

DISTRICT I
1325 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

As Drilled Plat

¹ API Number 30-045-35688		² Pool Code 47540	³ Pool Name NAGEEZI GALLUP
⁴ Property Code 317282	⁵ Property Name HEROS 2308 09L COM		⁶ Well Number #1H
⁷ OGRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC		⁹ Elevation 6916

¹⁰ Surface Location

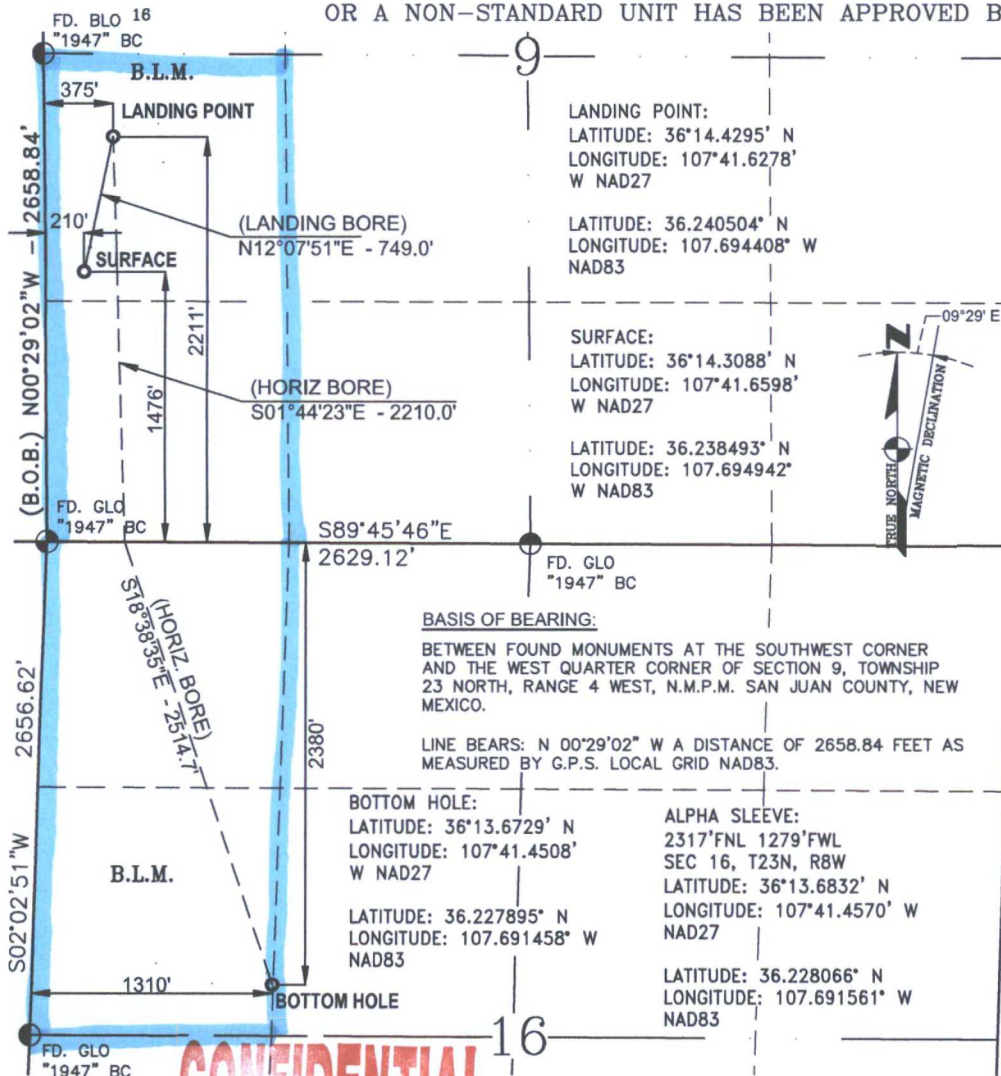
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	9	23-N	8-W		1476	SOUTH	210	WEST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	16	23-N	8-W		2380	NORTH	1310	WEST	SAN JUAN

¹² Dedicated Acres 160ACRE= W/2SW/4 SEC 9 W/2NW/4 SEC 16	¹³ Joint or Infill	¹⁴ Consolidation Code CA - NMNM136868	¹⁵ Order No.
---	-------------------------------	--	-------------------------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein
is true and complete to the best of my knowledge and
belief, and that this organization either owns
a working interest or unleased mineral interest in the
land including the proposed bottom hole location or
has a right to drill this well at this location pursuant
to a contract with an owner of such a mineral or
a working interest, or to a voluntary pooling agreement
or a compulsory pooling order heretofore entered by the
division.

Tamra Sessions 9/8/17
Signature Date
Tamra Sessions
Printed Name
tsessions@logosresourcesllc.com
E-mail Address

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat
was plotted from field notes of actual surveys made by
me or under my supervision, and that the same is true
and correct to the best of my belief.

SEPTEMBER 8, 2017
Date of Survey
Signature and Seal of
GLEN W. RUSSELL
NEW MEXICO
15703
LICENSED PROFESSIONAL SURVEYOR
GLEN W. RUSSELL
Certificate Number 15703

CONFIDENTIAL

AV

8



Project: San Juan County, NM
Site: S9-T23N-R8W
Well: HEROS 2308 09L COM #1H
Wellbore: OH
Design: FINAL

PROJECT DETAILS: San Juan County, NM

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone

SITE DETAILS: S9-T23N-R8W

Well Centre Northing: 1906138.82
Easting: 2763902.48

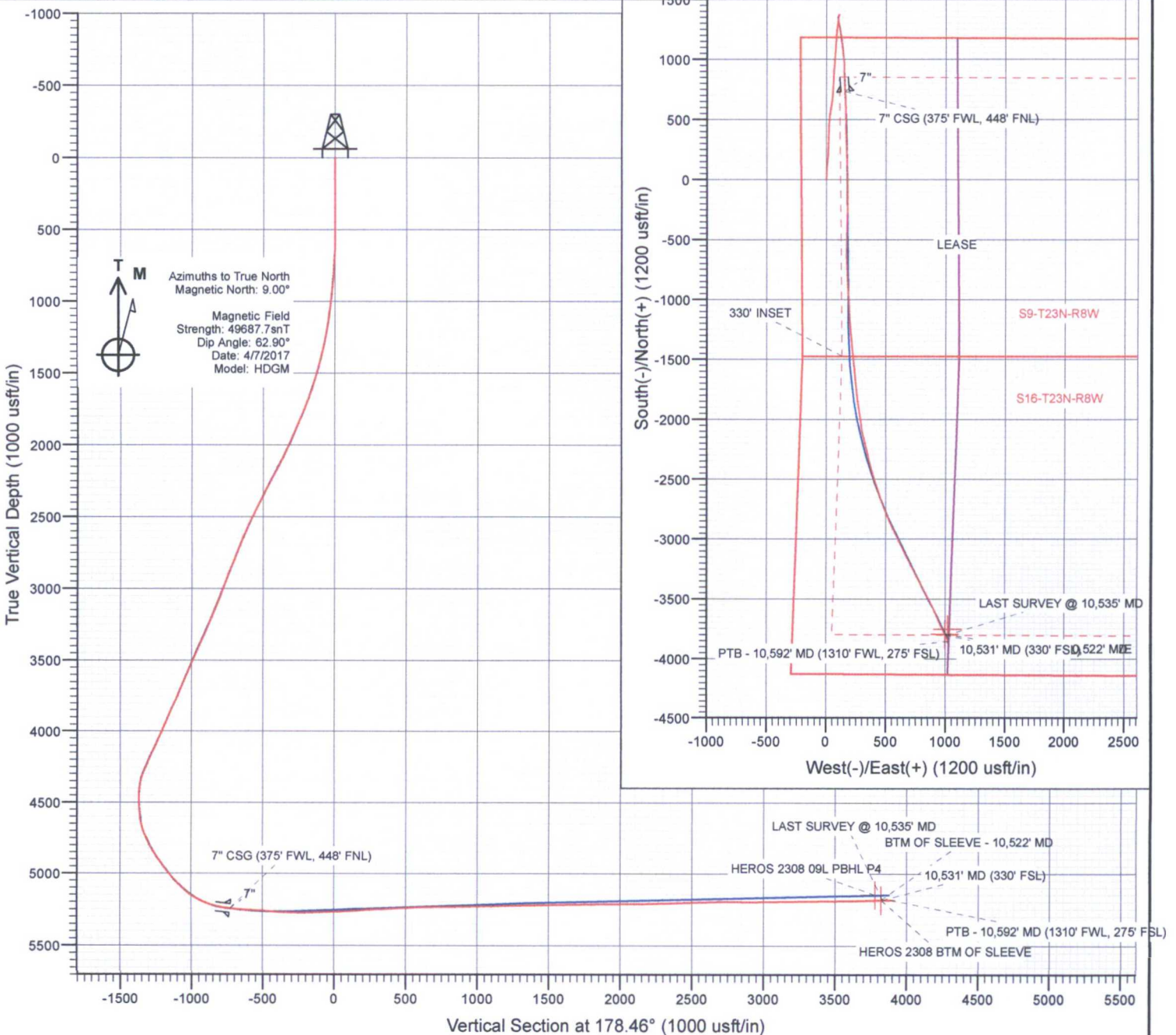
Positional Uncertainty: 0.00
Convergence: 0.08
Local North: True

SHL: 1476' FSL & 210' FWL
SEC 9 T2N 23N R8W
BHL: 2372' FNL & 1314' FWL
SEC 16 T2N 23N R8W

LANDING PT / 7" CSG:
2273' FSL & 380' FWL
SEC 9 T2N 23N R8W

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
HEROS 2308 09L PBHL P45150.00		-3753.71	1021.40	1902386.58	2764929.24	36.228181	-107.691479
HEROS 2308 BTM OF SLEEVE	37.37	-3795.71	997.22	1902344.54	2764905.12	36.228066	-107.691561



WELL DETAILS: HEROS 2308 09L COM #1H

+N/-S	+E/-W	Northing	Ground Level: Easting	6916.00	Latitude	Longitude
0.00	0.00	1906138.82	2763902.48		36.238493	-107.694942

CONFIDENTIAL

CATHEDRAL



LOGOS Operating LLC

San Juan County, NM

S9-T23N-R8W

HEROS 2308 09L COM #1H

OH

Survey: Survey #1

Survey Report - Geographic

23 August, 2017

Cathedral Energy Services

Survey Report - Geographic

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well HEROS 2308 09L COM #1H
Project:	San Juan County, NM	TVD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Site:	S9-T23N-R8W	MD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Well:	HEROS 2308 09L COM #1H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	San Juan County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site		S9-T23N-R8W			
Site Position:		Northing:	1,906,138.83 usft	Latitude:	36.238493
From:	Map	Easting:	2,763,902.48 usft	Longitude:	-107.694942
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.08 °

Well	HEROS 2308 09L COM #1H					
Well Position	+N/-S	0.00 usft	Northing:	1,906,138.82 usft	Latitude:	36.238493
	+E/-W	0.00 usft	Easting:	2,763,902.48 usft	Longitude:	-107.694942
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,916.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/7/2017	9.00	62.90	49,687.70000000

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	178.46	

Survey Program	Date	8/23/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
404.00	10,592.00	Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	1,906,138.82	2,763,902.48	36.238493	-107.694942	
404.00	0.22	120.36	404.00	-0.39	0.67	1,906,138.43	2,763,903.15	36.238492	-107.694940	
465.00	0.13	330.06	465.00	-0.39	0.74	1,906,138.43	2,763,903.22	36.238492	-107.694940	
526.00	0.09	191.20	526.00	-0.38	0.69	1,906,138.45	2,763,903.17	36.238492	-107.694940	
587.00	0.22	35.19	587.00	-0.33	0.75	1,906,138.49	2,763,903.23	36.238492	-107.694940	
649.00	1.23	11.64	648.99	0.42	0.95	1,906,139.24	2,763,903.43	36.238494	-107.694939	
710.00	3.34	5.48	709.94	2.83	1.25	1,906,141.65	2,763,903.73	36.238501	-107.694938	
772.00	3.74	0.04	771.82	6.65	1.43	1,906,145.47	2,763,903.90	36.238511	-107.694937	
833.00	4.83	2.32	832.65	11.21	1.53	1,906,150.03	2,763,904.00	36.238524	-107.694937	
894.00	5.89	1.97	893.38	16.90	1.75	1,906,155.72	2,763,904.20	36.238539	-107.694936	
956.00	6.11	1.00	955.04	23.38	1.91	1,906,162.20	2,763,904.36	36.238557	-107.694936	
1,017.00	6.28	358.45	1,015.69	29.96	1.88	1,906,168.78	2,763,904.32	36.238575	-107.694936	

Cathedral Energy Services

Survey Report - Geographic

Company: LOGOS Operating LLC
Project: San Juan County, NM
Site: S9-T23N-R8W
Well: HEROS 2308 09L COM #1H
Wellbore: OH
Design: FINAL

Local Co-ordinate Reference: Well HEROS 2308 09L COM #1H
TVD Reference: 14' KB @ 6930.00usft (AZTEC 920)
MD Reference: 14' KB @ 6930.00usft (AZTEC 920)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,078.00	7.43	358.81	1,076.25	37.24	1.71	1,906,176.06	2,763,904.14	36.238595	-107.694936
1,139.00	8.31	1.62	1,136.68	45.59	1.75	1,906,184.41	2,763,904.17	36.238618	-107.694936
1,200.00	9.84	359.42	1,196.91	55.21	1.82	1,906,194.03	2,763,904.22	36.238645	-107.694936
1,262.00	11.38	1.09	1,257.85	66.62	1.88	1,906,205.45	2,763,904.27	36.238676	-107.694936
1,323.00	12.35	4.69	1,317.55	79.14	2.53	1,906,217.97	2,763,904.90	36.238710	-107.694934
1,383.00	13.76	6.80	1,375.99	92.62	3.90	1,906,231.45	2,763,906.25	36.238747	-107.694929
1,444.00	14.81	9.00	1,435.11	107.52	5.98	1,906,246.36	2,763,908.31	36.238788	-107.694922
1,504.00	16.48	8.74	1,492.88	123.51	8.47	1,906,262.35	2,763,910.78	36.238832	-107.694914
1,565.00	16.74	6.01	1,551.34	140.80	10.71	1,906,279.64	2,763,912.99	36.238880	-107.694906
1,626.00	18.46	4.69	1,609.48	159.16	12.42	1,906,298.00	2,763,914.67	36.238930	-107.694900
1,687.00	20.65	3.81	1,666.96	179.52	13.92	1,906,318.37	2,763,916.15	36.238986	-107.694895
1,748.00	22.02	4.87	1,723.78	201.65	15.61	1,906,340.50	2,763,917.80	36.239047	-107.694889
1,809.00	23.03	4.08	1,780.12	224.95	17.43	1,906,363.80	2,763,919.59	36.239111	-107.694883
1,870.00	22.94	3.29	1,836.28	248.72	18.96	1,906,387.57	2,763,921.09	36.239176	-107.694878
1,932.00	22.72	1.88	1,893.42	272.75	20.04	1,906,411.60	2,763,922.14	36.239242	-107.694874
1,993.00	23.64	0.30	1,949.50	296.75	20.50	1,906,435.60	2,763,922.55	36.239308	-107.694873
2,054.00	24.92	359.60	2,005.10	321.83	20.47	1,906,460.69	2,763,922.49	36.239377	-107.694873
2,116.00	26.41	1.00	2,060.99	348.68	20.62	1,906,487.54	2,763,922.60	36.239451	-107.694872
2,177.00	27.25	0.91	2,115.42	376.21	21.08	1,906,515.06	2,763,923.02	36.239527	-107.694871
2,238.00	27.69	0.04	2,169.54	404.35	21.31	1,906,543.20	2,763,923.21	36.239604	-107.694870
2,299.00	28.30	0.12	2,223.40	432.98	21.35	1,906,571.83	2,763,923.21	36.239682	-107.694870
2,359.00	26.94	3.02	2,276.57	460.78	22.10	1,906,599.63	2,763,923.92	36.239759	-107.694867
2,420.00	26.46	4.78	2,331.06	488.12	23.96	1,906,626.98	2,763,925.74	36.239834	-107.694861
2,482.00	27.55	6.10	2,386.30	516.14	26.63	1,906,655.00	2,763,928.38	36.239911	-107.694852
2,544.00	27.60	7.07	2,441.26	544.65	29.92	1,906,683.52	2,763,931.63	36.239989	-107.694841
2,607.00	26.32	9.18	2,497.41	572.93	33.95	1,906,711.80	2,763,935.61	36.240067	-107.694827
2,670.00	24.96	10.93	2,554.21	599.77	38.70	1,906,738.65	2,763,940.32	36.240141	-107.694811
2,734.00	24.21	10.32	2,612.41	625.94	43.61	1,906,764.82	2,763,945.19	36.240213	-107.694794
2,798.00	22.32	8.39	2,671.20	650.87	47.73	1,906,789.76	2,763,949.28	36.240281	-107.694780
2,862.00	21.97	6.89	2,730.48	674.78	50.94	1,906,813.68	2,763,952.46	36.240347	-107.694770
2,926.00	23.07	5.66	2,789.60	699.15	53.61	1,906,838.04	2,763,955.10	36.240414	-107.694760
2,989.00	22.46	4.61	2,847.69	723.43	55.80	1,906,862.33	2,763,957.25	36.240480	-107.694753
3,053.00	20.92	3.81	2,907.16	747.01	57.54	1,906,885.92	2,763,958.96	36.240545	-107.694747
3,117.00	20.39	2.94	2,967.04	769.55	58.87	1,906,908.45	2,763,960.25	36.240607	-107.694743
3,180.00	19.91	1.62	3,026.19	791.23	59.74	1,906,930.14	2,763,961.09	36.240667	-107.694740
3,244.00	21.49	1.71	3,086.06	813.84	60.40	1,906,952.75	2,763,961.72	36.240729	-107.694737
3,307.00	22.06	2.15	3,144.56	837.20	61.18	1,906,976.11	2,763,962.47	36.240793	-107.694735
3,371.00	22.54	2.06	3,203.77	861.47	62.08	1,907,000.38	2,763,963.33	36.240860	-107.694732
3,435.00	23.56	2.76	3,262.66	886.50	63.13	1,907,025.42	2,763,964.35	36.240928	-107.694728
3,498.00	25.05	4.78	3,320.08	912.37	64.85	1,907,051.29	2,763,966.03	36.240999	-107.694722
3,561.00	24.65	5.05	3,377.25	938.75	67.12	1,907,077.67	2,763,968.26	36.241072	-107.694715
3,624.00	24.43	4.43	3,434.55	964.83	69.28	1,907,103.75	2,763,970.38	36.241143	-107.694707
3,688.00	22.94	3.46	3,493.16	990.47	71.06	1,907,129.40	2,763,972.12	36.241214	-107.694701
3,752.00	22.76	3.99	3,552.14	1,015.27	72.67	1,907,154.20	2,763,973.70	36.241282	-107.694696
3,816.00	23.12	4.52	3,611.08	1,040.15	74.52	1,907,179.08	2,763,975.52	36.241350	-107.694690
3,879.00	23.69	4.87	3,668.89	1,065.09	76.57	1,907,204.02	2,763,977.53	36.241419	-107.694683
3,943.00	23.25	4.43	3,727.60	1,090.50	78.64	1,907,229.43	2,763,979.56	36.241489	-107.694676
4,006.00	24.04	3.55	3,785.31	1,115.70	80.39	1,907,254.64	2,763,981.28	36.241558	-107.694670
4,070.00	23.42	2.76	3,843.90	1,141.42	81.81	1,907,280.36	2,763,982.66	36.241629	-107.694665
4,134.00	23.07	1.71	3,902.70	1,166.66	82.80	1,907,305.59	2,763,983.62	36.241698	-107.694661
4,198.00	23.07	2.67	3,961.59	1,191.71	83.76	1,907,330.66	2,763,984.54	36.241767	-107.694658
4,262.00	24.21	3.81	4,020.21	1,217.34	85.21	1,907,356.28	2,763,985.96	36.241837	-107.694653
4,326.00	25.44	6.63	4,078.30	1,244.09	87.67	1,907,383.03	2,763,988.38	36.241911	-107.694645
4,389.00	26.24	9.09	4,135.00	1,271.28	91.44	1,907,410.23	2,763,992.10	36.241985	-107.694632
4,452.00	25.14	8.65	4,191.78	1,298.26	95.65	1,907,437.22	2,763,996.28	36.242059	-107.694618

Cathedral Energy Services

Survey Report - Geographic

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well HEROS 2308 09L COM #1H
Project:	San Juan County, NM	TVD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Site:	S9-T23N-R8W	MD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Well:	HEROS 2308 09L COM #1H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,516.00	22.90	7.77	4,250.23	1,324.04	99.38	1,907,463.01	2,763,999.97	36.242130	-107.694605	
4,539.00	22.90	6.72	4,271.42	1,332.92	100.51	1,907,471.89	2,764,001.08	36.242155	-107.694601	
4,571.00	20.57	7.33	4,301.14	1,344.68	101.95	1,907,483.65	2,764,002.51	36.242187	-107.694597	
4,603.00	15.73	11.64	4,331.54	1,354.51	103.55	1,907,493.48	2,764,004.09	36.242214	-107.694591	
4,635.00	10.11	18.76	4,362.72	1,361.43	105.33	1,907,500.40	2,764,005.86	36.242233	-107.694585	
4,666.00	9.60	30.97	4,393.27	1,366.22	107.53	1,907,505.19	2,764,008.06	36.242246	-107.694578	
4,699.00	5.05	46.00	4,425.99	1,369.59	109.99	1,907,508.57	2,764,010.52	36.242255	-107.694569	
4,731.00	1.01	102.08	4,457.94	1,370.51	111.28	1,907,509.49	2,764,011.81	36.242258	-107.694565	
4,763.00	3.91	251.58	4,489.92	1,370.11	110.52	1,907,509.08	2,764,011.05	36.242257	-107.694567	
4,795.00	8.26	240.94	4,521.73	1,368.64	107.48	1,907,507.62	2,764,008.00	36.242253	-107.694578	
4,826.00	6.60	229.70	4,552.48	1,366.41	104.17	1,907,505.38	2,764,004.70	36.242247	-107.694589	
4,858.00	4.75	198.32	4,584.32	1,363.96	102.35	1,907,502.93	2,764,002.89	36.242240	-107.694595	
4,890.00	9.14	198.40	4,616.08	1,360.29	101.13	1,907,499.26	2,764,001.67	36.242230	-107.694599	
4,922.00	12.92	192.52	4,647.49	1,354.38	99.55	1,907,493.35	2,764,000.10	36.242214	-107.694605	
4,954.00	16.04	180.39	4,678.47	1,346.47	98.75	1,907,485.43	2,763,999.31	36.242192	-107.694607	
4,986.00	21.09	174.76	4,708.80	1,336.31	99.24	1,907,475.27	2,763,999.82	36.242164	-107.694606	
5,018.00	24.52	172.21	4,738.29	1,323.99	100.67	1,907,462.95	2,764,001.26	36.242130	-107.694601	
5,050.00	25.40	172.39	4,767.31	1,310.61	102.48	1,907,449.58	2,764,003.09	36.242093	-107.694595	
5,082.00	26.81	171.07	4,796.04	1,296.68	104.51	1,907,435.65	2,764,005.14	36.242055	-107.694588	
5,114.00	29.71	169.49	4,824.22	1,281.75	107.08	1,907,420.72	2,764,007.73	36.242014	-107.694579	
5,145.00	32.34	166.94	4,850.79	1,266.11	110.35	1,907,405.09	2,764,011.03	36.241971	-107.694568	
5,176.00	34.10	166.15	4,876.72	1,249.60	114.31	1,907,388.58	2,764,015.00	36.241926	-107.694555	
5,208.00	35.33	168.08	4,903.03	1,231.83	118.36	1,907,370.82	2,764,019.09	36.241877	-107.694541	
5,239.00	36.96	168.87	4,928.06	1,213.92	122.02	1,907,352.91	2,764,022.76	36.241828	-107.694529	
5,271.00	37.44	171.07	4,953.55	1,194.87	125.38	1,907,333.87	2,764,026.16	36.241775	-107.694517	
5,303.00	38.54	173.80	4,978.77	1,175.35	127.97	1,907,314.35	2,764,028.77	36.241722	-107.694508	
5,334.00	38.58	175.64	5,003.01	1,156.11	129.75	1,907,295.11	2,764,030.58	36.241669	-107.694502	
5,366.00	39.38	174.59	5,027.89	1,136.05	131.46	1,907,275.06	2,764,032.32	36.241614	-107.694496	
5,398.00	42.32	175.20	5,052.09	1,115.21	133.32	1,907,254.22	2,764,034.21	36.241557	-107.694490	
5,430.00	45.57	175.38	5,075.13	1,093.08	135.14	1,907,232.09	2,764,036.06	36.241496	-107.694484	
5,462.00	47.99	175.64	5,097.04	1,069.83	136.97	1,907,208.85	2,764,037.92	36.241432	-107.694478	
5,494.00	49.48	171.86	5,118.15	1,045.93	139.59	1,907,184.95	2,764,040.58	36.241366	-107.694469	
5,526.00	52.38	171.07	5,138.31	1,021.37	143.29	1,907,160.39	2,764,044.31	36.241299	-107.694456	
5,558.00	55.55	173.80	5,157.14	995.72	146.68	1,907,134.75	2,764,047.74	36.241228	-107.694445	
5,589.00	58.71	176.17	5,173.96	969.79	148.94	1,907,108.82	2,764,050.04	36.241157	-107.694437	
5,622.00	63.24	178.37	5,189.97	940.97	150.31	1,907,080.01	2,764,051.44	36.241078	-107.694433	
5,653.00	67.15	179.95	5,202.98	912.84	150.71	1,907,051.88	2,764,051.89	36.241001	-107.694431	
5,685.00	70.53	180.48	5,214.53	883.01	150.60	1,907,022.04	2,764,051.82	36.240919	-107.694432	
5,716.00	73.30	179.16	5,224.15	853.54	150.69	1,906,992.58	2,764,051.96	36.240838	-107.694431	
5,748.00	77.30	177.93	5,232.27	822.61	151.48	1,906,961.64	2,764,052.79	36.240753	-107.694429	
5,779.00	80.64	176.52	5,238.20	792.22	152.96	1,906,931.26	2,764,054.31	36.240669	-107.694424	
5,811.00	82.44	175.29	5,242.91	760.65	155.22	1,906,899.69	2,764,056.61	36.240583	-107.694416	
5,843.00	82.88	175.11	5,246.99	729.02	157.87	1,906,868.07	2,764,059.32	36.240496	-107.694407	
5,868.00	83.45	176.26	5,249.97	704.27	159.74	1,906,843.32	2,764,061.22	36.240428	-107.694401	
5,899.00	85.47	179.60	5,252.96	673.44	160.85	1,906,812.49	2,764,062.37	36.240343	-107.694397	
5,931.00	86.00	179.77	5,255.34	641.53	161.03	1,906,780.58	2,764,062.60	36.240255	-107.694396	
5,962.00	86.75	179.77	5,257.30	610.59	161.15	1,906,749.65	2,764,062.76	36.240170	-107.694396	
5,994.00	87.72	179.16	5,258.85	578.63	161.45	1,906,717.69	2,764,063.11	36.240083	-107.694395	
6,026.00	87.80	178.80	5,260.10	546.66	162.02	1,906,685.72	2,764,063.72	36.239995	-107.694393	
6,057.00	87.23	179.16	5,261.44	515.70	162.57	1,906,654.75	2,764,064.32	36.239910	-107.694391	
6,089.00	86.31	179.16	5,263.24	483.75	163.04	1,906,622.81	2,764,064.83	36.239822	-107.694389	
6,121.00	85.12	178.63	5,265.63	451.85	163.66	1,906,590.90	2,764,065.49	36.239734	-107.694387	
6,152.00	85.30	178.28	5,268.22	420.97	164.49	1,906,560.03	2,764,066.37	36.239649	-107.694384	
6,184.00	86.09	178.45	5,270.63	389.07	165.40	1,906,528.13	2,764,067.33	36.239562	-107.694381	
6,245.00	88.24	176.87	5,273.64	328.20	167.89	1,906,467.26	2,764,069.90	36.239395	-107.694373	

Cathedral Energy Services

Survey Report - Geographic

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well HEROS 2308 09L COM #1H
Project:	San Juan County, NM	TVD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Site:	S9-T23N-R8W	MD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Well:	HEROS 2308 09L COM #1H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude Longitude		
6,307.00	89.56	177.40	5,274.83	266.29	170.99	1,906,405.36	2,764,073.09	36.239225	-107.694362	
6,369.00	90.79	177.93	5,274.64	204.35	173.51	1,906,343.42	2,764,075.70	36.239054	-107.694354	
6,430.00	91.49	178.28	5,273.43	143.39	175.53	1,906,282.47	2,764,077.81	36.238887	-107.694347	
6,491.00	91.80	178.98	5,271.68	82.44	176.99	1,906,221.51	2,764,079.35	36.238719	-107.694342	
6,552.00	91.98	178.54	5,269.67	21.48	178.31	1,906,160.56	2,764,080.76	36.238552	-107.694338	
6,612.00	92.64	179.24	5,267.25	-38.46	179.47	1,906,100.62	2,764,082.00	36.238387	-107.694334	
6,673.00	93.16	179.42	5,264.16	-99.37	180.18	1,906,039.71	2,764,082.80	36.238220	-107.694331	
6,735.00	93.47	179.86	5,260.58	-161.27	180.57	1,905,977.81	2,764,083.28	36.238050	-107.694330	
6,797.00	94.00	181.27	5,256.54	-223.13	179.96	1,905,915.95	2,764,082.76	36.237880	-107.694332	
6,858.00	93.43	181.62	5,252.59	-283.98	178.42	1,905,855.09	2,764,081.31	36.237713	-107.694337	
6,920.00	92.42	181.79	5,249.42	-345.88	176.58	1,905,793.20	2,764,079.56	36.237543	-107.694343	
6,981.00	93.82	181.79	5,246.10	-406.75	174.68	1,905,732.32	2,764,077.74	36.237376	-107.694350	
7,042.00	92.99	181.97	5,242.48	-467.61	172.68	1,905,671.46	2,764,075.83	36.237208	-107.694357	
7,104.00	92.59	181.53	5,239.46	-529.51	170.79	1,905,609.56	2,764,074.03	36.237038	-107.694363	
7,165.00	91.58	180.39	5,237.24	-590.46	169.77	1,905,548.61	2,764,073.09	36.236871	-107.694367	
7,226.00	90.44	178.89	5,236.17	-651.45	170.15	1,905,487.62	2,764,073.57	36.236703	-107.694365	
7,286.00	89.69	178.28	5,236.10	-711.43	171.63	1,905,427.64	2,764,075.13	36.236539	-107.694360	
7,348.00	89.52	177.30	5,236.53	-773.38	174.03	1,905,365.69	2,764,077.61	36.236368	-107.694352	
7,409.00	91.63	176.70	5,235.91	-834.29	177.22	1,905,304.79	2,764,080.89	36.236201	-107.694341	
7,469.00	91.23	176.08	5,234.42	-894.15	180.99	1,905,244.93	2,764,084.75	36.236037	-107.694329	
7,530.00	90.79	176.26	5,233.34	-955.00	185.07	1,905,184.08	2,764,088.91	36.235870	-107.694315	
7,591.00	91.10	176.70	5,232.33	-1,015.88	188.81	1,905,123.21	2,764,092.75	36.235702	-107.694302	
7,651.00	91.49	176.70	5,230.98	-1,075.77	192.27	1,905,063.33	2,764,096.28	36.235538	-107.694290	
7,712.00	91.93	176.78	5,229.16	-1,136.64	195.73	1,905,002.46	2,764,099.84	36.235371	-107.694279	
7,774.00	91.06	175.11	5,227.54	-1,198.46	200.12	1,904,940.65	2,764,104.31	36.235201	-107.694264	
7,835.00	91.01	174.67	5,226.44	-1,259.21	205.55	1,904,879.91	2,764,109.83	36.235034	-107.694245	
7,895.00	91.80	175.99	5,224.97	-1,318.99	210.43	1,904,820.14	2,764,114.80	36.234870	-107.694229	
7,957.00	90.79	175.29	5,223.57	-1,380.79	215.14	1,904,758.34	2,764,119.60	36.234700	-107.694213	
8,018.00	89.91	174.41	5,223.19	-1,441.54	220.62	1,904,697.59	2,764,125.16	36.234533	-107.694194	
8,079.00	90.70	173.09	5,222.87	-1,502.18	227.26	1,904,636.97	2,764,131.89	36.234366	-107.694172	
8,141.00	91.93	172.92	5,221.45	-1,563.70	234.81	1,904,575.46	2,764,139.52	36.234197	-107.694146	
8,202.00	91.01	173.88	5,219.88	-1,624.27	241.82	1,904,514.90	2,764,146.62	36.234031	-107.694122	
8,263.00	89.87	174.67	5,219.41	-1,684.97	247.90	1,904,454.21	2,764,152.79	36.233864	-107.694102	
8,324.00	90.79	174.59	5,219.06	-1,745.70	253.61	1,904,393.49	2,764,158.58	36.233697	-107.694082	
8,385.00	91.80	174.76	5,217.68	-1,806.42	259.27	1,904,332.78	2,764,164.33	36.233531	-107.694063	
8,445.00	90.48	173.09	5,216.49	-1,866.07	265.62	1,904,273.14	2,764,170.76	36.233367	-107.694042	
8,507.00	89.60	172.21	5,216.45	-1,927.56	273.55	1,904,211.66	2,764,178.78	36.233198	-107.694015	
8,569.00	90.92	171.33	5,216.16	-1,988.91	282.42	1,904,150.31	2,764,187.75	36.233029	-107.693985	
8,630.00	91.45	170.90	5,214.90	-2,049.17	291.84	1,904,090.07	2,764,197.25	36.232864	-107.693953	
8,693.00	90.84	169.66	5,213.64	-2,111.25	302.48	1,904,028.01	2,764,207.97	36.232693	-107.693917	
8,756.00	90.22	167.56	5,213.06	-2,173.00	314.92	1,903,966.27	2,764,220.50	36.232524	-107.693874	
8,820.00	90.62	166.32	5,212.59	-2,235.34	329.38	1,903,903.95	2,764,235.05	36.232352	-107.693825	
8,883.00	91.54	165.45	5,211.40	-2,296.43	344.74	1,903,842.89	2,764,250.50	36.232185	-107.693773	
8,947.00	91.71	164.22	5,209.59	-2,358.18	361.48	1,903,781.17	2,764,267.32	36.232015	-107.693717	
9,010.00	91.89	163.86	5,207.61	-2,418.72	378.79	1,903,720.65	2,764,284.73	36.231849	-107.693658	
9,073.00	91.98	162.98	5,205.48	-2,479.06	396.76	1,903,660.33	2,764,302.78	36.231683	-107.693597	
9,135.00	92.59	162.28	5,203.01	-2,538.19	415.25	1,903,601.23	2,764,321.36	36.231520	-107.693534	
9,199.00	91.58	161.58	5,200.68	-2,598.99	435.09	1,903,540.46	2,764,341.28	36.231353	-107.693467	
9,263.00	90.35	160.79	5,199.61	-2,659.56	455.73	1,903,479.92	2,764,362.01	36.231187	-107.693397	
9,326.00	90.40	159.65	5,199.19	-2,718.84	477.05	1,903,420.67	2,764,383.41	36.231024	-107.693325	
9,389.00	89.96	157.98	5,199.00	-2,777.58	499.81	1,903,361.96	2,764,406.26	36.230863	-107.693248	
9,452.00	88.99	156.74	5,199.57	-2,835.72	524.06	1,903,303.85	2,764,430.59	36.230703	-107.693165	
9,515.00	89.47	155.16	5,200.42	-2,893.25	549.73	1,903,246.37	2,764,456.35	36.230545	-107.693078	
9,578.00	90.26	153.67	5,200.57	-2,950.07	576.94	1,903,189.58	2,764,483.63	36.230389	-107.692986	
9,641.00	91.36	153.32	5,199.68	-3,006.44	605.05	1,903,133.25	2,764,511.82	36.230234	-107.692891	

Cathedral Energy Services

Survey Report - Geographic

Company:	LOGOS Operating LLC	Local Co-ordinate Reference:	Well HEROS 2308 09L COM #1H
Project:	San Juan County, NM	TVD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Site:	S9-T23N-R8W	MD Reference:	14' KB @ 6930.00usft (AZTEC 920)
Well:	HEROS 2308 09L COM #1H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,705.00	90.92	153.58	5,198.40	-3,063.68	633.65	1,903,076.05	2,764,540.51	36.230077	-107.692794	
9,768.00	90.35	153.05	5,197.71	-3,119.96	661.94	1,903,019.81	2,764,568.88	36.229922	-107.692698	
9,831.00	91.14	153.14	5,196.89	-3,176.14	690.45	1,902,963.67	2,764,597.46	36.229768	-107.692601	
9,894.00	90.57	152.70	5,195.95	-3,232.23	719.12	1,902,907.63	2,764,626.22	36.229614	-107.692504	
9,958.00	90.57	153.23	5,195.31	-3,289.23	748.21	1,902,850.67	2,764,655.39	36.229457	-107.692405	
10,022.00	90.48	152.44	5,194.72	-3,346.17	777.43	1,902,793.77	2,764,684.69	36.229301	-107.692306	
10,086.00	90.62	151.38	5,194.11	-3,402.62	807.56	1,902,737.35	2,764,714.90	36.229146	-107.692204	
10,149.00	90.00	151.80	5,193.77	-3,458.04	837.54	1,902,681.99	2,764,744.96	36.228993	-107.692102	
10,212.00	90.04	153.23	5,193.75	-3,513.92	866.61	1,902,626.14	2,764,774.11	36.228840	-107.692004	
10,276.00	91.76	154.64	5,192.74	-3,571.40	894.73	1,902,568.70	2,764,802.31	36.228682	-107.691909	
10,340.00	91.32	155.69	5,191.02	-3,629.46	921.60	1,902,510.68	2,764,829.26	36.228523	-107.691817	
10,403.00	91.98	155.87	5,189.21	-3,686.89	947.43	1,902,453.29	2,764,855.18	36.228365	-107.691730	
10,466.00	91.27	155.60	5,187.42	-3,744.30	973.31	1,902,395.91	2,764,881.14	36.228207	-107.691642	
10,522.70	90.84	154.51	5,186.37	-3,795.71	997.22	1,902,344.55	2,764,905.12	36.228066	-107.691561	
BTM OF SLEEVE - 10,522' MD										
10,530.00	90.79	154.37	5,186.27	-3,802.29	1,000.37	1,902,337.96	2,764,908.28	36.228048	-107.691550	
10,531.45	90.82	154.24	5,186.25	-3,803.60	1,001.00	1,902,336.66	2,764,908.91	36.228044	-107.691548	
10,531' MD (330' FSL)										
10,535.00	90.88	153.93	5,186.20	-3,806.79	1,002.55	1,902,333.47	2,764,910.47	36.228035	-107.691543	
LAST SURVEY @ 10,535' MD										
10,592.00	90.88	153.93	5,185.32	-3,857.98	1,027.60	1,902,282.31	2,764,935.59	36.227895	-107.691458	
PTB - 10,592' MD (1310' FWL, 275' FSL)										

Design Targets										
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
HEROS 2308 09L PBHL	- survey misses target center by 54.21usft at 10495.49usft MD (5186.82 TVD, -3771.10 N, 985.63 E)	0.00	0.08	5,150.00	-3,753.71	1,021.40	1,902,386.58	2,764,929.24	36.228181	-107.691479
HEROS 2308 BTM OF S	- survey hits target center	0.00	0.00	5,186.37	-3,795.71	997.22	1,902,344.55	2,764,905.12	36.228066	-107.691561

Survey Annotations										
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment						
10,522.70	5,186.37	+N/-S (usft)	+E/-W (usft)	BTM OF SLEEVE - 10,522' MD						
10,531.45	5,186.25	-3,803.60	1,001.00	10,531' MD (330' FSL)						
10,535.00	5,186.20	-3,806.79	1,002.55	LAST SURVEY @ 10,535' MD						
10,592.00	5,185.32	-3,857.98	1,027.60	PTB - 10,592' MD (1310' FWL, 275' FSL)						

Checked By: _____ Approved By: _____ Date: _____