10	-469.78	2,257.53	0.83
9,517.00	89.38	179.99	7,478.66	-2,349.09	-470.18	2,351.52	0.62
9,611.00	88.15	178.13	7,480.68	-2,443.05	-468.64	2,445.47	2.37
9,705.00	88.27	177.61	7,483.62	-2,536.94	-465.14	2,539.34	0.57
9,800.00	88.49	177.48	7,486.30	-2,631.81	-461.08	2,634.19	0.27
9,894.00	88.71	179.95	7,488.60	-2,725.75	-458.97	2,728.12	2.64
9,989.00	88.52	179.97	7,490.90	-2,820.72	-458.90	2,823.09	0.20
10,084.00	88.61	179.43	7,493.28	-2,915.69	-458.41	2,918.05	0.58
10,176.00	89.32	179.23	7,494.94	-3,007.67	-457.33	3,010.02	0.80
10,267.00	90.25	179.02	7,495.28	-3,098.66	-455.94	3,101.00	1.05
10,359.00	88.89	178.50	7,495.97	-3,190.63	-453.95	3,192.96	1.58
10,450.00	87.87	179.49	7,498.54	-3,281.58	-452.35	3,283.90	1.56
10,541.00	88.02	180.58	7,501.81	-3,372.52	-452.41	3,374.84	1.21
10,633.00	88.24	180.40	7,504.81	-3,464.47	-453.20	3,466.79	0.31
10,724.00	88.30	180.15	7,507.56	-3,555.42	-453.63	3,557.75	0.28
10,816.00	89.17	180.44	7,509.59	-3,647.40	-454.11	3,649.73	1.00
10,907.00	89.69	179.94	7,510.49	-3,738.39	-454.41	3,740.72	0.79
10,999.00	91.33	180.24	7,509.67	-3,830.39	-454.55	3,832.71	1.81
11,091.00	91.17	179.56	7,507.67	-3,922.36	-454.39	3,924.69	0.76
11,181.00	91.08	179.38	7,505.90	-4,012.34	-453.56	4,014.66	0.22
11,274.00	91.20	178.67	7,504.05	-4,105.31	-451.98	4,107.62	0.77
11,366.00	91.17	178.99	7,502.15	-4,197.27	-450.10	4,199.57	0.35
11,458.00	91.57	179.09	7,499.95	-4,289.23	-448.56	4,291.52	0.45
11,551.00	90.59	179.11	7,498.19	-4,382.20	-447.10	4,384.48	1.05
11,644.00	90.25	179.65	7,497.51	-4,475.19	-446.09	4,477.47	0.69
11,736.00	90.43	179.90	7,496.97	-4,567.19	-445.73	4,569.46	0.33
11,828.00	88.58	180.35	7,497.76	-4,659.18	-445.93	4,661.45	2.07
11,920.00	88.64	179.61	7,499.99	-4,751.16	-445.90	4,753.43	0.81
12,013.00	88.70	179.50	7,502.15	-4,844.13	-445.18	4,846.39	0.13
12,106.00	88.98	179.05	7,504.03	-4,937.10	-444.00	4,939.36	0.57
12,197.00	88.77	178.23	7,505.82	-5,028.06	-441.84	5,030.30	0.93
12,288.00	88.80	180.03	7,507.75	-5,119.02	-440.46	5,121.26	1.98
12,380.00	89.57	181.83	7,509.06	-5,211.00	-441.95	5,213.24	2.13
12,473.00	89.78	182.14	7,509.59	-5,303.94	-445.17	5,306.20	0.40
12,565.00	90.03	182.13	7,509.74	-5,395.88	-448.60	5,398.15	0.27

Design Report for KERR 34C-25HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
12,657.00	90.74	183.25	7,509.12	-5,487.77	-452.92	5,490.07	1.44
12,750.00	91.02	182.81	7,507.69	-5,580.63	-457.83	5,582.95	0.56
12,842.00	91.23	182.86	7,505.89	-5,672.50	-462.38	5,674.84	0.23
12,936.00	91.14	182.11	7,503.94	-5,766.39	-466.46	5,768.75	0.80
13,031.00	91.05	181.47	7,502.13	-5,861.32	-469.42	5,863.70	0.68
13,125.00	91.39	180.98	7,500.13	-5,955.28	-471.43	5,957.67	0.63
13,219.00	90.56	180.53	7,498.53	-6,049.26	-472.67	6,051.65	1.00
13,313.00	89.54	180.24	7,498.44	-6,143.26	-473.30	6,145.65	1.13
13,408.00	89.38	179.39	7,499.34	-6,238.25	-473.00	6,240.64	0.91
13,502.00	89.60	179.03	7,500.18	-6,332.24	-471.70	6,334.62	0.45
13,596.00	90.00	178.68	7,500.50	-6,426.22	-469.82	6,428.59	0.57
13,690.00	90.15	178.41	7,500.38	-6,520.19	-467.44	6,522.54	0.33
13,784.00	89.94	177.55	7,500.31	-6,614.13	-464.12	6,616.47	0.94
13,879.00	89.44	177.79	7,500.82	-6,709.05	-460.26	6,711.36	0.58
13,973.00	89.38	178.57	7,501.79	-6,802.99	-457.27	6,805.29	0.83
14,067.00	89.63	179.13	7,502.60	-6,896.97	-455.39	6,899.26	0.65
14,162.00	90.22	179.12	7,502.73	-6,991.96	-453.94	6,994.24	0.62
14,256.00	90.43	179.18	7,502.19	-7,085.95	-452.54	7,088.22	0.23
14,351.00	90.15	180.26	7,501.71	-7,180.94	-452.08	7,183.21	1.17
14,445.00	90.28	179.71	7,501.36	-7,274.94	-452.05	7,277.21	0.60
14,540.00	89.14	181.02	7,501.84	-7,369.94	-452.66	7,372.20	1.83
14,634.00	89.97	181.28	7,502.57	-7,463.91	-454.55	7,466.19	0.93
14,728.00	90.37	181.22	7,502.29	-7,557.89	-456.60	7,560.18	0.43
14,823.00	90.37	180.77	7,501.68	-7,652.87	-458.25	7,655.17	0.47
14,917.00	90.46	179.64	7,501.00	-7,746.87	-458.58	7,749.16	1.21
15,012.00	90.12	181.28	7,500.52	-7,841.86	-459.35	7,844.16	1.76
15,106.00	90.19	180.75	7,500.26	-7,935.85	-461.01	7,938.15	0.57
15,201.00	89.82	179.79	7,500.25	-8,030.84	-461.46	8,033.15	1.08
15,295.00	89.54	178.81	7,500.78	-8,124.83	-460.31	8,127.13	1.08
15,389.00	89.20	180.55	7,501.81	-8,218.82	-459.78	8,221.12	1.89
15,484.00	89.29	181.52	7,503.06	-8,313.80	-461.50	8,316.10	1.03
15,578.00	89.75	181.55	7,503.85	-8,407.76	-464.02	8,410.07	0.49
15,672.00	90.12	181.61	7,503.96	-8,501.72	-466.61	8,504.05	0.40
15,766.00	90.25	180.99	7,503.65	-8,595.70	-468.74	8,598.04	0.67
15,861.00	89.97	180.08	7,503.47	-8,690.69	-469.63	8,693.03	1.00
15,956.00	89.57	179.46	7,503.85	-8,785.69	-469.25	8,788.03	0.78
16,050.00	89.69	178.86	7,504.46	-8,879.68	-467.87	8,882.01	0.65
16,144.00	90.25	179.79	7,504.51	-8,973.67	-466.76	8,975.99	1.15
16,239.00	90.59	179.41	7,503.81	-9,068.67	-466.10	9,070.98	0.54
16,334.00	90.25	178.05	7,503.12	-9,163.64	-463.99	9,165.94	1.48
16,429.00	89.66	179.61	7,503.19	-9,258.61	-462.05	9,260.91	1.76
16,523.00	90.12	179.30	7,503.37	-9,352.61	-461.16	9,354.90	0.59
16,616.00	91.51	180.89	7,502.05	-9,445.60	-461.31	9,447.88	2.27
16,711.00	92.28	180.55	7,498.91	-9,540.53	-462.51	9,542.83	0.89
16,805.00	90.89	181.56	7,496.31	-9,634.48	-464.24	9,636.78	1.83
16,899.00	88.95	180.65	7,496.44	-9,728.46	-466.05	9,730.76	2.28
16,994.00	88.21	179.88	7,498.79	-9,823.42	-466.49	9,825.73	1.12
17,088.00	89.78	180.05	7,500.44	-9,917.41	-466.43	9,919.71	1.68
17,183.00	90.43	179.90	7,500.27	-10,012.41	-466.39	10,014.71	0.70
17,278.00	90.83	179.47	7,499.22	-10,107.40	-465.87	10,109.70	0.62
17,373.00	90.86	178.68	7,497.82	-10,202.38	-464.34	10,204.67	0.83

Design Report for KERR 34C-25HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
17,467.00	88.77	176.93	7,498.12	-10,296.30	-460.74	10,298.57	2.90
17,562.00	88.80	176.08	7,500.14	-10,391.10	-454.95	10,393.34	0.90
17,657.00	89.08	175.69	7,501.90	-10,485.84	-448.13	10,488.04	0.51
17,740.00	89.88	175.80	7,502.65	-10,568.60	-441.97	10,570.77	0.97
Last MWD Survey @ 17740.00' MD :: 7502.65' TVD							
17,788.00	89.88	175.80	7,502.75	-10,616.48	-438.46	10,618.63	0.00
St. Line Projection to Bit @ 17788.00' MD :: 7502.75' TVD - Current MWD Survey @ 7460' MD :: 7341.30' TVD - KERR 34							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,102.00	1,101.97	5.06	-2.98	Tie-On to Gyro Surveys @ 1102.00ft
17,740.00	7,502.65	-10,568.60	-441.97	Last MWD Survey @ 17740.00' MD :: 7502.65' TVD
17,788.00	7,502.75	-10,616.48	-438.46	St. Line Projection to Bit @ 17788.00' MD :: 7502.75' TVD
17,788.00	7,502.75	-10,616.48	-438.46	Current MWD Survey @ 7460' MD :: 7341.30' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	180.30	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
20.00	1,102.00	Cathedral MWD Surface Surveys	MWD
1,192.00	7,788.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
7,912.00	17,788.00	MWD Lateral Surveys	MWD+IFR1+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,090.20	1,090.17	9 5/8"	9-5/8	13-1/2
7,823.30	7,461.12	7"	7	8-3/4

Design Report for KERR 34C-25HZ - Actual Field 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
KERR 34C-25HZ_SHL - 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	1,291,306.12	3,182,653.85	40.131182	-104.846760
KERR 34C-25HZ_LD - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.01	0.00	1,291,306.12	3,182,653.85	40.131182	-104.846760
Point 1				0.00	-603.68	-977.54	1,290,695.28	3,181,680.83	
Point 2				0.00	-609.57	-57.52	1,290,696.16	3,182,600.83	
Point 3				0.00	-1,465.77	-61.16	1,289,839.99	3,182,603.49	
Point 4				0.00	-2,782.04	-66.78	1,288,523.77	3,182,607.57	
Point 5				0.00	-4,095.29	-72.75	1,287,210.57	3,182,611.27	
Point 6				0.00	-5,408.96	-78.76	1,285,896.94	3,182,614.94	
Point 7				0.00	-11,495.70	-125.22	1,279,810.28	3,182,613.32	
Point 8				0.00	-11,493.37	-1,045.27	1,279,805.83	3,181,693.32	
KERR 34C-25HZ_SEC - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.01	0.00	1,291,306.12	3,182,653.85	40.131182	-104.846760
Point 1				0.00	10,398.88	-472.98	1,301,700.80	3,182,104.30	
Point 2				0.00	10,330.72	2,148.65	1,301,651.96	3,184,726.26	
Point 3				0.00	10,296.70	3,459.41	1,301,627.60	3,186,037.18	
Point 4				0.00	10,262.49	4,770.23	1,301,603.05	3,187,348.16	
Point 5				0.00	7,653.40	4,754.01	1,298,994.01	3,187,351.16	
Point 6				0.00	5,044.87	4,738.16	1,296,385.54	3,187,354.53	
Point 7				0.00	5,084.15	2,120.80	1,296,405.54	3,184,737.06	
Point 8				0.00	5,124.94	-493.84	1,296,427.07	3,182,122.29	
Point 9				0.00	5,084.15	2,120.80	1,296,405.54	3,184,737.06	
Point 10				0.00	5,044.87	4,738.16	1,296,385.54	3,187,354.53	
Point 11				0.00	2,434.19	4,724.79	1,293,774.94	3,187,360.39	
Point 12				0.00	-175.86	4,710.56	1,291,164.97	3,187,365.39	
Point 13				0.00	-161.93	2,097.24	1,291,159.65	3,184,752.14	
Point 14				0.00	-146.92	-515.56	1,291,155.41	3,182,139.41	
Point 15				0.00	-161.93	2,097.24	1,291,159.65	3,184,752.14	
Point 16				0.00	-175.86	4,710.56	1,291,164.97	3,187,365.39	
Point 17				0.00	-2,786.50	4,696.00	1,288,554.40	3,187,370.06	
Point 18				0.00	-5,397.28	4,681.32	1,285,943.69	3,187,374.61	
Point 19				0.00	-5,409.37	2,070.71	1,285,912.37	3,184,764.27	
Point 20				0.00	-5,408.88	-538.79	1,285,893.64	3,182,154.94	
Point 21				0.00	-5,409.37	2,070.71	1,285,912.37	3,184,764.27	
Point 22				0.00	-5,397.28	4,681.32	1,285,943.69	3,187,374.61	
Point 23				0.00	-10,700.99	4,693.05	1,280,640.43	3,187,425.41	
Point 24				0.00	-10,671.18	2,059.48	1,280,650.83	3,184,791.80	
Point 25				0.00	-10,640.10	-585.86	1,280,662.42	3,182,146.41	
Point 26				0.00	-8,001.82	-559.50	1,283,300.72	3,182,153.33	
Point 27				0.00	-5,408.88	-538.79	1,285,893.64	3,182,154.94	
Point 28				0.00	-2,781.42	-526.81	1,288,521.00	3,182,147.57	
Point 29				0.00	-146.95	-511.68	1,291,155.41	3,182,143.29	
Point 30				0.00	2,489.63	-504.63	1,293,791.86	3,182,130.92	
Point 31				0.00	5,124.94	-493.84	1,296,427.07	3,182,122.29	
Point 32				0.00	7,762.68	-485.22	1,299,064.69	3,182,111.48	
KERR 34C-25HZ_TOE - actual wellpath misses target center by 57.87usft at 17788.00usft MD (7502.75 TVD, -10616.48 N, -438.46 E) - Point	0.00	0.00	7,508.00	-10,640.26	-490.95	1,280,662.96	3,182,241.31	40.101974	-104.848515

Directional Difficulty Index

Average Dogleg over Survey:	1.27 °/100usft	Maximum Dogleg over Survey:	17.19 °/100usft at 6,987.00 usft
Net Tortosity applicable to Plans:	0.63 °/100usft	Directional Difficulty Index:	6.772

Design Report for KERR 34C-25HZ - Actual Field Surveys

Audit Info

North Reference Sheet for Sec. 13-T2N-R67W - KERR 34C-25HZ - Plan A

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

Vertical Depths are relative to RKB = 25' @ 4916.00usft (H&P 308). Northing and Easting are relative to KERR 34C-25HZ

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: 0.99995901

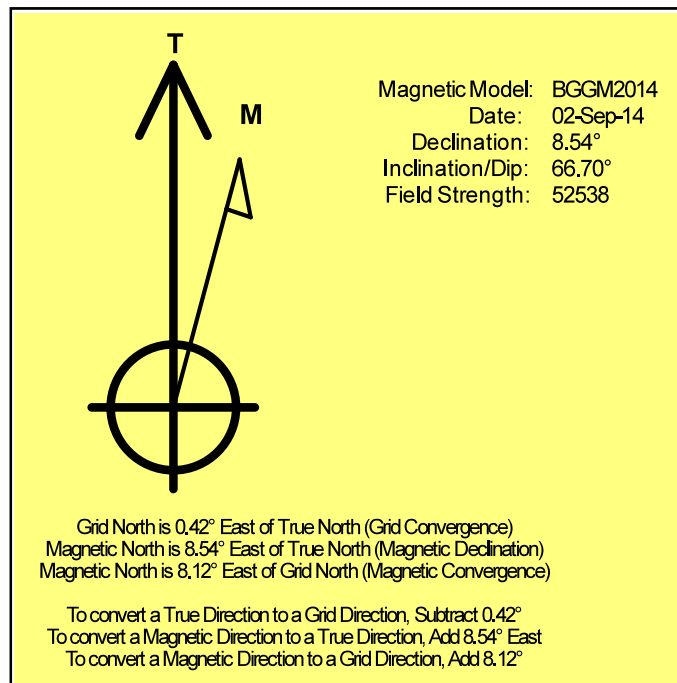
Grid Coordinates of Well: 1,291,306.11 usft N, 3,182,653.85 usft E

Geographical Coordinates of Well: 40° 07' 52.25" N, 104° 50' 48.34" W

Grid Convergence at Surface is: 0.42°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,788.00usft the Bottom Hole Displacement is 10,625.53usft in the Direction of 182.36° (True).

Magnetic Convergence at surface is: -8.12° (2 September 2014, , BGGM2014)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 13-T2N-R67W

KERR 34C-25HZ

API: 05-123-39356 :: Job #: 901639966

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Geodetic Report

16 December, 2014

Well Coordinates: 1,291,306.11 N, 3,182,653.85 E (40° 07' 52.25" N, 104° 50' 48.34" W)

Ground Level: 4,891.00 usft

Local Coordinate Origin:

Centered on Well KERR 34C-25HZ

Viewing Datum:

RKB = 25' @ 4916.00usft (H&P 308)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for KERR 34C-25HZ - Actual Field 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)
0.00	0.00	0.00	0.00	0.00	0.00	40.131182	-104.846760	1,291,306.11	3,182,653.85
20.00	0.00	0.00	20.00	0.00	0.00	40.131182	-104.846760	1,291,306.11	3,182,653.85
70.00	0.30	280.50	70.00	0.02	-0.13	40.131182	-104.846761	1,291,306.13	3,182,653.72
141.00	0.50	311.50	141.00	0.26	-0.54	40.131183	-104.846762	1,291,306.37	3,182,653.31
217.00	0.30	326.00	217.00	0.65	-0.90	40.131184	-104.846763	1,291,306.75	3,182,652.94
297.00	0.40	293.30	296.99	0.93	-1.28	40.131185	-104.846765	1,291,307.03	3,182,652.57
377.00	0.40	311.70	376.99	1.23	-1.74	40.131185	-104.846766	1,291,307.32	3,182,652.10
457.00	0.60	327.60	456.99	1.77	-2.17	40.131187	-104.846768	1,291,307.86	3,182,651.66
537.00	0.10	239.00	536.99	2.09	-2.46	40.131188	-104.846769	1,291,308.17	3,182,651.38
617.00	0.40	239.90	616.99	1.91	-2.76	40.131187	-104.846770	1,291,308.00	3,182,651.08
697.00	0.60	318.50	696.99	2.08	-3.28	40.131188	-104.846772	1,291,308.17	3,182,650.56
777.00	0.50	349.30	776.98	2.74	-3.62	40.131190	-104.846773	1,291,308.82	3,182,650.21
857.00	0.50	19.60	856.98	3.41	-3.57	40.131191	-104.846773	1,291,309.49	3,182,650.26
937.00	0.70	25.30	936.97	4.18	-3.24	40.131194	-104.846772	1,291,310.27	3,182,650.58
1,017.00	0.20	6.70	1,016.97	4.76	-3.02	40.131195	-104.846771	1,291,310.85	3,182,650.80
1,057.00	0.20	6.60	1,056.97	4.90	-3.00	40.131195	-104.846771	1,291,310.99	3,182,650.81
1,090.20	0.20	6.60	1,090.17	5.02	-2.99	40.131196	-104.846771	1,291,311.10	3,182,650.83
1,102.00	0.20	6.60	1,101.97	5.06	-2.98	40.131196	-104.846771	1,291,311.14	3,182,650.83
1,192.00	0.44	312.88	1,191.97	5.45	-3.22	40.131197	-104.846772	1,291,311.53	3,182,650.59
1,283.00	0.56	295.74	1,282.97	5.88	-3.88	40.131198	-104.846774	1,291,311.96	3,182,649.93
1,373.00	0.37	291.51	1,372.96	6.18	-4.54	40.131199	-104.846777	1,291,312.25	3,182,649.26
1,465.00	0.45	289.55	1,464.96	6.41	-5.16	40.131200	-104.846779	1,291,312.48	3,182,648.65
1,588.00	0.68	276.25	1,587.95	6.65	-6.34	40.131200	-104.846783	1,291,312.71	3,182,647.46
1,680.00	0.59	288.67	1,679.95	6.86	-7.33	40.131201	-104.846786	1,291,312.91	3,182,646.47
1,771.00	0.65	283.67	1,770.94	7.13	-8.28	40.131202	-104.846790	1,291,313.18	3,182,645.52
1,863.00	0.76	294.83	1,862.94	7.51	-9.34	40.131203	-104.846794	1,291,313.55	3,182,644.46
1,954.00	0.81	307.48	1,953.93	8.16	-10.40	40.131204	-104.846797	1,291,314.19	3,182,643.40
2,046.00	1.05	311.87	2,045.92	9.11	-11.54	40.131207	-104.846802	1,291,315.14	3,182,642.25
2,137.00	1.71	239.46	2,136.90	8.98	-13.33	40.131207	-104.846808	1,291,314.99	3,182,640.46
2,229.00	1.52	244.99	2,228.86	7.77	-15.62	40.131203	-104.846816	1,291,313.76	3,182,638.18
2,320.00	1.44	253.06	2,319.83	6.92	-17.81	40.131201	-104.846824	1,291,312.90	3,182,636.00
2,412.00	1.29	256.86	2,411.80	6.35	-19.92	40.131199	-104.846832	1,291,312.31	3,182,633.89
2,594.00	2.07	173.96	2,593.74	2.62	-21.57	40.131189	-104.846837	1,291,308.56	3,182,632.26
2,687.00	1.69	179.30	2,686.69	-0.43	-21.38	40.131181	-104.846837	1,291,305.52	3,182,632.48
2,779.00	1.68	175.68	2,778.65	-3.13	-21.26	40.131173	-104.846836	1,291,302.82	3,182,632.62
2,871.00	1.55	170.82	2,870.62	-5.70	-20.96	40.131166	-104.846835	1,291,300.25	3,182,632.94
2,964.00	1.29	162.45	2,963.59	-7.94	-20.44	40.131160	-104.846833	1,291,298.02	3,182,633.47
3,149.00	1.27	157.12	3,148.54	-11.81	-19.02	40.131150	-104.846828	1,291,294.15	3,182,634.92
3,240.00	1.04	163.20	3,239.52	-13.53	-18.39	40.131145	-104.846826	1,291,292.44	3,182,635.57
3,333.00	0.94	164.61	3,332.51	-15.08	-17.94	40.131141	-104.846824	1,291,290.90	3,182,636.02
3,518.00	0.53	164.88	3,517.50	-17.37	-17.31	40.131134	-104.846822	1,291,288.61	3,182,636.67
3,610.00	0.22	162.98	3,609.49	-17.95	-17.15	40.131133	-104.846822	1,291,288.04	3,182,636.83

Design Report for KERR 34C-25HZ - Actual Field 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)
3,701.00	0.51	179.43	3,700.49	-18.52	-17.10	40.131131	-104.846821	1,291,287.46	3,182,636.89
3,793.00	2.44	287.12	3,792.46	-18.35	-18.96	40.131132	-104.846828	1,291,287.62	3,182,635.02
3,886.00	4.21	283.13	3,885.30	-16.99	-24.18	40.131135	-104.846847	1,291,288.94	3,182,629.80
3,978.00	5.27	280.92	3,976.99	-15.43	-31.62	40.131140	-104.846873	1,291,290.45	3,182,622.35
4,070.00	7.28	277.92	4,068.43	-13.82	-41.54	40.131144	-104.846909	1,291,291.98	3,182,612.42
4,162.00	8.64	274.25	4,159.54	-12.51	-54.21	40.131148	-104.846954	1,291,293.20	3,182,599.74
4,255.00	8.63	273.51	4,251.49	-11.56	-68.14	40.131150	-104.847004	1,291,294.05	3,182,585.80
4,349.00	9.74	267.68	4,344.29	-11.45	-83.12	40.131151	-104.847058	1,291,294.04	3,182,570.82
4,443.00	9.58	267.96	4,436.95	-12.05	-98.88	40.131149	-104.847114	1,291,293.33	3,182,555.06
4,537.00	9.25	268.59	4,529.69	-12.52	-114.25	40.131148	-104.847169	1,291,292.75	3,182,539.70
4,631.00	9.31	270.07	4,622.46	-12.69	-129.41	40.131147	-104.847223	1,291,292.46	3,182,524.54
4,725.00	9.28	269.54	4,715.22	-12.74	-144.59	40.131147	-104.847277	1,291,292.30	3,182,509.36
4,819.00	8.69	267.37	4,808.07	-13.13	-159.26	40.131146	-104.847330	1,291,291.80	3,182,494.69
4,913.00	9.56	266.50	4,900.88	-13.93	-174.15	40.131144	-104.847383	1,291,290.89	3,182,479.82
5,007.00	9.75	266.58	4,993.55	-14.88	-189.89	40.131141	-104.847439	1,291,289.83	3,182,464.09
5,101.00	9.60	266.12	5,086.21	-15.89	-205.65	40.131138	-104.847496	1,291,288.70	3,182,448.33
5,195.00	9.35	263.27	5,178.93	-17.31	-221.05	40.131134	-104.847551	1,291,287.17	3,182,432.94
5,289.00	9.06	259.97	5,271.72	-19.50	-235.93	40.131128	-104.847604	1,291,284.87	3,182,418.09
5,383.00	10.00	269.81	5,364.43	-20.81	-251.38	40.131125	-104.847659	1,291,283.44	3,182,402.65
5,477.00	9.77	268.25	5,457.03	-21.09	-267.51	40.131124	-104.847717	1,291,283.05	3,182,386.51
5,571.00	9.53	268.96	5,549.70	-21.47	-283.26	40.131123	-104.847773	1,291,282.55	3,182,370.77
5,665.00	9.04	271.14	5,642.47	-21.46	-298.43	40.131123	-104.847827	1,291,282.45	3,182,355.60
5,760.00	8.66	272.26	5,736.34	-21.03	-313.03	40.131124	-104.847880	1,291,282.77	3,182,340.99
5,854.00	8.45	269.33	5,829.29	-20.84	-327.01	40.131125	-104.847930	1,291,282.86	3,182,327.02
5,949.00	9.43	265.91	5,923.14	-21.47	-341.75	40.131123	-104.847982	1,291,282.12	3,182,312.28
6,043.00	8.56	265.01	6,015.98	-22.63	-356.41	40.131120	-104.848035	1,291,280.85	3,182,297.64
6,137.00	7.63	264.86	6,109.04	-23.80	-369.59	40.131117	-104.848082	1,291,279.59	3,182,284.46
6,232.00	6.71	265.70	6,203.30	-24.78	-381.41	40.131114	-104.848124	1,291,278.52	3,182,272.65
6,326.00	6.22	265.62	6,296.70	-25.58	-391.96	40.131112	-104.848162	1,291,277.64	3,182,262.11
6,421.00	5.56	264.56	6,391.20	-26.41	-401.67	40.131110	-104.848197	1,291,276.74	3,182,252.40
6,516.00	3.53	256.39	6,485.90	-27.53	-409.10	40.131106	-104.848223	1,291,275.56	3,182,244.98
6,610.00	3.01	219.60	6,579.75	-30.12	-413.48	40.131099	-104.848239	1,291,272.95	3,182,240.62
6,705.00	0.85	190.03	6,674.69	-32.73	-415.20	40.131092	-104.848245	1,291,270.32	3,182,238.92
6,799.00	0.89	164.94	6,768.68	-34.12	-415.13	40.131088	-104.848245	1,291,268.93	3,182,239.00
6,893.00	4.24	172.88	6,862.58	-38.28	-414.51	40.131077	-104.848243	1,291,264.78	3,182,239.65
6,940.00	10.55	181.53	6,909.16	-44.31	-414.41	40.131060	-104.848242	1,291,258.75	3,182,239.80
6,987.00	18.62	183.01	6,954.61	-56.12	-414.92	40.131028	-104.848244	1,291,246.93	3,182,239.38
7,034.00	24.15	183.09	6,998.36	-73.23	-415.83	40.130981	-104.848247	1,291,229.82	3,182,238.59
7,082.00	25.27	182.29	7,041.96	-93.27	-416.77	40.130926	-104.848251	1,291,209.77	3,182,237.80
7,129.00	27.97	183.16	7,083.98	-114.31	-417.78	40.130868	-104.848254	1,291,188.73	3,182,236.94
7,176.00	31.27	182.16	7,124.83	-137.51	-418.85	40.130805	-104.848258	1,291,165.52	3,182,236.05
7,223.00	33.57	182.48	7,164.50	-162.68	-419.87	40.130735	-104.848262	1,291,140.34	3,182,235.21

Design Report for KERR 34C-25HZ - Actual Field 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)
7,271.00	37.65	181.25	7,203.52	-190.61	-420.76	40.130659	-104.848265	1,291,112.41	3,182,234.52
7,318.00	40.29	180.90	7,240.06	-220.16	-421.31	40.130578	-104.848267	1,291,082.86	3,182,234.19
7,366.00	42.32	178.53	7,276.11	-251.84	-421.14	40.130491	-104.848266	1,291,051.19	3,182,234.59
7,413.00	45.14	177.23	7,310.07	-284.30	-419.93	40.130402	-104.848262	1,291,018.73	3,182,236.04
7,460.00	51.31	176.36	7,341.37	-319.28	-417.96	40.130306	-104.848255	1,290,983.77	3,182,238.27
7,507.00	58.46	178.31	7,368.39	-357.65	-416.20	40.130200	-104.848249	1,290,945.41	3,182,240.31
7,555.00	63.66	180.15	7,391.61	-399.64	-415.66	40.130085	-104.848247	1,290,903.43	3,182,241.17
7,602.00	67.45	182.18	7,411.06	-442.41	-416.54	40.129968	-104.848250	1,290,860.66	3,182,240.60
7,648.00	70.61	182.42	7,427.52	-485.32	-418.26	40.129850	-104.848256	1,290,817.74	3,182,239.19
7,695.00	75.19	184.15	7,441.34	-530.15	-420.84	40.129727	-104.848265	1,290,772.89	3,182,236.94
7,753.00	80.96	182.51	7,453.32	-586.78	-424.13	40.129571	-104.848277	1,290,716.24	3,182,234.07
7,788.00	84.07	182.33	7,457.88	-621.45	-425.59	40.129476	-104.848282	1,290,681.57	3,182,232.86
7,823.30	85.38	182.14	7,461.12	-656.57	-426.96	40.129380	-104.848287	1,290,646.44	3,182,231.75
7,912.00	88.67	181.67	7,465.72	-745.09	-429.91	40.129137	-104.848298	1,290,557.90	3,182,229.46
8,007.00	89.72	181.77	7,467.06	-840.04	-432.76	40.128876	-104.848308	1,290,462.94	3,182,227.31
8,101.00	90.12	182.00	7,467.19	-933.98	-435.85	40.128618	-104.848319	1,290,368.98	3,182,224.91
8,195.00	90.68	181.90	7,466.53	-1,027.93	-439.05	40.128360	-104.848330	1,290,275.02	3,182,222.40
8,290.00	91.05	182.01	7,465.10	-1,122.86	-442.29	40.128100	-104.848342	1,290,180.06	3,182,219.86
8,384.00	91.02	181.60	7,463.40	-1,216.80	-445.25	40.127842	-104.848352	1,290,086.11	3,182,217.59
8,479.00	91.94	181.75	7,460.95	-1,311.73	-448.03	40.127581	-104.848362	1,289,991.17	3,182,215.52
8,573.00	90.92	182.44	7,458.60	-1,405.63	-451.46	40.127324	-104.848375	1,289,897.25	3,182,212.77
8,668.00	89.63	182.48	7,458.15	-1,500.54	-455.54	40.127063	-104.848389	1,289,802.31	3,182,209.40
8,762.00	87.93	181.53	7,460.15	-1,594.46	-458.83	40.126805	-104.848401	1,289,708.38	3,182,206.80
8,856.00	88.03	181.35	7,463.46	-1,688.37	-461.19	40.126547	-104.848409	1,289,614.46	3,182,205.13
8,951.00	88.21	181.25	7,466.58	-1,783.29	-463.34	40.126287	-104.848417	1,289,519.52	3,182,203.68
9,045.00	88.74	181.41	7,469.08	-1,877.24	-465.52	40.126029	-104.848425	1,289,425.57	3,182,202.19
9,140.00	89.38	181.38	7,470.64	-1,972.19	-467.84	40.125768	-104.848433	1,289,330.60	3,182,200.57
9,234.00	88.24	180.20	7,472.59	-2,066.16	-469.13	40.125510	-104.848438	1,289,236.63	3,182,199.97
9,329.00	88.43	180.05	7,475.35	-2,161.12	-469.34	40.125250	-104.848439	1,289,141.68	3,182,200.46
9,423.00	89.08	180.49	7,477.39	-2,255.10	-469.78	40.124992	-104.848440	1,289,047.70	3,182,200.71
9,517.00	89.38	179.99	7,478.66	-2,349.09	-470.18	40.124734	-104.848442	1,288,953.72	3,182,201.01
9,611.00	88.15	178.13	7,480.68	-2,443.05	-468.64	40.124476	-104.848436	1,288,859.77	3,182,203.24
9,705.00	88.27	177.61	7,483.62	-2,536.94	-465.14	40.124218	-104.848424	1,288,765.92	3,182,207.43
9,800.00	88.49	177.48	7,486.30	-2,631.81	-461.08	40.123958	-104.848409	1,288,671.08	3,182,212.19
9,894.00	88.71	179.95	7,488.60	-2,725.75	-458.97	40.123700	-104.848401	1,288,577.16	3,182,214.99
9,989.00	88.52	179.97	7,490.90	-2,820.72	-458.90	40.123439	-104.848401	1,288,482.20	3,182,215.76
10,084.00	88.61	179.43	7,493.28	-2,915.69	-458.41	40.123178	-104.848399	1,288,387.24	3,182,216.96
10,176.00	89.32	179.23	7,494.94	-3,007.67	-457.33	40.122926	-104.848396	1,288,295.27	3,182,218.71
10,267.00	90.25	179.02	7,495.28	-3,098.66	-455.94	40.122676	-104.848391	1,288,204.30	3,182,220.77
10,359.00	88.89	178.50	7,495.97	-3,190.63	-453.95	40.122424	-104.848383	1,288,112.35	3,182,223.44
10,450.00	87.87	179.49	7,498.54	-3,281.58	-452.35	40.122174	-104.848378	1,288,021.42	3,182,225.70
10,541.00	88.02	180.58	7,501.81	-3,372.52	-452.41	40.121924	-104.848378	1,287,930.49	3,182,226.32

Design Report for KERR 34C-25HZ - Actual Field 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)
10,633.00	88.24	180.40	7,504.81	-3,464.47	-453.20	40.121672	-104.848381	1,287,838.54	3,182,226.21
10,724.00	88.30	180.15	7,507.56	-3,555.42	-453.63	40.121422	-104.848382	1,287,747.58	3,182,226.44
10,816.00	89.17	180.44	7,509.59	-3,647.40	-454.11	40.121170	-104.848384	1,287,655.61	3,182,226.65
10,907.00	89.69	179.94	7,510.49	-3,738.39	-454.41	40.120920	-104.848385	1,287,564.62	3,182,227.01
10,999.00	91.33	180.24	7,509.67	-3,830.39	-454.55	40.120667	-104.848386	1,287,472.63	3,182,227.55
11,091.00	91.17	179.56	7,507.67	-3,922.36	-454.39	40.120415	-104.848385	1,287,380.66	3,182,228.38
11,181.00	91.08	179.38	7,505.90	-4,012.34	-453.56	40.120168	-104.848382	1,287,290.70	3,182,229.88
11,274.00	91.20	178.67	7,504.05	-4,105.31	-451.98	40.119913	-104.848376	1,287,197.75	3,182,232.15
11,366.00	91.17	178.99	7,502.15	-4,197.27	-450.10	40.119660	-104.848370	1,287,105.81	3,182,234.70
11,458.00	91.57	179.09	7,499.95	-4,289.23	-448.56	40.119408	-104.848364	1,287,013.86	3,182,236.92
11,551.00	90.59	179.11	7,498.19	-4,382.20	-447.10	40.119153	-104.848359	1,286,920.91	3,182,239.07
11,644.00	90.25	179.65	7,497.51	-4,475.19	-446.09	40.118897	-104.848355	1,286,827.93	3,182,240.76
11,736.00	90.43	179.90	7,496.97	-4,567.19	-445.73	40.118645	-104.848354	1,286,735.94	3,182,241.80
11,828.00	88.58	180.35	7,497.76	-4,659.18	-445.93	40.118392	-104.848355	1,286,643.96	3,182,242.27
11,920.00	88.64	179.61	7,499.99	-4,751.16	-445.90	40.118140	-104.848355	1,286,551.99	3,182,242.98
12,013.00	88.70	179.50	7,502.15	-4,844.13	-445.18	40.117885	-104.848352	1,286,459.03	3,182,244.39
12,106.00	88.98	179.05	7,504.03	-4,937.10	-444.00	40.117629	-104.848348	1,286,366.07	3,182,246.25
12,197.00	88.77	178.23	7,505.82	-5,028.06	-441.84	40.117380	-104.848340	1,286,275.14	3,182,249.08
12,288.00	88.80	180.03	7,507.75	-5,119.02	-440.46	40.117130	-104.848335	1,286,184.19	3,182,251.13
12,380.00	89.57	181.83	7,509.06	-5,211.00	-441.95	40.116878	-104.848340	1,286,092.21	3,182,250.32
12,473.00	89.78	182.14	7,509.59	-5,303.94	-445.17	40.116623	-104.848352	1,285,999.25	3,182,247.78
12,565.00	90.03	182.13	7,509.74	-5,395.88	-448.60	40.116370	-104.848364	1,285,907.30	3,182,245.03
12,657.00	90.74	183.25	7,509.12	-5,487.77	-452.92	40.116118	-104.848380	1,285,815.38	3,182,241.39
12,750.00	91.02	182.81	7,507.69	-5,580.63	-457.83	40.115863	-104.848397	1,285,722.49	3,182,237.16
12,842.00	91.23	182.86	7,505.89	-5,672.50	-462.38	40.115611	-104.848413	1,285,630.59	3,182,233.29
12,936.00	91.14	182.11	7,503.94	-5,766.39	-466.46	40.115353	-104.848428	1,285,536.68	3,182,229.90
13,031.00	91.05	181.47	7,502.13	-5,861.32	-469.42	40.115092	-104.848439	1,285,441.72	3,182,227.64
13,125.00	91.39	180.98	7,500.13	-5,955.28	-471.43	40.114835	-104.848446	1,285,347.76	3,182,226.32
13,219.00	90.56	180.53	7,498.53	-6,049.26	-472.67	40.114577	-104.848450	1,285,253.78	3,182,225.77
13,313.00	89.54	180.24	7,498.44	-6,143.26	-473.30	40.114319	-104.848452	1,285,159.78	3,182,225.83
13,408.00	89.38	179.39	7,499.34	-6,238.25	-473.00	40.114058	-104.848451	1,285,064.80	3,182,226.84
13,502.00	89.60	179.03	7,500.18	-6,332.24	-471.70	40.113800	-104.848447	1,284,970.83	3,182,228.83
13,596.00	90.00	178.68	7,500.50	-6,426.22	-469.82	40.113542	-104.848440	1,284,876.87	3,182,231.40
13,690.00	90.15	178.41	7,500.38	-6,520.19	-467.44	40.113284	-104.848431	1,284,782.92	3,182,234.48
13,784.00	89.94	177.55	7,500.31	-6,614.13	-464.12	40.113026	-104.848420	1,284,689.01	3,182,238.48
13,879.00	89.44	177.79	7,500.82	-6,709.05	-460.26	40.112765	-104.848406	1,284,594.13	3,182,243.04
13,973.00	89.38	178.57	7,501.79	-6,802.99	-457.27	40.112508	-104.848395	1,284,500.21	3,182,246.72
14,067.00	89.63	179.13	7,502.60	-6,896.97	-455.39	40.112250	-104.848388	1,284,406.25	3,182,249.30
14,162.00	90.22	179.12	7,502.73	-6,991.96	-453.94	40.111989	-104.848383	1,284,311.28	3,182,251.45
14,256.00	90.43	179.18	7,502.19	-7,085.95	-452.54	40.111731	-104.848378	1,284,217.31	3,182,253.54
14,351.00	90.15	180.26	7,501.71	-7,180.94	-452.08	40.111470	-104.848377	1,284,122.32	3,182,254.70
14,445.00	90.28	179.71	7,501.36	-7,274.94	-452.05	40.111212	-104.848376	1,284,028.33	3,182,255.42

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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)
14,540.00	89.14	181.02	7,501.84	-7,369.94	-452.66	40.110951	-104.848379	1,283,933.34	3,182,255.51
14,634.00	89.97	181.28	7,502.57	-7,463.91	-454.55	40.110693	-104.848385	1,283,839.35	3,182,254.32
14,728.00	90.37	181.22	7,502.29	-7,557.89	-456.60	40.110435	-104.848393	1,283,745.37	3,182,252.96
14,823.00	90.37	180.77	7,501.68	-7,652.87	-458.25	40.110175	-104.848399	1,283,650.38	3,182,252.01
14,917.00	90.46	179.64	7,501.00	-7,746.87	-458.58	40.109917	-104.848400	1,283,556.39	3,182,252.37
15,012.00	90.12	181.28	7,500.52	-7,841.86	-459.35	40.109656	-104.848402	1,283,461.40	3,182,252.30
15,106.00	90.19	180.75	7,500.26	-7,935.85	-461.01	40.109398	-104.848408	1,283,367.41	3,182,251.33
15,201.00	89.82	179.79	7,500.25	-8,030.84	-461.46	40.109137	-104.848410	1,283,272.41	3,182,251.58
15,295.00	89.54	178.81	7,500.78	-8,124.83	-460.31	40.108879	-104.848406	1,283,178.44	3,182,253.42
15,389.00	89.20	180.55	7,501.81	-8,218.82	-459.78	40.108621	-104.848404	1,283,084.46	3,182,254.64
15,484.00	89.29	181.52	7,503.06	-8,313.80	-461.50	40.108360	-104.848410	1,282,989.48	3,182,253.62
15,578.00	89.75	181.55	7,503.85	-8,407.76	-464.02	40.108102	-104.848419	1,282,895.50	3,182,251.80
15,672.00	90.12	181.61	7,503.96	-8,501.72	-466.61	40.107844	-104.848428	1,282,801.52	3,182,249.90
15,766.00	90.25	180.99	7,503.65	-8,595.70	-468.74	40.107586	-104.848436	1,282,707.54	3,182,248.46
15,861.00	89.97	180.08	7,503.47	-8,690.69	-469.63	40.107326	-104.848439	1,282,612.55	3,182,248.27
15,956.00	89.57	179.46	7,503.85	-8,785.69	-469.25	40.107065	-104.848438	1,282,517.56	3,182,249.35
16,050.00	89.69	178.86	7,504.46	-8,879.68	-467.87	40.106807	-104.848433	1,282,423.59	3,182,251.42
16,144.00	90.25	179.79	7,504.51	-8,973.67	-466.76	40.106549	-104.848429	1,282,329.61	3,182,253.22
16,239.00	90.59	179.41	7,503.81	-9,068.67	-466.10	40.106288	-104.848427	1,282,234.63	3,182,254.59
16,334.00	90.25	178.05	7,503.12	-9,163.64	-463.99	40.106027	-104.848419	1,282,139.68	3,182,257.39
16,429.00	89.66	179.61	7,503.19	-9,258.61	-462.05	40.105767	-104.848412	1,282,044.72	3,182,260.03
16,523.00	90.12	179.30	7,503.37	-9,352.61	-461.16	40.105509	-104.848409	1,281,950.74	3,182,261.62
16,616.00	91.51	180.89	7,502.05	-9,445.60	-461.31	40.105253	-104.848409	1,281,857.76	3,182,262.15
16,711.00	92.28	180.55	7,498.91	-9,540.53	-462.51	40.104993	-104.848414	1,281,762.82	3,182,261.65
16,805.00	90.89	181.56	7,496.31	-9,634.48	-464.24	40.104735	-104.848420	1,281,668.86	3,182,260.62
16,899.00	88.95	180.65	7,496.44	-9,728.46	-466.05	40.104477	-104.848426	1,281,574.88	3,182,259.50
16,994.00	88.21	179.88	7,498.79	-9,823.42	-466.49	40.104216	-104.848428	1,281,479.92	3,182,259.76
17,088.00	89.78	180.05	7,500.44	-9,917.41	-466.43	40.103958	-104.848428	1,281,385.94	3,182,260.51
17,183.00	90.43	179.90	7,500.27	-10,012.41	-466.39	40.103698	-104.848428	1,281,290.95	3,182,261.25
17,278.00	90.83	179.47	7,499.22	-10,107.40	-465.87	40.103437	-104.848426	1,281,195.96	3,182,262.47
17,373.00	90.86	178.68	7,497.82	-10,202.38	-464.34	40.103176	-104.848420	1,281,101.01	3,182,264.70
17,467.00	88.77	176.93	7,498.12	-10,296.30	-460.74	40.102918	-104.848407	1,281,007.12	3,182,268.99
17,562.00	88.80	176.08	7,500.14	-10,391.10	-454.95	40.102658	-104.848387	1,280,912.37	3,182,275.48
17,657.00	89.08	175.69	7,501.90	-10,485.84	-448.13	40.102398	-104.848362	1,280,817.68	3,182,282.99
17,740.00	89.88	175.80	7,502.65	-10,568.60	-441.97	40.102171	-104.848340	1,280,734.97	3,182,289.76
17,788.00	89.88	175.80	7,502.75	-10,616.48	-438.46	40.102039	-104.848328	1,280,687.13	3,182,293.63

Design Report for KERR 34C-25HZ - Actual Field Surveys

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,102.00	1,101.97	5.06	-2.98	Tie-On to Gyro Surveys @ 1102.00ft
17,740.00	7,502.65	-10,568.60	-441.97	Last MWD Survey @ 17740.00' MD :: 7502.65' TVD
17,788.00	7,502.75	-10,616.48	-438.46	St. Line Projection to Bit @ 17788.00' MD :: 7502.75' TVD
17,788.00	7,502.75	-10,616.48	-438.46	Current MWD Survey @ 7460' MD :: 7341.30' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	180.30	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
20.00	1,102.00	Cathedral MWD Surface Surveys	MWD
1,192.00	7,788.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
7,912.00	17,788.00	MWD Lateral Surveys	MWD+IFR1+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,090.20	1,090.17	9 5/8"	9-5/8	13-1/2
7,823.30	7,461.12	7"	7	8-3/4

Design Report for KERR 34C-25HZ - Actual Field Surveys

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:	1.27 °/100usft	Maximum Dogleg over Survey:	17.19 °/100usft at 6,987.00 usft
Net Tortosity applicable to Plans:	0.63 °/100usft	Directional Difficulty Index:	6.772

Audit Info

North Reference Sheet for Sec. 13-T2N-R67W - KERR 34C-25HZ - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
 Vertical Depths are relative to RKB = 25' @ 4916.00usft (H&P 308). Northing and Easting are relative to KERR 34C-25HZ
 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: 0.99995901

Grid Coordinates of Well: 1,291,306.11 usft N, 3,182,653.85 usft E
 Geographical Coordinates of Well: 40° 07' 52.25" N, 104° 50' 48.34" W
 Grid Convergence at Surface is: 0.42°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,788.00usft
 the Bottom Hole Displacement is 10,625.53usft in the Direction of 182.36° (True).
 Magnetic Convergence at surface is: -8.12° (2 September 2014, , BGGM2014)

