

Great Western Operating Company, LLC

Location	Colorado	Slot	E-14 - B-Farm LD 18-392HC
Field	Wattenburg	Well	B-Farm LD 18-392HC
Installation	B-Farm	Wellbore	B-Farm LD 18-392HC (AWB)

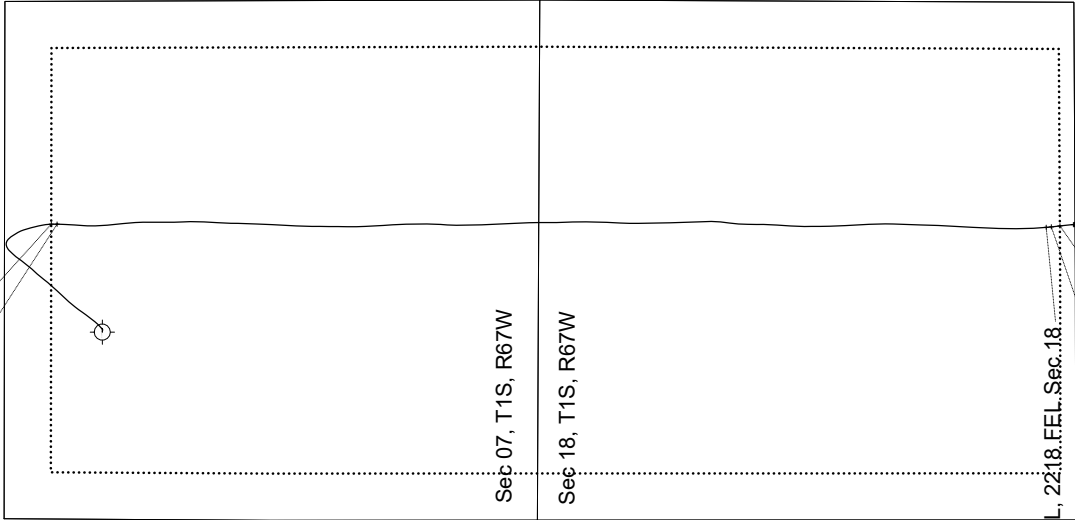
Created by	admin
Date plotted	4-Jun-2019
Plot reference is	B-Farm LD 18-392HC (AWB).
Ref wellpath is	B-Farm LD 18-392HC (AWP#1).
Coordinates are in	Feet reference E-14 - B-Farm LD 18-392HC.
True Vertical Depths are	reference Rig Datum.
Measured Depths are	reference Rig Datum.
Rig Datum:	Actual Datum #1
Rig Datum to Mean Sea Level:	5144.50 ft.
Plot North is	aligned to TRUE North.

Scale 1 cm = 400 ft

East (Feet) ->



460 Setback: 8529 / 7965 MD/TVD, 460 FNL, 2195 FEL Sec 07
Top Perf: 8587 / 7971 MD/TVD, 517 FNL, 2195 FEL Sec 07



Btm Perf: 18,339 / 8006 MD/TVD, 285 FSL, 2218 FEL Sec 18
Btm Toe Sub: 18,390 / 8006 MD/TVD, 234 FSL, 2213 FEL Sec 18
150 Setback: 18,475 / 8006 MD/TVD, 150 FSL, 2203 FEL Sec 18
PBDT: 18,609 / 8006 MD/TVD, 16 FSL, 2189 FEL Sec 18
5.5" Csg: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18
BHL: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18

460 Setback: 8529 / 7965 MD/TVD, 460 FNL, 2195 FEL Sec 07
Top Perf: 8587 / 7971 MD/TVD, 517 FNL, 2195 FEL Sec 07

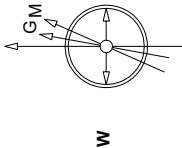
Btm Perf: 18,339 / 8006 MD/TVD, 285 FSL, 2218 FEL Sec 18
Btm Toe Sub: 18,390 / 8006 MD/TVD, 234 FSL, 2213 FEL Sec 18
150 Setback: 18,475 / 8006 MD/TVD, 150 FSL, 2203 FEL Sec 18
PBDT: 18,609 / 8006 MD/TVD, 16 FSL, 2189 FEL Sec 18
5.5" Csg: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18
BHL: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18

Scale 1 cm = 800 ft

Vertical Section (Feet) ->

Azimuth 173.68 with reference 0.00 N, 0.00 E from E-14 - B-Farm LD 18-392HC

N
TRUE



Step-5-2016
Dip: 68.51 deg / Field: 02296.6 m/T
Lat: 43.02 39.33000 Long: 104.09 25000
To convert azimuth from Magnetic to TRUE add 0.35 deg

- True Vertical Depth (Feet)

Scale 1 cm = 800 ft

-3200

-1600

0

1600

3200

4800

6400

8000

9600

11200

-4800

-3200

-1600

0

1600

3200

4800

6400

8000

9600

11200

12800

14400

North(Feet)

Scale 1 cm = 400 ft

-6400

-4800

-3200

-1600

0

1600

3200

4800

6400

8000

9600

11200

12800

14400

16000

17600

19200

20800

22400

24000

25600

27200

28800

30400

32000

33600

35200

36800

38400

40000

41600

43200

44800

46400

48000

49600

51200

52800

54400

56000

57600

59200

60800

62400

64000

65600

67200

68800

70400

72000

73600

75200

76800

78400

80000

81600

83200

84800

86400

88000

89600

91200

92800

94400

96000

97600

99200

100800

102400

104000

105600

107200

108800

110400

112000

113600

115200

116800

118400

120000

121600

123200

124800

126400

128000

129600

131200

132800

134400

136000

137600

139200

140800

142400

144000

145600

147200

148800

150400

152000

153600

155200

156800

158400

160000

161600

163200

164800

166400

168000

169600

171200

172800

174400

176000

177600

179200

180800

182400

184000

185600

187200

188800

190400

192000

193600

195200

196800

198400

200000

201600

203200

204800

206400

208000

209600

211200

212800

214400

216000

217600

219200

220800

222400

224000

225600

227200

228800

230400

232000

233600

235200

236800

238400

240000

241600

243200

244800

246400

248000

249600

251200

252800

254400

256000

257600

259200

260800

262400

264000

265600

267200

268800

270400

272000

273600

275200

276800

278400

280000

281600

283200

284800

286400

288000

289600

291200

292800

294400

296000

297600

299200

300800

302400

304000

305600

307200

308800

310400

312000

313600

315200

316800

318400

320000

321600

323200

324800

326400

328000

329600

331200

332800

334400

336000

337600

339200

340800

342400

344000

345600

347200

348800

350400

352000

353600

355200

356800

358400

360000

361600

363200

364800

366400

368000

Great Western Operating Co, LLC Directional Survey Report Wellpath: B-Farm LD 18-392HC MDs and TVDs are from Rig Floor 5144.5ft above Mean Sea Level

Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Jan-26-2019	Jun-4-2019	05-001-10094	20.00	B-Farm LD 18-392HC

Slot Coordinates

Latitude	Longitude
39.98370600	-104.93367100

Pad Information

Pad Name	Ground Elev.
B-Farm	5124.50

Field

Name
Wattenburg

Wellpath Report

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
0.00	0.00	0.000	0.00	0.00	0.00		0.00	39.98370600	-104.93367100
20.00	0.00	98.120	20.00	0.00	0.00	==>	0.00	39.98370600	-104.93367100
161.00	0.09	98.120	161.00	-0.02	0.11	0.06	0.03	39.98370596	-104.93367061
246.00	0.62	131.780	246.00	-0.33	0.52	0.64	0.39	39.98370509	-104.93366915
306.00	0.92	100.490	305.99	-0.64	1.23	0.84	0.77	39.98370426	-104.93366660
396.00	1.89	86.870	395.96	-0.69	3.43	1.13	1.06	39.98370412	-104.93365877
486.00	1.80	87.570	485.92	-0.55	6.32	0.10	1.24	39.98370450	-104.93364844
576.00	1.67	76.410	575.88	-0.18	9.01	0.40	1.17	39.98370551	-104.93363886
666.00	1.63	101.280	665.84	-0.12	11.54	0.79	1.39	39.98370567	-104.93362983
756.00	1.54	112.800	755.81	-0.84	13.91	0.37	2.36	39.98370370	-104.93362137
846.00	1.76	116.310	845.77	-1.92	16.26	0.27	3.70	39.98370073	-104.93361297
936.00	1.45	119.920	935.73	-3.10	18.49	0.36	5.12	39.98369749	-104.93360503
1026.00	0.83	78.260	1025.72	-3.54	20.11	1.11	5.73	39.98369630	-104.93359923
1116.00	0.97	62.960	1115.71	-3.06	21.43	0.31	5.40	39.98369761	-104.93359453
1206.00	0.88	85.820	1205.69	-2.66	22.80	0.42	5.15	39.98369870	-104.93358965
1296.00	1.49	78.170	1295.68	-2.37	24.63	0.70	5.07	39.98369950	-104.93358310
1386.00	1.14	56.810	1385.65	-1.64	26.53	0.66	4.55	39.98370150	-104.93357634
1476.00	1.32	42.840	1475.63	-0.39	27.98	0.39	3.47	39.98370493	-104.93357115
1566.00	1.01	91.620	1565.61	0.35	29.48	1.11	2.90	39.98370696	-104.93356581
1656.00	0.40	194.010	1655.61	0.02	30.20	1.29	3.30	39.98370606	-104.93356325
1705.00	0.75	239.620	1704.61	-0.31	29.88	1.12	3.59	39.98370516	-104.93356438
1756.00	0.73	240.460	1755.60	-0.64	29.31	0.04	3.86	39.98370425	-104.93356642
1759.00	0.73	240.510	1758.60	-0.65	29.27	0.04	3.87	39.98370420	-104.93356654
1849.00	0.10	296.470	1848.60	-0.90	28.70	0.75	4.06	39.98370352	-104.93356857
1939.00	0.10	297.290	1938.60	-0.83	28.56	==>	3.97	39.98370372	-104.93356907
2028.00	0.11	286.810	2027.60	-0.77	28.41	0.02	3.89	39.98370388	-104.93356961
2118.00	0.06	167.850	2117.60	-0.79	28.34	0.17	3.91	39.98370383	-104.93356987
2208.00	0.10	113.030	2207.60	-0.87	28.42	0.09	3.99	39.98370362	-104.93356958
2297.00	0.10	351.640	2296.60	-0.82	28.48	0.20	3.95	39.98370374	-104.93356936
2387.00	0.12	198.000	2386.60	-0.83	28.44	0.24	3.96	39.98370371	-104.93356951
2477.00	0.11	103.990	2476.60	-0.94	28.50	0.19	4.07	39.98370341	-104.93356931
2566.00	0.06	321.570	2565.60	-0.93	28.55	0.18	4.06	39.98370345	-104.93356912
2656.00	0.11	121.980	2655.60	-0.94	28.59	0.19	4.08	39.98370343	-104.93356896
2746.00	0.03	300.550	2745.60	-0.97	28.65	0.16	4.12	39.98370333	-104.93356877
2835.00	0.07	166.680	2834.60	-1.01	28.64	0.10	4.16	39.98370322	-104.93356880
2925.00	0.07	261.720	2924.60	-1.07	28.60	0.11	4.21	39.98370305	-104.93356895
3015.00	0.17	310.540	3014.60	-1.00	28.44	0.15	4.12	39.98370327	-104.93356950
3104.00	0.07	164.880	3103.60	-0.96	28.36	0.26	4.08	39.98370336	-104.93356981
3194.00	0.06	173.520	3193.60	-1.06	28.38	==>	4.18	39.98370309	-104.93356974
3284.00	0.06	98.150	3283.60	-1.12	28.43	0.08	4.24	39.98370294	-104.93356956
3374.00	0.11	162.210	3373.60	-1.20	28.50	0.11	4.33	39.98370269	-104.93356930
3463.00	0.14	245.560	3462.60	-1.33	28.43	0.19	4.45	39.98370235	-104.93356956
3553.00	0.09	139.040	3552.60	-1.43	28.37	0.21	4.54	39.98370208	-104.93356975
3643.00	0.13	103.700	3642.60	-1.51	28.52	0.09	4.64	39.98370186	-104.93356923
3733.00	0.10	141.250	3732.60	-1.59	28.67	0.09	4.74	39.98370163	-104.93356870
3822.00	0.12	211.280	3821.60	-1.73	28.67	0.14	4.88	39.98370124	-104.93356870
3912.00	0.15	181.310	3911.60	-1.93	28.62	0.08	5.07	39.98370070	-104.93356888
4002.00	0.10	255.680	4001.60	-2.07	28.54	0.17	5.20	39.98370032	-104.93356916
4092.00	0.14	223.680	4091.60	-2.17	28.39	0.09	5.28	39.98370005	-104.93356971
4181.00	0.10	147.400	4180.60	-2.31	28.35	0.17	5.42	39.98369966	-104.93356982
4271.00	0.11	217.890	4270.60	-2.45	28.34	0.13	5.55	39.98369929	-104.93356986
4361.00	0.04	307.910	4360.60	-2.49	28.26	0.13	5.59	39.98369915	-104.93357014
4451.00	0.09	258.110	4450.60	-2.49	28.17	0.08	5.57	39.98369917	-104.93357048
4540.00	0.15	192.810	4539.60	-2.62	28.08	0.16	5.69	39.98369881	-104.93357081
4630.00	0.19	202.850	4629.60	-2.87	27.99	0.06	5.93	39.98369812	-104.93357111
4720.00	0.76	38.260	4719.59	-2.54	28.30	1.05	5.64	39.98369903	-104.93357000
4809.00	3.38	40.660	4808.53	-0.08	30.38	2.94	3.43	39.98370577	-104.93356259
4899.00	6.39	43.750	4898.19	5.55	35.57	3.36	-1.60	39.98372123	-104.93354406
4989.00	9.06	45.420	4987.37	14.14	44.08	2.98	-9.20	39.98374482	-104.93351369
5079.00	11.89	52.160	5075.86	24.80	56.46	3.42	-18.44	39.98377409	-104.93346954
5168.00	15.77	49.350	5162.27	38.31	72.88	4.42	-30.06	39.98381117	-104.93341093
5258.00	16.96	36.770	5248.65	56.80	90.02	4.15	-46.55	39.98386192	-104.93334976
5348.00	18.36	35.140	5334.40	78.91	106.04	1.65	-66.76	39.98392261	-104.93329260
5438.00	22.33	38.090	5418.77	103.97	124.75	4.55	-89.61	39.98399140	-104.93322582
5527.00	26.02	41.110	5499.96	131.99	148.03	4.37	-114.90	39.98406833	-104.93314276
5617.00	26.74	35.700	5580.60	163.31	172.83	2.79	-143.31	39.98415431	-104.93305427
5707.00	29.00	34.710	5660.15	197.70	197.07	2.56	-174.81	39.98424869	-104.93296776
5797.00	29.46	35.070	5738.69	233.74	222.21	0.55	-207.87	39.98434765	-104.93287805
5886.00	29.99	38.070	5815.99	269.17	248.50	1.77	-240.19	39.98444489	-104.93278422
5976.00	29.69	40.180	5894.05	303.91	276.75	1.21	-271.61	39.98454025	-104.93268341
6066.00	30.27	42.390	5972.01	337.69	306.42	1.39	-301.92	39.98463299	-104.93257751
6156.00	30.04	42.460	6049.84	371.06	336.92	0.26	-331.74	39.98472460	-104.93246867
6245.00	30.19	43.990	6126.82	403.60	367.51	0.88	-360.71	39.98481391	-104.93235954

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
6335.00	30.28	41.980	6204.58	436.75	398.40	1.13	-390.26	39.98490491	-104.93224929
6425.00	30.09	41.460	6282.38	470.52	428.51	0.36	-420.51	39.98499762	-104.93214182
6514.00	30.11	42.920	6359.38	503.59	458.49	0.82	-450.08	39.98508840	-104.93203485
6604.00	30.34	40.490	6437.15	537.41	488.62	1.38	-480.38	39.98518123	-104.93192732
6694.00	30.26	37.590	6514.86	572.67	517.22	1.63	-512.28	39.98527802	-104.93182527
6783.00	30.04	38.000	6591.82	607.99	544.61	0.34	-544.37	39.98537499	-104.93172751
6873.00	29.42	41.620	6669.97	642.27	573.16	2.11	-575.30	39.98546908	-104.93162562
6963.00	30.24	43.790	6748.05	675.16	603.53	1.51	-604.65	39.98555936	-104.93151725
7052.00	30.27	41.310	6824.93	708.19	633.85	1.40	-634.14	39.98565002	-104.93140905
7142.00	30.36	36.620	6902.64	743.49	662.39	2.63	-666.08	39.98574692	-104.93130718
7232.00	30.20	35.780	6980.36	780.11	689.19	0.50	-699.53	39.98584744	-104.93121153
7322.00	30.16	37.130	7058.16	816.49	716.08	0.76	-732.74	39.98594733	-104.93111560
7411.00	30.15	39.120	7135.12	851.66	743.68	1.12	-764.66	39.98604386	-104.93101711
7501.00	29.92	42.540	7213.04	885.74	773.11	1.92	-795.29	39.98613740	-104.93091205
7591.00	29.91	46.490	7291.06	917.73	804.57	2.19	-823.62	39.98622521	-104.93079980
7681.00	24.54	67.280	7371.24	940.46	838.18	12.05	-842.52	39.98628762	-104.93067985
7770.00	20.36	94.370	7453.69	946.44	870.77	12.41	-844.87	39.98630402	-104.93056356
7860.00	21.70	121.280	7537.89	936.58	900.67	10.74	-831.79	39.98627697	-104.93045685
7950.00	26.06	141.460	7620.30	912.43	927.26	10.22	-804.86	39.98621066	-104.93036195
8039.00	33.19	145.290	7697.63	877.06	953.35	8.29	-766.83	39.98611358	-104.93026885
8129.00	41.04	151.240	7769.36	830.83	981.65	9.58	-717.76	39.98598664	-104.93016788
8219.00	48.63	161.440	7833.22	772.75	1006.68	11.60	-657.28	39.98582721	-104.93007855
8308.00	58.26	165.050	7886.18	704.35	1027.13	11.30	-587.05	39.98563945	-104.93000560
8398.00	66.62	167.500	7927.79	626.90	1045.97	9.60	-508.00	39.98542685	-104.92993835
8488.00	76.43	173.620	7956.30	542.83	1059.82	12.66	-422.91	39.98519605	-104.92988895
8529.26	80.52	177.110	7964.54	502.55	1063.08	12.91	-382.52	39.98508548	-104.92987733
8577.00	85.29	181.040	7970.44	455.20	1063.84	12.91	-335.38	39.98495551	-104.92987463
8587.00	86.26	181.490	7971.18	445.23	1063.62	10.71	-325.49	39.98492814	-104.92987542
8622.00	89.66	183.070	7972.42	410.29	1062.22	10.71	-290.91	39.98483222	-104.92988040
8667.00	89.91	182.510	7972.59	365.34	1060.03	1.36	-246.48	39.98470883	-104.92988822
8757.00	89.91	184.170	7972.73	275.50	1054.79	1.84	-157.76	39.98446220	-104.92990694
8846.00	90.43	183.420	7972.47	186.69	1048.90	1.03	-70.14	39.98421843	-104.92992798
8936.00	90.22	180.400	7971.96	96.76	1045.90	3.36	18.92	39.98397154	-104.92993870
9026.00	90.12	176.190	7971.69	6.82	1048.58	4.68	108.61	39.98372465	-104.92992916
9116.00	89.97	174.030	7971.62	-82.85	1056.25	2.41	198.57	39.98347850	-104.92990179
9205.00	89.69	174.090	7971.88	-171.37	1065.46	0.32	287.57	39.98323550	-104.92986894
9295.00	89.75	174.690	7972.32	-260.94	1074.26	0.67	377.56	39.98298963	-104.92983756
9385.00	89.85	177.080	7972.64	-350.70	1080.71	2.66	467.49	39.98274323	-104.92981453
9474.00	89.85	179.960	7972.87	-439.66	1083.01	3.24	556.16	39.98249902	-104.92980634
9564.00	90.09	180.900	7972.92	-529.66	1082.34	1.08	645.54	39.98225197	-104.92980876
9654.00	89.35	179.850	7973.36	-619.65	1081.75	1.43	734.92	39.98200493	-104.92981088
9743.00	89.35	178.680	7974.37	-708.64	1082.89	1.31	823.49	39.98176065	-104.92980682
9833.00	89.48	178.600	7975.29	-798.61	1085.03	0.17	913.15	39.98151368	-104.92979921
9923.00	89.38	178.170	7976.18	-888.57	1087.56	0.49	1002.84	39.98126673	-104.92979018
10012.00	89.26	182.040	7977.24	-977.54	1087.40	4.35	1091.26	39.98102248	-104.92979077
10102.00	89.97	184.640	7977.84	-1067.38	1082.16	2.99	1179.98	39.98077587	-104.92980949
10192.00	90.25	183.390	7977.67	-1157.16	1075.86	1.42	1268.52	39.98052942	-104.92983199
10282.00	90.12	181.040	7977.38	-1247.08	1072.38	2.62	1357.51	39.98028257	-104.92984442
10371.00	90.12	181.330	7977.19	-1336.07	1070.54	0.33	1445.75	39.98003831	-104.92985100
10461.00	90.12	181.780	7977.01	-1426.03	1068.09	0.50	1534.90	39.97979134	-104.92985973
10551.00	90.12	181.700	7976.82	-1515.99	1065.36	0.09	1624.01	39.97954440	-104.92986949
10641.00	90.12	182.480	7976.63	-1605.93	1062.08	0.87	1713.05	39.97929750	-104.92988122
10730.00	90.22	183.430	7976.36	-1694.81	1057.49	1.07	1800.88	39.97905352	-104.92989760
10820.00	90.37	183.360	7975.90	-1784.65	1052.16	0.18	1889.59	39.97880690	-104.92991664
10910.00	90.37	182.690	7975.32	-1874.52	1047.41	0.74	1978.39	39.97856019	-104.92993360
10999.00	90.34	181.840	7974.77	-1963.45	1043.90	0.96	2066.39	39.97831608	-104.92994616
11089.00	90.43	180.980	7974.16	-2053.42	1041.68	0.96	2155.57	39.97806910	-104.92995408
11179.00	90.25	180.340	7973.63	-2143.41	1040.64	0.74	2244.91	39.97782206	-104.92995779
11269.00	90.37	180.300	7973.14	-2233.41	1040.14	0.14	2334.30	39.97757501	-104.92995959
11358.00	90.46	180.820	7972.50	-2322.40	1039.27	0.59	2422.66	39.97733072	-104.92996271
11448.00	90.34	180.770	7971.87	-2412.39	1038.02	0.14	2511.96	39.97708369	-104.92996718
11538.00	90.37	178.560	7971.31	-2502.38	1038.55	2.46	2601.47	39.97683665	-104.92996532
11627.00	90.22	177.060	7970.85	-2591.31	1041.95	1.69	2690.23	39.97659253	-104.92995320
11717.00	90.37	177.450	7970.39	-2681.21	1046.26	0.46	2780.06	39.97634576	-104.92993783
11807.00	90.31	176.690	7969.86	-2771.09	1050.86	0.85	2869.90	39.97609903	-104.92992143
11896.00	90.28	176.110	7969.40	-2859.91	1056.45	0.65	2958.79	39.97585520	-104.92990150
11986.00	90.06	177.900	7969.13	-2949.79	1061.15	2.00	3048.64	39.97560849	-104.92988474
12076.00	90.00	179.050	7969.08	-3039.75	1063.55	1.28	3138.32	39.97536152	-104.92987621
12166.00	89.63	179.090	7969.37	-3129.74	1065.01	0.41	3227.92	39.97511449	-104.92987101
12255.00	89.29	180.610	7970.21	-3218.73	1065.24	1.75	3316.40	39.97487020	-104.92987019
12345.00	88.83	184.070	7971.69	-3308.63	1061.57	3.88	3405.35	39.97462342	-104.92988331
12435.00	88.46	183.990	7973.82	-3398.38	1055.24	0.42	3493.86	39.97437704	-104.92990589
12525.00	88.89	179.830	7975.90	-3488.29	1052.24	4.65	3582.89	39.97413024	-104.92991660
12614.00	89.26	178.630	7977.34	-3577.27	1053.44	1.41	3671.46	39.97388599	-104.92991234
12704.00	89.23	178.410	7978.52	-3667.23	1055.77	0.25	3761.13	39.97363903	-104.92990406
12794.00	90.46	178.780	7978.77	-3757.20	1057.97	1.43	3850.80	39.97339205	-104.92989620
12883.00	90.37	178.150	7978.12	-3846.17	1060.36	0.72	3939.49	39.97314783	-104.92988771
12973.00	90.40	176.510	7977.52	-3936.06	1064.55	1.82	4029.30	39.97290106	-104.92987277
13063.00	90.55	177.090	7976.77	-4025.92	1069.57	0.67	4119.16	39.97265439	-104.92985486
13152.00	90.52	176.990	7975.94	-4114.80	1074.17	0.12	4208.01	39.97241041	-104.92983847
13242.00	90.65	177.840	7975.02	-4204.70	1078.23	0.96	4297.81	39.97216362	-104.92982401
13332.00	90.65	180.550	7974.00	-4294.68	1079.49	3.01	4387.38	39.97191662	-104.92981951
13422.00	90.62	180.330	7973.00	-4384.67	1078.80	0.25	4476.75	39.97166959	-104.92982199
13512.00	90.46	179.090	7972.15	-4474.66	1079.25	1.39	4566.25	39.97142255	-104.92982038
13601.00	87.94	177.510	7973.40	-4563.60	1081.89	3.34	4654.94	39.97117839	-104.92981097
13691.00	88.77	178.560	7975.98	-4653.51	1084.98	1.49	4744.64	39.97093159	-104.92979998
13781.00	88.58	180.000	7978.06	-4743.48	1086.11	1.61	4834.19	39.97068462	-104.92979596
13870.00	88.68	181.260	7980.19	-4832.45	1085.13	1.42	4922.51	39.97044039	-104.92979947
13960.00	89.51	182.280	7981.61	-4922.39	1082.35	1.46	5011.60	39.97019349	-104.92980940
14050.00	90.03	182.720	7981.97	-5012.30	1078.43	0.76	5100.53	39.96994667	-104.92982342
14140.00	90.03	182.120	7981.93	-5102.22	1074.63	0.67	5189.49	39.96969983	-104.92983699
14229.00	90.68	181.380	7981.37	-5191.18	1071.91	1.11	5277.60	39.96945564	-104.92984670
14319.00	89.94	180.410	7980.89	-5281.16	1070.50	1.36	5366.89	39.96920862	-104.92985173
14409.00	89.94	178.660	7980.98	-5371.16	1071.23	1.94	5456.42	39.96896158	-104.92984914
14498.00	89.97	177.770	7981.05	-5460.11	1074.00	1.00	5545.14	39.96871739	-104.92983926
14588.00	89.97	178.010</							

MD[ft]	Inc[deg]	Azi[deg]	TVD[ft]	North[ft]	East[ft]	Dogleg [deg/100ft]	Vertical Section[ft]	Lat - NAD 83	Long - NAD 83
14678.00	89.97	179.640	7981.15	-5640.03	1079.16	1.81	5724.53	39.96822349	-104.92982088
14767.00	89.94	179.130	7981.22	-5729.02	1080.12	0.57	5813.09	39.96797920	-104.92981749
14857.00	89.94	177.180	7981.31	-5818.97	1083.02	2.17	5902.81	39.96773228	-104.92980716
14947.00	89.85	177.020	7981.47	-5908.86	1087.57	0.20	5992.65	39.96748553	-104.92979093
15037.00	89.94	179.730	7981.64	-5998.81	1090.12	3.01	6082.34	39.96723860	-104.92978184
15126.00	89.85	186.530	7981.80	-6087.63	1085.27	7.64	6170.08	39.96699479	-104.92979918
15216.00	90.06	187.380	7981.87	-6176.96	1074.37	0.97	6257.68	39.96674955	-104.92983808
15306.00	89.91	184.010	7981.90	-6266.51	1065.44	3.75	6345.69	39.96650375	-104.92986995
15395.00	89.94	181.100	7982.01	-6355.41	1061.47	3.27	6433.62	39.96625971	-104.92988412
15485.00	89.88	179.970	7982.16	-6445.40	1060.63	1.26	6522.97	39.96601266	-104.92988713
15575.00	89.91	181.330	7982.32	-6535.40	1059.61	1.51	6612.31	39.96576563	-104.92989078
15665.00	89.94	183.280	7982.44	-6625.32	1055.99	2.17	6701.28	39.96551878	-104.92990371
15754.00	89.97	184.690	7982.51	-6714.10	1049.80	1.58	6788.85	39.96527506	-104.92992579
15844.00	90.15	183.130	7982.41	-6803.89	1043.67	1.74	6877.41	39.96502859	-104.92994770
15934.00	90.06	180.220	7982.25	-6893.84	1041.04	3.23	6966.53	39.96478166	-104.92995709
16024.00	90.03	179.690	7982.18	-6983.84	1041.11	0.59	7055.99	39.96453460	-104.92995685
16113.00	89.97	179.990	7982.18	-7072.84	1041.36	0.34	7144.48	39.96429029	-104.92995598
16203.00	90.15	179.060	7982.08	-7162.84	1042.10	1.05	7234.01	39.96404324	-104.92995333
16293.00	88.83	177.140	7982.89	-7252.78	1045.09	2.59	7323.73	39.96379635	-104.92994270
16383.00	88.99	175.930	7984.60	-7342.59	1050.52	1.36	7413.60	39.96354979	-104.92992331
16472.00	89.05	176.660	7986.12	-7431.39	1056.28	0.82	7502.50	39.96330602	-104.92990281
16562.00	88.98	177.610	7987.67	-7521.27	1060.77	1.06	7592.32	39.96305931	-104.92988678
16652.00	88.98	178.640	7989.27	-7611.20	1063.72	1.14	7682.03	39.96281242	-104.92987629
16742.00	88.98	179.700	7990.87	-7701.18	1065.02	1.18	7771.61	39.96256543	-104.92987166
16831.00	88.99	180.660	7992.45	-7790.16	1064.74	1.08	7860.02	39.96232116	-104.92987267
16921.00	88.92	182.160	7994.09	-7880.12	1062.53	1.67	7949.18	39.96207422	-104.92988058
17011.00	89.02	182.410	7995.71	-7970.03	1058.94	0.30	8038.16	39.96182740	-104.92989339
17101.00	89.05	181.340	7997.22	-8059.97	1055.99	1.19	8127.22	39.96158051	-104.92990391
17190.00	89.02	182.030	7998.72	-8148.92	1053.38	0.78	8215.34	39.96133634	-104.92991326
17280.00	88.89	182.620	8000.36	-8238.83	1049.73	0.67	8304.31	39.96108953	-104.92992629
17370.00	88.92	182.790	8002.08	-8328.71	1045.48	0.19	8393.18	39.96084279	-104.92994146
17459.00	89.08	182.210	8003.64	-8417.61	1041.60	0.68	8481.11	39.96059875	-104.92995532
17549.00	89.45	183.490	8004.79	-8507.49	1037.13	1.48	8569.95	39.96035202	-104.92997129
17639.00	90.15	184.050	8005.10	-8597.30	1031.21	1.00	8658.56	39.96010550	-104.92999241
17729.00	90.03	183.300	8004.96	-8687.11	1025.44	0.84	8747.19	39.95985895	-104.93001300
17818.00	90.12	183.150	8004.85	-8775.97	1020.43	0.20	8834.96	39.95961503	-104.93003088
17908.00	89.82	180.170	8004.89	-8865.92	1017.83	3.33	8924.08	39.95936810	-104.93004019
17998.00	89.97	178.210	8005.06	-8955.91	1019.10	2.18	9013.66	39.95912108	-104.93003567
18087.00	89.88	180.130	8005.18	-9044.89	1020.39	2.16	9102.25	39.95887680	-104.93003108
18177.00	89.85	178.060	8005.39	-9134.88	1021.81	2.30	9191.84	39.95862978	-104.93002602
18267.00	89.85	176.430	8005.62	-9224.77	1026.13	1.81	9281.67	39.95838302	-104.93001061
18339.00	89.83	175.110	8005.83	-9296.57	1031.44	1.83	9353.62	39.95818592	-104.92999168
18356.00	89.82	174.800	8005.88	-9313.51	1032.94	1.83	9370.61	39.95813943	-104.92998635
18390.36	89.92	174.220	8005.96	-9347.71	1036.23	1.72	9404.97	39.95804554	-104.92997462
18446.00	90.09	173.280	8005.95	-9403.02	1042.28	1.72	9460.61	39.95789371	-104.92995302
18474.61	90.01	173.500	8005.92	-9431.44	1045.58	0.80	9489.22	39.95781570	-104.92994128
18536.00	89.85	173.960	8006.00	-9492.46	1052.28	0.80	9550.61	39.95764818	-104.92991736
18595.00	89.94	175.000	8006.11	-9551.19	1057.96	1.77	9609.60	39.95748697	-104.92989713
18609.14	89.94	175.000	8006.12	-9565.27	1059.19	==>	9623.74	39.95744831	-104.92989273
18619.00	89.94	175.000	8006.13	-9575.09	1060.05	==>	9633.59	39.95742134	-104.92988967

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1756.00	1755.60	-0.64	29.31	39.98370425	-104.93356642	9.625" Csg: 1756 MD/TVD
8529.26	7964.54	502.55	1063.08	39.98508548	-104.92987733	460 Setback: 8529 / 7965 MD/TVD, 460 FNL, 2195 FEL Sec 07
8587.00	7971.18	445.23	1063.62	39.98492814	-104.92987542	Top Perf: 8587 / 7971 MD/TVD, 517 FNL, 2195 FEL Sec 07
18339.00	8005.83	-9296.57	1031.44	39.95818592	-104.92999168	Btm Perf: 18,339 / 8006 MD/TVD, 285 FSL, 2218 FEL Sec 18
18390.36	8005.96	-9347.71	1036.23	39.95804554	-104.92997462	Btm Toe Sub: 18,390 / 8006 MD/TVD, 234 FSL, 2213 FEL Sec 18
18474.61	8005.92	-9431.44	1045.58	39.95781570	-104.92994128	150 Setback: 18,475 / 8006 MD/TVD, 150 FSL, 2203 FEL Sec 18
18609.14	8006.12	-9565.27	1059.19	39.95744831	-104.92989273	PBTD: 18,609 / 8006 MD/TVD, 16 FSL, 2189 FEL Sec 18
18619.00	8006.13	-9575.09	1060.05	39.95742134	-104.92988967	5.5" Csg: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18
18619.00	8006.13	-9575.09	1060.05	39.95742134	-104.92988967	BHL: 18,619 / 8006 MD/TVD, 6 FSL, 2190 FEL Sec 18

Hole Sections

Diameter [in]	Start MD[ft]	Start TVD[ft]	Start North[ft]	Start East[ft]	End MD[ft]	End TVD[ft]	End North[ft]	End East[ft]
13.500	0.00	0.00	0.00	0.00	1756.00	1755.60	-0.64	29.31
8.500	1756.00	1755.60	-0.64	29.31	18619.00	8006.13	-9575.09	1060.05

Casings

Name	Top MD[ft]	Top TVD[ft]	Top North[ft]	Top East[ft]	Shoe MD[ft]	Shoe TVD[ft]	Shoe North[ft]	Shoe East[ft]
9 5/8in Casing	0.00	0.00	0.00	0.00	1756.00	1755.60	-0.64	29.31
5 1/2in Casing	0.00	0.00	0.00	0.00	18619.00	8006.13	-9575.09	1060.05

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
514656	As Drilled - 20190128	18619.00	8006.13	MWD

Coordinates are from Slot
MD's and TVD's are from Rig Floor 5144.5ft above Mean Sea Level
Vertical Section is from 0.00 0.00 on azimuth 173.680 degrees
Bottom hole distance is 9633.59 Feet on azimuth 173.68 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Great Western Operating Co.
Date Printed: