

# **Logos Operating LLC**

**La Plata, CO (NAD83)**

**Ignacio 33-7 29P Pad**

**Ignacio 33-7 29P #1H**

**OH**

**Plan: Prelim 9**

## **Standard Planning Report**

**12 February, 2024**

# SDT Planning Report

<b>Database:</b>	EDM 5000 Multi User Db	<b>Local Co-ordinate Reference:</b>	Well Ignacio 33-7 29P #1H
<b>Company:</b>	Logos Operating LLC	<b>TVD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Project:</b>	La Plata, CO (NAD83)	<b>MD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

<b>Project</b>	La Plata, 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 Southern Zone		

<b>Site</b>	Ignacio 33-7 29P Pad				
<b>Site Position:</b>		<b>Northing:</b>	1,154,205.95 usft	<b>Latitude:</b>	37.070751
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,379,275.54 usft	<b>Longitude:</b>	-107.627618
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "		

<b>Well</b>	Ignacio 33-7 29P #1H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,153,445.61 usft	<b>Latitude:</b>	37.068673
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	2,379,429.09 usft	<b>Longitude:</b>	-107.627033
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	6,419.30 usft
<b>Grid Convergence:</b>	-1.30 °					

<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>
	IGRF2015	10/20/2023	8.60	63.55	49,554.23738409

<b>Design</b>	Prelim 9			
<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	90.29

<b>Plan Survey Tool Program</b>		<b>Date</b>	2/12/2024		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	16,492.65 Prelim 9 (OH)	MWD+HRGM+MS		
			MWD + HRGM + Multi-Station		

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<b>Company:</b>	Logos Operating LLC	<b>TVD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Project:</b>	La Plata, CO (NAD83)	<b>MD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

Plan Sections										
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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,264.15	15.28	284.42	1,255.12	25.23	-98.12	2.00	2.00	0.00	284.42	
5,353.65	15.28	284.42	5,200.00	293.67	-1,142.10	0.00	0.00	0.00	0.00	
6,153.20	11.29	284.42	5,978.00	339.41	-1,320.00	0.50	-0.50	0.00	180.00	
6,253.20	10.79	284.42	6,076.15	344.18	-1,338.53	0.50	-0.50	0.00	180.00	
7,118.84	90.83	90.29	6,654.03	368.98	-849.78	11.70	9.25	19.16	165.59	
16,357.64	90.83	90.29	6,520.94	322.25	8,387.94	0.00	0.00	0.00	0.00	IGN 29 #1H FPP
16,492.65	90.83	90.29	6,519.00	321.57	8,522.94	0.00	0.00	0.00	0.00	IGN 29 #1H PBHL

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<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

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	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>										
600.00	2.00	284.42	599.98	0.43	-1.69	-1.69	2.00	2.00	2.00	0.00
700.00	4.00	284.42	699.84	1.74	-6.76	-6.77	2.00	2.00	2.00	0.00
800.00	6.00	284.42	799.45	3.91	-15.20	-15.22	2.00	2.00	2.00	0.00
900.00	8.00	284.42	898.70	6.94	-27.00	-27.04	2.00	2.00	2.00	0.00
1,000.00	10.00	284.42	997.47	10.84	-42.15	-42.21	2.00	2.00	2.00	0.00
1,100.00	12.00	284.42	1,095.62	15.59	-60.63	-60.71	2.00	2.00	2.00	0.00
1,200.00	14.00	284.42	1,193.06	21.19	-82.42	-82.52	2.00	2.00	2.00	0.00
1,264.15	15.28	284.42	1,255.12	25.23	-98.12	-98.25	2.00	2.00	2.00	0.00
<b>Start 4089.50 hold at 1264.15 MD</b>										
1,300.00	15.28	284.42	1,289.70	27.58	-107.27	-107.41	0.00	0.00	0.00	0.00
1,400.00	15.28	284.42	1,386.17	34.15	-132.80	-132.97	0.00	0.00	0.00	0.00
1,468.25	15.28	284.42	1,452.00	38.63	-150.22	-150.42	0.00	0.00	0.00	0.00
<b>Ojo Alamo</b>										
1,500.00	15.28	284.42	1,482.63	40.71	-158.33	-158.53	0.00	0.00	0.00	0.00
1,600.00	15.28	284.42	1,579.09	47.27	-183.86	-184.09	0.00	0.00	0.00	0.00
1,605.09	15.28	284.42	1,584.00	47.61	-185.15	-185.39	0.00	0.00	0.00	0.00
<b>Kirtland</b>										
1,700.00	15.28	284.42	1,675.56	53.84	-209.38	-209.65	0.00	0.00	0.00	0.00
1,800.00	15.28	284.42	1,772.02	60.40	-234.91	-235.22	0.00	0.00	0.00	0.00
1,900.00	15.28	284.42	1,868.48	66.97	-260.44	-260.78	0.00	0.00	0.00	0.00
2,000.00	15.28	284.42	1,964.95	73.53	-285.97	-286.34	0.00	0.00	0.00	0.00
2,100.00	15.28	284.42	2,061.41	80.09	-311.50	-311.90	0.00	0.00	0.00	0.00
2,200.00	15.28	284.42	2,157.88	86.66	-337.03	-337.46	0.00	0.00	0.00	0.00
2,300.00	15.28	284.42	2,254.34	93.22	-362.55	-363.02	0.00	0.00	0.00	0.00
2,400.00	15.28	284.42	2,350.80	99.79	-388.08	-388.58	0.00	0.00	0.00	0.00
2,500.00	15.28	284.42	2,447.27	106.35	-413.61	-414.14	0.00	0.00	0.00	0.00
2,561.92	15.28	284.42	2,507.00	110.42	-429.42	-429.97	0.00	0.00	0.00	0.00
<b>Fruitland</b>										
2,600.00	15.28	284.42	2,543.73	112.92	-439.14	-439.71	0.00	0.00	0.00	0.00
2,665.59	15.28	284.42	2,607.00	117.22	-455.88	-456.47	0.00	0.00	0.00	0.00
<b>Top of Coals</b>										
2,700.00	15.28	284.42	2,640.19	119.48	-464.67	-465.27	0.00	0.00	0.00	0.00
2,800.00	15.28	284.42	2,736.66	126.04	-490.20	-490.83	0.00	0.00	0.00	0.00
2,863.59	15.28	284.42	2,798.00	130.22	-506.43	-507.08	0.00	0.00	0.00	0.00
<b>Base of Coals</b>										
2,900.00	15.28	284.42	2,833.12	132.61	-515.72	-516.39	0.00	0.00	0.00	0.00
3,000.00	15.28	284.42	2,929.58	139.17	-541.25	-541.95	0.00	0.00	0.00	0.00
3,061.59	15.28	284.42	2,989.00	143.21	-556.98	-557.69	0.00	0.00	0.00	0.00
<b>Pictured Cliffs</b>										
3,100.00	15.28	284.42	3,026.05	145.74	-566.78	-567.51	0.00	0.00	0.00	0.00
3,188.07	15.28	284.42	3,111.00	151.52	-589.26	-590.02	0.00	0.00	0.00	0.00
<b>Lewis</b>										
3,200.00	15.28	284.42	3,122.51	152.30	-592.31	-593.07	0.00	0.00	0.00	0.00
3,300.00	15.28	284.42	3,218.97	158.86	-617.84	-618.63	0.00	0.00	0.00	0.00
3,400.00	15.28	284.42	3,315.44	165.43	-643.37	-644.19	0.00	0.00	0.00	0.00
3,500.00	15.28	284.42	3,411.90	171.99	-668.89	-669.76	0.00	0.00	0.00	0.00

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<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

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)
3,600.00	15.28	284.42	3,508.37	178.56	-694.42	-695.32	0.00	0.00	0.00
3,700.00	15.28	284.42	3,604.83	185.12	-719.95	-720.88	0.00	0.00	0.00
3,800.00	15.28	284.42	3,701.29	191.68	-745.48	-746.44	0.00	0.00	0.00
3,900.00	15.28	284.42	3,797.76	198.25	-771.01	-772.00	0.00	0.00	0.00
4,000.00	15.28	284.42	3,894.22	204.81	-796.54	-797.56	0.00	0.00	0.00
4,100.00	15.28	284.42	3,990.68	211.38	-822.06	-823.12	0.00	0.00	0.00
4,200.00	15.28	284.42	4,087.15	217.94	-847.59	-848.68	0.00	0.00	0.00
4,284.85	15.28	284.42	4,169.00	223.51	-869.25	-870.37	0.00	0.00	0.00
<b>Chacra</b>									
4,300.00	15.28	284.42	4,183.61	224.50	-873.12	-874.25	0.00	0.00	0.00
4,400.00	15.28	284.42	4,280.07	231.07	-898.65	-899.81	0.00	0.00	0.00
4,500.00	15.28	284.42	4,376.54	237.63	-924.18	-925.37	0.00	0.00	0.00
4,600.00	15.28	284.42	4,473.00	244.20	-949.71	-950.93	0.00	0.00	0.00
4,700.00	15.28	284.42	4,569.46	250.76	-975.23	-976.49	0.00	0.00	0.00
4,800.00	15.28	284.42	4,665.93	257.32	-1,000.76	-1,002.05	0.00	0.00	0.00
4,824.95	15.28	284.42	4,690.00	258.96	-1,007.13	-1,008.43	0.00	0.00	0.00
<b>Upper Cliff House</b>									
4,900.00	15.28	284.42	4,762.39	263.89	-1,026.29	-1,027.61	0.00	0.00	0.00
5,000.00	15.28	284.42	4,858.85	270.45	-1,051.82	-1,053.17	0.00	0.00	0.00
5,100.00	15.28	284.42	4,955.32	277.02	-1,077.35	-1,078.73	0.00	0.00	0.00
5,196.08	15.28	284.42	5,048.00	283.32	-1,101.87	-1,103.29	0.00	0.00	0.00
<b>Cliff House</b>									
5,200.00	15.28	284.42	5,051.78	283.58	-1,102.87	-1,104.30	0.00	0.00	0.00
5,276.94	15.28	284.42	5,126.00	288.63	-1,122.52	-1,123.96	0.00	0.00	0.00
<b>Menefee</b>									
5,300.00	15.28	284.42	5,148.25	290.14	-1,128.40	-1,129.86	0.00	0.00	0.00
5,353.65	15.28	284.42	5,200.00	293.67	-1,142.10	-1,143.57	0.00	0.00	0.00
<b>Start DLS 0.50 TFO 180.00</b>									
5,400.00	15.05	284.42	5,244.73	296.69	-1,153.84	-1,155.33	0.50	-0.50	0.00
5,431.33	14.89	284.42	5,275.00	298.70	-1,161.68	-1,163.18	0.50	-0.50	0.00
<b>Point Lookout</b>									
5,500.00	14.55	284.42	5,341.42	303.05	-1,178.59	-1,180.10	0.50	-0.50	0.00
5,600.00	14.05	284.42	5,438.32	309.20	-1,202.51	-1,204.06	0.50	-0.50	0.00
5,700.00	13.55	284.42	5,535.43	315.14	-1,225.61	-1,227.19	0.50	-0.50	0.00
5,800.00	13.05	284.42	5,632.75	320.87	-1,247.90	-1,249.50	0.50	-0.50	0.00
5,900.00	12.55	284.42	5,730.26	326.39	-1,269.35	-1,270.99	0.50	-0.50	0.00
6,000.00	12.05	284.42	5,827.96	331.69	-1,289.99	-1,291.65	0.50	-0.50	0.00
6,095.05	11.58	284.42	5,921.00	336.54	-1,308.83	-1,310.52	0.50	-0.50	0.00
<b>Mancos</b>									
6,100.00	11.55	284.42	5,925.85	336.79	-1,309.80	-1,311.48	0.50	-0.50	0.00
6,153.20	11.29	284.42	5,978.00	339.41	-1,320.00	-1,321.70	0.50	-0.50	0.00
<b>Start Drop -0.50</b>									
6,200.00	11.05	284.42	6,023.91	341.67	-1,328.78	-1,330.49	0.50	-0.50	0.00
6,253.20	10.79	284.42	6,076.15	344.18	-1,338.53	-1,340.26	0.50	-0.50	0.00
<b>Start DLS 11.70 TFO 165.59</b>									
6,275.00	8.34	288.80	6,097.64	345.19	-1,342.01	-1,343.74	11.70	-11.22	20.09
6,300.00	5.65	298.39	6,122.46	346.36	-1,344.81	-1,346.54	11.70	-10.77	38.35
6,325.00	3.37	322.67	6,147.38	347.53	-1,346.33	-1,348.08	11.70	-9.12	97.12
6,350.00	2.81	18.34	6,172.35	348.70	-1,346.59	-1,348.33	11.70	-2.24	222.71
6,375.00	4.64	55.19	6,197.30	349.86	-1,345.56	-1,347.32	11.70	7.33	147.38
6,400.00	7.23	68.69	6,222.16	351.00	-1,343.27	-1,345.03	11.70	10.36	54.00
6,425.00	10.01	74.93	6,246.88	352.14	-1,339.70	-1,341.47	11.70	11.10	24.96
6,450.00	12.85	78.45	6,271.38	353.26	-1,334.88	-1,336.65	11.70	11.37	14.11

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<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

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)
6,475.00	15.72	80.72	6,295.60	354.37	-1,328.81	-1,330.59	11.70	11.49	9.04
6,500.00	18.61	82.29	6,319.49	355.45	-1,321.52	-1,323.30	11.70	11.55	6.30
6,525.00	21.51	83.45	6,342.97	356.50	-1,313.01	-1,314.80	11.70	11.59	4.66
6,550.00	24.41	84.35	6,365.99	357.54	-1,303.32	-1,305.11	11.70	11.62	3.60
6,575.00	27.32	85.07	6,388.48	358.54	-1,292.46	-1,294.26	11.70	11.63	2.87
6,600.00	30.23	85.66	6,410.39	359.51	-1,280.46	-1,282.27	11.70	11.64	2.36
6,625.00	33.14	86.16	6,431.66	360.44	-1,267.37	-1,269.18	11.70	11.65	1.98
6,650.00	36.06	86.58	6,452.24	361.34	-1,253.20	-1,255.02	11.70	11.66	1.69
6,675.00	38.97	86.95	6,472.07	362.20	-1,238.00	-1,239.82	11.70	11.67	1.47
6,698.53	41.72	87.25	6,490.00	362.97	-1,222.79	-1,224.61	11.70	11.67	1.30
<b>Black Top</b>									
6,700.00	41.89	87.27	6,491.10	363.01	-1,221.81	-1,223.63	11.70	11.67	1.23
6,725.00	44.81	87.56	6,509.27	363.78	-1,204.67	-1,206.50	11.70	11.67	1.16
6,750.00	47.73	87.82	6,526.55	364.51	-1,186.62	-1,188.45	11.70	11.68	1.04
6,775.00	50.65	88.06	6,542.89	365.19	-1,167.71	-1,169.55	11.70	11.68	0.95
6,800.00	53.57	88.28	6,558.24	365.82	-1,148.00	-1,149.83	11.70	11.68	0.88
6,825.00	56.49	88.48	6,572.57	366.40	-1,127.52	-1,129.36	11.70	11.68	0.81
6,850.00	59.41	88.67	6,585.84	366.92	-1,106.34	-1,108.18	11.70	11.68	0.76
6,875.00	62.33	88.85	6,598.01	367.39	-1,084.51	-1,086.36	11.70	11.68	0.71
6,900.00	65.25	89.02	6,609.05	367.81	-1,062.09	-1,063.94	11.70	11.68	0.68
6,925.00	68.17	89.18	6,618.93	368.17	-1,039.13	-1,040.98	11.70	11.68	0.65
6,950.00	71.09	89.34	6,627.63	368.47	-1,015.70	-1,017.55	11.70	11.69	0.62
6,975.00	74.01	89.49	6,635.12	368.72	-991.85	-993.71	11.70	11.69	0.60
7,000.00	76.94	89.63	6,641.39	368.91	-967.65	-969.51	11.70	11.69	0.58
7,025.00	79.86	89.77	6,646.42	369.03	-943.17	-945.02	11.70	11.69	0.57
7,050.00	82.78	89.91	6,650.19	369.10	-918.46	-920.31	11.70	11.69	0.56
7,075.00	85.70	90.05	6,652.70	369.11	-893.59	-895.44	11.70	11.69	0.55
7,100.00	88.62	90.19	6,653.94	369.06	-868.62	-870.48	11.70	11.69	0.55
7,118.84	90.83	90.29	6,654.03	368.98	-849.78	-851.64	11.70	11.69	0.55
<b>Start 9238.80 hold at 7118.84 MD</b>									
7,200.00	90.83	90.29	6,652.86	368.57	-768.63	-770.49	0.00	0.00	0.00
7,300.00	90.83	90.29	6,651.42	368.06	-668.64	-670.50	0.00	0.00	0.00
7,400.00	90.83	90.29	6,649.98	367.56	-568.65	-570.51	0.00	0.00	0.00
7,500.00	90.83	90.29	6,648.54	367.05	-468.67	-470.52	0.00	0.00	0.00
7,600.00	90.83	90.29	6,647.10	366.54	-368.68	-370.53	0.00	0.00	0.00
7,700.00	90.83	90.29	6,645.66	366.04	-268.69	-270.54	0.00	0.00	0.00
7,800.00	90.83	90.29	6,644.22	365.53	-168.70	-170.55	0.00	0.00	0.00
7,900.00	90.83	90.29	6,642.78	365.03	-68.71	-70.56	0.00	0.00	0.00
8,000.00	90.83	90.29	6,641.34	364.52	31.28	29.43	0.00	0.00	0.00
8,100.00	90.83	90.29	6,639.90	364.02	131.26	129.42	0.00	0.00	0.00
8,200.00	90.83	90.29	6,638.46	363.51	231.25	229.41	0.00	0.00	0.00
8,300.00	90.83	90.29	6,637.01	363.00	331.24	329.40	0.00	0.00	0.00
8,400.00	90.83	90.29	6,635.57	362.50	431.23	429.39	0.00	0.00	0.00
8,500.00	90.83	90.29	6,634.13	361.99	531.22	529.38	0.00	0.00	0.00
8,600.00	90.83	90.29	6,632.69	361.49	631.21	629.37	0.00	0.00	0.00
8,700.00	90.83	90.29	6,631.25	360.98	731.19	729.36	0.00	0.00	0.00
8,800.00	90.83	90.29	6,629.81	360.48	831.18	829.35	0.00	0.00	0.00
8,900.00	90.83	90.29	6,628.37	359.97	931.17	929.34	0.00	0.00	0.00
9,000.00	90.83	90.29	6,626.93	359.46	1,031.16	1,029.33	0.00	0.00	0.00
9,100.00	90.83	90.29	6,625.49	358.96	1,131.15	1,129.32	0.00	0.00	0.00
9,200.00	90.83	90.29	6,624.05	358.45	1,231.14	1,229.31	0.00	0.00	0.00
9,300.00	90.83	90.29	6,622.61	357.95	1,331.12	1,329.30	0.00	0.00	0.00
9,400.00	90.83	90.29	6,621.17	357.44	1,431.11	1,429.29	0.00	0.00	0.00
9,500.00	90.83	90.29	6,619.73	356.94	1,531.10	1,529.27	0.00	0.00	0.00

## SDT Planning Report

<b>Database:</b>	EDM 5000 Multi User Db	<b>Local Co-ordinate Reference:</b>	Well Ignacio 33-7 29P #1H
<b>Company:</b>	Logos Operating LLC	<b>TVD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Project:</b>	La Plata, CO (NAD83)	<b>MD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

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)
9,600.00	90.83	90.29	6,618.29	356.43	1,631.09	1,629.26	0.00	0.00	0.00
9,700.00	90.83	90.29	6,616.85	355.92	1,731.08	1,729.25	0.00	0.00	0.00
9,800.00	90.83	90.29	6,615.41	355.42	1,831.07	1,829.24	0.00	0.00	0.00
9,900.00	90.83	90.29	6,613.97	354.91	1,931.05	1,929.23	0.00	0.00	0.00
10,000.00	90.83	90.29	6,612.53	354.41	2,031.04	2,029.22	0.00	0.00	0.00
10,100.00	90.83	90.29	6,611.08	353.90	2,131.03	2,129.21	0.00	0.00	0.00
10,200.00	90.83	90.29	6,609.64	353.40	2,231.02	2,229.20	0.00	0.00	0.00
10,300.00	90.83	90.29	6,608.20	352.89	2,331.01	2,329.19	0.00	0.00	0.00
10,400.00	90.83	90.29	6,606.76	352.38	2,431.00	2,429.18	0.00	0.00	0.00
10,500.00	90.83	90.29	6,605.32	351.88	2,530.98	2,529.17	0.00	0.00	0.00
10,600.00	90.83	90.29	6,603.88	351.37	2,630.97	2,629.16	0.00	0.00	0.00
10,700.00	90.83	90.29	6,602.44	350.87	2,730.96	2,729.15	0.00	0.00	0.00
10,800.00	90.83	90.29	6,601.00	350.36	2,830.95	2,829.14	0.00	0.00	0.00
10,900.00	90.83	90.29	6,599.56	349.86	2,930.94	2,929.13	0.00	0.00	0.00
11,000.00	90.83	90.29	6,598.12	349.35	3,030.93	3,029.12	0.00	0.00	0.00
11,100.00	90.83	90.29	6,596.68	348.84	3,130.91	3,129.11	0.00	0.00	0.00
11,200.00	90.83	90.29	6,595.24	348.34	3,230.90	3,229.10	0.00	0.00	0.00
11,300.00	90.83	90.29	6,593.80	347.83	3,330.89	3,329.09	0.00	0.00	0.00
11,400.00	90.83	90.29	6,592.36	347.33	3,430.88	3,429.08	0.00	0.00	0.00
11,500.00	90.83	90.29	6,590.92	346.82	3,530.87	3,529.07	0.00	0.00	0.00
11,600.00	90.83	90.29	6,589.48	346.32	3,630.86	3,629.06	0.00	0.00	0.00
11,700.00	90.83	90.29	6,588.04	345.81	3,730.84	3,729.05	0.00	0.00	0.00
11,800.00	90.83	90.29	6,586.60	345.30	3,830.83	3,829.04	0.00	0.00	0.00
11,900.00	90.83	90.29	6,585.15	344.80	3,930.82	3,929.03	0.00	0.00	0.00
12,000.00	90.83	90.29	6,583.71	344.29	4,030.81	4,029.02	0.00	0.00	0.00
12,100.00	90.83	90.29	6,582.27	343.79	4,130.80	4,129.01	0.00	0.00	0.00
12,200.00	90.83	90.29	6,580.83	343.28	4,230.79	4,228.99	0.00	0.00	0.00
12,300.00	90.83	90.29	6,579.39	342.78	4,330.77	4,328.98	0.00	0.00	0.00
12,400.00	90.83	90.29	6,577.95	342.27	4,430.76	4,428.97	0.00	0.00	0.00
12,500.00	90.83	90.29	6,576.51	341.76	4,530.75	4,528.96	0.00	0.00	0.00
12,600.00	90.83	90.29	6,575.07	341.26	4,630.74	4,628.95	0.00	0.00	0.00
12,700.00	90.83	90.29	6,573.63	340.75	4,730.73	4,728.94	0.00	0.00	0.00
12,800.00	90.83	90.29	6,572.19	340.25	4,830.72	4,828.93	0.00	0.00	0.00
12,900.00	90.83	90.29	6,570.75	339.74	4,930.70	4,928.92	0.00	0.00	0.00
13,000.00	90.83	90.29	6,569.31	339.24	5,030.69	5,028.91	0.00	0.00	0.00
13,100.00	90.83	90.29	6,567.87	338.73	5,130.68	5,128.90	0.00	0.00	0.00
13,200.00	90.83	90.29	6,566.43	338.22	5,230.67	5,228.89	0.00	0.00	0.00
13,300.00	90.83	90.29	6,564.99	337.72	5,330.66	5,328.88	0.00	0.00	0.00
13,400.00	90.83	90.29	6,563.55	337.21	5,430.65	5,428.87	0.00	0.00	0.00
13,500.00	90.83	90.29	6,562.11	336.71	5,530.64	5,528.86	0.00	0.00	0.00
13,600.00	90.83	90.29	6,560.67	336.20	5,630.62	5,628.85	0.00	0.00	0.00
13,700.00	90.83	90.29	6,559.22	335.69	5,730.61	5,728.84	0.00	0.00	0.00
13,800.00	90.83	90.29	6,557.78	335.19	5,830.60	5,828.83	0.00	0.00	0.00
13,900.00	90.83	90.29	6,556.34	334.68	5,930.59	5,928.82	0.00	0.00	0.00
14,000.00	90.83	90.29	6,554.90	334.18	6,030.58	6,028.81	0.00	0.00	0.00
14,100.00	90.83	90.29	6,553.46	333.67	6,130.57	6,128.80	0.00	0.00	0.00
14,200.00	90.83	90.29	6,552.02	333.17	6,230.55	6,228.79	0.00	0.00	0.00
14,300.00	90.83	90.29	6,550.58	332.66	6,330.54	6,328.78	0.00	0.00	0.00
14,400.00	90.83	90.29	6,549.14	332.15	6,430.53	6,428.77	0.00	0.00	0.00
14,500.00	90.83	90.29	6,547.70	331.65	6,530.52	6,528.76	0.00	0.00	0.00
14,600.00	90.83	90.29	6,546.26	331.14	6,630.51	6,628.75	0.00	0.00	0.00
14,700.00	90.83	90.29	6,544.82	330.64	6,730.50	6,728.74	0.00	0.00	0.00
14,800.00	90.83	90.29	6,543.38	330.13	6,830.48	6,828.73	0.00	0.00	0.00
14,900.00	90.83	90.29	6,541.94	329.63	6,930.47	6,928.71	0.00	0.00	0.00

# SDT Planning Report

<b>Database:</b>	EDM 5000 Multi User Db	<b>Local Co-ordinate Reference:</b>	Well Ignacio 33-7 29P #1H
<b>Company:</b>	Logos Operating LLC	<b>TVD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Project:</b>	La Plata, CO (NAD83)	<b>MD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

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)	
15,000.00	90.83	90.29	6,540.50	329.12	7,030.46	7,028.70	0.00	0.00	0.00	
15,100.00	90.83	90.29	6,539.06	328.61	7,130.45	7,128.69	0.00	0.00	0.00	
15,200.00	90.83	90.29	6,537.62	328.11	7,230.44	7,228.68	0.00	0.00	0.00	
15,300.00	90.83	90.29	6,536.18	327.60	7,330.43	7,328.67	0.00	0.00	0.00	
15,400.00	90.83	90.29	6,534.74	327.10	7,430.41	7,428.66	0.00	0.00	0.00	
15,500.00	90.83	90.29	6,533.29	326.59	7,530.40	7,528.65	0.00	0.00	0.00	
15,600.00	90.83	90.29	6,531.85	326.09	7,630.39	7,628.64	0.00	0.00	0.00	
15,700.00	90.83	90.29	6,530.41	325.58	7,730.38	7,728.63	0.00	0.00	0.00	
15,800.00	90.83	90.29	6,528.97	325.07	7,830.37	7,828.62	0.00	0.00	0.00	
15,900.00	90.83	90.29	6,527.53	324.57	7,930.36	7,928.61	0.00	0.00	0.00	
16,000.00	90.83	90.29	6,526.09	324.06	8,030.34	8,028.60	0.00	0.00	0.00	
16,100.00	90.83	90.29	6,524.65	323.56	8,130.33	8,128.59	0.00	0.00	0.00	
16,200.00	90.83	90.29	6,523.21	323.05	8,230.32	8,228.58	0.00	0.00	0.00	
16,300.00	90.83	90.29	6,521.77	322.55	8,330.31	8,328.57	0.00	0.00	0.00	
16,357.64	90.83	90.29	6,520.94	322.25	8,387.94	8,386.20	0.00	0.00	0.00	
<b>FPP @ 600' FEL</b>										
16,400.00	90.83	90.29	6,520.33	322.04	8,430.30	8,428.56	0.00	0.00	0.00	
16,492.65	90.83	90.29	6,519.00	321.57	8,522.94	8,521.20	0.00	0.00	0.00	
<b>TD at 16492.65' MD @ 465' FEL</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
IGN 29 #1H SHL - hit/miss target - Shape - Point	0.00	0.00	0.00	0.00	0.00	1,153,445.61	2,379,429.09	37.068673	-107.627033	
IGN 29 #1H PBHL - plan misses target center by 0.01usft at 16492.65usft MD (6519.00 TVD, 321.57 N, 8522.94 E) - Point	0.00	0.00	6,519.00	321.58	8,522.94	1,153,573.05	2,387,957.15	37.069553	-107.597822	
IGN 29 #1H FPP - plan hits target center - Point	0.00	0.00	6,520.94	322.25	8,387.94	1,153,576.79	2,387,822.20	37.069555	-107.598285	
IGN 29 #1H POE - plan hits target center - Point	0.00	0.00	6,654.03	368.98	-849.78	1,153,833.84	2,378,587.94	37.069686	-107.629945	

# SDT

## Planning Report

<b>Database:</b>	EDM 5000 Multi User Db	<b>Local Co-ordinate Reference:</b>	Well Ignacio 33-7 29P #1H
<b>Company:</b>	Logos Operating LLC	<b>TVD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Project:</b>	La Plata, CO (NAD83)	<b>MD Reference:</b>	6419.2+30 @ 6449.20usft (H&P 530)
<b>Site:</b>	Ignacio 33-7 29P Pad	<b>North Reference:</b>	True
<b>Well:</b>	Ignacio 33-7 29P #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Prelim 9		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,468.25	1,452.00	Ojo Alamo				
1,605.09	1,584.00	Kirtland				
2,561.92	2,507.00	Fruitland				
2,665.59	2,607.00	Top of Coals				
2,863.59	2,798.00	Base of Coals				
3,061.59	2,989.00	Pictured Cliffs				
3,188.07	3,111.00	Lewis				
4,284.85	4,169.00	Chacra				
4,824.95	4,690.00	Upper Cliff House				
5,196.08	5,048.00	Cliff House				
5,276.94	5,126.00	Menefee				
5,431.33	5,275.00	Point Lookout				
6,095.05	5,921.00	Mancos				
6,698.53	6,490.00	Black Top				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
500.00	500.00	0.00	0.00	Start Build 2.00	
1,264.15	1,255.12	25.23	-98.12	Start 4089.50 hold at 1264.15 MD	
5,353.65	5,200.00	293.67	-1,142.10	Start DLS 0.50 TFO 180.00	
6,153.20	5,978.00	339.41	-1,320.00	Start Drop -0.50	
6,253.20	6,076.15	344.18	-1,338.53	Start DLS 11.70 TFO 165.59	
7,118.84	6,654.03	368.98	-849.78	Start 9238.80 hold at 7118.84 MD	
16,357.64	6,520.94	322.25	8,387.94	FPP @ 600' FEL	
16,492.65	6,519.00	321.57	8,522.94	TD at 16492.65' MD @ 465' FEL	