

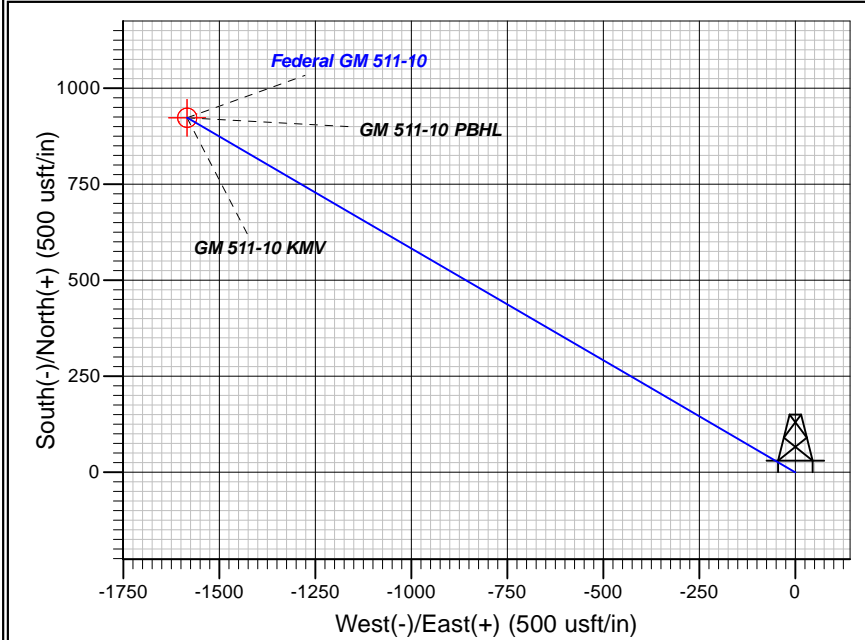
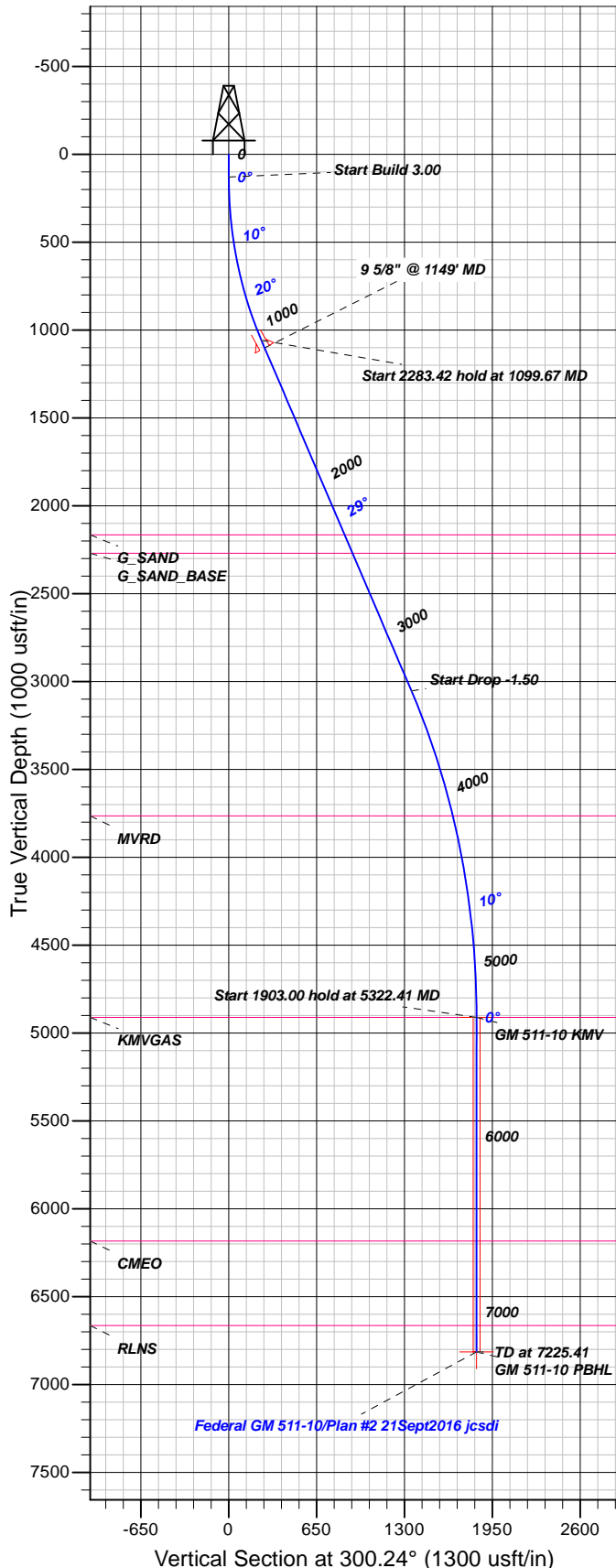
## Well Details: Federal GM 511-10

GL 6148' & RKB 24' @ 6172.00usft (H&P 318)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1600349.50	2266864.30	39.4529627	-108.0966912	B7

**T M** Azimuths to True North  
 Magnetic North: 9.71°

Magnetic Field  
 Strength: 51587.4snT  
 Dip Angle: 65.58°  
 Date: 9/13/2016  
 Model: BGGM2016



### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2165.00	2365.84	G_SAND
2270.00	2486.00	G_SAND_BASE
3764.00	4157.44	MVRD
4911.00	5322.41	KMVGAS
6183.00	6594.41	CMEQ
6664.00	7075.41	RLNS

Plan: Plan #2 21Sept2016 jcsdi

17:28, September 22 2016  
 Created By: Janie Collins

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

### CASING DETAILS

TVD	MD	Name	Size
1102.24	1149.67	9 5/8" @ 1149' MD	9.62

### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	130.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	
3	1099.67	29.09	300.24	1058.54	121.32	-208.14	3.00	300.24	240.91	
4	3383.08	29.09	300.24	3053.92	680.38	-1167.25	0.00	0.00	0.00	0.001351.07
5	5322.41	0.00	0.00	4911.00	923.02	-1583.53	1.50	180.00	1832.90	GM 511-10 KMV
6	7225.41	0.00	0.00	6814.00	923.02	-1583.53	0.00	0.00	1832.90	GM 511-10 PBHL

### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 511-10 KMV	4911.00	923.02	-1583.53	1601317.40	2265307.80	39.4554967	-108.1022993	Circle (Radius: 25.00)
- plan hits target center								
GM 511-10 PBHL	6814.00	923.02	-1583.53	1601317.40	2265307.80	39.4554967	-108.1022993	Point
- plan hits target center								



## **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**MV 5-10 Pad**

**Federal GM 511-10 - Slot B7**

**OH**

**Plan: Plan #2 21Sept2016 jcsdi**

## **Standard Planning Report**

**22 September, 2016**



[www.scientificdrilling.com](http://www.scientificdrilling.com)



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 511-10 - Slot B7
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 511-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

<b>Project</b>	Garfield County, CO NAD83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	MV 5-10 Pad			
<b>Site Position:</b>		<b>Northing:</b>	1,600,344.70 usft	<b>Latitude:</b> 39.4529509
<b>From:</b> Map		<b>Easting:</b>	2,266,881.70 usft	<b>Longitude:</b> -108.0966291
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b> -1.64 °

<b>Well</b>	Federal GM 511-10 - Slot B7			
<b>Well Position</b>	<b>+N/-S</b>	4.30 usft	<b>Northing:</b>	1,600,349.50 usft
	<b>+E/-W</b>	-17.53 usft	<b>Easting:</b>	2,266,864.30 usft
<b>Position Uncertainty</b>	0.00 usft		<b>Wellhead Elevation:</b>	0.00 usft
			<b>Ground Level:</b>	6,148.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2016	9/13/2016	9.72	65.58	51,587

<b>Design</b>	Plan #2 21Sept2016 jcsdi			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	300.24

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
130.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,099.67	29.09	300.24	1,058.54	121.32	-208.14	3.00	3.00	0.00	300.24	
3,383.08	29.09	300.24	3,053.92	680.38	-1,167.25	0.00	0.00	0.00	0.00	
5,322.41	0.00	0.00	4,911.00	923.02	-1,583.53	1.50	-1.50	0.00	180.00	GM 511-10 KMW
7,225.41	0.00	0.00	6,814.00	923.02	-1,583.53	0.00	0.00	0.00	0.00	GM 511-10 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well Federal GM 511-10 - Slot B7
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6148' & RKB 24' @ 6172.00usft (H&P 318)
<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 511-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
130.00	0.00	0.00	130.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.10	300.24	199.98	0.65	-1.11	1.28	3.00	3.00	0.00
300.00	5.10	300.24	299.78	3.81	-6.53	7.56	3.00	3.00	0.00
400.00	8.10	300.24	399.10	9.60	-16.46	19.05	3.00	3.00	0.00
500.00	11.10	300.24	497.69	17.99	-30.87	35.73	3.00	3.00	0.00
600.00	14.10	300.24	595.27	28.98	-49.71	57.54	3.00	3.00	0.00
700.00	17.10	300.24	691.58	42.52	-72.94	84.43	3.00	3.00	0.00
800.00	20.10	300.24	786.34	58.58	-100.50	116.32	3.00	3.00	0.00
900.00	23.10	300.24	879.31	77.11	-132.30	153.13	3.00	3.00	0.00
1,000.00	26.10	300.24	970.22	98.07	-168.26	194.75	3.00	3.00	0.00
1,099.67	29.09	300.24	1,058.54	121.32	-208.14	240.91	3.00	3.00	0.00
1,100.00	29.09	300.24	1,058.83	121.40	-208.28	241.08	0.00	0.00	0.00
1,149.67	29.09	300.24	1,102.24	133.56	-229.14	265.23	0.00	0.00	0.00
9 5/8" @ 1149' MD									
1,200.00	29.09	300.24	1,146.22	145.89	-250.28	289.70	0.00	0.00	0.00
1,300.00	29.09	300.24	1,233.60	170.37	-292.28	338.31	0.00	0.00	0.00
1,400.00	29.09	300.24	1,320.99	194.85	-334.29	386.93	0.00	0.00	0.00
1,500.00	29.09	300.24	1,408.38	219.34	-376.29	435.55	0.00	0.00	0.00
1,600.00	29.09	300.24	1,495.76	243.82	-418.30	484.17	0.00	0.00	0.00
1,700.00	29.09	300.24	1,583.15	268.30	-460.30	532.79	0.00	0.00	0.00
1,800.00	29.09	300.24	1,670.53	292.79	-502.30	581.40	0.00	0.00	0.00
1,900.00	29.09	300.24	1,757.92	317.27	-544.31	630.02	0.00	0.00	0.00
2,000.00	29.09	300.24	1,845.30	341.75	-586.31	678.64	0.00	0.00	0.00
2,100.00	29.09	300.24	1,932.69	366.24	-628.31	727.26	0.00	0.00	0.00
2,200.00	29.09	300.24	2,020.08	390.72	-670.32	775.88	0.00	0.00	0.00
2,300.00	29.09	300.24	2,107.46	415.20	-712.32	824.50	0.00	0.00	0.00
2,365.84	29.09	300.24	2,165.00	431.32	-739.98	856.51	0.00	0.00	0.00
G_SAND									
2,400.00	29.09	300.24	2,194.85	439.69	-754.32	873.11	0.00	0.00	0.00
2,486.00	29.09	300.24	2,270.00	460.74	-790.45	914.93	0.00	0.00	0.00
G_SAND_BASE									
2,500.00	29.09	300.24	2,282.23	464.17	-796.33	921.73	0.00	0.00	0.00
2,600.00	29.09	300.24	2,369.62	488.65	-838.33	970.35	0.00	0.00	0.00
2,700.00	29.09	300.24	2,457.00	513.14	-880.33	1,018.97	0.00	0.00	0.00
2,800.00	29.09	300.24	2,544.39	537.62	-922.34	1,067.59	0.00	0.00	0.00
2,900.00	29.09	300.24	2,631.78	562.10	-964.34	1,116.21	0.00	0.00	0.00
3,000.00	29.09	300.24	2,719.16	586.59	-1,006.34	1,164.82	0.00	0.00	0.00
3,100.00	29.09	300.24	2,806.55	611.07	-1,048.35	1,213.44	0.00	0.00	0.00
3,200.00	29.09	300.24	2,893.93	635.55	-1,090.35	1,262.06	0.00	0.00	0.00
3,300.00	29.09	300.24	2,981.32	660.04	-1,132.35	1,310.68	0.00	0.00	0.00
3,383.08	29.09	300.24	3,053.92	680.38	-1,167.25	1,351.07	0.00	0.00	0.00
3,400.00	28.84	300.24	3,068.72	684.50	-1,174.33	1,359.26	1.50	-1.50	0.00
3,500.00	27.34	300.24	3,156.94	708.21	-1,215.00	1,406.34	1.50	-1.50	0.00
3,600.00	25.84	300.24	3,246.37	730.75	-1,253.67	1,451.10	1.50	-1.50	0.00
3,700.00	24.34	300.24	3,336.93	752.10	-1,290.30	1,493.49	1.50	-1.50	0.00
3,800.00	22.84	300.24	3,428.58	772.25	-1,324.86	1,533.50	1.50	-1.50	0.00
3,900.00	21.34	300.24	3,521.23	791.18	-1,357.35	1,571.10	1.50	-1.50	0.00
4,000.00	19.84	300.24	3,614.85	808.89	-1,387.72	1,606.26	1.50	-1.50	0.00
4,100.00	18.34	300.24	3,709.35	825.36	-1,415.97	1,638.96	1.50	-1.50	0.00
4,157.44	17.47	300.24	3,764.00	834.25	-1,431.23	1,656.62	1.50	-1.50	0.00

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<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 511-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>MVRD</b>									
4,200.00	16.84	300.24	3,804.67	840.57	-1,442.08	1,669.17	1.50	-1.50	0.00
4,300.00	15.34	300.24	3,900.75	854.52	-1,466.01	1,696.88	1.50	-1.50	0.00
4,400.00	13.84	300.24	3,997.53	867.21	-1,487.77	1,722.06	1.50	-1.50	0.00
4,500.00	12.34	300.24	4,094.93	878.61	-1,507.33	1,744.71	1.50	-1.50	0.00
4,600.00	10.84	300.24	4,192.89	888.72	-1,524.68	1,764.79	1.50	-1.50	0.00
4,700.00	9.34	300.24	4,291.34	897.54	-1,539.81	1,782.30	1.50	-1.50	0.00
4,800.00	7.84	300.24	4,390.21	905.06	-1,552.71	1,797.23	1.50	-1.50	0.00
4,900.00	6.34	300.24	4,489.45	911.27	-1,563.37	1,809.57	1.50	-1.50	0.00
5,000.00	4.84	300.24	4,588.97	916.17	-1,571.78	1,819.30	1.50	-1.50	0.00
5,100.00	3.34	300.24	4,688.71	919.76	-1,577.93	1,826.43	1.50	-1.50	0.00
5,200.00	1.84	300.24	4,788.61	922.03	-1,581.83	1,830.94	1.50	-1.50	0.00
5,300.00	0.34	300.24	4,888.59	922.99	-1,583.47	1,832.83	1.50	-1.50	0.00
5,322.41	0.00	0.00	4,911.00	923.02	-1,583.53	1,832.90	1.50	-1.50	0.00
<b>KMVGAS - GM 511-10 KMV</b>									
5,400.00	0.00	0.00	4,988.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
5,500.00	0.00	0.00	5,088.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
5,600.00	0.00	0.00	5,188.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
5,700.00	0.00	0.00	5,288.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
5,800.00	0.00	0.00	5,388.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
5,900.00	0.00	0.00	5,488.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,000.00	0.00	0.00	5,588.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,100.00	0.00	0.00	5,688.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,200.00	0.00	0.00	5,788.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,300.00	0.00	0.00	5,888.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,400.00	0.00	0.00	5,988.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,500.00	0.00	0.00	6,088.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,594.41	0.00	0.00	6,183.00	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
<b>CME0</b>									
6,600.00	0.00	0.00	6,188.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,700.00	0.00	0.00	6,288.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,800.00	0.00	0.00	6,388.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
6,900.00	0.00	0.00	6,488.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
7,000.00	0.00	0.00	6,588.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
7,075.41	0.00	0.00	6,664.00	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
<b>RLNS</b>									
7,100.00	0.00	0.00	6,688.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
7,200.00	0.00	0.00	6,788.59	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
7,225.41	0.00	0.00	6,814.00	923.02	-1,583.53	1,832.90	0.00	0.00	0.00
<b>GM 511-10 PBHL</b>									

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<b>Site:</b>	MV 5-10 Pad	<b>North Reference:</b>	True
<b>Well:</b>	Federal GM 511-10	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2 21Sept2016 jcsdi		

Design 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
GM 511-10 KMV - plan hits target center - Circle (radius 25.00)	0.00	0.00	4,911.00	923.02	-1,583.53	1,601,317.40	2,265,307.80	39.4554967	-108.1022993
GM 511-10 PBHL - plan hits target center - Point	0.00	0.00	6,814.00	923.02	-1,583.53	1,601,317.40	2,265,307.80	39.4554967	-108.1022993

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,149.67	1,102.24	9 5/8" @ 1149' MD	9.62	9.62	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,365.84	2,165.00	G_SAND		0.00	0.00	
2,486.00	2,270.00	G_SAND_BASE		0.00	0.00	
4,157.44	3,764.00	MVRD		0.00	0.00	
5,322.41	4,911.00	KMVGAS		0.00	0.00	
6,594.41	6,183.00	CME0		0.00	0.00	
7,075.41	6,664.00	RLNS		0.00	0.00	