

Bayswater

Weld County, CO (NAD 83)
Sec. 10-T6N-R65W-6th P.M.
Kaiser E-10HN

Kaiser E-10HN Permit

Plan: Plan A Rev 0 Proposal - Permit Only

Sperry Drilling Services Proposal Report

08 January, 2014

Well Coordinates: 1,428,777.77 N, 3,238,777.58 E (40° 30' 26.00" N, 104° 38' 28.64" W)

Ground Level: 4,801.00 ft

Local Coordinate Origin:

Centered on Well Kaiser E-10HN

Viewing Datum:

WELL RKB 16' @ 4817.0ft (Original Well Elev)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet

Version: 2003.16 Build: 431

HALLIBURTON

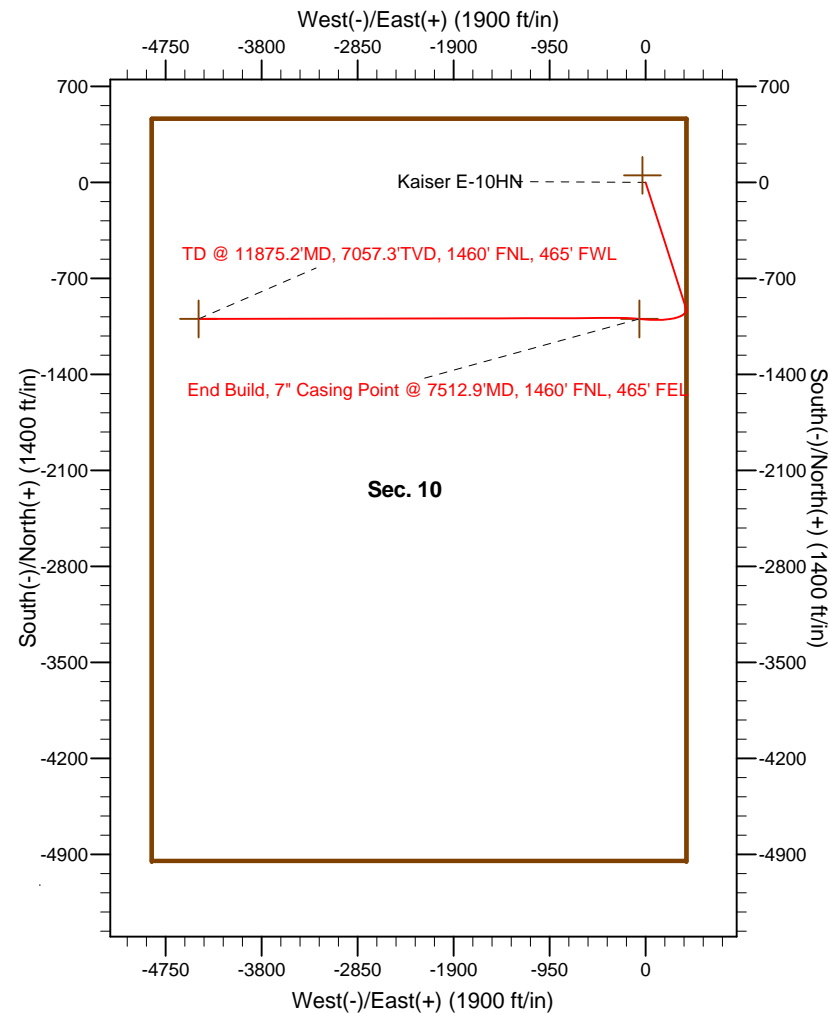
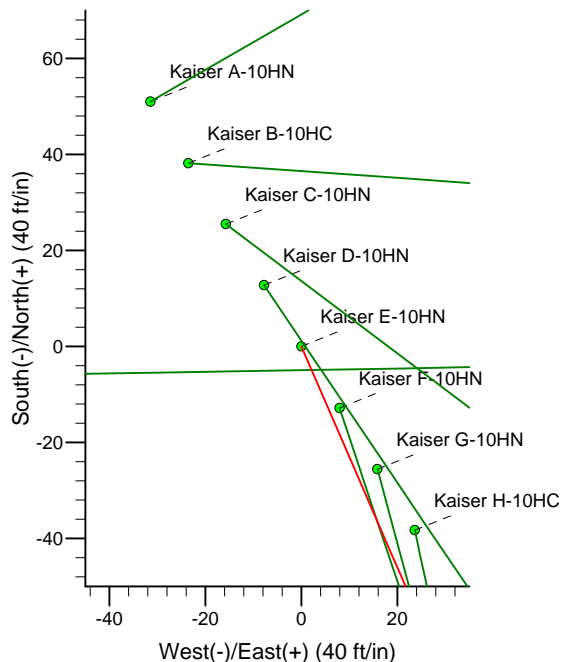
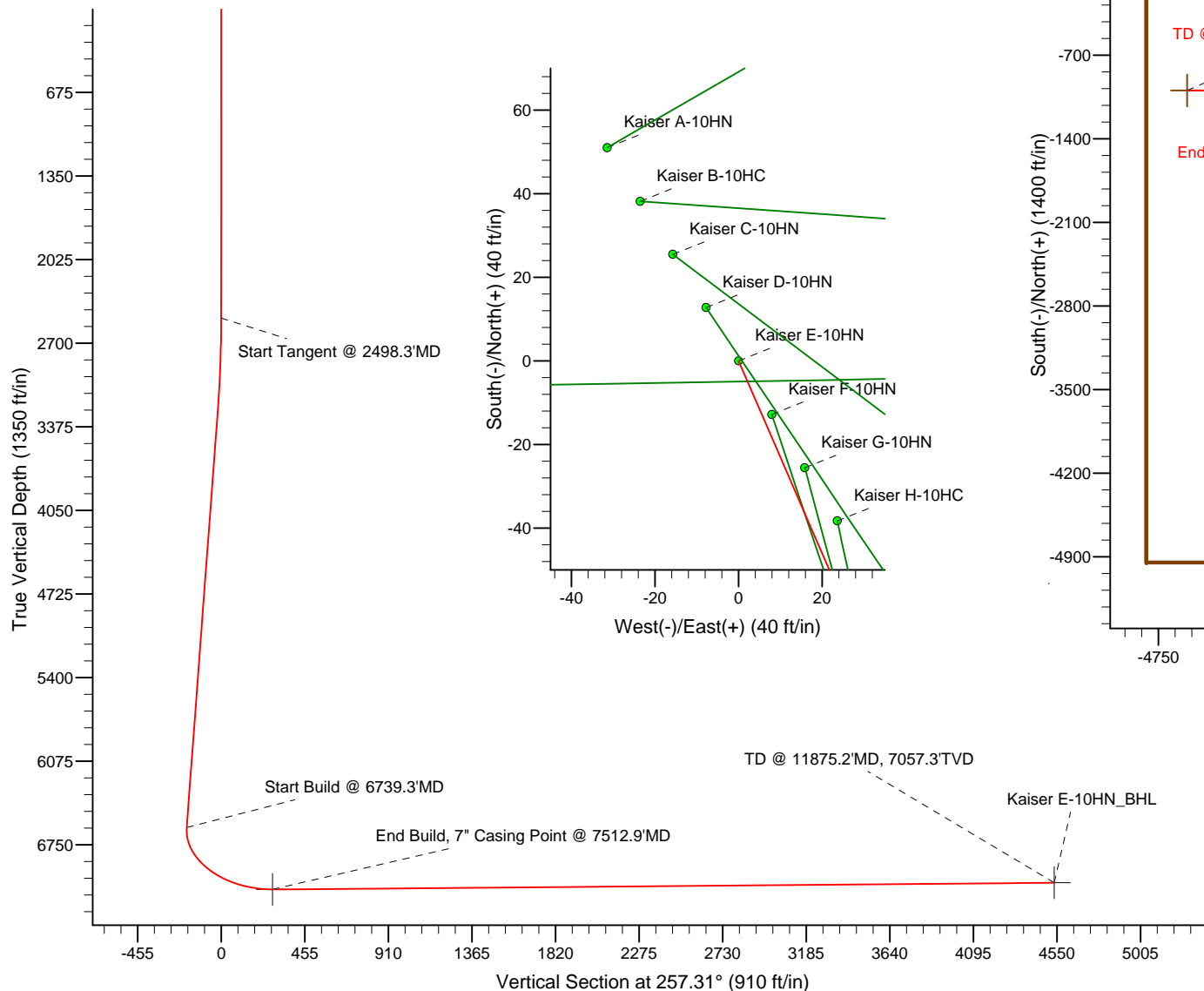
Project: Weld County,CO (NAD 83)
Site: Sec. 10-T6N-R65W-6th P.M.
Well: Kaiser E-10HN
Wellbore: Kaiser E-10HN Permit
Design: Plan A Rev 0 Proposal - Permit Only

Bayswater

HALLIBURTON
Sperry Drilling

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2498.3	0.00	0.00	2498.3	0.0	0.0	0.00	0.00	0.0	
3	3248.3	15.00	156.50	3239.8	-89.5	38.9	2.00	156.50	-18.3	
4	6739.3	15.00	156.50	6611.8	-918.1	399.2	0.00	0.00	-187.8	
5	7512.9	90.00	274.98	7111.0	-995.9	-62.3	12.55	117.66	279.5	Kaiser E-10HN_7"
6	7684.0	90.72	269.90	7110.0	-988.6	-233.2	3.00	-81.92	444.6	
7	11875.2	90.72	269.90	7057.3	-995.9	-4424.1	0.00	0.00	4534.8	Kaiser E-10HN_BHL



WELL DETAILS: Kaiser E-10HN

Ground Level: 4801.0

Northing	Easting	Latitude	Longitude
428777.77	3238777.58	40° 30' 26.000 N	104° 38' 28.645 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Kaiser E-10HN, True North
Vertical (TVD) Reference: WELL RKB 16' @ 4817.0ft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: WELL RKB 16' @ 4817.0ft (Original Well Elev)
Calculation Method: Minimum Curvature

Plan Report for Kaiser E-10HN - Plan A Rev 0 Proposal - Permit Only

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
2,498.3	0.00	0.00	2,498.3	0.0	0.0	0.0	0.00	0.00	0.00	0.00
Start Tangent @ 2498.3'MD										
2,500.0	0.03	156.50	2,500.0	0.0	0.0	0.0	2.00	2.00	0.00	156.50
2,600.0	2.03	156.50	2,600.0	-1.7	0.7	-0.3	2.00	2.00	0.00	0.00
2,700.0	4.03	156.50	2,699.8	-6.5	2.8	-1.3	2.00	2.00	0.00	0.00
2,800.0	6.03	156.50	2,799.4	-14.6	6.3	-3.0	2.00	2.00	0.00	0.00
2,900.0	8.03	156.50	2,898.7	-25.8	11.2	-5.3	2.00	2.00	0.00	0.00
3,000.0	10.03	156.50	2,997.4	-40.2	17.5	-8.2	2.00	2.00	0.00	0.00
3,100.0	12.03	156.50	3,095.6	-57.7	25.1	-11.8	2.00	2.00	0.00	0.00
3,200.0	14.03	156.50	3,193.0	-78.4	34.1	-16.0	2.00	2.00	0.00	0.00
3,248.3	15.00	156.50	3,239.8	-89.5	38.9	-18.3	2.00	2.00	0.00	0.00
3,300.0	15.00	156.50	3,289.7	-101.8	44.3	-20.8	0.00	0.00	0.00	0.00
3,400.0	15.00	156.50	3,386.3	-125.5	54.6	-25.7	0.00	0.00	0.00	0.00
3,500.0	15.00	156.50	3,482.9	-149.3	64.9	-30.5	0.00	0.00	0.00	0.00
3,600.0	15.00	156.50	3,579.5	-173.0	75.2	-35.4	0.00	0.00	0.00	0.00
3,700.0	15.00	156.50	3,676.1	-196.7	85.5	-40.2	0.00	0.00	0.00	0.00
3,800.0	15.00	156.50	3,772.7	-220.5	95.9	-45.1	0.00	0.00	0.00	0.00
3,900.0	15.00	156.50	3,869.2	-244.2	106.2	-50.0	0.00	0.00	0.00	0.00
4,000.0	15.00	156.50	3,965.8	-267.9	116.5	-54.8	0.00	0.00	0.00	0.00
4,100.0	15.00	156.50	4,062.4	-291.7	126.8	-59.7	0.00	0.00	0.00	0.00
4,200.0	15.00	156.50	4,159.0	-315.4	137.1	-64.5	0.00	0.00	0.00	0.00
4,300.0	15.00	156.50	4,255.6	-339.1	147.5	-69.4	0.00	0.00	0.00	0.00
4,400.0	15.00	156.50	4,352.2	-362.9	157.8	-74.2	0.00	0.00	0.00	0.00
4,500.0	15.00	156.50	4,448.8	-386.6	168.1	-79.1	0.00	0.00	0.00	0.00
4,600.0	15.00	156.50	4,545.4	-410.3	178.4	-84.0	0.00	0.00	0.00	0.00
4,700.0	15.00	156.50	4,642.0	-434.1	188.7	-88.8	0.00	0.00	0.00	0.00
4,800.0	15.00	156.50	4,738.6	-457.8	199.1	-93.7	0.00	0.00	0.00	0.00
4,900.0	15.00	156.50	4,835.2	-481.6	209.4	-98.5	0.00	0.00	0.00	0.00
5,000.0	15.00	156.50	4,931.8	-505.3	219.7	-103.4	0.00	0.00	0.00	0.00
5,100.0	15.00	156.50	5,028.4	-529.0	230.0	-108.2	0.00	0.00	0.00	0.00
5,200.0	15.00	156.50	5,124.9	-552.8	240.3	-113.1	0.00	0.00	0.00	0.00
5,300.0	15.00	156.50	5,221.5	-576.5	250.7	-117.9	0.00	0.00	0.00	0.00
5,400.0	15.00	156.50	5,318.1	-600.2	261.0	-122.8	0.00	0.00	0.00	0.00

Plan Report for Kaiser E-10HN - Plan A Rev 0 Proposal - Permit Only

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
5,500.0	15.00	156.50	5,414.7	-624.0	271.3	-127.7	0.00	0.00	0.00	0.00
5,600.0	15.00	156.50	5,511.3	-647.7	281.6	-132.5	0.00	0.00	0.00	0.00
5,700.0	15.00	156.50	5,607.9	-671.4	291.9	-137.4	0.00	0.00	0.00	0.00
5,800.0	15.00	156.50	5,704.5	-695.2	302.3	-142.2	0.00	0.00	0.00	0.00
5,900.0	15.00	156.50	5,801.1	-718.9	312.6	-147.1	0.00	0.00	0.00	0.00
6,000.0	15.00	156.50	5,897.7	-742.6	322.9	-151.9	0.00	0.00	0.00	0.00
6,100.0	15.00	156.50	5,994.3	-766.4	333.2	-156.8	0.00	0.00	0.00	0.00
6,200.0	15.00	156.50	6,090.9	-790.1	343.5	-161.6	0.00	0.00	0.00	0.00
6,300.0	15.00	156.50	6,187.5	-813.8	353.9	-166.5	0.00	0.00	0.00	0.00
6,400.0	15.00	156.50	6,284.1	-837.6	364.2	-171.4	0.00	0.00	0.00	0.00
6,500.0	15.00	156.50	6,380.7	-861.3	374.5	-176.2	0.00	0.00	0.00	0.00
6,600.0	15.00	156.50	6,477.2	-885.1	384.8	-181.1	0.00	0.00	0.00	0.00
6,700.0	15.00	156.50	6,573.8	-908.8	395.2	-185.9	0.00	0.00	0.00	0.00
6,739.3	15.00	156.50	6,611.8	-918.1	399.2	-187.8	0.00	0.00	0.00	0.00
Start Build @ 6739.3'MD										
6,800.0	13.26	187.28	6,670.7	-932.2	401.5	-186.9	12.55	-2.86	50.71	117.66
6,900.0	18.54	230.36	6,767.2	-953.9	387.7	-168.8	12.55	5.27	43.08	87.77
7,000.0	28.64	249.44	6,858.9	-972.5	352.9	-130.7	12.55	10.11	19.08	46.15
7,100.0	40.08	258.73	6,941.3	-987.3	298.7	-74.6	12.55	11.43	9.29	28.57
7,200.0	51.96	264.36	7,010.7	-997.5	227.6	-3.0	12.55	11.89	5.64	20.86
7,300.0	64.04	268.40	7,063.6	-1,002.6	143.2	80.5	12.55	12.08	4.03	16.92
7,400.0	76.21	271.67	7,097.5	-1,002.4	49.3	172.0	12.55	12.17	3.27	14.77
7,500.0	88.42	274.61	7,110.9	-997.0	-49.4	267.2	12.55	12.21	2.94	13.65
7,512.9	90.00	274.98	7,111.0	-995.9	-62.3	279.5	12.55	12.22	2.88	13.26
End Build, 7" Casing Point @ 7512.9'MD										
7,600.0	90.37	272.40	7,110.8	-990.3	-149.2	363.1	3.00	0.42	-2.97	-81.86
7,684.0	90.72	269.90	7,110.0	-988.6	-233.2	444.6	3.00	0.42	-2.97	-81.93
7,700.0	90.72	269.90	7,109.8	-988.6	-249.2	460.2	0.00	0.00	0.00	0.00
7,800.0	90.72	269.90	7,108.5	-988.8	-349.2	557.8	0.00	0.00	0.00	0.00
7,900.0	90.72	269.90	7,107.2	-989.0	-449.2	655.4	0.00	0.00	0.00	0.00
8,000.0	90.72	269.90	7,106.0	-989.2	-549.2	753.0	0.00	0.00	0.00	0.00
8,100.0	90.72	269.90	7,104.7	-989.3	-649.1	850.6	0.00	0.00	0.00	0.00
8,200.0	90.72	269.90	7,103.5	-989.5	-749.1	948.2	0.00	0.00	0.00	0.00
8,300.0	90.72	269.90	7,102.2	-989.7	-849.1	1,045.8	0.00	0.00	0.00	0.00
8,400.0	90.72	269.90	7,101.0	-989.9	-949.1	1,143.3	0.00	0.00	0.00	0.00
8,500.0	90.72	269.90	7,099.7	-990.0	-1,049.1	1,240.9	0.00	0.00	0.00	0.00
8,600.0	90.72	269.90	7,098.5	-990.2	-1,149.1	1,338.5	0.00	0.00	0.00	0.00
8,700.0	90.72	269.90	7,097.2	-990.4	-1,249.1	1,436.1	0.00	0.00	0.00	0.00
8,800.0	90.72	269.90	7,095.9	-990.6	-1,349.1	1,533.7	0.00	0.00	0.00	0.00
8,900.0	90.72	269.90	7,094.7	-990.7	-1,449.1	1,631.3	0.00	0.00	0.00	0.00
9,000.0	90.72	269.90	7,093.4	-990.9	-1,549.1	1,728.9	0.00	0.00	0.00	0.00
9,100.0	90.72	269.90	7,092.2	-991.1	-1,649.1	1,826.5	0.00	0.00	0.00	0.00
9,200.0	90.72	269.90	7,090.9	-991.3	-1,749.1	1,924.1	0.00	0.00	0.00	0.00
9,300.0	90.72	269.90	7,089.7	-991.4	-1,849.1	2,021.6	0.00	0.00	0.00	0.00
9,400.0	90.72	269.90	7,088.4	-991.6	-1,949.0	2,119.2	0.00	0.00	0.00	0.00
9,500.0	90.72	269.90	7,087.1	-991.8	-2,049.0	2,216.8	0.00	0.00	0.00	0.00
9,600.0	90.72	269.90	7,085.9	-991.9	-2,149.0	2,314.4	0.00	0.00	0.00	0.00
9,700.0	90.72	269.90	7,084.6	-992.1	-2,249.0	2,412.0	0.00	0.00	0.00	0.00
9,800.0	90.72	269.90	7,083.4	-992.3	-2,349.0	2,509.6	0.00	0.00	0.00	0.00
9,900.0	90.72	269.90	7,082.1	-992.5	-2,449.0	2,607.2	0.00	0.00	0.00	0.00
10,000.0	90.72	269.90	7,080.9	-992.6	-2,549.0	2,704.8	0.00	0.00	0.00	0.00
10,100.0	90.72	269.90	7,079.6	-992.8	-2,649.0	2,802.4	0.00	0.00	0.00	0.00
10,200.0	90.72	269.90	7,078.3	-993.0	-2,749.0	2,899.9	0.00	0.00	0.00	0.00
10,300.0	90.72	269.90	7,077.1	-993.2	-2,849.0	2,997.5	0.00	0.00	0.00	0.00
10,400.0	90.72	269.90	7,075.8	-993.3	-2,949.0	3,095.1	0.00	0.00	0.00	0.00
10,500.0	90.72	269.90	7,074.6	-993.5	-3,049.0	3,192.7	0.00	0.00	0.00	0.00
10,600.0	90.72	269.90	7,073.3	-993.7	-3,148.9	3,290.3	0.00	0.00	0.00	0.00
10,700.0	90.72	269.90	7,072.1	-993.9	-3,248.9	3,387.9	0.00	0.00	0.00	0.00
10,800.0	90.72	269.90	7,070.8	-994.0	-3,348.9	3,485.5	0.00	0.00	0.00	0.00
10,900.0	90.72	269.90	7,069.6	-994.2	-3,448.9	3,583.1	0.00	0.00	0.00	0.00

Plan Report for Kaiser E-10HN - Plan A Rev 0 Proposal - Permit Only

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
11,000.0	90.72	269.90	7,068.3	-994.4	-3,548.9	3,680.6	0.00	0.00	0.00	0.00
11,100.0	90.72	269.90	7,067.0	-994.6	-3,648.9	3,778.2	0.00	0.00	0.00	0.00
11,200.0	90.72	269.90	7,065.8	-994.7	-3,748.9	3,875.8	0.00	0.00	0.00	0.00
11,300.0	90.72	269.90	7,064.5	-994.9	-3,848.9	3,973.4	0.00	0.00	0.00	0.00
11,400.0	90.72	269.90	7,063.3	-995.1	-3,948.9	4,071.0	0.00	0.00	0.00	0.00
11,500.0	90.72	269.90	7,062.0	-995.2	-4,048.9	4,168.6	0.00	0.00	0.00	0.00
11,600.0	90.72	269.90	7,060.8	-995.4	-4,148.9	4,266.2	0.00	0.00	0.00	0.00
11,700.0	90.72	269.90	7,059.5	-995.6	-4,248.9	4,363.8	0.00	0.00	0.00	0.00
11,800.0	90.72	269.90	7,058.2	-995.8	-4,348.8	4,461.4	0.00	0.00	0.00	0.00
11,875.2	90.72	269.90	7,057.3	-995.9	-4,424.1	4,534.8	0.00	0.00	0.00	0.00

TD @ 11875.2'MD, 7057.3'TVD

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,498.3	2,498.3	0.0	0.0	Start Tangent @ 2498.3'MD
6,739.3	6,611.8	-918.1	399.2	Start Build @ 6739.3'MD
7,512.9	7,111.0	-995.9	-62.3	End Build, 7" Casing Point @ 7512.9'MD
11,875.2	7,057.3	-995.9	-4,424.1	TD @ 11875.2'MD, 7057.3'TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	257.31	Slot	0.0	0.0	0.0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.0	11,875.2	Plan A Rev 0 Proposal - Permit Only	MWD

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Kaiser Sec 10_Section Lines	0.0	51.0	-31.4	Polygon
Kaiser E-10HN_7"	7,111.0	-995.9	-62.4	Point
Kaiser F-10HN_SHL	0.0	51.0	-31.4	Point
Kaiser E-10HN_BHL	7,057.0	-995.9	-4,424.1	Point

North Reference Sheet for Sec. 10-T6N-R65W-6th P.M. - Kaiser E-10HN - Kaiser E-10HN Permit

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

Vertical Depths are relative to WELL RKB 16' @ 4817.0ft (Original Well Elev). Northing and Easting are relative to Kaiser E-10HN

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 -105.50° , Longitude Origin: $0^\circ 0' 0.000 \text{ E}$, Latitude Origin: $40^\circ 47' 0.000 \text{ N}$

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996684

Grid Coordinates of Well: 1,428,777.77 ft N, 3,238,777.58 ft E

Geographical Coordinates of Well: $40^\circ 30' 26.00'' \text{ N}$, $104^\circ 38' 28.64'' \text{ W}$

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,875.20ft
the Bottom Hole Displacement is 4,534.77ft in the Direction of 257.31° (True).

Magnetic Convergence at surface is: -7.94° (7 January 2014, , BGGM2013)

