

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMSF078771
6. If Indian, Allottee or Tribe Name**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
LOGOS OPERATING LLC3a. Address
2010 AFTON PLACE
FARMINGTON, NM 874013b. Phone No. (include area code)
(505) 278-87204. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SEC 25 T31N R06W NE/NE (A) 1080 FNL 258 FEL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No.
ROSA UNIT 650H9. API Well No.
30-039-3141210. Field and Pool or Exploratory Area
BASIN MANCOS11. Country or Parish, State
RIO ARRIBA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off	
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity	
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other	
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon		
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

LOGOS Operating request a change in plans for the following:

Original TD @ 16,449' MD 6987' TVD to **new TD @ 16,438' MD 6987' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6435' MD 6341' TVD to **new KOP @ 6433' MD 6350' TVD**Original Landing point @ 7467' MD 6999' TVD to **new Landing point @ 7454' MD 6999' TVD**Original Intermediate 12.25" hole size, 9.625" casing @ 6335' MD to **new Intermediate casing set depth @ 6325' MD 6244' TVD**Original Production 8.5" hole size, 5.5" casing @ 16,449' MD to **new Production casing set depth @ 16,438' MD 6987' TVD**

The 9.625" Intermediate & 5.5" production casing grade, weight and cement sacks have been update per casing depth changes.

Attached: New C102, Operation and Directional Drill plans.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Etta Trujillo

Title Regulatory Specialist

Signature *Etta Trujillo*

Date 5/31/2022

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462State of New Mexico
Energy, Minerals & Natural Resources DepartmentForm Page 2 of 27
Revised August 1, 2011Submit one copy to
Appropriate District OfficeOIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31412	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 320608	⁵ Property Name ROSA UNIT	⁶ Well Number 650H
⁷ GRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC	⁹ Elevation 6372'

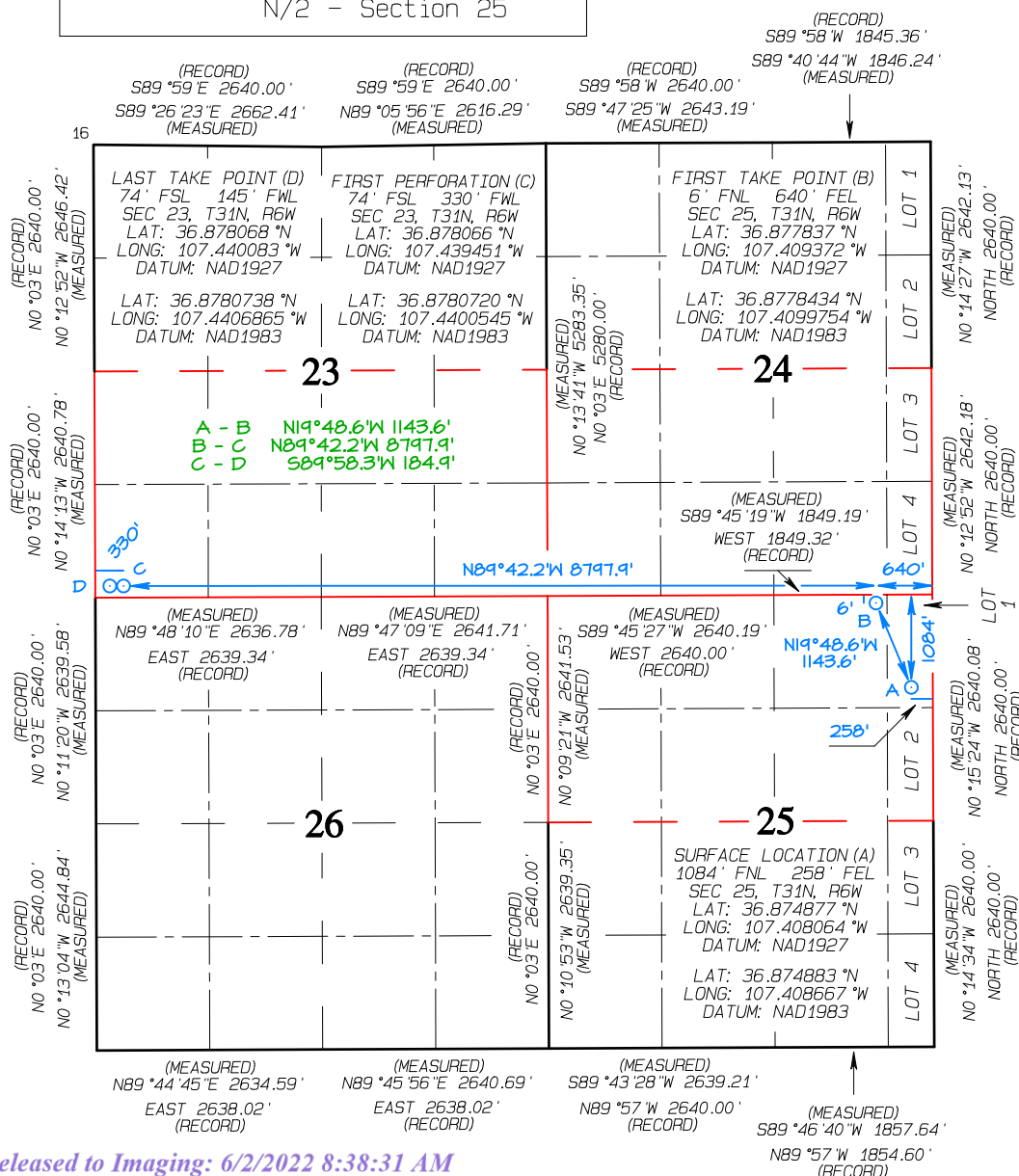
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	25	31N	6W	1	1084	NORTH	258	EAST	RIO ARriba

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
M	23	31N	6W		74	SOUTH	145	WEST	RIO ARriba

¹² Dedicated Acres 864.18	S/2 - Section 23 S/2 - Section 24 N/2 - Section 25	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13457
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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 working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Etta Trujillo 5/11/2022
Signature Date
Printed Name
etrujillo@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.

Date Revised: MAY 9, 2022
Date of Survey: MARCH 15, 2019
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 29
Well: Rosa Unit #650H
Wellbore: OH
Design: Plan #7

PROJECT DETAILS: Rio Arriba, NM NAD83

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Local North: True



WELL DETAILS: Rosa Unit #650H

GL 6372' & RKB 25' @ 6397.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2138058.49	2847301.01	36.8748833	-107.4086666	B10

Plan: Plan #7 (Rosa Unit #650H/OH)

Created By: Janie Collins Date: 11:58, April 08 2022

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Rosa 650H POE Rev 3	6999.00	1077.66	-382.80	2139134.43	2846913.42	36.8778434	-107.4099754
Rosa 650H IP1	6999.00	1127.66	-1182.80	2139180.88	2846113.21	36.8779806	-107.4127106
Rosa 650H BHL Rev 1	6987.00	1163.12	-9365.13	2139179.95	2837930.80	36.8780738	-107.4406865
Rosa 650H FPerf	6987.00	1162.41	-9180.28	2139180.05	2838115.64	36.8780720	-107.4400545

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
650.00	0.00	0.000	650.00	0.00	0.00	0.00	0.00	0.00
1148.57	9.97	14.828	1146.06	41.83	11.08	2.00	14.83	-5.83
6432.78	9.97	14.828	6350.44	926.35	245.25	0.00	0.00	-129.20
7454.29	90.00	273.576	6999.00	1077.66	-382.80	9.00	-101.09	512.70
8255.85	90.00	273.576	6999.00	1127.66	-1182.80	0.00	0.00	1312.76
8424.03	90.08	270.214	6998.88	1133.22	-1350.86	2.00	-88.55	1480.23
16438.37	90.08	270.214	6987.00	1163.12	-9365.13	0.00	0.00	9437.08



Azimuths to True North
Magnetic North: 8.86°

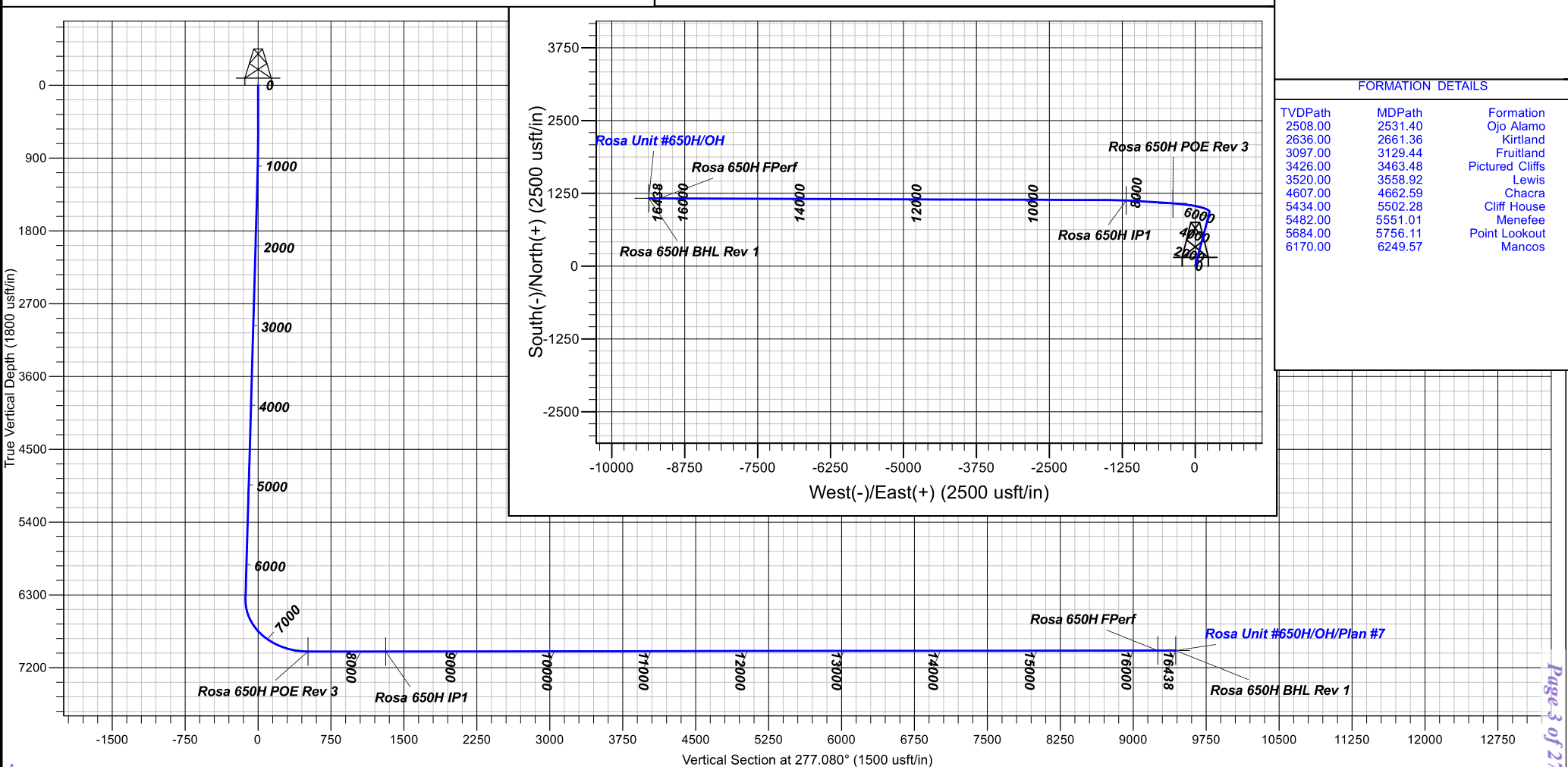
Magnetic Field
Strength: 49909.00
Dip Angle: 63.42°
Date: 3/6/2019
Model: HDGM2021_F

CASING DETAILS

No casing data is available

FORMATION DETAILS

TVDPATH	MDPATH	FORMATION
2508.00	2531.40	Ojo Alamo
2636.00	2661.36	Kirtland
3097.00	3129.44	Fruitland
3426.00	3463.48	Pictured Cliffs
3520.00	3558.92	Lewis
4607.00	4662.59	Chacra
5434.00	5502.28	Cliff House
5482.00	5551.01	Menefee
5684.00	5756.11	Point Lookout
6170.00	6249.57	Mancos





Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 29

Rosa Unit #650H - Slot B10

OH

Plan: Plan #7

Standard Planning Report

08 April, 2022





Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Project	Rio Arriba, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site		Rosa Unit 29			
Site Position:		Northing:	2,138,126.53 usft	Latitude:	36.8750715
From:	Map	Easting:	2,847,195.58 usft	Longitude:	-107.4090261
Position Uncertainty:		0.00 usft	Slot Radius:	13.20 in	

Well	Rosa Unit #650H - Slot B10					
Well Position	+N/-S	0.00 usft	Northing:	2,138,058.49 usft	Latitude:	36.8748833
	+E/-W	0.00 usft	Easting:	2,847,301.01 usft	Longitude:	-107.4086666
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,372.00 usft
Grid Convergence:		0.25 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	3/6/2019	8.88	63.42	49,909.20000000

Design	Plan #7				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	277.080	

Plan Survey Tool Program	Date	4/8/2022			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,438.37 Plan #7 (OH)	MWD+HDGM		
			OWSG MWD + HDGM		

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
650.00	0.00	0.000	650.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,148.57	9.97	14.828	1,146.06	41.83	11.08	2.00	2.00	0.00	14.83	
6,432.78	9.97	14.828	6,350.44	926.35	245.25	0.00	0.00	0.00	0.00	
7,454.29	90.00	273.576	6,999.00	1,077.66	-382.80	9.00	7.83	-9.91	-101.09	Rosa 650H POE Rev
8,255.85	90.00	273.576	6,999.00	1,127.66	-1,182.80	0.00	0.00	0.00	0.00	Rosa 650H IP1
8,424.03	90.08	270.214	6,998.88	1,133.22	-1,350.86	2.00	0.05	-2.00	-88.55	
16,438.37	90.08	270.214	6,987.00	1,163.12	-9,365.13	0.00	0.00	0.00	0.00	Rosa 650H BHL Rev



Lonestar Consulting, LLC

Planning Report



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Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
650.00	0.00	0.000	650.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	1.00	14.828	700.00	0.42	0.11	-0.06	2.00	2.00	0.00
800.00	3.00	14.828	799.93	3.80	1.00	-0.53	2.00	2.00	0.00
900.00	5.00	14.828	899.68	10.54	2.79	-1.47	2.00	2.00	0.00
1,000.00	7.00	14.828	999.13	20.64	5.46	-2.88	2.00	2.00	0.00
1,100.00	9.00	14.828	1,098.15	34.10	9.03	-4.76	2.00	2.00	0.00
1,148.57	9.97	14.828	1,146.06	41.83	11.08	-5.83	2.00	2.00	0.00
1,200.00	9.97	14.828	1,196.71	50.44	13.35	-7.04	0.00	0.00	0.00
1,300.00	9.97	14.828	1,295.20	67.18	17.79	-9.37	0.00	0.00	0.00
1,400.00	9.97	14.828	1,393.69	83.92	22.22	-11.70	0.00	0.00	0.00
1,500.00	9.97	14.828	1,492.18	100.66	26.65	-14.04	0.00	0.00	0.00
1,600.00	9.97	14.828	1,590.67	117.40	31.08	-16.37	0.00	0.00	0.00
1,700.00	9.97	14.828	1,689.16	134.14	35.51	-18.71	0.00	0.00	0.00
1,800.00	9.97	14.828	1,787.65	150.88	39.94	-21.04	0.00	0.00	0.00
1,900.00	9.97	14.828	1,886.14	167.62	44.37	-23.38	0.00	0.00	0.00
2,000.00	9.97	14.828	1,984.63	184.35	48.81	-25.71	0.00	0.00	0.00
2,100.00	9.97	14.828	2,083.12	201.09	53.24	-28.05	0.00	0.00	0.00
2,200.00	9.97	14.828	2,181.60	217.83	57.67	-30.38	0.00	0.00	0.00
2,300.00	9.97	14.828	2,280.09	234.57	62.10	-32.72	0.00	0.00	0.00
2,400.00	9.97	14.828	2,378.58	251.31	66.53	-35.05	0.00	0.00	0.00
2,500.00	9.97	14.828	2,477.07	268.05	70.96	-37.39	0.00	0.00	0.00
2,600.00	9.97	14.828	2,575.56	284.79	75.40	-39.72	0.00	0.00	0.00
2,700.00	9.97	14.828	2,674.05	301.53	79.83	-42.06	0.00	0.00	0.00
2,800.00	9.97	14.828	2,772.54	318.27	84.26	-44.39	0.00	0.00	0.00
2,900.00	9.97	14.828	2,871.03	335.00	88.69	-46.72	0.00	0.00	0.00
3,000.00	9.97	14.828	2,969.52	351.74	93.12	-49.06	0.00	0.00	0.00
3,100.00	9.97	14.828	3,068.01	368.48	97.55	-51.39	0.00	0.00	0.00
3,200.00	9.97	14.828	3,166.50	385.22	101.98	-53.73	0.00	0.00	0.00
3,300.00	9.97	14.828	3,264.99	401.96	106.42	-56.06	0.00	0.00	0.00
3,400.00	9.97	14.828	3,363.48	418.70	110.85	-58.40	0.00	0.00	0.00
3,500.00	9.97	14.828	3,461.97	435.44	115.28	-60.73	0.00	0.00	0.00
3,600.00	9.97	14.828	3,560.46	452.18	119.71	-63.07	0.00	0.00	0.00
3,700.00	9.97	14.828	3,658.95	468.92	124.14	-65.40	0.00	0.00	0.00
3,800.00	9.97	14.828	3,757.44	485.66	128.57	-67.74	0.00	0.00	0.00
3,900.00	9.97	14.828	3,855.92	502.39	133.01	-70.07	0.00	0.00	0.00
4,000.00	9.97	14.828	3,954.41	519.13	137.44	-72.41	0.00	0.00	0.00
4,100.00	9.97	14.828	4,052.90	535.87	141.87	-74.74	0.00	0.00	0.00
4,200.00	9.97	14.828	4,151.39	552.61	146.30	-77.08	0.00	0.00	0.00
4,300.00	9.97	14.828	4,249.88	569.35	150.73	-79.41	0.00	0.00	0.00
4,400.00	9.97	14.828	4,348.37	586.09	155.16	-81.74	0.00	0.00	0.00
4,500.00	9.97	14.828	4,446.86	602.83	159.59	-84.08	0.00	0.00	0.00
4,600.00	9.97	14.828	4,545.35	619.57	164.03	-86.41	0.00	0.00	0.00
4,700.00	9.97	14.828	4,643.84	636.31	168.46	-88.75	0.00	0.00	0.00
4,800.00	9.97	14.828	4,742.33	653.04	172.89	-91.08	0.00	0.00	0.00
4,900.00	9.97	14.828	4,840.82	669.78	177.32	-93.42	0.00	0.00	0.00
5,000.00	9.97	14.828	4,939.31	686.52	181.75	-95.75	0.00	0.00	0.00
5,100.00	9.97	14.828	5,037.80	703.26	186.18	-98.09	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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)
5,200.00	9.97	14.828	5,136.29	720.00	190.62	-100.42	0.00	0.00	0.00
5,300.00	9.97	14.828	5,234.78	736.74	195.05	-102.76	0.00	0.00	0.00
5,400.00	9.97	14.828	5,333.27	753.48	199.48	-105.09	0.00	0.00	0.00
5,500.00	9.97	14.828	5,431.76	770.22	203.91	-107.43	0.00	0.00	0.00
5,600.00	9.97	14.828	5,530.25	786.96	208.34	-109.76	0.00	0.00	0.00
5,700.00	9.97	14.828	5,628.73	803.70	212.77	-112.09	0.00	0.00	0.00
5,800.00	9.97	14.828	5,727.22	820.43	217.20	-114.43	0.00	0.00	0.00
5,900.00	9.97	14.828	5,825.71	837.17	221.64	-116.76	0.00	0.00	0.00
6,000.00	9.97	14.828	5,924.20	853.91	226.07	-119.10	0.00	0.00	0.00
6,100.00	9.97	14.828	6,022.69	870.65	230.50	-121.43	0.00	0.00	0.00
6,200.00	9.97	14.828	6,121.18	887.39	234.93	-123.77	0.00	0.00	0.00
6,300.00	9.97	14.828	6,219.67	904.13	239.36	-126.10	0.00	0.00	0.00
6,400.00	9.97	14.828	6,318.16	920.87	243.79	-128.44	0.00	0.00	0.00
6,432.78	9.97	14.828	6,350.44	926.35	245.25	-129.20	0.00	0.00	0.00
6,500.00	10.61	340.635	6,416.65	937.83	244.68	-127.23	9.00	0.94	-50.87
6,600.00	16.31	309.684	6,513.98	955.51	230.80	-111.27	9.00	5.70	-30.95
6,700.00	24.08	296.270	6,607.81	973.55	201.64	-80.11	9.00	7.77	-13.41
6,800.00	32.47	289.300	6,695.82	991.48	157.92	-34.51	9.00	8.39	-6.97
6,900.00	41.09	284.979	6,775.85	1,008.89	100.72	24.39	9.00	8.62	-4.32
7,000.00	49.83	281.946	6,845.93	1,025.32	31.45	95.16	9.00	8.74	-3.03
7,100.00	58.63	279.611	6,904.33	1,040.39	-48.19	176.05	9.00	8.80	-2.33
7,200.00	67.47	277.679	6,949.61	1,053.72	-136.23	265.06	9.00	8.83	-1.93
7,300.00	76.32	275.982	6,980.67	1,064.97	-230.51	360.01	9.00	8.85	-1.70
7,400.00	85.19	274.409	6,996.72	1,073.88	-328.70	458.55	9.00	8.87	-1.57
7,454.29	90.00	273.576	6,999.00	1,077.66	-382.80	512.70	9.00	8.87	-1.53
7,500.00	90.00	273.576	6,999.00	1,080.51	-428.42	558.32	0.00	0.00	0.00
7,600.00	90.00	273.576	6,999.00	1,086.75	-528.22	658.14	0.00	0.00	0.00
7,700.00	90.00	273.576	6,999.00	1,092.98	-628.03	757.95	0.00	0.00	0.00
7,800.00	90.00	273.576	6,999.00	1,099.22	-727.83	857.76	0.00	0.00	0.00
7,900.00	90.00	273.576	6,999.00	1,105.46	-827.64	957.58	0.00	0.00	0.00
8,000.00	90.00	273.576	6,999.00	1,111.70	-927.44	1,057.39	0.00	0.00	0.00
8,100.00	90.00	273.576	6,999.00	1,117.94	-1,027.25	1,157.20	0.00	0.00	0.00
8,200.00	90.00	273.576	6,999.00	1,124.17	-1,127.05	1,257.01	0.00	0.00	0.00
8,255.85	90.00	273.576	6,999.00	1,127.66	-1,182.80	1,312.76	0.00	0.00	0.00
8,300.00	90.02	272.694	6,998.99	1,130.07	-1,226.88	1,356.81	2.00	0.05	-2.00
8,400.00	90.07	270.694	6,998.91	1,133.03	-1,326.83	1,456.36	2.00	0.05	-2.00
8,424.03	90.08	270.214	6,998.88	1,133.22	-1,350.86	1,480.23	2.00	0.05	-2.00
8,500.00	90.08	270.214	6,998.76	1,133.50	-1,426.83	1,555.65	0.00	0.00	0.00
8,600.00	90.08	270.214	6,998.61	1,133.88	-1,526.83	1,654.94	0.00	0.00	0.00
8,700.00	90.08	270.214	6,998.47	1,134.25	-1,626.83	1,754.22	0.00	0.00	0.00
8,800.00	90.08	270.214	6,998.32	1,134.62	-1,726.83	1,853.50	0.00	0.00	0.00
8,900.00	90.08	270.214	6,998.17	1,134.99	-1,826.82	1,952.78	0.00	0.00	0.00
9,000.00	90.08	270.214	6,998.02	1,135.37	-1,926.82	2,052.07	0.00	0.00	0.00
9,100.00	90.08	270.214	6,997.87	1,135.74	-2,026.82	2,151.35	0.00	0.00	0.00
9,200.00	90.08	270.214	6,997.73	1,136.11	-2,126.82	2,250.63	0.00	0.00	0.00
9,300.00	90.08	270.214	6,997.58	1,136.49	-2,226.82	2,349.92	0.00	0.00	0.00
9,400.00	90.08	270.214	6,997.43	1,136.86	-2,326.82	2,449.20	0.00	0.00	0.00
9,500.00	90.08	270.214	6,997.28	1,137.23	-2,426.82	2,548.48	0.00	0.00	0.00
9,600.00	90.08	270.214	6,997.13	1,137.61	-2,526.82	2,647.76	0.00	0.00	0.00
9,700.00	90.08	270.214	6,996.98	1,137.98	-2,626.82	2,747.05	0.00	0.00	0.00
9,800.00	90.08	270.214	6,996.84	1,138.35	-2,726.82	2,846.33	0.00	0.00	0.00
9,900.00	90.08	270.214	6,996.69	1,138.73	-2,826.82	2,945.61	0.00	0.00	0.00
10,000.00	90.08	270.214	6,996.54	1,139.10	-2,926.82	3,044.89	0.00	0.00	0.00
10,100.00	90.08	270.214	6,996.39	1,139.47	-3,026.81	3,144.18	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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)
10,200.00	90.08	270.214	6,996.24	1,139.85	-3,126.81	3,243.46	0.00	0.00	0.00
10,300.00	90.08	270.214	6,996.10	1,140.22	-3,226.81	3,342.74	0.00	0.00	0.00
10,400.00	90.08	270.214	6,995.95	1,140.59	-3,326.81	3,442.03	0.00	0.00	0.00
10,500.00	90.08	270.214	6,995.80	1,140.96	-3,426.81	3,541.31	0.00	0.00	0.00
10,600.00	90.08	270.214	6,995.65	1,141.34	-3,526.81	3,640.59	0.00	0.00	0.00
10,700.00	90.08	270.214	6,995.50	1,141.71	-3,626.81	3,739.87	0.00	0.00	0.00
10,800.00	90.08	270.214	6,995.35	1,142.08	-3,726.81	3,839.16	0.00	0.00	0.00
10,900.00	90.08	270.214	6,995.21	1,142.46	-3,826.81	3,938.44	0.00	0.00	0.00
11,000.00	90.08	270.214	6,995.06	1,142.83	-3,926.81	4,037.72	0.00	0.00	0.00
11,100.00	90.08	270.214	6,994.91	1,143.20	-4,026.81	4,137.01	0.00	0.00	0.00
11,200.00	90.08	270.214	6,994.76	1,143.58	-4,126.81	4,236.29	0.00	0.00	0.00
11,300.00	90.08	270.214	6,994.61	1,143.95	-4,226.81	4,335.57	0.00	0.00	0.00
11,400.00	90.08	270.214	6,994.47	1,144.32	-4,326.80	4,434.85	0.00	0.00	0.00
11,500.00	90.08	270.214	6,994.32	1,144.70	-4,426.80	4,534.14	0.00	0.00	0.00
11,600.00	90.08	270.214	6,994.17	1,145.07	-4,526.80	4,633.42	0.00	0.00	0.00
11,700.00	90.08	270.214	6,994.02	1,145.44	-4,626.80	4,732.70	0.00	0.00	0.00
11,800.00	90.08	270.214	6,993.87	1,145.82	-4,726.80	4,831.98	0.00	0.00	0.00
11,900.00	90.08	270.214	6,993.72	1,146.19	-4,826.80	4,931.27	0.00	0.00	0.00
12,000.00	90.08	270.214	6,993.58	1,146.56	-4,926.80	5,030.55	0.00	0.00	0.00
12,100.00	90.08	270.214	6,993.43	1,146.93	-5,026.80	5,129.83	0.00	0.00	0.00
12,200.00	90.08	270.214	6,993.28	1,147.31	-5,126.80	5,229.12	0.00	0.00	0.00
12,300.00	90.08	270.214	6,993.13	1,147.68	-5,226.80	5,328.40	0.00	0.00	0.00
12,400.00	90.08	270.214	6,992.98	1,148.05	-5,326.80	5,427.68	0.00	0.00	0.00
12,500.00	90.08	270.214	6,992.84	1,148.43	-5,426.80	5,526.96	0.00	0.00	0.00
12,600.00	90.08	270.214	6,992.69	1,148.80	-5,526.79	5,626.25	0.00	0.00	0.00
12,700.00	90.08	270.214	6,992.54	1,149.17	-5,626.79	5,725.53	0.00	0.00	0.00
12,800.00	90.08	270.214	6,992.39	1,149.55	-5,726.79	5,824.81	0.00	0.00	0.00
12,900.00	90.08	270.214	6,992.24	1,149.92	-5,826.79	5,924.09	0.00	0.00	0.00
13,000.00	90.08	270.214	6,992.10	1,150.29	-5,926.79	6,023.38	0.00	0.00	0.00
13,100.00	90.08	270.214	6,991.95	1,150.67	-6,026.79	6,122.66	0.00	0.00	0.00
13,200.00	90.08	270.214	6,991.80	1,151.04	-6,126.79	6,221.94	0.00	0.00	0.00
13,300.00	90.08	270.214	6,991.65	1,151.41	-6,226.79	6,321.23	0.00	0.00	0.00
13,400.00	90.08	270.214	6,991.50	1,151.79	-6,326.79	6,420.51	0.00	0.00	0.00
13,500.00	90.08	270.214	6,991.35	1,152.16	-6,426.79	6,519.79	0.00	0.00	0.00
13,600.00	90.08	270.214	6,991.21	1,152.53	-6,526.79	6,619.07	0.00	0.00	0.00
13,700.00	90.08	270.214	6,991.06	1,152.90	-6,626.79	6,718.36	0.00	0.00	0.00
13,800.00	90.08	270.214	6,990.91	1,153.28	-6,726.79	6,817.64	0.00	0.00	0.00
13,900.00	90.08	270.214	6,990.76	1,153.65	-6,826.78	6,916.92	0.00	0.00	0.00
14,000.00	90.08	270.214	6,990.61	1,154.02	-6,926.78	7,016.20	0.00	0.00	0.00
14,100.00	90.08	270.214	6,990.47	1,154.40	-7,026.78	7,115.49	0.00	0.00	0.00
14,200.00	90.08	270.214	6,990.32	1,154.77	-7,126.78	7,214.77	0.00	0.00	0.00
14,300.00	90.08	270.214	6,990.17	1,155.14	-7,226.78	7,314.05	0.00	0.00	0.00
14,400.00	90.08	270.214	6,990.02	1,155.52	-7,326.78	7,413.34	0.00	0.00	0.00
14,500.00	90.08	270.214	6,989.87	1,155.89	-7,426.78	7,512.62	0.00	0.00	0.00
14,600.00	90.08	270.214	6,989.72	1,156.26	-7,526.78	7,611.90	0.00	0.00	0.00
14,700.00	90.08	270.214	6,989.58	1,156.64	-7,626.78	7,711.18	0.00	0.00	0.00
14,800.00	90.08	270.214	6,989.43	1,157.01	-7,726.78	7,810.47	0.00	0.00	0.00
14,900.00	90.08	270.214	6,989.28	1,157.38	-7,826.78	7,909.75	0.00	0.00	0.00
15,000.00	90.08	270.214	6,989.13	1,157.76	-7,926.78	8,009.03	0.00	0.00	0.00
15,100.00	90.08	270.214	6,988.98	1,158.13	-8,026.77	8,108.32	0.00	0.00	0.00
15,200.00	90.08	270.214	6,988.84	1,158.50	-8,126.77	8,207.60	0.00	0.00	0.00
15,300.00	90.08	270.214	6,988.69	1,158.88	-8,226.77	8,306.88	0.00	0.00	0.00
15,400.00	90.08	270.214	6,988.54	1,159.25	-8,326.77	8,406.16	0.00	0.00	0.00
15,500.00	90.08	270.214	6,988.39	1,159.62	-8,426.77	8,505.45	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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)	
15,600.00	90.08	270.214	6,988.24	1,159.99	-8,526.77	8,604.73	0.00	0.00	0.00	
15,700.00	90.08	270.214	6,988.09	1,160.37	-8,626.77	8,704.01	0.00	0.00	0.00	
15,800.00	90.08	270.214	6,987.95	1,160.74	-8,726.77	8,803.29	0.00	0.00	0.00	
15,900.00	90.08	270.214	6,987.80	1,161.11	-8,826.77	8,902.58	0.00	0.00	0.00	
16,000.00	90.08	270.214	6,987.65	1,161.49	-8,926.77	9,001.86	0.00	0.00	0.00	
16,100.00	90.08	270.214	6,987.50	1,161.86	-9,026.77	9,101.14	0.00	0.00	0.00	
16,200.00	90.08	270.214	6,987.35	1,162.23	-9,126.77	9,200.43	0.00	0.00	0.00	
16,300.00	90.08	270.214	6,987.21	1,162.61	-9,226.77	9,299.71	0.00	0.00	0.00	
16,400.00	90.08	270.214	6,987.06	1,162.98	-9,326.76	9,398.99	0.00	0.00	0.00	
16,438.37	90.08	270.214	6,987.00	1,163.12	-9,365.13	9,437.08	0.00	0.00	0.00	

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	
Rosa 650H FPerf - plan misses target center by 0.28usft at 16253.52usft MD (6987.27 TVD, 1162.43 N, -9180.28 E) - Point	0.00	0.000	6,987.00	1,162.41	-9,180.28	2,139,180.05	2,838,115.65	36.8780720	-107.4400545	
Rosa 650H BHL Rev 1 - plan hits target center - Point	0.00	0.000	6,987.00	1,163.12	-9,365.13	2,139,179.94	2,837,930.80	36.8780738	-107.4406865	
Rosa 650H IP1 - plan hits target center - Point	0.00	0.000	6,999.00	1,127.66	-1,182.80	2,139,180.87	2,846,113.21	36.8779806	-107.4127107	
Rosa 650H POE Rev 3 - plan hits target center - Point	0.00	0.000	6,999.00	1,077.66	-382.80	2,139,134.43	2,846,913.43	36.8778433	-107.4099754	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,531.40	2,508.00	Ojo Alamo		0.00	0.000	
2,661.36	2,636.00	Kirtland		0.00	0.000	
3,129.44	3,097.00	Fruitland		0.00	0.000	
3,463.48	3,426.00	Pictured Cliffs		0.00	0.000	
3,558.92	3,520.00	Lewis		0.00	0.000	
4,662.59	4,607.00	Chacra		0.00	0.000	
5,502.28	5,434.00	Cliff House		0.00	0.000	
5,551.01	5,482.00	Menefee		0.00	0.000	
5,756.11	5,684.00	Point Lookout		0.00	0.000	
6,249.57	6,170.00	Mancos		0.00	0.000	



Lonestar Consulting, LLC
Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
650.00	650.00	0.00	0.00	Start Build 2.00
1,148.57	1,146.06	41.83	11.08	Start 5284.21 hold at 1148.57 MD
6,432.78	6,350.44	926.35	245.25	Start DLS 9.00 TFO -101.09
7,454.29	6,999.00	1,077.66	-382.80	Start 801.56 hold at 7454.29 MD
8,255.85	6,999.00	1,127.66	-1,182.80	Start DLS 2.00 TFO -88.55
8,424.03	6,998.88	1,133.22	-1,350.86	Start 8014.33 hold at 8424.03 MD
16,253.51	6,987.27	1,162.43	-9,180.28	First Perf @ 16,253' MD
16,253.51	6,987.27	1,162.43	-9,180.28	36.8780721 / -107.4400545
16,438.37	6,987.00	1,163.12	-9,365.13	TD at 16438.37



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 29

Rosa Unit #650H

OH

Plan #7

Anticollision Report

08 April, 2022





Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference	Plan #7		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum centre distance of 2,500.00usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	4/8/2022		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	16,438.37	Plan #7 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference	Offset	Distance		Separation Factor	Warning
	Measured	Measured	Between	Between		
	Depth	Depth	Centres	Ellipses		
Offset Well - Wellbore - Design						
Rosa Unit 29						
Rosa Unit #654H - OH - OH	969.34	968.37	43.60	37.50	7.148	CC, ES
Rosa Unit #654H - OH - OH	1,000.00	998.42	43.88	37.57	6.950	SF
Rosa Unit #654H - ST1 - ST1	969.34	968.37	43.60	37.50	7.148	CC, ES
Rosa Unit #654H - ST1 - ST1	7,600.00	7,160.99	145.29	104.21	3.537	SF
Rosa Unit #654H - ST2 - ST2	969.34	968.37	43.60	37.50	7.148	CC, ES
Rosa Unit #654H - ST2 - ST2	7,600.00	7,319.16	103.47	49.98	1.934	SF
Rosa Unit #656H - OH - OH	0.00	0.00	30.00			
Rosa Unit #656H - OH - OH	851.02	850.53	34.42	29.24	6.647	ES
Rosa Unit #656H - OH - OH	900.00	899.02	34.82	29.30	6.307	SF

Offset Design: Rosa Unit 29 - Rosa Unit #654H - OH - OH													Offset Site Error: 0.00 usft	
Survey Program: Reference		Offset		Semi Major Axis		Offset Wellbore Centre			Rule Assigned: Distance				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-53.32	27.00	-36.25	45.20					
100.00	100.00	99.85	99.85	0.27	0.17	-52.86	27.38	-36.15	45.35	44.92	0.44	104.014		
200.00	200.00	199.69	199.69	0.63	0.33	-51.51	28.53	-35.87	45.83	44.87	0.96	47.666		
300.00	300.00	299.52	299.49	0.99	0.50	-49.32	30.43	-35.40	46.69	45.20	1.49	31.398		
400.00	400.00	399.34	399.27	1.34	0.75	-46.41	33.08	-34.75	47.98	45.89	2.09	22.955		
500.00	500.00	499.58	499.46	1.70	1.11	-43.29	36.01	-33.92	49.47	46.67	2.81	17.617		
600.00	600.00	600.22	600.09	2.06	1.46	-41.54	37.31	-33.06	49.85	46.33	3.52	14.167		
700.00	700.00	700.49	700.35	2.42	1.79	-57.78	36.29	-33.27	49.00	44.79	4.21	11.627		
800.00	799.93	800.05	799.89	2.78	2.13	-63.87	34.49	-34.33	46.81	41.90	4.91	9.536		
900.00	899.68	899.77	899.60	3.14	2.47	-74.28	33.27	-35.65	44.65	39.04	5.61	7.960		
969.34	968.68	968.37	968.19	3.39	2.71	-84.29	32.46	-36.28	43.60	37.50	6.10	7.148 CC, ES		
1,000.00	999.13	998.42	998.23	3.50	2.82	-89.36	32.24	-36.84	43.88	37.57	6.31	6.950 SF		
1,100.00	1,098.15	1,096.48	1,096.24	3.87	3.16	-106.12	32.54	-39.96	49.05	42.02	7.02	6.982		
1,200.00	1,196.71	1,194.54	1,194.18	4.25	3.51	-119.32	34.70	-44.42	59.94	52.19	7.74	7.739		
1,300.00	1,295.20	1,292.27	1,291.66	4.64	3.86	-127.10	38.19	-50.27	74.06	65.60	8.46	8.751		
1,400.00	1,393.69	1,390.14	1,389.09	5.03	4.21	-130.93	43.20	-57.99	90.07	80.89	9.19	9.804		
1,500.00	1,492.18	1,488.03	1,486.31	5.43	4.57	-132.37	49.90	-67.32	106.96	97.04	9.92	10.783		
1,600.00	1,590.67	1,586.81	1,584.17	5.83	4.94	-132.53	58.21	-77.85	124.14	113.48	10.67	11.636		



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 359-MWD+HDCM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
1,700.00	1,689.16	1,685.21	1,681.39	6.24	5.32	-131.78	68.40	-89.19	141.18	129.76	11.43	12.356	
1,800.00	1,787.65	1,782.84	1,777.48	6.65	5.70	-130.41	80.27	-101.69	158.58	146.39	12.19	13.010	
1,900.00	1,886.14	1,878.81	1,871.52	7.06	6.09	-128.64	93.39	-115.63	176.99	164.04	12.95	13.667	
2,000.00	1,984.63	1,972.51	1,962.83	7.47	6.49	-126.69	107.20	-131.45	197.28	183.58	13.70	14.402	
2,100.00	2,083.12	2,067.30	2,054.66	7.89	6.91	-124.61	122.16	-149.56	219.47	205.00	14.47	15.169	
2,200.00	2,181.60	2,164.79	2,148.70	8.30	7.35	-122.49	138.78	-169.14	242.44	227.15	15.28	15.864	
2,300.00	2,280.09	2,261.93	2,242.38	8.72	7.81	-120.68	155.65	-188.57	265.49	249.40	16.10	16.491	
2,400.00	2,378.58	2,360.64	2,337.61	9.14	8.28	-119.15	172.86	-208.01	288.45	271.51	16.94	17.028	
2,500.00	2,477.07	2,459.06	2,432.67	9.56	8.75	-117.87	190.02	-226.87	311.07	293.29	17.78	17.496	
2,600.00	2,575.56	2,556.52	2,526.88	9.98	9.22	-116.82	206.84	-245.29	333.59	314.98	18.61	17.925	
2,700.00	2,674.05	2,653.59	2,620.74	10.40	9.69	-115.91	223.52	-263.61	356.20	336.76	19.44	18.323	
2,800.00	2,772.54	2,750.63	2,714.52	10.82	10.17	-115.09	240.36	-282.02	378.94	358.67	20.27	18.693	
2,900.00	2,871.03	2,848.22	2,808.83	11.24	10.65	-114.35	257.31	-300.53	401.75	380.63	21.11	19.029	
3,000.00	2,969.52	2,946.82	2,904.13	11.66	11.14	-113.69	274.51	-319.03	424.39	402.43	21.97	19.321	
3,100.00	3,068.01	3,046.26	3,000.43	12.08	11.63	-113.16	291.29	-337.30	446.79	423.96	22.83	19.574	
3,200.00	3,166.50	3,148.20	3,099.43	12.50	12.13	-112.78	307.89	-355.03	468.33	444.63	23.71	19.756	
3,300.00	3,264.99	3,246.04	3,194.62	12.92	12.60	-112.50	323.41	-371.53	489.44	464.90	24.54	19.941	
3,400.00	3,363.48	3,339.71	3,285.74	13.35	13.06	-112.29	337.98	-387.59	510.88	485.53	25.34	20.158	
3,500.00	3,461.97	3,429.47	3,372.74	13.77	13.50	-112.01	352.52	-404.20	533.57	507.47	26.11	20.439	
3,600.00	3,560.46	3,520.41	3,460.45	14.19	13.97	-111.63	368.22	-422.36	557.57	530.69	26.88	20.740	
3,700.00	3,658.95	3,615.88	3,552.36	14.62	14.47	-111.23	384.86	-442.14	582.32	554.61	27.72	21.010	
3,800.00	3,757.44	3,716.78	3,649.64	15.04	14.99	-110.88	402.14	-462.59	606.69	578.08	28.61	21.208	
3,900.00	3,855.92	3,819.81	3,749.24	15.46	15.52	-110.64	418.98	-482.87	630.58	601.07	29.51	21.367	
4,000.00	3,954.41	3,928.73	3,855.17	15.89	16.05	-110.57	435.22	-502.29	652.79	622.33	30.46	21.430	
4,100.00	4,052.90	4,032.12	3,956.17	16.31	16.54	-110.63	449.38	-519.28	673.76	642.42	31.35	21.494	
4,200.00	4,151.39	4,126.42	4,048.43	16.73	16.98	-110.74	461.66	-534.46	694.48	662.34	32.15	21.603	
4,300.00	4,249.88	4,216.85	4,136.74	17.16	17.41	-110.82	473.53	-549.87	716.12	683.20	32.91	21.757	
4,400.00	4,348.37	4,316.68	4,233.96	17.58	17.90	-110.82	487.66	-567.60	738.35	704.58	33.77	21.863	
4,500.00	4,446.86	4,411.98	4,326.67	18.01	18.37	-110.74	502.21	-584.20	760.13	725.54	34.59	21.973	
4,600.00	4,545.35	4,497.53	4,409.59	18.43	18.80	-110.60	516.08	-600.04	782.90	747.57	35.33	22.162	
4,700.00	4,643.84	4,587.62	4,496.35	18.86	19.27	-110.34	532.07	-618.23	807.15	771.05	36.11	22.354	
4,800.00	4,742.33	4,686.27	4,591.27	19.28	19.80	-110.04	549.93	-638.35	831.60	794.62	36.98	22.488	
4,900.00	4,840.82	4,782.93	4,684.58	19.71	20.30	-109.87	566.09	-657.71	855.82	817.99	37.83	22.623	
5,000.00	4,939.31	4,867.52	4,766.09	20.13	20.75	-109.70	580.49	-675.15	880.64	842.08	38.56	22.840	
5,100.00	5,037.80	4,950.79	4,845.73	20.56	21.22	-109.45	595.90	-693.94	907.21	867.94	39.27	23.101	
5,200.00	5,136.29	5,044.39	4,934.73	20.98	21.75	-109.08	614.77	-715.93	934.62	894.52	40.11	23.304	
5,300.00	5,234.78	5,145.42	5,030.89	21.41	22.33	-108.71	635.02	-739.39	961.82	920.79	41.03	23.444	
5,400.00	5,333.27	5,238.74	5,119.86	21.83	22.87	-108.41	653.39	-760.73	988.72	946.86	41.86	23.619	
5,500.00	5,431.76	5,326.86	5,203.45	22.26	23.38	-108.07	671.82	-781.69	1,016.47	973.82	42.64	23.838	
5,600.00	5,530.25	5,423.61	5,294.96	22.68	23.96	-107.67	692.80	-805.03	1,044.58	1,001.06	43.52	24.001	
5,700.00	5,628.73	5,526.35	5,392.24	23.11	24.57	-107.26	715.16	-829.35	1,072.28	1,027.81	44.47	24.112	
5,800.00	5,727.22	5,627.89	5,488.56	23.53	25.17	-106.89	737.18	-852.78	1,099.43	1,054.03	45.40	24.215	
5,900.00	5,825.71	5,734.01	5,589.39	23.96	25.79	-106.53	760.06	-876.66	1,126.08	1,079.70	46.38	24.279	
6,000.00	5,924.20	5,880.79	5,729.29	24.38	26.61	-106.02	792.89	-906.53	1,150.86	1,103.13	47.73	24.110	
6,100.00	6,022.69	6,021.68	5,864.00	24.81	27.35	-105.31	829.45	-925.26	1,167.33	1,118.38	48.95	23.848	
6,200.00	6,121.18	6,029.99	5,871.94	25.24	27.40	-105.28	831.58	-926.43	1,189.11	1,140.08	49.03	24.252	
6,300.00	6,219.67	6,029.99	5,871.94	25.66	27.40	-105.28	831.58	-926.43	1,218.70	1,169.92	48.79	24.981	
6,400.00	6,318.16	6,029.99	5,871.94	26.09	27.40	-105.28	831.58	-926.43	1,255.58	1,207.27	48.32	25.986	
6,500.00	6,416.65	6,029.99	5,871.94	26.51	27.40	-71.41	831.58	-926.43	1,295.95	1,248.29	47.66	27.192	
6,600.00	6,513.98	6,029.99	5,871.94	26.89	27.40	-41.02	831.58	-926.43	1,329.18	1,282.41	46.78	28.415	
6,700.00	6,607.81	6,029.99	5,871.94	27.23	27.40	-28.24	831.58	-926.43	1,354.31	1,308.63	45.68	29.647	
6,800.00	6,695.82	6,029.99	5,871.94	27.53	27.40	-21.99	831.58	-926.43	1,371.18	1,326.80	44.38	30.894	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - OH - OH												Offset Site Error: 0.00 usft			
Survey Program: 359-MWD+HDGM				Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
6,900.00	6,775.85	6,029.99	5,871.94	27.79	27.40	-18.47	831.58	-926.43	1,379.68	1,336.77	42.90	32.159			
6,978.57	6,831.84	6,029.99	5,871.94	27.96	27.40	-16.71	831.58	-926.43	1,380.44	1,338.82	41.63	33.163			
7,000.00	6,845.93	6,029.99	5,871.94	28.01	27.40	-16.34	831.58	-926.43	1,379.75	1,338.49	41.26	33.441			
7,085.14	6,896.45	6,029.99	5,871.94	28.20	27.40	-15.17	831.58	-926.43	1,373.17	1,333.42	39.75	34.548			
7,100.00	6,904.33	6,029.99	5,871.94	28.24	27.40	-15.02	831.58	-926.43	1,371.39	1,331.91	39.49	34.732			
7,187.59	6,944.75	6,029.99	5,871.94	28.50	27.40	-14.31	831.58	-926.43	1,357.19	1,319.34	37.85	35.854			
7,200.00	6,949.61	6,029.99	5,871.94	28.55	27.40	-14.23	831.58	-926.43	1,354.66	1,317.04	37.62	36.010			
7,288.59	6,977.87	6,029.99	5,871.94	29.08	27.40	-13.88	831.58	-926.43	1,332.94	1,297.01	35.93	37.103			
7,300.00	6,980.67	6,029.99	5,871.94	29.18	27.40	-13.85	831.58	-926.43	1,329.67	1,293.96	35.71	37.239			
7,388.95	6,995.70	6,029.99	5,871.94	30.13	27.40	-13.80	831.58	-926.43	1,300.62	1,266.61	34.01	38.247			
7,400.00	6,996.72	6,029.99	5,871.94	30.26	27.40	-13.82	831.58	-926.43	1,296.57	1,262.77	33.80	38.362			
7,488.78	7,000.87	6,029.99	5,871.94	31.51	27.40	-13.91	831.58	-926.43	1,263.17	1,231.04	32.13	39.320			
7,500.00	6,999.00	6,029.99	5,871.94	31.68	27.40	-13.93	831.58	-926.43	1,257.07	1,225.13	31.94	39.362			
7,587.02	6,999.00	6,029.99	5,871.94	33.11	27.40	-13.93	831.58	-926.43	1,226.37	1,196.03	30.34	40.423			
7,600.00	6,999.00	6,029.99	5,871.94	33.33	27.40	-13.93	831.58	-926.43	1,222.26	1,192.15	30.10	40.602			
7,684.88	6,999.00	6,029.99	5,871.94	34.91	27.40	-13.93	831.58	-926.43	1,198.48	1,169.83	28.65	41.827			
7,700.00	6,999.00	6,029.99	5,871.94	35.19	27.40	-13.93	831.58	-926.43	1,194.83	1,166.42	28.41	42.059			
7,782.64	6,999.00	6,029.99	5,871.94	36.86	27.40	-13.93	831.58	-926.43	1,178.10	1,150.89	27.20	43.306			
7,800.00	6,999.00	6,029.99	5,871.94	37.21	27.40	-13.93	831.58	-926.43	1,175.29	1,148.31	26.98	43.566			
7,880.30	6,999.00	6,029.99	5,871.94	38.93	27.40	-13.93	831.58	-926.43	1,165.59	1,139.48	26.11	44.639			
7,900.00	6,999.00	6,029.99	5,871.94	39.36	27.40	-13.93	831.58	-926.43	1,164.05	1,138.11	25.94	44.873			
7,981.51	6,999.00	6,029.99	5,871.94	41.20	27.40	-13.93	831.58	-926.43	1,161.19	1,135.72	25.47	45.589			
8,000.00	6,999.00	6,029.99	5,871.94	41.62	27.40	-13.93	831.58	-926.43	1,161.34	1,135.92	25.41	45.700			
8,100.00	6,999.00	6,029.99	5,871.94	43.98	27.40	-13.93	831.58	-926.43	1,167.22	1,141.76	25.46	45.845			
8,200.00	6,999.00	6,029.99	5,871.94	46.41	27.40	-13.93	831.58	-926.43	1,181.57	1,155.47	26.09	45.284			
8,300.00	6,998.99	6,029.99	5,871.94	48.91	27.40	-14.14	831.58	-926.43	1,203.99	1,176.75	27.24	44.207			
8,400.00	6,998.91	6,029.99	5,871.94	51.45	27.40	-14.74	831.58	-926.43	1,233.38	1,204.65	28.73	42.929			
8,500.00	6,998.76	6,029.99	5,871.94	54.02	27.40	-14.90	831.58	-926.43	1,269.35	1,238.91	30.45	41.690			
8,600.00	6,998.61	6,029.99	5,871.94	56.64	27.40	-14.90	831.58	-926.43	1,311.96	1,279.68	32.27	40.653			
8,700.00	6,998.47	6,029.99	5,871.94	59.29	27.40	-14.90	831.58	-926.43	1,360.59	1,326.49	34.10	39.905			
8,800.00	6,998.32	6,029.99	5,871.94	61.97	27.40	-14.90	831.58	-926.43	1,414.63	1,378.78	35.85	39.464			
8,900.00	6,998.17	6,029.99	5,871.94	64.69	27.40	-14.90	831.58	-926.43	1,473.48	1,436.00	37.48	39.311			
9,000.00	6,998.02	6,029.99	5,871.94	67.43	27.40	-14.90	831.58	-926.43	1,536.59	1,497.60	38.99	39.413			
9,100.00	6,997.87	6,029.99	5,871.94	70.19	27.40	-14.90	831.58	-926.43	1,603.46	1,563.11	40.35	39.735			
9,200.00	6,997.73	6,029.99	5,871.94	72.98	27.40	-14.90	831.58	-926.43	1,673.63	1,632.05	41.59	40.245			
9,300.00	6,997.58	6,029.99	5,871.94	75.78	27.40	-14.90	831.58	-926.43	1,746.72	1,704.02	42.69	40.913			
9,400.00	6,997.43	6,029.99	5,871.94	78.60	27.40	-14.90	831.58	-926.43	1,822.36	1,778.67	43.68	41.716			
9,500.00	6,997.28	6,029.99	5,871.94	81.43	27.40	-14.90	831.58	-926.43	1,900.25	1,855.68	44.57	42.632			
9,600.00	6,997.13	6,029.99	5,871.94	84.27	27.40	-14.90	831.58	-926.43	1,980.13	1,934.77	45.37	43.645			
9,700.00	6,996.98	6,029.99	5,871.94	87.13	27.40	-14.90	831.58	-926.43	2,061.77	2,015.69	46.08	44.741			
9,800.00	6,996.84	6,029.99	5,871.94	90.00	27.40	-14.90	831.58	-926.43	2,144.97	2,098.24	46.72	45.907			
9,900.00	6,996.69	6,029.99	5,871.94	92.88	27.40	-14.90	831.58	-926.43	2,229.54	2,182.24	47.30	47.135			
10,000.00	6,996.54	6,029.99	5,871.94	95.76	27.40	-14.90	831.58	-926.43	2,315.34	2,267.52	47.82	48.415			
10,100.00	6,996.39	6,029.99	5,871.94	98.65	27.40	-14.90	831.58	-926.43	2,402.25	2,353.95	48.30	49.740			
10,200.00	6,996.24	6,029.99	5,871.94	101.56	27.40	-14.90	831.58	-926.43	2,490.13	2,441.41	48.73	51.106			



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST1 - ST1												Offset Site Error:	0.00 usft
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-53.32	27.00	-36.25	45.20				
100.00	100.00	99.85	99.85	0.27	0.17	-52.86	27.38	-36.15	45.35	44.92	0.44	104.014	
200.00	200.00	199.69	199.69	0.63	0.33	-51.51	28.53	-35.87	45.83	44.87	0.96	47.665	
300.00	300.00	299.52	299.49	0.99	0.50	-49.32	30.43	-35.40	46.69	45.20	1.49	31.398	
400.00	400.00	399.34	399.27	1.34	0.75	-46.41	33.08	-34.75	47.98	45.89	2.09	22.955	
500.00	500.00	499.58	499.46	1.70	1.11	-43.29	36.01	-33.92	49.47	46.67	2.81	17.617	
600.00	600.00	600.22	600.09	2.06	1.46	-41.54	37.31	-33.06	49.85	46.33	3.52	14.167	
700.00	700.00	700.49	700.35	2.42	1.79	-57.78	36.29	-33.27	49.00	44.79	4.21	11.627	
800.00	799.93	800.05	799.89	2.78	2.13	-63.87	34.49	-34.33	46.81	41.90	4.91	9.536	
900.00	899.68	899.77	899.60	3.14	2.47	-74.28	33.27	-35.65	44.65	39.04	5.61	7.960	
969.34	968.68	968.37	968.19	3.39	2.71	-84.29	32.46	-36.28	43.60	37.50	6.10	7.148 CC, ES	
1,000.00	999.13	998.42	998.23	3.50	2.82	-89.36	32.24	-36.84	43.88	37.57	6.31	6.950	
1,100.00	1,098.15	1,096.48	1,096.24	3.87	3.16	-106.12	32.54	-39.96	49.05	42.02	7.02	6.982	
1,200.00	1,196.71	1,194.54	1,194.18	4.25	3.51	-119.32	34.70	-44.42	59.94	52.19	7.74	7.739	
1,300.00	1,295.20	1,292.27	1,291.66	4.64	3.86	-127.10	38.19	-50.27	74.06	65.60	8.46	8.751	
1,400.00	1,393.69	1,390.14	1,389.09	5.03	4.21	-130.93	43.20	-57.99	90.07	80.89	9.19	9.804	
1,500.00	1,492.18	1,488.03	1,486.31	5.43	4.57	-132.37	49.90	-67.32	106.96	97.04	9.92	10.783	
1,600.00	1,590.67	1,586.81	1,584.17	5.83	4.94	-132.53	58.21	-77.85	124.14	113.48	10.67	11.636	
1,700.00	1,689.16	1,685.21	1,681.39	6.24	5.32	-131.78	68.40	-89.19	141.18	129.76	11.43	12.356	
1,800.00	1,787.65	1,782.84	1,777.48	6.65	5.70	-130.41	80.27	-101.69	158.58	146.39	12.19	13.010	
1,900.00	1,886.14	1,878.81	1,871.52	7.06	6.09	-128.64	93.39	-115.63	176.99	164.03	12.95	13.667	
2,000.00	1,984.63	1,972.51	1,962.83	7.47	6.49	-126.69	107.20	-131.45	197.28	183.58	13.70	14.402	
2,100.00	2,083.12	2,067.30	2,054.66	7.89	6.91	-124.61	122.16	-149.56	219.47	205.00	14.47	15.169	
2,200.00	2,181.60	2,164.79	2,148.70	8.30	7.35	-122.49	138.78	-169.14	242.44	227.15	15.28	15.863	
2,300.00	2,280.09	2,261.93	2,242.38	8.72	7.81	-120.68	155.65	-188.57	265.49	249.39	16.10	16.491	
2,400.00	2,378.58	2,360.64	2,337.61	9.14	8.28	-119.15	172.86	-208.01	288.45	271.51	16.94	17.028	
2,500.00	2,477.07	2,459.06	2,432.67	9.56	8.75	-117.87	190.02	-226.87	311.07	293.29	17.78	17.496	
2,600.00	2,575.56	2,556.52	2,526.88	9.98	9.22	-116.82	206.84	-245.29	333.59	314.98	18.61	17.924	
2,700.00	2,674.05	2,653.59	2,620.74	10.40	9.70	-115.91	223.52	-263.61	356.20	336.76	19.44	18.322	
2,800.00	2,772.54	2,750.63	2,714.52	10.82	10.17	-115.09	240.36	-282.02	378.94	358.67	20.27	18.692	
2,900.00	2,871.03	2,848.22	2,808.83	11.24	10.66	-114.35	257.31	-300.53	401.75	380.63	21.11	19.028	
3,000.00	2,969.52	2,946.82	2,904.13	11.66	11.14	-113.69	274.51	-319.03	424.39	402.43	21.97	19.321	
3,100.00	3,068.01	3,046.26	3,000.43	12.08	11.64	-113.16	291.29	-337.30	446.79	423.96	22.83	19.574	
3,200.00	3,166.50	3,148.20	3,099.43	12.50	12.13	-112.78	307.89	-355.03	468.33	444.62	23.71	19.755	
3,300.00	3,264.99	3,246.04	3,194.62	12.92	12.60	-112.50	323.41	-371.53	489.44	464.90	24.54	19.941	
3,400.00	3,363.48	3,339.71	3,285.74	13.35	13.06	-112.29	337.98	-387.59	510.88	485.53	25.34	20.158	
3,500.00	3,461.97	3,429.47	3,372.74	13.77	13.50	-112.01	352.52	-404.20	533.57	507.46	26.11	20.439	
3,600.00	3,560.46	3,520.41	3,460.45	14.19	13.97	-111.63	368.22	-422.36	557.57	530.68	26.88	20.739	
3,700.00	3,658.95	3,615.88	3,552.36	14.62	14.47	-111.23	384.86	-442.14	582.32	554.61	27.72	21.010	
3,800.00	3,757.44	3,716.78	3,649.64	15.04	14.99	-110.88	402.14	-462.59	606.69	578.08	28.61	21.208	
3,900.00	3,855.92	3,819.81	3,749.24	15.46	15.52	-110.64	418.98	-482.87	630.58	601.07	29.51	21.367	
4,000.00	3,954.41	3,928.73	3,855.17	15.89	16.05	-110.57	435.22	-502.29	652.79	622.33	30.46	21.429	
4,100.00	4,052.90	4,032.12	3,956.17	16.31	16.54	-110.63	449.38	-519.28	673.76	642.42	31.35	21.493	
4,200.00	4,151.39	4,126.42	4,048.43	16.73	16.98	-110.74	461.66	-534.46	694.48	662.34	32.15	21.603	
4,300.00	4,249.88	4,216.85	4,136.74	17.16	17.41	-110.82	473.53	-549.87	716.12	683.20	32.91	21.757	
4,400.00	4,348.37	4,316.68	4,233.96	17.58	17.90	-110.82	487.66	-567.60	738.35	704.58	33.77	21.862	
4,500.00	4,446.86	4,411.98	4,326.67	18.01	18.37	-110.74	502.21	-584.20	760.13	725.54	34.59	21.973	
4,600.00	4,545.35	4,497.53	4,409.59	18.43	18.80	-110.60	516.08	-600.04	782.90	747.57	35.33	22.161	
4,700.00	4,643.84	4,587.62	4,496.35	18.86	19.27	-110.34	532.07	-618.23	807.15	771.04	36.11	22.353	
4,800.00	4,742.33	4,686.27	4,591.27	19.28	19.80	-110.04	549.93	-638.35	831.60	794.62	36.98	22.487	
4,900.00	4,840.82	4,782.93	4,684.58	19.71	20.30	-109.87	566.09	-657.71	855.82	817.99	37.83	22.622	
5,000.00	4,939.31	4,867.52	4,766.09	20.13	20.76	-109.70	580.49	-675.15	880.64	842.08	38.56	22.840	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST1 - ST1													Offset Site Error: 0.00 usft
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside		Offset Wellbore Centre		Distance		Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,037.80	4,950.79	4,845.73	20.56	21.22	-109.45	595.90	-693.94	907.21	867.94	39.27	23.101	
5,200.00	5,136.29	5,044.39	4,934.73	20.98	21.75	-109.08	614.77	-715.93	934.62	894.51	40.11	23.303	
5,300.00	5,234.78	5,173.13	5,057.57	21.41	22.34	-108.64	640.25	-744.75	961.21	920.03	41.18	23.341	
5,400.00	5,333.27	5,333.08	5,212.73	21.83	22.80	-108.39	668.39	-771.37	982.00	939.79	42.20	23.267	
5,500.00	5,431.76	5,440.24	5,317.93	22.26	22.95	-108.47	683.75	-784.76	998.94	956.19	42.75	23.368	
5,600.00	5,530.25	5,537.96	5,413.77	22.68	23.09	-108.51	698.24	-797.18	1,016.12	972.85	43.27	23.486	
5,700.00	5,628.73	5,646.80	5,520.26	23.11	23.27	-108.44	716.23	-810.65	1,032.86	989.03	43.83	23.563	
5,800.00	5,727.22	5,775.27	5,645.64	23.53	23.49	-108.21	740.60	-824.36	1,047.80	1,003.32	44.48	23.557	
5,900.00	5,825.71	5,932.66	5,798.17	23.96	23.78	-107.55	777.75	-834.98	1,058.64	1,013.48	45.16	23.442	
6,000.00	5,924.20	6,026.00	5,888.16	24.38	23.96	-107.03	802.28	-838.81	1,066.73	1,020.99	45.74	23.321	
6,100.00	6,022.69	6,127.64	5,986.38	24.81	24.16	-106.54	828.03	-843.31	1,075.27	1,028.93	46.34	23.204	
6,200.00	6,121.18	6,226.68	6,082.76	25.24	24.35	-106.21	850.40	-847.48	1,083.72	1,036.79	46.93	23.090	
6,300.00	6,219.67	6,324.52	6,178.90	25.66	24.52	-106.13	867.97	-851.59	1,092.31	1,044.79	47.52	22.985	
6,400.00	6,318.16	7,160.99	6,891.46	26.09	25.28	-102.28	1,055.04	-620.64	1,045.91	1,004.13	41.78	25.036	
6,500.00	6,416.65	7,160.99	6,891.46	26.51	25.28	-68.69	1,055.04	-620.64	993.97	949.99	43.98	22.599	
6,600.00	6,513.98	7,160.99	6,891.46	26.89	25.28	-38.66	1,055.04	-620.64	936.67	890.68	45.99	20.368	
6,700.00	6,607.81	7,160.99	6,891.46	27.23	25.28	-26.23	1,055.04	-620.64	873.63	825.89	47.74	18.300	
6,800.00	6,695.82	7,160.99	6,891.46	27.53	25.28	-20.33	1,055.04	-620.64	805.27	756.05	49.22	16.361	
6,900.00	6,775.85	7,160.99	6,891.46	27.79	25.28	-17.20	1,055.04	-620.64	732.02	681.61	50.41	14.522	
7,000.00	6,845.93	7,160.99	6,891.46	28.01	25.28	-15.55	1,055.04	-620.64	654.35	603.07	51.28	12.761	
7,100.00	6,904.33	7,160.99	6,891.46	28.24	25.28	-14.85	1,055.04	-620.64	572.78	520.98	51.81	11.056	
7,200.00	6,949.61	7,160.99	6,891.46	28.55	25.28	-14.94	1,055.04	-620.64	487.89	435.94	51.95	9.391	
7,300.00	6,980.67	7,160.99	6,891.46	29.18	25.28	-15.84	1,055.04	-620.64	400.32	348.68	51.64	7.752	
7,400.00	6,996.72	7,160.99	6,891.46	30.26	25.28	-17.70	1,055.04	-620.64	310.90	260.20	50.70	6.132	
7,500.00	6,999.00	7,160.99	6,891.46	31.68	25.28	-19.18	1,055.04	-620.64	221.72	173.20	48.52	4.570	
7,597.16	6,999.00	7,160.99	6,891.46	33.29	25.28	-19.18	1,055.04	-620.64	147.07	105.63	41.45	3.548	
7,600.00	6,999.00	7,160.99	6,891.46	33.33	25.28	-19.18	1,055.04	-620.64	145.29	104.21	41.08	3.537 SF	
7,700.00	6,999.00	7,160.99	6,891.46	35.19	25.28	-19.18	1,055.04	-620.64	114.27	88.10	26.17	4.366	
7,800.00	6,999.00	7,141.88	6,879.80	37.21	25.31	-17.87	1,054.97	-635.77	156.97	122.44	34.53	4.545	
7,900.00	6,999.00	7,072.15	6,836.88	39.36	25.43	-14.68	1,054.37	-690.72	218.25	182.54	35.71	6.112	
8,000.00	6,999.00	7,021.25	6,802.92	41.62	25.51	-13.77	1,051.11	-728.46	285.84	247.67	38.17	7.488	
8,100.00	6,999.00	6,978.99	6,772.68	43.98	25.56	-13.67	1,045.92	-757.50	359.39	319.15	40.24	8.932	
8,200.00	6,999.00	6,944.19	6,746.54	46.41	25.59	-13.97	1,039.55	-779.55	437.78	395.85	41.93	10.441	
8,300.00	6,998.99	6,905.99	6,716.75	48.91	25.63	-15.74	1,030.36	-801.62	520.04	477.16	42.88	12.129	
8,400.00	6,998.91	6,905.99	6,716.75	51.45	25.63	-18.80	1,030.36	-801.62	604.97	560.01	44.96	13.455	
8,500.00	6,998.76	6,872.39	6,689.71	54.02	25.60	-19.69	1,020.29	-818.81	691.38	645.97	45.41	15.226	
8,600.00	6,998.61	6,856.07	6,676.33	56.64	25.59	-19.82	1,014.70	-826.28	780.27	734.09	46.19	16.893	
8,700.00	6,998.47	6,809.99	6,637.95	59.29	25.56	-20.44	996.56	-844.12	872.67	826.58	46.09	18.935	
8,800.00	6,998.32	6,809.99	6,637.95	61.97	25.56	-20.44	996.56	-844.12	963.37	916.43	46.94	20.523	
8,900.00	6,998.17	6,809.99	6,637.95	64.69	25.56	-20.44	996.56	-844.12	1,055.76	1,008.15	47.61	22.175	
9,000.00	6,998.02	6,809.99	6,637.95	67.43	25.56	-20.44	996.56	-844.12	1,149.41	1,101.27	48.14	23.876	
9,100.00	6,997.87	6,809.99	6,637.95	70.19	25.56	-20.44	996.56	-844.12	1,244.06	1,195.49	48.57	25.613	
9,200.00	6,997.73	6,809.99	6,637.95	72.98	25.56	-20.44	996.56	-844.12	1,339.49	1,290.56	48.93	27.377	
9,300.00	6,997.58	6,809.99	6,637.95	75.78	25.56	-20.44	996.56	-844.12	1,435.53	1,386.31	49.23	29.162	
9,400.00	6,997.43	6,809.99	6,637.95	78.60	25.56	-20.44	996.56	-844.12	1,532.09	1,482.61	49.48	30.963	
9,500.00	6,997.28	6,809.99	6,637.95	81.43	25.56	-20.44	996.56	-844.12	1,629.06	1,579.36	49.70	32.778	
9,600.00	6,997.13	6,809.99	6,637.95	84.27	25.56	-20.44	996.56	-844.12	1,726.37	1,676.48	49.89	34.604	
9,700.00	6,996.98	6,809.99	6,637.95	87.13	25.56	-20.44	996.56	-844.12	1,823.98	1,773.92	50.06	36.437	
9,800.00	6,996.84	6,809.99	6,637.95	90.00	25.56	-20.44	996.56	-844.12	1,921.83	1,871.62	50.21	38.277	
9,900.00	6,996.69	6,809.99	6,637.95	92.88	25.56	-20.44	996.56	-844.12	2,019.89	1,969.55	50.34	40.122	
10,000.00	6,996.54	6,766.30	6,600.69	95.76	25.45	-21.15	977.05	-855.82	2,114.70	2,064.63	50.07	42.232	
10,100.00	6,996.39	6,763.77	6,598.50	98.65	25.44	-21.19	975.88	-856.32	2,212.72	2,162.54	50.18	44.097	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST1 - ST1												Offset Site Error:	0.00 usft
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Rule Assigned:		Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
10,200.00	6,996.24	6,761.43	6,596.48	101.56	25.44	-21.23	974.79	-856.76	2,310.88	2,260.61	50.28	45.965	
10,300.00	6,996.10	6,759.26	6,594.60	104.46	25.43	-21.26	973.78	-857.16	2,409.18	2,358.81	50.37	47.833	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST2 - ST2												Offset Site Error:	0.00 usft
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM, 6808-MWD+HDGM												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-53.32	27.00	-36.25	45.20				
100.00	100.00	99.85	99.85	0.27	0.17	-52.86	27.38	-36.15	45.35	44.92	0.44	104.013	
200.00	200.00	199.69	199.69	0.63	0.33	-51.51	28.53	-35.87	45.83	44.87	0.96	47.665	
300.00	300.00	299.52	299.49	0.99	0.50	-49.32	30.43	-35.40	46.69	45.20	1.49	31.398	
400.00	400.00	399.34	399.27	1.34	0.75	-46.41	33.08	-34.75	47.98	45.89	2.09	22.955	
500.00	500.00	499.58	499.46	1.70	1.11	-43.29	36.01	-33.92	49.47	46.67	2.81	17.617	
600.00	600.00	600.22	600.09	2.06	1.46	-41.54	37.31	-33.06	49.85	46.33	3.52	14.167	
700.00	700.00	700.49	700.35	2.42	1.79	-57.78	36.29	-33.27	49.00	44.79	4.21	11.627	
800.00	799.93	800.05	799.89	2.78	2.13	-63.87	34.49	-34.33	46.81	41.90	4.91	9.536	
900.00	899.68	899.77	899.60	3.14	2.47	-74.28	33.27	-35.65	44.65	39.04	5.61	7.960	
969.34	968.68	968.37	968.19	3.39	2.71	-84.29	32.46	-36.28	43.60	37.50	6.10	7.148 CC, ES	
1,000.00	999.13	998.42	998.23	3.50	2.82	-89.36	32.24	-36.84	43.88	37.57	6.31	6.950	
1,100.00	1,098.15	1,096.48	1,096.24	3.87	3.16	-106.12	32.54	-39.96	49.05	42.02	7.02	6.982	
1,200.00	1,196.71	1,194.54	1,194.18	4.25	3.51	-119.32	34.70	-44.42	59.94	52.19	7.74	7.739	
1,300.00	1,295.20	1,292.27	1,291.66	4.64	3.86	-127.10	38.19	-50.27	74.06	65.60	8.46	8.751	
1,400.00	1,393.69	1,390.14	1,389.09	5.03	4.21	-130.93	43.20	-57.99	90.07	80.89	9.19	9.804	
1,500.00	1,492.18	1,488.03	1,486.31	5.43	4.57	-132.37	49.90	-67.32	106.96	97.04	9.92	10.783	
1,600.00	1,590.67	1,586.81	1,584.17	5.83	4.94	-132.53	58.21	-77.85	124.14	113.48	10.67	11.636	
1,700.00	1,689.16	1,685.21	1,681.39	6.24	5.32	-131.78	68.40	-89.19	141.18	129.76	11.43	12.356	
1,800.00	1,787.65	1,782.84	1,777.48	6.65	5.70	-130.41	80.27	-101.69	158.58	146.39	12.19	13.010	
1,900.00	1,886.14	1,878.81	1,871.52	7.06	6.09	-128.64	93.39	-115.63	176.99	164.03	12.95	13.667	
2,000.00	1,984.63	1,972.51	1,962.83	7.47	6.49	-126.69	107.20	-131.45	197.28	183.58	13.70	14.402	
2,100.00	2,083.12	2,067.30	2,054.66	7.89	6.91	-124.61	122.16	-149.56	219.47	205.00	14.47	15.169	
2,200.00	2,181.60	2,164.79	2,148.70	8.30	7.35	-122.49	138.78	-169.14	242.44	227.15	15.28	15.863	
2,300.00	2,280.09	2,261.93	2,242.38	8.72	7.81	-120.68	155.65	-188.57	265.49	249.39	16.10	16.491	
2,400.00	2,378.58	2,360.64	2,337.61	9.14	8.28	-119.15	172.86	-208.01	288.45	271.51	16.94	17.028	
2,500.00	2,477.07	2,459.06	2,432.67	9.56	8.75	-117.87	190.02	-226.87	311.07	293.29	17.78	17.496	
2,600.00	2,575.56	2,556.52	2,526.88	9.98	9.22	-116.82	206.84	-245.29	333.59	314.98	18.61	17.924	
2,700.00	2,674.05	2,653.59	2,620.74	10.40	9.70	-115.91	223.52	-263.61	356.20	336.76	19.44	18.322	
2,800.00	2,772.54	2,750.63	2,714.52	10.82	10.17	-115.09	240.36	-282.02	378.94	358.67	20.27	18.692	
2,900.00	2,871.03	2,848.22	2,808.83	11.24	10.66	-114.35	257.31	-300.53	401.75	380.63	21.11	19.028	
3,000.00	2,969.52	2,946.82	2,904.13	11.66	11.14	-113.69	274.51	-319.03	424.39	402.43	21.97	19.321	
3,100.00	3,068.01	3,046.26	3,000.43	12.08	11.64	-113.16	291.29	-337.30	446.79	423.96	22.83	19.574	
3,200.00	3,166.50	3,148.20	3,099.43	12.50	12.13	-112.78	307.89	-355.03	468.33	444.62	23.71	19.755	
3,300.00	3,264.99	3,246.04	3,194.62	12.92	12.60	-112.50	323.41	-371.53	489.44	464.90	24.55	19.941	
3,400.00	3,363.48	3,339.71	3,285.74	13.35	13.06	-112.29	337.98	-387.59	510.88	485.53	25.34	20.158	
3,500.00	3,461.97	3,429.47	3,372.74	13.77	13.50	-112.01	352.52	-404.20	533.57	507.46	26.11	20.438	
3,600.00	3,560.46	3,520.41	3,460.45	14.19	13.97	-111.63	368.22	-422.36	557.57	530.68	26.89	20.739	
3,700.00	3,658.95	3,615.88	3,552.36	14.62	14.47	-111.23	384.86	-442.14	582.32	554.61	27.72	21.010	
3,800.00	3,757.44	3,716.78	3,649.64	15.04	14.99	-110.88	402.14	-462.59	606.69	578.08	28.61	21.208	
3,900.00	3,855.92	3,819.81	3,749.24	15.46	15.52	-110.64	418.98	-482.87	630.58	601.07	29.51	21.367	
4,000.00	3,954.41	3,928.73	3,855.17	15.89	16.05	-110.57	435.22	-502.29	652.79	622.33	30.46	21.429	
4,100.00	4,052.90	4,032.12	3,956.17	16.31	16.54	-110.63	449.38	-519.28	673.76	642.42	31.35	21.493	
4,200.00	4,151.39	4,126.42	4,048.43	16.73	16.98	-110.74	461.66	-534.46	694.48	662.34	32.15	21.603	
4,300.00	4,249.88	4,216.85	4,136.74	17.16	17.41	-110.82	473.53	-549.87	716.12	683.20	32.91	21.757	
4,400.00	4,348.37	4,316.68	4,233.96	17.58	17.90	-110.82	487.66	-567.60	738.35	704.58	33.77	21.862	
4,500.00	4,446.86	4,411.98	4,326.67	18.01	18.37	-110.74	502.21	-584.20	760.13	725.54	34.59	21.973	
4,600.00	4,545.35	4,497.53	4,409.59	18.43	18.80	-110.60	516.08	-600.04	782.90	747.57	35.33	22.161	
4,700.00	4,643.84	4,587.62	4,496.35	18.86	19.27	-110.34	532.07	-618.23	807.15	771.04	36.11	22.353	
4,800.00	4,742.33	4,686.27	4,591.27	19.28	19.80	-110.04	549.93	-638.35	831.60	794.61	36.98	22.487	
4,900.00	4,840.82	4,782.93	4,684.58	19.71	20.30	-109.87	566.09	-657.71	855.82	817.99	37.83	22.622	
5,000.00	4,939.31	4,867.52	4,766.09	20.13	20.76	-109.70	580.49	-675.15	880.64	842.08	38.56	22.839	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST2 - ST2													Offset Site Error: 0.00 usft
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM, 6808-MWD+HDGM													Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,037.80	4,950.79	4,845.73	20.56	21.22	-109.45	595.90	-693.94	907.21	867.94	39.27	23.100	
5,200.00	5,136.29	5,044.39	4,934.73	20.98	21.75	-109.08	614.77	-715.93	934.62	894.51	40.11	23.303	
5,300.00	5,234.78	5,173.13	5,057.57	21.41	22.34	-108.64	640.25	-744.75	961.21	920.03	41.18	23.341	
5,400.00	5,333.27	5,333.08	5,212.73	21.83	22.80	-108.39	668.39	-771.37	982.00	939.79	42.20	23.267	
5,500.00	5,431.76	5,440.24	5,317.93	22.26	22.95	-108.47	683.75	-784.76	998.94	956.19	42.75	23.367	
5,600.00	5,530.25	5,537.96	5,413.77	22.68	23.09	-108.51	698.24	-797.18	1,016.12	972.85	43.27	23.485	
5,700.00	5,628.73	5,646.80	5,520.26	23.11	23.27	-108.44	716.23	-810.65	1,032.86	989.03	43.84	23.562	
5,800.00	5,727.22	5,775.27	5,645.64	23.53	23.49	-108.21	740.60	-824.36	1,047.80	1,003.32	44.48	23.557	
5,900.00	5,825.71	5,932.66	5,798.17	23.96	23.78	-107.55	777.75	-834.98	1,058.64	1,013.48	45.16	23.442	
6,000.00	5,924.20	6,026.00	5,888.16	24.38	23.96	-107.03	802.28	-838.81	1,066.73	1,020.99	45.74	23.321	
6,100.00	6,022.69	6,091.67	7,004.89	24.81	34.29	-28.22	1,224.35	231.49	1,043.95	1,017.11	26.85	38.885	
6,200.00	6,121.18	8,095.90	7,004.91	25.24	34.39	-26.97	1,224.28	235.71	945.78	918.20	27.58	34.298	
6,300.00	6,219.67	8,100.16	7,004.94	25.66	34.49	-25.71	1,224.21	239.98	848.01	819.55	28.45	29.803	
6,400.00	6,318.16	8,104.48	7,004.96	26.09	34.59	-24.41	1,224.14	244.29	750.79	721.25	29.54	25.412	
6,500.00	6,416.65	8,105.59	7,004.97	26.51	34.62	31.35	1,224.12	245.40	654.30	623.39	30.91	21.170	
6,600.00	6,513.98	8,093.08	7,004.90	26.89	34.33	83.06	1,224.33	232.89	559.71	527.21	32.51	17.219	
6,700.00	6,607.81	8,066.26	7,004.75	27.23	33.70	105.73	1,224.93	206.08	469.87	435.42	34.45	13.639	
6,800.00	6,695.82	8,023.66	7,004.54	27.53	32.74	115.12	1,226.19	163.50	387.86	350.94	36.92	10.505	
6,900.00	6,775.85	7,965.07	7,004.58	27.79	31.44	117.58	1,227.44	104.93	316.39	276.42	39.97	7.915	
7,000.00	6,845.93	7,882.06	7,004.51	28.01	29.67	114.36	1,226.65	21.93	256.46	213.12	43.35	5.916	
7,100.00	6,904.33	7,801.35	7,003.43	28.24	28.05	109.65	1,222.35	-58.66	207.47	160.56	46.91	4.423	
7,200.00	6,949.61	7,713.19	7,002.01	28.55	26.42	102.57	1,218.11	-146.70	172.87	122.85	50.02	3.456	
7,300.00	6,980.67	7,618.22	6,999.11	29.18	25.47	94.63	1,211.84	-241.42	148.42	96.42	52.01	2.854	
7,400.00	6,996.72	7,521.62	6,996.08	30.26	25.60	89.02	1,205.00	-337.72	131.43	78.50	52.93	2.483	
7,500.00	6,999.00	7,420.70	6,987.34	31.68	25.79	84.27	1,197.50	-437.94	117.95	64.39	53.56	2.202	
7,585.62	6,999.00	7,333.21	6,969.04	33.09	25.96	73.33	1,186.58	-522.68	105.46	51.77	53.69	1.964	
7,600.00	6,999.00	7,319.16	6,964.79	33.33	25.98	70.52	1,184.10	-535.85	103.47	49.98	53.49	1.934 SF	
7,674.96	6,999.00	7,249.71	6,938.77	34.72	26.08	52.03	1,168.44	-598.23	97.88	48.06	49.82	1.965	
7,700.00	6,999.00	7,228.23	6,929.46	35.19	26.10	45.10	1,162.17	-616.54	98.75	51.35	47.41	2.083	
7,800.00	6,999.00	7,158.99	6,895.69	37.21	26.16	22.35	1,138.29	-672.00	123.75	83.99	39.76	3.113	
7,900.00	6,999.00	7,093.99	6,856.54	39.36	26.21	7.32	1,117.03	-719.26	179.37	141.83	37.53	4.779	
8,000.00	6,999.00	7,059.35	6,833.00	41.62	26.22	2.07	1,106.14	-742.20	248.79	207.56	41.23	6.034	
8,100.00	6,999.00	7,021.59	6,805.77	43.98	26.24	-2.35	1,093.62	-765.16	326.52	283.68	42.84	7.621	
8,200.00	6,999.00	6,998.99	6,788.74	46.41	26.26	-4.48	1,085.83	-777.82	409.43	364.71	44.73	9.154	
8,300.00	6,998.99	6,964.87	6,762.38	48.91	26.24	-8.81	1,073.03	-795.27	495.50	450.26	45.24	10.953	
8,400.00	6,998.91	6,943.13	6,745.35	51.45	26.22	-13.86	1,063.96	-805.28	584.02	537.89	46.13	12.661	
8,500.00	6,998.76	6,903.99	6,714.38	54.02	26.21	-16.65	1,045.94	-821.01	674.94	628.79	46.15	14.624	
8,600.00	6,998.61	6,903.99	6,714.38	56.64	26.21	-16.65	1,045.94	-821.01	765.95	718.64	47.32	16.187	
8,700.00	6,998.47	6,903.99	6,714.38	59.29	26.21	-16.65	1,045.94	-821.01	858.97	810.80	48.17	17.832	
8,800.00	6,998.32	6,903.99	6,714.38	61.97	26.21	-16.65	1,045.94	-821.01	953.40	904.59	48.81	19.533	
8,900.00	6,998.17	6,870.48	6,687.49	64.69	26.15	-18.07	1,029.42	-832.24	1,047.31	998.68	48.63	21.537	
9,000.00	6,998.02	6,860.53	6,679.40	67.43	26.14	-18.45	1,024.44	-835.20	1,142.57	1,093.66	48.90	23.364	
9,100.00	6,997.87	6,851.65	6,672.15	70.19	26.12	-18.78	1,019.97	-837.70	1,238.35	1,189.21	49.14	25.201	
9,200.00	6,997.73	6,843.68	6,665.61	72.98	26.11	-19.06	1,015.94	-839.82	1,334.58	1,285.24	49.35	27.045	
9,300.00	6,997.58	6,807.99	6,636.04	75.78	26.06	-20.19	997.68	-847.95	1,432.21	1,383.08	49.13	29.151	
9,400.00	6,997.43	6,807.99	6,636.04	78.60	26.06	-20.19	997.68	-847.95	1,528.73	1,479.32	49.40	30.944	
9,500.00	6,997.28	6,807.99	6,636.04	81.43	26.06	-20.19	997.68	-847.95	1,625.66	1,576.02	49.64	32.750	
9,600.00	6,997.13	6,807.99	6,636.04	84.27	26.06	-20.19	997.68	-847.95	1,722.95	1,673.10	49.84	34.567	
9,700.00	6,996.98	6,807.99	6,636.04	87.13	26.06	-20.19	997.68	-847.95	1,820.52	1,770.50	50.03	36.392	
9,800.00	6,996.84	6,807.99	6,636.04	90.00	26.06	-20.19	997.68	-847.95	1,918.35	1,868.17	50.19	38.224	
9,900.00	6,996.69	6,807.99	6,636.04	92.88	26.06	-20.19	997.68	-847.95	2,016.39	1,966.06	50.33	40.062	
10,000.00	6,996.54	6,788.02	6,619.25	95.76	25.81	-20.71	987.59	-851.81	2,114.46	2,064.18	50.27	42.060	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #654H - ST2 - ST2													
Survey Program: 359-MWD+HDGM, 5279-MWD+HDGM, 6808-MWD+HDGM													
Reference Offset Semi Major Axis													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,100.00	6,996.39	6,777.17	6,610.02	98.65	25.67	-20.94	982.28	-853.86	2,212.63	2,162.33	50.30	43.989	
10,200.00	6,996.24	6,759.99	6,595.23	101.56	25.46	-21.25	974.12	-857.03	2,310.89	2,260.62	50.27	45.971	
10,300.00	6,996.10	6,759.99	6,595.23	104.46	25.46	-21.25	974.12	-857.03	2,409.18	2,358.80	50.38	47.823	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #656H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 435-MWD+HDGM, 6501-MWD+HDGM, 7540-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	-64.81	12.77	-27.15	30.00				
100.00	100.00	99.92	99.92	0.27	0.17	-64.60	12.92	-27.21	30.12	29.68	0.44	68.799	
200.00	200.00	199.85	199.84	0.63	0.34	-64.00	13.36	-27.38	30.47	29.50	0.97	31.570	
300.00	300.00	299.77	299.76	0.99	0.51	-63.02	14.09	-27.68	31.06	29.57	1.49	20.812	
400.00	400.00	399.69	399.68	1.34	0.68	-61.71	15.12	-28.09	31.90	29.88	2.02	15.796	
500.00	500.00	499.71	499.69	1.70	0.97	-60.26	16.32	-28.57	32.90	30.23	2.67	12.325	
600.00	600.00	599.77	599.75	2.06	1.33	-58.92	17.40	-28.87	33.71	30.32	3.39	9.954	
700.00	700.00	699.60	699.56	2.42	1.68	-72.55	18.82	-29.02	34.46	30.35	4.10	8.400	
800.00	799.93	799.70	799.65	2.78	2.04	-76.29	20.33	-29.42	34.63	29.81	4.82	7.188	
851.02	850.86	850.53	850.48	2.96	2.22	-81.32	20.53	-29.76	34.42	29.24	5.18	6.647 ES	
900.00	899.68	899.02	898.96	3.14	2.39	-88.89	20.04	-30.70	34.82	29.30	5.52	6.307 SF	
1,000.00	999.13	997.19	996.99	3.50	2.73	-109.89	16.77	-34.38	40.09	33.87	6.21	6.451	
1,100.00	1,098.15	1,093.27	1,092.72	3.87	3.06	-128.62	11.19	-40.46	54.80	47.90	6.90	7.942	
1,200.00	1,196.71	1,186.28	1,185.00	4.25	3.39	-139.42	4.50	-49.88	79.04	71.47	7.56	10.450	
1,300.00	1,295.20	1,278.02	1,275.44	4.64	3.74	-144.32	-3.16	-63.22	109.09	100.88	8.21	13.285	
1,400.00	1,393.69	1,369.29	1,364.87	5.03	4.10	-146.43	-11.36	-79.47	142.29	133.43	8.87	16.049	
1,500.00	1,492.18	1,457.53	1,450.85	5.43	4.48	-147.63	-20.64	-96.94	178.03	168.54	9.49	18.750	
1,600.00	1,590.67	1,547.07	1,537.57	5.83	4.87	-148.51	-31.89	-116.21	216.33	206.19	10.15	21.316	
1,700.00	1,689.16	1,639.93	1,627.30	6.24	5.30	-148.84	-42.94	-137.39	255.10	244.24	10.86	23.496	
1,800.00	1,787.65	1,733.15	1,717.38	6.65	5.74	-148.77	-52.63	-159.36	293.38	281.81	11.58	25.344	
1,900.00	1,886.14	1,828.10	1,809.26	7.06	6.19	-148.84	-62.76	-181.05	331.36	319.04	12.32	26.903	
2,000.00	1,984.63	1,928.35	1,906.65	7.47	6.67	-149.02	-73.04	-202.45	368.05	354.94	13.11	28.075	
2,100.00	2,083.12	2,034.87	2,010.88	7.89	7.16	-149.46	-83.24	-221.94	402.23	388.28	13.95	28.836	
2,200.00	2,181.60	2,147.85	2,122.17	8.30	7.65	-149.84	-91.02	-239.68	432.82	418.00	14.82	29.203	
2,300.00	2,280.09	2,238.79	2,211.90	8.72	8.04	-149.95	-95.33	-253.77	461.80	446.27	15.52	29.752	
2,400.00	2,378.58	2,328.33	2,300.12	9.14	8.43	-150.07	-100.47	-268.23	491.91	475.69	16.21	30.343	
2,500.00	2,477.07	2,436.68	2,407.12	9.56	8.88	-150.54	-108.41	-283.25	521.62	504.58	17.04	30.613	
2,600.00	2,575.56	2,530.99	2,500.55	9.98	9.27	-151.13	-115.74	-293.82	549.88	532.12	17.75	30.973	
2,700.00	2,674.05	2,615.62	2,584.27	10.40	9.62	-151.62	-123.05	-303.81	579.23	560.83	18.40	31.486	
2,800.00	2,772.54	2,707.72	2,675.12	10.82	10.01	-152.01	-131.39	-316.35	610.06	590.96	19.10	31.940	
2,900.00	2,871.03	2,818.03	2,784.00	11.24	10.48	-152.24	-139.28	-332.25	640.08	620.14	19.95	32.090	
3,000.00	2,969.52	2,910.99	2,875.89	11.66	10.87	-152.35	-144.36	-345.35	668.68	648.02	20.66	32.363	
3,100.00	3,068.01	2,994.19	2,957.99	12.08	11.23	-152.41	-149.40	-357.80	698.32	677.02	21.31	32.777	
3,200.00	3,166.50	3,086.94	3,049.30	12.50	11.64	-152.49	-156.20	-372.61	729.46	707.44	22.02	33.123	
3,300.00	3,264.99	3,194.63	3,155.47	12.92	12.11	-152.61	-163.87	-388.88	759.92	737.06	22.85	33.250	
3,400.00	3,363.48	3,291.86	3,251.51	13.35	12.52	-152.74	-170.26	-402.62	789.34	765.74	23.60	33.442	
3,500.00	3,461.97	3,380.71	3,339.24	13.77	12.90	-152.85	-176.29	-415.39	819.07	794.78	24.29	33.721	
3,600.00	3,560.46	3,486.65	3,443.83	14.19	13.35	-152.95	-183.19	-430.71	848.68	823.57	25.10	33.806	
3,700.00	3,658.95	3,582.09	3,538.15	14.62	13.76	-153.03	-189.00	-444.08	877.68	851.84	25.84	33.967	
3,800.00	3,757.44	3,693.28	3,648.20	15.04	14.22	-153.18	-195.55	-458.54	905.91	879.23	26.68	33.951	
3,900.00	3,855.92	3,806.23	3,760.35	15.46	14.66	-153.41	-201.42	-470.58	932.10	904.57	27.52	33.864	
4,000.00	3,954.41	3,902.60	3,856.11	15.89	15.04	-153.58	-205.81	-480.54	957.65	929.39	28.26	33.891	
4,100.00	4,052.90	3,996.91	3,949.74	16.31	15.42	-153.69	-209.74	-491.06	983.45	954.47	28.98	33.937	
4,200.00	4,151.39	4,090.39	4,042.49	16.73	15.79	-153.74	-213.13	-502.27	1,009.39	979.69	29.70	33.989	
4,300.00	4,249.88	4,176.69	4,128.00	17.16	16.15	-153.75	-216.28	-513.45	1,035.96	1,005.58	30.37	34.110	
4,400.00	4,348.37	4,258.61	4,209.01	17.58	16.49	-153.74	-219.82	-525.05	1,063.76	1,032.75	31.01	34.300	
4,500.00	4,446.86	4,345.07	4,294.40	18.01	16.86	-153.71	-224.15	-538.00	1,092.60	1,060.91	31.69	34.480	
4,600.00	4,545.35	4,431.99	4,380.09	18.43	17.23	-153.67	-228.80	-551.76	1,122.23	1,089.86	32.37	34.672	
4,700.00	4,643.84	4,518.47	4,465.25	18.86	17.61	-153.63	-233.90	-565.93	1,152.60	1,119.56	33.04	34.883	
4,800.00	4,742.33	4,625.31	4,570.53	19.28	18.08	-153.62	-240.70	-582.76	1,182.92	1,149.05	33.87	34.922	
4,900.00	4,840.82	4,700.71	4,644.80	19.71	18.41	-153.62	-245.74	-594.76	1,213.56	1,179.09	34.46	35.215	
5,000.00	4,939.31	4,784.39	4,727.00	20.13	18.79	-153.58	-251.69	-609.25	1,245.39	1,210.28	35.11	35.467	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 29 - Rosa Unit #656H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 435-MWD+HDGM, 6501-MWD+HDGM, 7540-MWD+HDGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
5,100.00	5,037.80	4,870.55	4,811.47	20.56	19.18	-153.52	-257.87	-625.07	1,277.94	1,242.15	35.79	35.706	
5,200.00	5,136.29	4,959.51	4,898.58	20.98	19.59	-153.44	-264.50	-641.87	1,311.02	1,274.53	36.49	35.928	
5,300.00	5,234.78	5,090.56	5,027.20	21.41	20.19	-153.41	-274.55	-664.81	1,343.56	1,306.03	37.53	35.803	
5,400.00	5,333.27	5,200.13	5,135.31	21.83	20.66	-153.45	-281.91	-681.09	1,373.54	1,335.17	38.37	35.793	
5,500.00	5,431.76	5,279.99	5,213.96	22.26	21.01	-153.42	-286.38	-694.12	1,403.67	1,364.67	39.00	35.989	
5,600.00	5,530.25	5,347.01	5,279.73	22.68	21.32	-153.35	-290.30	-706.42	1,435.28	1,395.74	39.53	36.308	
5,700.00	5,628.73	5,431.57	5,362.45	23.11	21.71	-153.27	-296.28	-722.90	1,468.45	1,428.25	40.20	36.531	
5,800.00	5,727.22	5,527.09	5,455.98	23.53	22.16	-153.21	-303.49	-740.91	1,501.59	1,460.63	40.95	36.665	
5,900.00	5,825.71	5,631.01	5,557.87	23.96	22.63	-153.19	-312.00	-759.48	1,534.57	1,492.80	41.78	36.734	
6,000.00	5,924.20	5,766.21	5,690.99	24.38	23.23	-153.27	-323.12	-780.32	1,566.08	1,523.26	42.83	36.569	
6,100.00	6,022.69	5,871.71	5,795.17	24.81	23.68	-153.35	-330.69	-795.11	1,595.89	1,552.25	43.64	36.573	
6,200.00	6,121.18	5,987.78	5,912.45	25.24	24.11	-153.43	-338.06	-810.00	1,625.70	1,583.06	44.45	36.577	
6,300.00	6,219.67	6,093.85	6,018.52	25.66	24.53	-153.51	-345.43	-824.89	1,655.51	1,612.87	45.26	36.581	
6,400.00	6,318.16	6,200.00	6,125.69	26.09	24.96	-153.59	-352.80	-839.78	1,685.32	1,642.68	46.07	36.585	
6,500.00	6,416.65	6,306.07	6,231.76	26.51	25.38	-153.67	-360.17	-854.67	1,715.13	1,672.49	46.88	36.589	
6,600.00	6,515.14	6,412.14	6,337.86	26.93	25.80	-153.75	-367.54	-869.56	1,744.94	1,702.30	47.69	36.593	
6,700.00	6,613.63	6,518.23	6,443.95	27.35	26.22	-153.83	-374.91	-884.45	1,774.75	1,732.11	48.50	36.597	
6,800.00	6,712.12	6,624.32	6,550.04	27.77	26.64	-153.91	-382.28	-899.34	1,804.56	1,761.92	49.31	36.601	
6,900.00	6,810.61	6,730.41	6,656.13	28.19	27.06	-153.99	-389.65	-914.23	1,834.37	1,791.73	50.12	36.605	
7,000.00	6,909.10	6,836.50	6,762.22	28.61	27.48	-154.07	-397.02	-929.12	1,864.18	1,821.54	50.93	36.609	
7,100.00	7,007.59	6,942.59	6,868.31	29.03	27.90	-154.15	-404.39	-944.01	1,893.99	1,851.35	51.74	36.613	
7,200.00	7,106.08	7,048.68	6,974.40	29.45	28.32	-154.23	-411.76	-958.90	1,923.80	1,881.16	52.55	36.617	
7,300.00	7,204.57	7,154.77	7,080.49	29.87	28.74	-154.31	-419.13	-973.79	1,953.61	1,910.97	53.36	36.621	
7,400.00	7,303.06	7,260.86	7,186.58	30.29	29.16	-154.39	-426.50	-988.68	1,983.42	1,940.78	54.17	36.625	
7,500.00	7,401.55	7,366.95	7,292.67	30.71	29.58	-154.47	-433.87	-1003.57	2,013.23	1,970.59	54.98	36.629	
7,600.00	7,500.04	7,473.04	7,398.76	31.13	30.00	-154.55	-441.24	-1018.46	2,043.04	2,000.40	55.79	36.633	
7,700.00	7,598.53	7,579.13	7,504.85	31.55	30.42	-154.63	-448.61	-1033.35	2,072.85	2,030.21	56.60	36.637	
7,800.00	7,697.02	7,685.22	7,610.94	31.97	30.84	-154.71	-455.98	-1048.24	2,102.66	2,060.02	57.41	36.641	
7,900.00	7,795.51	7,783.31	7,717.03	32.39	31.26	-154.79	-463.35	-1063.13	2,132.47	2,089.83	58.22	36.645	
8,000.00	7,894.00	7,882.40	7,823.12	32.81	31.68	-154.87	-470.72	-1078.02	2,162.28	2,119.64	59.03	36.649	
8,100.00	7,992.49	7,980.89	7,929.21	33.23	32.10	-154.95	-478.09	-1092.91	2,192.09	2,149.45	59.84	36.653	
8,200.00	8,090.98	8,079.38	8,035.30	33.65	32.52	-155.03	-485.46	-1107.80	2,221.90	2,179.26	60.65	36.657	
8,300.00	8,189.47	8,177.87	8,141.39	34.07	32.94	-155.11	-492.83	-1122.69	2,251.71	2,209.07	61.46	36.661	
8,400.00	8,287.96	8,276.36	8,243.48	34.49	33.36	-155.19	-500.20	-1137.58	2,281.52	2,238.88	62.27	36.665	
8,500.00	8,386.45	8,374.85	8,345.97	34.91	33.78	-155.27	-507.57	-1152.47	2,311.33	2,268.69	63.08	36.669	
8,600.00	8,484.94	8,473.34	8,446.46	35.33	34.20	-155.35	-514.94	-1167.36	2,341.14	2,298.50	63.89	36.673	
8,700.00	8,583.43	8,571.83	8,547.95	35.75	34.62	-155.43	-522.31	-1182.25	2,370.95	2,328.31	64.70	36.677	
8,800.00	8,681.92	8,670.32	8,649.44	36.17	35.04	-155.51	-529.68	-1197.14	2,400.76	2,358.12	65.51	36.681	
8,900.00	8,780.41	8,768.81	8,750.93	36.59	35.46	-155.59	-537.05	-1212.03	2,430.57	2,387.93	66.32	36.685	
9,000.00	8,878.90	8,867.30	8,849.42	37.01	35.88	-155.67	-544.42	-1226.92	2,460.38	2,417.74	67.13	36.689	
9,100.00	8,977.39	8,965.79	8,951.91	37.43	36.30	-155.75	-551.79	-1241.81	2,490.19	2,447.55	67.94	36.693	
9,200.00	9,075.88	9,064.28	9,050.40	37.85	36.72	-155.83	-559.16	-1256.70	2,519.99	2,477.36	68.75	36.697	
9,300.00	9,174.37	9,162.77	9,150.89	38.27	37.14	-155.91	-566.53	-1271.59	2,549.80	2,507.17	69.56	36.701	
9,400.00	9,272.86	9,261.26	9,250.38	38.69	37.56	-155.99	-573.90	-1286.48	2,579.61	2,536.98	70.37	36.705	
9,500.00	9,371.35	9,359.75	9,350.87	39.11	37.98	-156.07	-581.27	-1301.37	2,609.42	2,566.79	71.18	36.709	
9,600.00	9,469.84	9,458.24	9,450.99	39.53	38.40	-156.15	-588.64	-1316.26	2,639.23	2,596.60	71.99	36.713	
9,700.00	9,568.33	9,556.73	9,550.08	39.95	38.82	-156.23	-596.01	-1331.15	2,669.04	2,626.41	72.80	36.717	
9,800.00	9,666.82	9,655.22	9,650.60	40.37	39.24	-156.31	-603.38	-1346.04	2,698.85	2,656.22	73.61	36.721	
9,900.00	9,765.31	9,753.71	9,750.09	40.79	39.66	-156.39	-610.75	-1360.93	2,728.66	2,686.03	74.42	36.725	



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6372' & RKB 25' @ 6397.00usft

Offset Depths are relative to Offset Datum

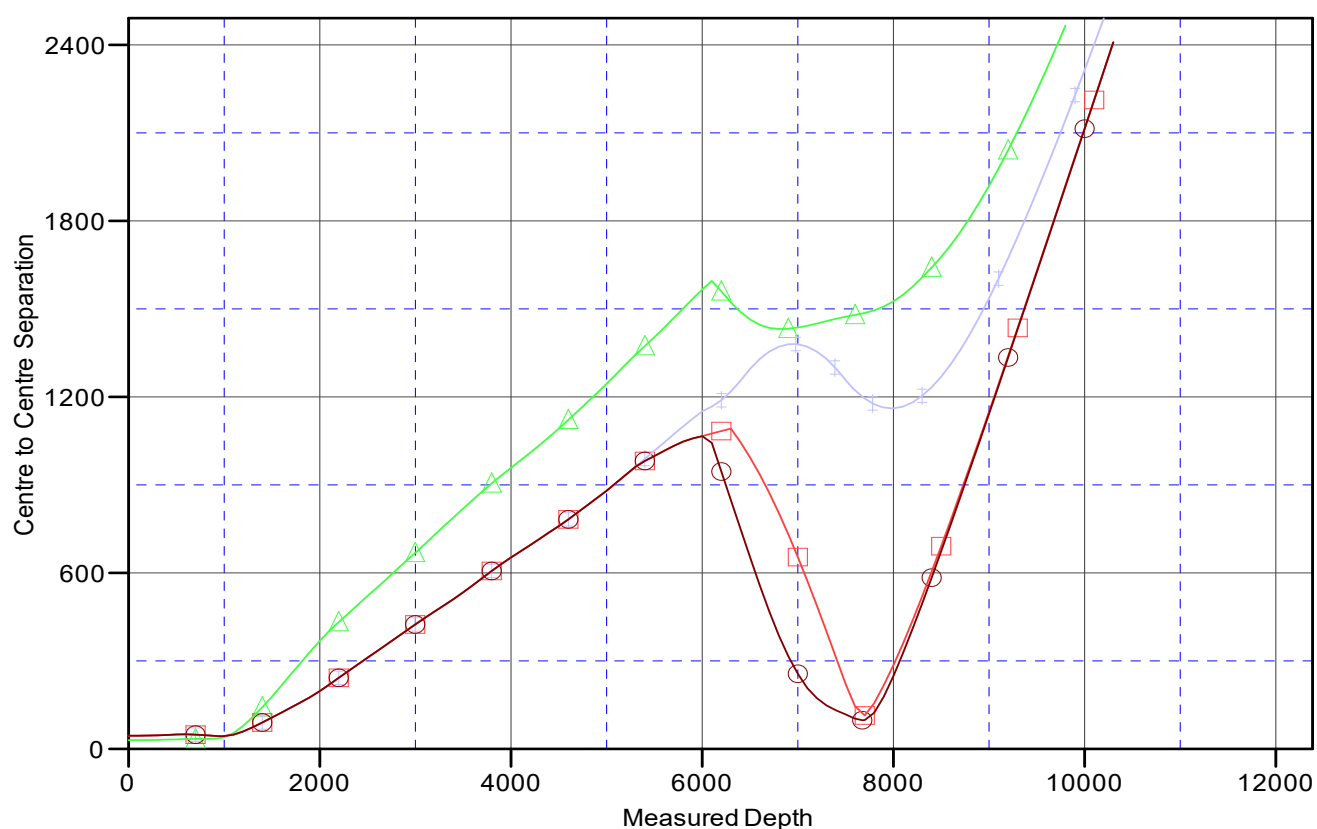
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #650H - Slot B10

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.25°

Ladder Plot



LEGEND

Rosa Unit #656H, OH, OH V0
 Rosa Unit #654H, ST1, ST1 V0
 Rosa Unit #654H, ST2, ST2 V0



Lonestar Consulting, LLC

Anticollision Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 25' @ 6397.00usft
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6372' & RKB 25' @ 6397.00usft

Offset Depths are relative to Offset Datum

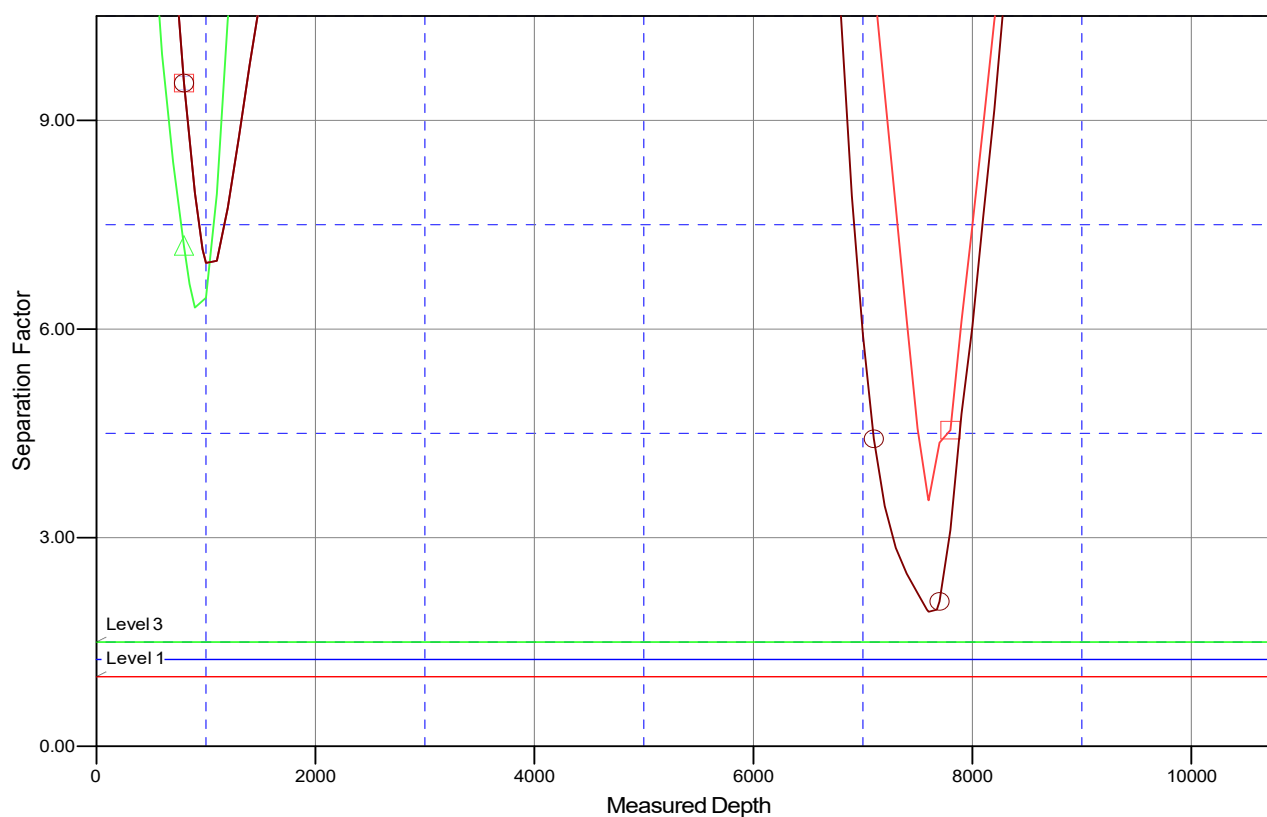
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #650H - Slot B10

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.25°

Separation Factor Plot



LEGEND

Rosa Unit #650H, OH OH V0
 Rosa Unit #654H, ST1, ST1 V0
 Rosa Unit #654H, OH OH V0
 Rosa Unit #654H, ST2, ST2 V0

Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 25 / NENE /	County or Parish/State: RIO ARRIBA / NM
Well Number: 650H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078771	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141200X1	Well Status: Temporarily Abandoned	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2674127

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 05/31/2022

Time Sundry Submitted: 12:05

Date proposed operation will begin: 06/01/2022

Procedure Description: LOGOS Operating request a change in plans for the following: Original TD @ 16,449' MD 6987' TVD to new TD @ 16,438' MD 6987' TVD. Geology tops have been updated per changes. Original KOP @ 6435' MD 6341' TVD to new KOP @ 6433' MD 6350' TVD Original Landing point @ 7467' MD 6999' TVD to new Landing point @ 7454' MD 6999' TVD Original Intermediate 12.25" hole size, 9.625" casing @ 6335' MD to new Intermediate casing set depth @ 6325' MD 6244' TVD Original Production 8.5" hole size, 5.5" casing @ 16,449' MD to new Production casing set depth @ 16,438' MD 6987' TVD The 9.625" Intermediate & 5.5" production casing grade, weight and cement sacks have been update per casing depth changes. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_5_Rosa_Unit_650H_TD_KOP_Change_of_Plans_20220531_20220531120449.pdf

Received by OCD: 6/1/2022 9:12:46 AM

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Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 25 / NENE /	County or Parish/State: RIO ARRIBA / NM
Well Number: 650H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078771	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141200X1	Well Status: Temporarily Abandoned	Operator: LOGOS OPERATING LLC

Operator

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: ETTA TRUJILLO	Signed on: MAY 31, 2022 12:05 PM
Name: LOGOS OPERATING LLC	
Title: Regulatory Specialist	
Street Address: 2010 AFTON PLACE	
City: Farmington	State: NM
Phone: (505) 324-4154	
Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM	

Field

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5055647742	BLM POC Email Address: krennick@blm.gov
Disposition: Approved	Disposition Date: 05/31/2022
Signature: Kenneth Rennick	

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 112534

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 112534
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	6/2/2022