

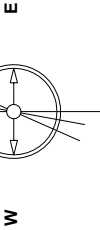
Great Western Operating Company, LLC

Created by	admin
Date plotted	11-Jun-2019
Plot reference is T&M DE 33-173HC-OH	
Ref wellpath is T&M DE 33-173HC (AWP#1).	
Coordinates are in Feet reference T&M DE 33-173HC.	
True Vertical Depths are reference Rig Datum.	
Measured Depths are reference Rig Datum.	
Rig Datum: Actual Datum #1	
Rig Datum to Mean Sea Level: 5108.50 ft.	
Plot North is aligned to TRUE North.	

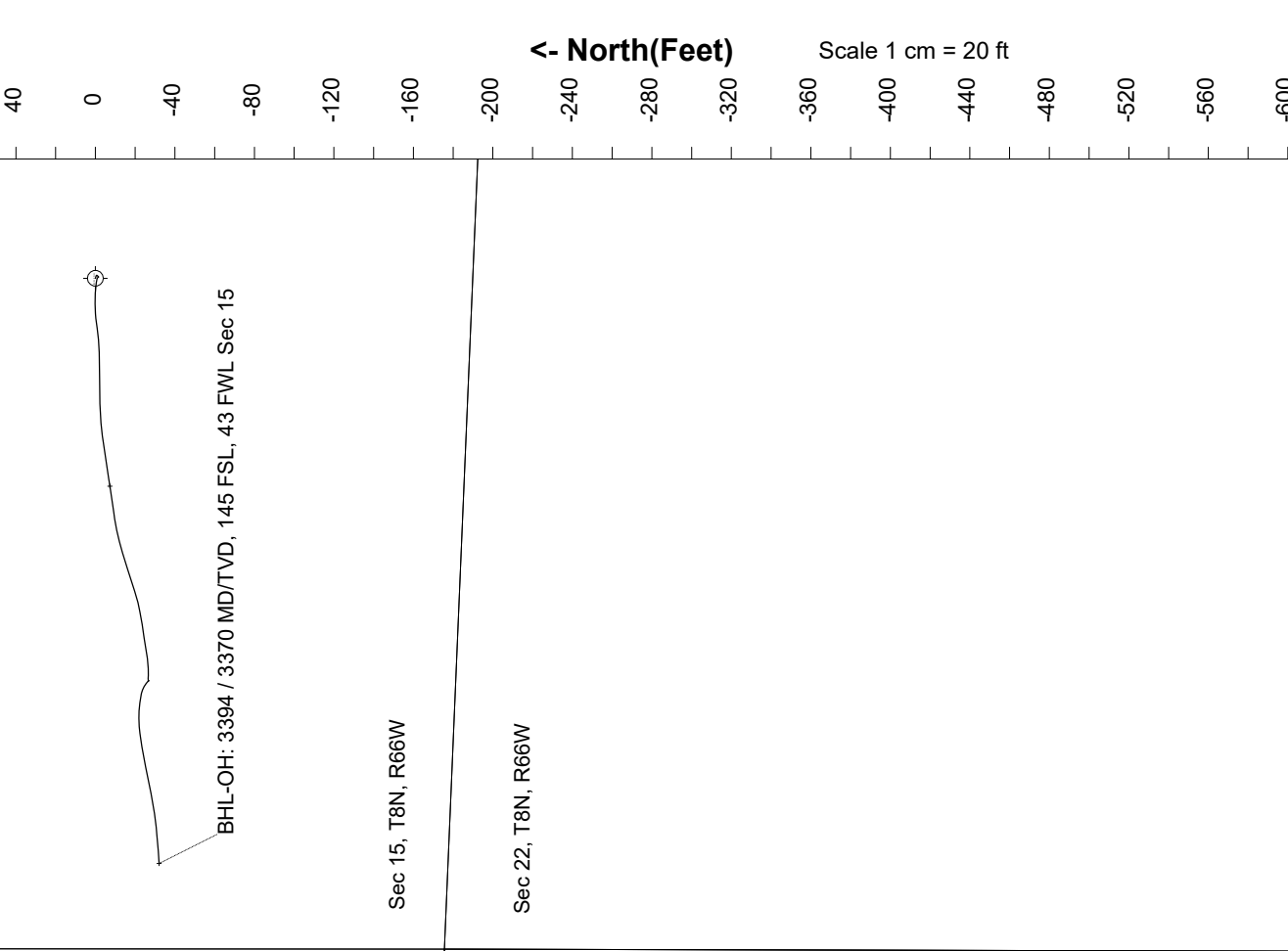
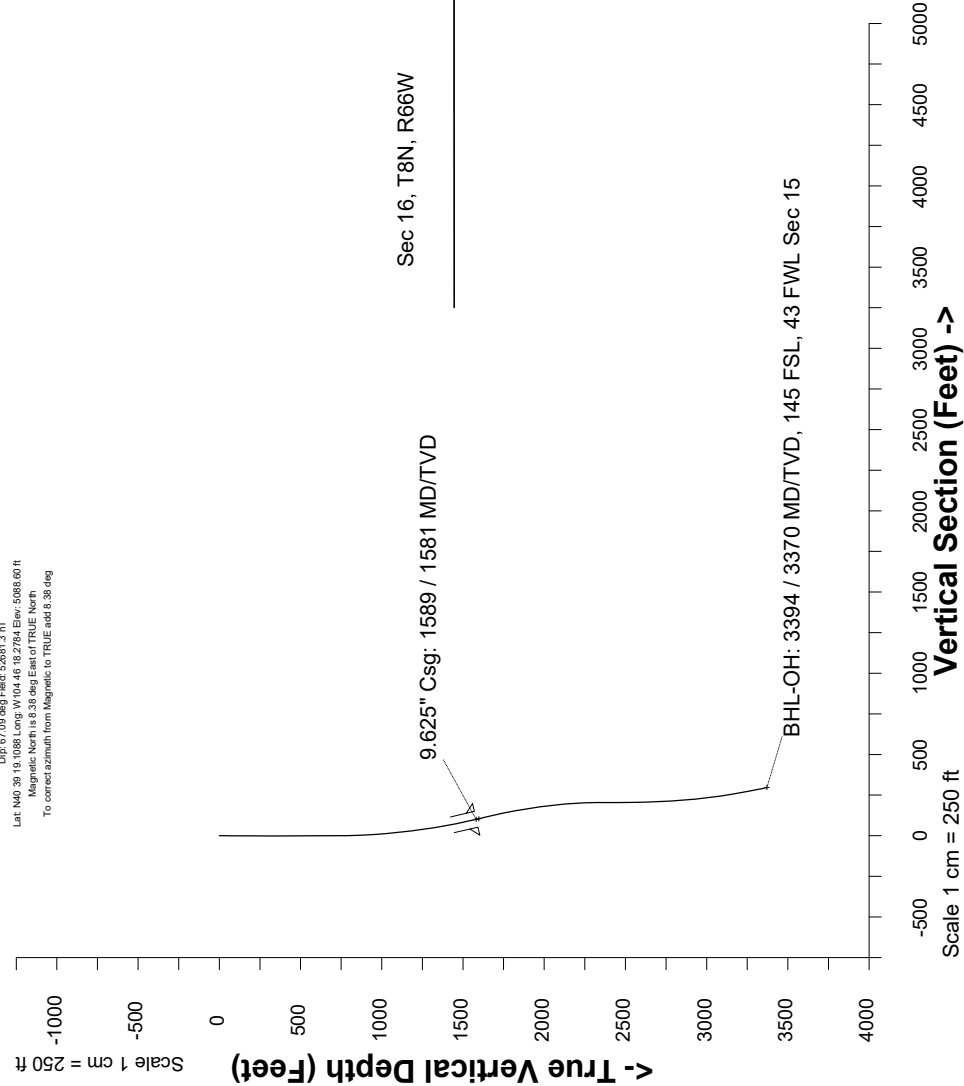
Location	Colorado	Slot	T&M DE 33-173HC
Field	Wattenburg	Well	T&M DE 33-173HC
Installation	T&M	Wellbore	T&M DE 33-173HC-OH

Scale 1 cm = 20 ft

East (Feet) ->



Jun-26-2016  
Dip: 67.08 deg Field: 52681.3 nT  
Lat: N40 39 10.1088 Long: W104 45 19.2764 Elev: 5088.60 ft  
Magnetic North is 8.38 deg East of TRUE North  
To correct azimuth from Magnetic to TRUE add 8.38 deg



North(Feet)

Scale 1 cm = 20 ft

Great Western Operating Co, LLC Directional Survey Report Wellpath: T&M DE 33-173HC-OH MDs and TVDs are from Rig Floor 5108.5ft above Mean Sea Level
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Wellbore Information

Date Created	Date Revised	API #	RKB above GL	Well Name
Jun-2-2019	Jun-11-2019	05-123-49892	20.00	T&M DE 33-173HC-OH

Slot Coordinates

Latitude	Longitude
40.65526800	-104.77174700

Pad Information

Pad Name	Ground Elev.
T&M	5088.50

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	40.65526800	-104.77174700
14.00	0.00	105.430	14.00	0.00	0.00	==>	0.00	40.65526800	-104.77174700
95.00	0.70	105.430	95.00	-0.13	0.48	0.86	-0.46	40.65526764	-104.77174528
186.00	0.35	108.700	185.99	-0.37	1.28	0.39	-1.23	40.65526699	-104.77174240
276.00	0.18	186.730	275.99	-0.60	1.52	0.40	-1.45	40.65526636	-104.77174152
336.00	0.22	216.000	335.99	-0.78	1.44	0.18	-1.35	40.65526585	-104.77174181
426.00	0.31	219.510	425.99	-1.11	1.18	0.10	-1.06	40.65526495	-104.77174273
516.00	0.31	214.240	515.99	-1.50	0.89	0.03	-0.73	40.65526388	-104.77174378
606.00	0.22	303.010	605.99	-1.61	0.61	0.42	-0.43	40.65526359	-104.77174480
696.00	0.26	346.870	695.99	-1.31	0.42	0.20	-0.27	40.65526439	-104.77174549
786.00	0.75	297.830	785.99	-0.84	-0.15	0.68	0.24	40.65526569	-104.77174753
876.00	2.64	275.250	875.94	-0.38	-2.73	2.19	2.76	40.65526697	-104.77175685
966.00	3.87	274.270	965.80	0.04	-7.83	1.37	7.78	40.65526811	-104.77177520
1056.00	5.80	267.850	1055.47	0.10	-15.40	2.22	15.30	40.65526826	-104.77180250
1146.00	7.03	261.260	1144.91	-0.91	-25.39	1.59	25.34	40.65526550	-104.77183850
1236.00	7.47	268.210	1234.19	-1.93	-36.68	1.09	36.67	40.65526270	-104.77187919
1326.00	8.92	270.230	1323.27	-2.09	-49.50	1.64	49.44	40.65526227	-104.77192542
1416.00	10.63	268.030	1411.96	-2.34	-64.78	1.94	64.65	40.65526157	-104.77198047
1506.00	12.44	261.790	1500.14	-4.01	-82.67	2.44	82.62	40.65526698	-104.77204495
1538.00	12.74	261.440	1531.37	-5.03	-89.57	0.97	89.59	40.65525419	-104.77206982
1589.00	13.04	261.530	1581.09	-6.72	-100.82	0.58	100.96	40.65524957	-104.77211037
1606.00	13.14	261.560	1597.65	-7.28	-104.63	0.58	104.80	40.65524801	-104.77212409
1665.00	13.48	261.660	1655.06	-9.26	-118.07	0.58	118.38	40.65524257	-104.77217251
1755.00	11.71	253.680	1742.90	-13.35	-137.21	2.75	137.85	40.65523135	-104.77224152
1844.00	10.40	251.060	1830.25	-18.50	-153.48	1.58	154.58	40.65521723	-104.77230015
1933.00	8.76	259.120	1918.01	-22.38	-167.74	2.38	169.17	40.65520656	-104.77235152
2023.00	7.35	262.190	2007.12	-24.46	-180.17	1.64	181.76	40.65520086	-104.77239634
2112.00	5.98	260.840	2095.51	-25.97	-190.39	1.55	192.08	40.65519671	-104.77243316
2202.00	3.12	271.860	2185.22	-26.64	-197.46	3.31	199.19	40.65519488	-104.77245867
2291.00	2.05	269.870	2274.13	-26.56	-201.48	1.21	203.17	40.65519509	-104.77247313
2381.00	0.40	114.560	2364.11	-26.70	-202.80	2.69	204.50	40.65519472	-104.77247790
2470.00	0.06	96.610	2453.11	-26.83	-202.47	0.39	204.19	40.65519435	-104.77247672
2560.00	1.13	310.390	2543.11	-26.26	-203.10	1.31	204.75	40.65519591	-104.77247899
2649.00	2.25	305.080	2632.07	-24.69	-205.20	1.27	206.67	40.65520023	-104.77248655
2739.00	3.18	281.920	2721.97	-23.16	-209.09	1.58	210.37	40.65520443	-104.77250056
2828.00	3.85	277.150	2810.80	-22.28	-214.47	0.82	215.62	40.65520685	-104.77251995
2918.00	5.09	269.650	2900.52	-21.93	-221.46	1.52	222.53	40.65520782	-104.77254515
3007.00	6.51	263.630	2989.07	-22.51	-230.42	1.73	231.50	40.65520621	-104.77257745
3096.00	8.13	257.520	3077.34	-24.43	-241.58	2.02	242.81	40.65520094	-104.77261767
3186.00	10.00	258.940	3166.21	-27.30	-255.47	2.09	256.92	40.65519305	-104.77266770
3275.00	10.66	262.320	3253.77	-29.89	-271.21	1.01	272.85	40.65518596	-104.77272444
3364.00	11.79	265.930	3341.07	-31.63	-288.44	1.49	290.16	40.65518117	-104.77278653
3394.00	11.79	265.930	3370.43	-32.07	-294.55	==>	296.29	40.65517998	-104.77280856

Comments

MD[ft]	TVD[ft]	North[ft]	East[ft]	Lat - NAD 83	Long - NAD 83	Comment
1589.00	1581.09	-6.72	-100.82	40.65524957	-104.77211037	9.625" Csg: 1589 / 1581 MD/TVD
3394.00	3370.43	-32.07	-294.55	40.65517998	-104.77280856	BHL-OH: 3394 / 3370 MD/TVD, 145 FSL, 43 FWL Sec 15

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	1589.00	1581.09	-6.72	-100.82
8.500	1589.00	1581.09	-6.72	-100.82	3394.00	3370.43	-32.07	-294.55

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	1589.00	1581.09	-6.72	-100.82

Survey Tool Program

Reference	Survey Name	MD[ft]	TVD[ft]	Survey Tool
567415	As Drilled - 20190611	3394.00	3370.43	MWD

Coordinates are from Slot  
MD's and TVD's are from Rig Floor 5108.5ft above Mean Sea Level  
Vertical Section is from 0.00 0.00 on azimuth 263.790 degrees  
Bottom hole distance is 296.29 Feet on azimuth 263.79 degrees from Wellhead  
Calculation method uses Minimum Curvature method  
Prepared by Great Western Operating Co.  
Date Printed: