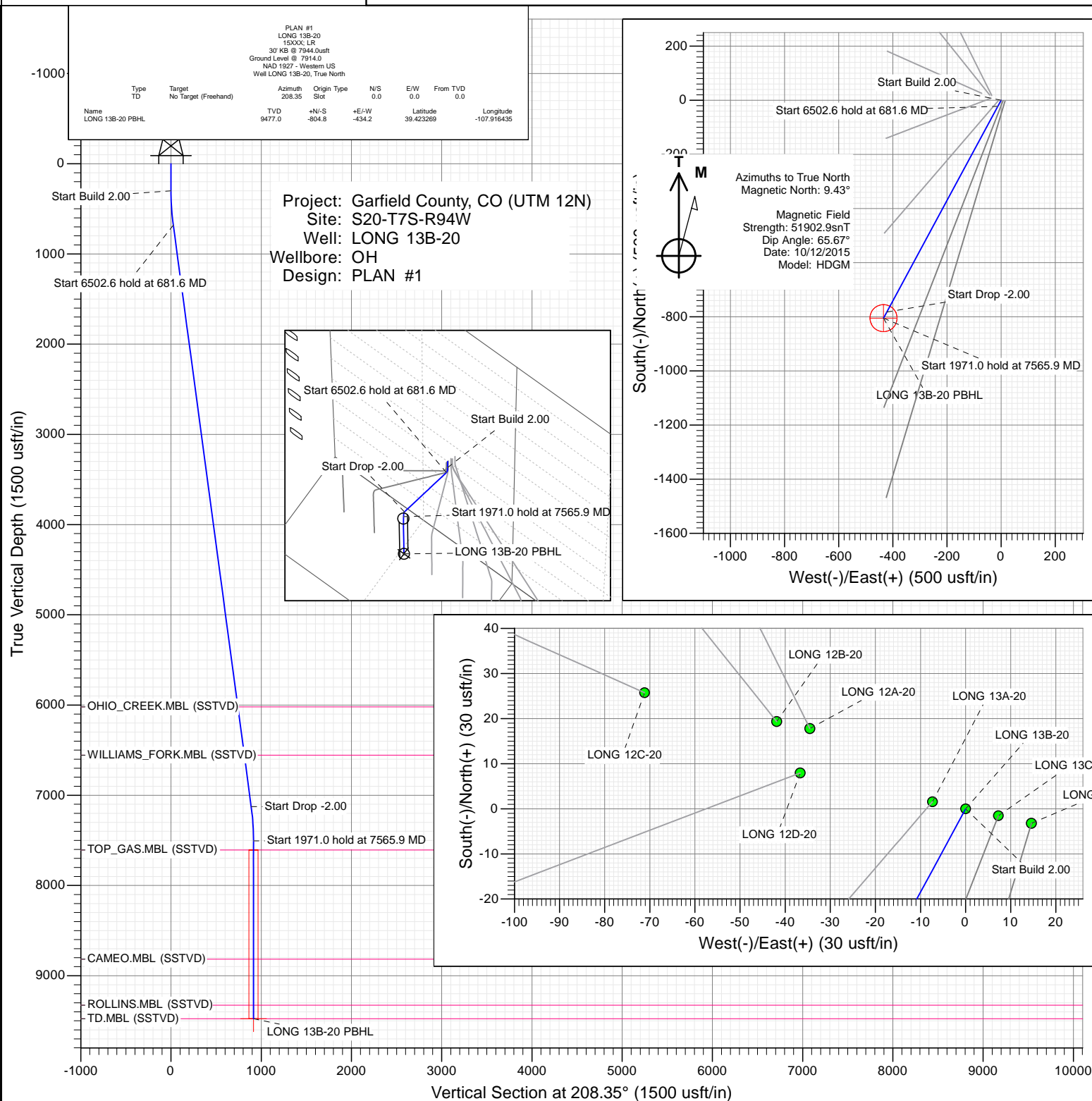




SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	681.6	7.63	208.35	680.5	-22.3	-12.1	2.00	208.35	25.4	
4	7184.2	7.63	208.35	7125.5	-782.5	-422.1	0.00	0.00	889.1	
5	7565.9	0.00	0.00	7506.0	-804.8	-434.2	2.00	180.00	914.5	
6	9536.9	0.00	0.00	9477.0	-804.8	-434.2	0.00	0.00	914.5	LONG 13B-20 PBHL



WELL DETAILS: LONG 13B-20

Ground Level:	7914.0
+N/-S	0.0
+E/-W	0.0
Northing	14331756.70
Easting	2511704.00
Latitude	39.425477
Longitude	-107.914899



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well LONG 13B-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.0usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.0usft
Site:	S20-T7S-R94W	North Reference:	True
Well:	LONG 13B-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Project	Garfield County, CO (UTM 12N)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		
Map Zone:	Zone 12N (114 W to 108 W)		

Site		S20-T7S-R94W			
Site Position:		Northing:	14,331,773.30 usft	Latitude:	39.425526
From:	Map	Easting:	2,511,668.90 usft	Longitude:	-107.915021
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.96 °

Well	LONG 13B-20					
Well Position	+N/-S	0.0 usft	Northing:	14,331,756.70 usft	Latitude:	39.425477
	+E/-W	0.0 usft	Easting:	2,511,704.00 usft	Longitude:	-107.914899
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,914.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	10/12/2015	9.43	65.67	51,903

Design	PLAN #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	208.35

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.0	0.00	0.00	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	0.00	0.00	0.00	0.00	
681.6	7.63	208.35	680.5	-22.3	-12.1	2.00	2.00	0.00	208.35	
7,184.2	7.63	208.35	7,125.5	-782.5	-422.1	0.00	0.00	0.00	0.00	
7,565.9	0.00	0.00	7,506.0	-804.8	-434.2	2.00	-2.00	0.00	180.00	
9,536.9	0.00	0.00	9,477.0	-804.8	-434.2	0.00	0.00	0.00	0.00	LONG 13B-20 PBHL

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well LONG 13B-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.0usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.0usft
Site:	S20-T7S-R94W	North Reference:	True
Well:	LONG 13B-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	Start Build 2.00
400.0	2.00	208.35	400.0	-1.5	-0.8	1.7	2.00	2.00	
500.0	4.00	208.35	499.8	-6.1	-3.3	7.0	2.00	2.00	
600.0	6.00	208.35	599.5	-13.8	-7.5	15.7	2.00	2.00	
681.6	7.63	208.35	680.5	-22.3	-12.1	25.4	2.00	2.00	Start 6502.6 hold at 681.6 MD
700.0	7.63	208.35	698.7	-24.5	-13.2	27.8	0.00	0.00	
800.0	7.63	208.35	797.8	-36.2	-19.5	41.1	0.00	0.00	
900.0	7.63	208.35	896.9	-47.9	-25.8	54.4	0.00	0.00	
1,000.0	7.63	208.35	996.1	-59.6	-32.1	67.7	0.00	0.00	
1,100.0	7.63	208.35	1,095.2	-71.2	-38.4	81.0	0.00	0.00	
1,200.0	7.63	208.35	1,194.3	-82.9	-44.7	94.2	0.00	0.00	
1,300.0	7.63	208.35	1,293.4	-94.6	-51.0	107.5	0.00	0.00	
1,400.0	7.63	208.35	1,392.5	-106.3	-57.4	120.8	0.00	0.00	
1,500.0	7.63	208.35	1,491.6	-118.0	-63.7	134.1	0.00	0.00	
1,600.0	7.63	208.35	1,590.7	-129.7	-70.0	147.4	0.00	0.00	
1,700.0	7.63	208.35	1,689.8	-141.4	-76.3	160.6	0.00	0.00	
1,800.0	7.63	208.35	1,789.0	-153.1	-82.6	173.9	0.00	0.00	
1,900.0	7.63	208.35	1,888.1	-164.8	-88.9	187.2	0.00	0.00	
2,000.0	7.63	208.35	1,987.2	-176.5	-95.2	200.5	0.00	0.00	
2,100.0	7.63	208.35	2,086.3	-188.1	-101.5	213.8	0.00	0.00	
2,200.0	7.63	208.35	2,185.4	-199.8	-107.8	227.1	0.00	0.00	
2,300.0	7.63	208.35	2,284.5	-211.5	-114.1	240.3	0.00	0.00	
2,400.0	7.63	208.35	2,383.6	-223.2	-120.4	253.6	0.00	0.00	
2,500.0	7.63	208.35	2,482.8	-234.9	-126.7	266.9	0.00	0.00	
2,600.0	7.63	208.35	2,581.9	-246.6	-133.0	280.2	0.00	0.00	
2,700.0	7.63	208.35	2,681.0	-258.3	-139.3	293.5	0.00	0.00	
2,800.0	7.63	208.35	2,780.1	-270.0	-145.6	306.8	0.00	0.00	
2,900.0	7.63	208.35	2,879.2	-281.7	-152.0	320.0	0.00	0.00	
3,000.0	7.63	208.35	2,978.3	-293.4	-158.3	333.3	0.00	0.00	
3,100.0	7.63	208.35	3,077.4	-305.0	-164.6	346.6	0.00	0.00	
3,200.0	7.63	208.35	3,176.6	-316.7	-170.9	359.9	0.00	0.00	
3,300.0	7.63	208.35	3,275.7	-328.4	-177.2	373.2	0.00	0.00	
3,400.0	7.63	208.35	3,374.8	-340.1	-183.5	386.4	0.00	0.00	
3,500.0	7.63	208.35	3,473.9	-351.8	-189.8	399.7	0.00	0.00	
3,600.0	7.63	208.35	3,573.0	-363.5	-196.1	413.0	0.00	0.00	
3,700.0	7.63	208.35	3,672.1	-375.2	-202.4	426.3	0.00	0.00	
3,800.0	7.63	208.35	3,771.2	-386.9	-208.7	439.6	0.00	0.00	
3,900.0	7.63	208.35	3,870.4	-398.6	-215.0	452.9	0.00	0.00	
4,000.0	7.63	208.35	3,969.5	-410.2	-221.3	466.1	0.00	0.00	
4,100.0	7.63	208.35	4,068.6	-421.9	-227.6	479.4	0.00	0.00	
4,200.0	7.63	208.35	4,167.7	-433.6	-233.9	492.7	0.00	0.00	
4,300.0	7.63	208.35	4,266.8	-445.3	-240.2	506.0	0.00	0.00	
4,400.0	7.63	208.35	4,365.9	-457.0	-246.5	519.3	0.00	0.00	
4,500.0	7.63	208.35	4,465.0	-468.7	-252.9	532.6	0.00	0.00	
4,600.0	7.63	208.35	4,564.2	-480.4	-259.2	545.8	0.00	0.00	
4,700.0	7.63	208.35	4,663.3	-492.1	-265.5	559.1	0.00	0.00	
4,800.0	7.63	208.35	4,762.4	-503.8	-271.8	572.4	0.00	0.00	
4,900.0	7.63	208.35	4,861.5	-515.5	-278.1	585.7	0.00	0.00	
5,000.0	7.63	208.35	4,960.6	-527.1	-284.4	599.0	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well LONG 13B-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.0usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.0usft
Site:	S20-T7S-R94W	North Reference:	True
Well:	LONG 13B-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,100.0	7.63	208.35	5,059.7	-538.8	-290.7	612.2	0.00	0.00	
5,200.0	7.63	208.35	5,158.8	-550.5	-297.0	625.5	0.00	0.00	
5,300.0	7.63	208.35	5,258.0	-562.2	-303.3	638.8	0.00	0.00	
5,400.0	7.63	208.35	5,357.1	-573.9	-309.6	652.1	0.00	0.00	
5,500.0	7.63	208.35	5,456.2	-585.6	-315.9	665.4	0.00	0.00	
5,600.0	7.63	208.35	5,555.3	-597.3	-322.2	678.7	0.00	0.00	
5,700.0	7.63	208.35	5,654.4	-609.0	-328.5	691.9	0.00	0.00	
5,800.0	7.63	208.35	5,753.5	-620.7	-334.8	705.2	0.00	0.00	
5,900.0	7.63	208.35	5,852.6	-632.4	-341.1	718.5	0.00	0.00	
6,000.0	7.63	208.35	5,951.7	-644.0	-347.5	731.8	0.00	0.00	
6,068.9	7.63	208.35	6,020.0	-652.1	-351.8	740.9	0.00	0.00	OHIO_CREEK.MBL (SSTVD)
6,100.0	7.63	208.35	6,050.9	-655.7	-353.8	745.1	0.00	0.00	
6,200.0	7.63	208.35	6,150.0	-667.4	-360.1	758.4	0.00	0.00	
6,300.0	7.63	208.35	6,249.1	-679.1	-366.4	771.6	0.00	0.00	
6,400.0	7.63	208.35	6,348.2	-690.8	-372.7	784.9	0.00	0.00	
6,500.0	7.63	208.35	6,447.3	-702.5	-379.0	798.2	0.00	0.00	
6,600.0	7.63	208.35	6,546.4	-714.2	-385.3	811.5	0.00	0.00	
6,608.6	7.63	208.35	6,555.0	-715.2	-385.8	812.6	0.00	0.00	WILLIAMS_FORK.MBL (SSTVD)
6,700.0	7.63	208.35	6,645.5	-725.9	-391.6	824.8	0.00	0.00	
6,800.0	7.63	208.35	6,744.7	-737.6	-397.9	838.0	0.00	0.00	
6,900.0	7.63	208.35	6,843.8	-749.3	-404.2	851.3	0.00	0.00	
7,000.0	7.63	208.35	6,942.9	-760.9	-410.5	864.6	0.00	0.00	
7,100.0	7.63	208.35	7,042.0	-772.6	-416.8	877.9	0.00	0.00	
7,184.2	7.63	208.35	7,125.5	-782.5	-422.1	889.1	0.00	0.00	Start Drop -2.00
7,200.0	7.32	208.35	7,141.1	-784.3	-423.1	891.1	2.00	-2.00	
7,300.0	5.32	208.35	7,240.5	-794.0	-428.3	902.1	2.00	-2.00	
7,400.0	3.32	208.35	7,340.2	-800.6	-431.9	909.7	2.00	-2.00	
7,500.0	1.32	208.35	7,440.1	-804.2	-433.8	913.7	2.00	-2.00	
7,565.9	0.00	0.00	7,506.0	-804.8	-434.2	914.5	2.00	-2.00	Start 1971.0 hold at 7565.9 MD
7,600.0	0.00	0.00	7,540.1	-804.8	-434.2	914.5	0.00	0.00	
7,665.9	0.00	0.00	7,606.0	-804.8	-434.2	914.5	0.00	0.00	TOP_GAS.MBL (SSTVD)
7,700.0	0.00	0.00	7,640.1	-804.8	-434.2	914.5	0.00	0.00	
7,800.0	0.00	0.00	7,740.1	-804.8	-434.2	914.5	0.00	0.00	
7,900.0	0.00	0.00	7,840.1	-804.8	-434.2	914.5	0.00	0.00	
8,000.0	0.00	0.00	7,940.1	-804.8	-434.2	914.5	0.00	0.00	
8,100.0	0.00	0.00	8,040.1	-804.8	-434.2	914.5	0.00	0.00	
8,200.0	0.00	0.00	8,140.1	-804.8	-434.2	914.5	0.00	0.00	
8,300.0	0.00	0.00	8,240.1	-804.8	-434.2	914.5	0.00	0.00	
8,400.0	0.00	0.00	8,340.1	-804.8	-434.2	914.5	0.00	0.00	
8,500.0	0.00	0.00	8,440.1	-804.8	-434.2	914.5	0.00	0.00	
8,600.0	0.00	0.00	8,540.1	-804.8	-434.2	914.5	0.00	0.00	
8,700.0	0.00	0.00	8,640.1	-804.8	-434.2	914.5	0.00	0.00	
8,800.0	0.00	0.00	8,740.1	-804.8	-434.2	914.5	0.00	0.00	
8,876.9	0.00	0.00	8,817.0	-804.8	-434.2	914.5	0.00	0.00	CAMEO.MBL (SSTVD)
8,900.0	0.00	0.00	8,840.1	-804.8	-434.2	914.5	0.00	0.00	
9,000.0	0.00	0.00	8,940.1	-804.8	-434.2	914.5	0.00	0.00	
9,100.0	0.00	0.00	9,040.1	-804.8	-434.2	914.5	0.00	0.00	
9,200.0	0.00	0.00	9,140.1	-804.8	-434.2	914.5	0.00	0.00	
9,300.0	0.00	0.00	9,240.1	-804.8	-434.2	914.5	0.00	0.00	
9,386.9	0.00	0.00	9,327.0	-804.8	-434.2	914.5	0.00	0.00	ROLLINS.MBL (SSTVD)
9,400.0	0.00	0.00	9,340.1	-804.8	-434.2	914.5	0.00	0.00	
9,500.0	0.00	0.00	9,440.1	-804.8	-434.2	914.5	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well LONG 13B-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.0usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.0usft
Site:	S20-T7S-R94W	North Reference:	True
Well:	LONG 13B-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,536.9	0.00	0.00	9,477.0	-804.8	-434.2	914.5	0.00	0.00	TD at 9536.9 - TD.MBL (SSTVD)

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
LONG 13B-20 PBHL - plan hits target center - Circle (radius 50.0)	0.00	0.00	9,477.0	-804.8	-434.2	14,330,937.50	2,511,297.60	39.423269	-107.916435

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,068.9	6,020.0	OHIO_CREEK.MBL (SSTVD)		0.00	
6,608.6	6,555.0	WILLIAMS_FORK.MBL (SSTVD)		0.00	
7,665.9	7,606.0	TOP_GAS.MBL (SSTVD)		0.00	
8,876.9	8,817.0	CAMEO.MBL (SSTVD)		0.00	
9,386.9	9,327.0	ROLLINS.MBL (SSTVD)		0.00	
9,536.9	9,477.0	TD.MBL (SSTVD)		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.0	300.0	0.0	0.0	Start Build 2.00
681.6	680.5	-22.3	-12.1	Start 6502.6 hold at 681.6 MD
7,184.2	7,125.5	-782.5	-422.1	Start Drop -2.00
7,565.9	7,506.0	-804.8	-434.2	Start 1971.0 hold at 7565.9 MD
9,536.9	9,477.0	-804.8	-434.2	TD at 9536.9