Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM 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.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No. NMSF078773

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No. NMNM78407E

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No. ROSA UNIT 742H

2. Name of Operator LOGOS OPERATING, LLC

9 API Well No. 30-039-31419

3a. Address 2010 AFTON PLACE, FARMINGTON, NM 87401

3b. Phone No. *(include area code)* (505) 278-8720

10. Field and Pool or Exploratory Area BASIN MANCOS

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*
SEC 33 T31N R05W, NENW (C) 378' FNL 1695 FWL

11. 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 recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zonesAttach 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 recompletion 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 bottom-hole location from 1827' FNL & 230' FWL to new **bottom-hole location 1827' FNL & 160' FWL**

Original TD @ 18,435' MD 7,042' TVD to new **TD @ 17,443' MD 7,042' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6,215' MD 5,969' TVD to new **KOP @ 6,323' MD 6,156' TVD**

Original Landing point @ 7,904 MD 7,069' TVD to new **Landing point @ 7,817' MD 7,069' TVD**

Original 9.625" casing Intermediate @ 6,572' MD to **6,485' MD 6,311' TVD**

Original 5.5" casing Production @ 18,435' MD to **17,443' MD 7,042' TVD**

The 9.625" Intermediate & 5.5" production cementing bbls and 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 3/31/2022

THE SPACE FOR FEDERAL OR STATE OFICE 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)

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to Appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-039-31419	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	742H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6492'

[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
C	33	31N	5W		378	NORTH	1695	WEST	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
F	31	31N	5W	2	1827	NORTH	160	WEST	RIO ARRIBA

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
712.89	REFER TO DESCRIPTION BELOW			R-13457

T31N R5W, Section 31 : Lots 1 & 2, NE/4
T31N R5W, Section 32 : N/2
T31N R5W, Section 33 : NW/4

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 — Signature — 3/31/2022 — Date

Etta Trujillo — 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: JANUARY 20, 2022
Date of Survey: APRIL 21, 2016

Signature and Seal of Professional Surveyor

JASON C. EDWARDS — NEW MEXICO — 15269 — REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

END-OF-LATERAL (D)
1827' FNL 160' FWL
SECTION 31, T31N, R5W
LAT: 36.858332 °N
LONG: 107.406638 °W
DATUM: NAD1927

LAT: 36.858338 °N
LONG: 107.407241 °W
DATUM: NAD1983

N89°46.4'W 170.0'

FIRST PERFORATION (C)
1828' FNL 330' FWL
SECTION 31, T31N, R5W
LAT: 36.858328 °N
LONG: 107.406057 °W
DATUM: NAD1927

LAT: 36.858334 °N
LONG: 107.406660 °W
DATUM: NAD1983

N89°46.4'W 9456.1'

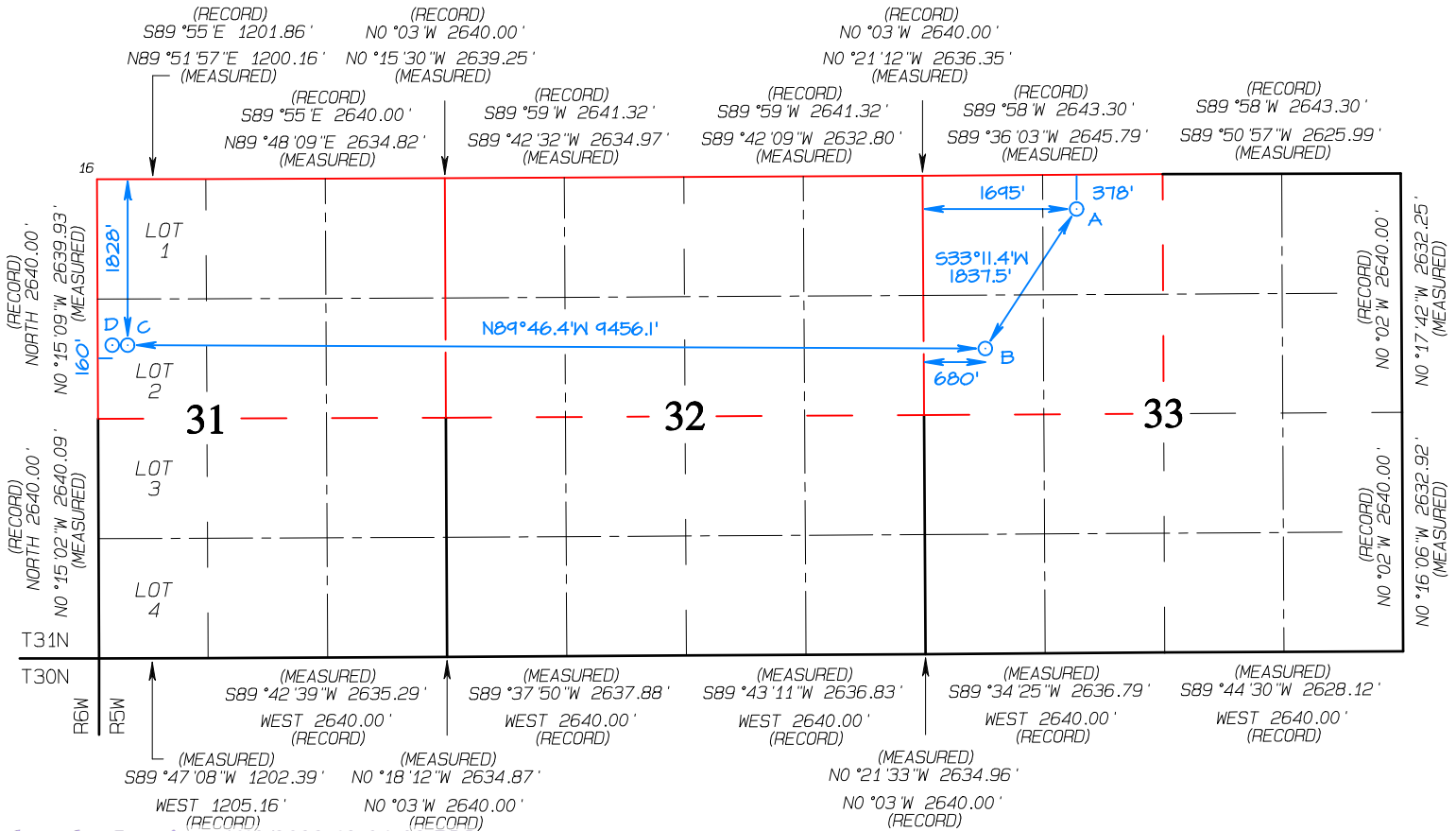
POINT-OF-ENTRY (B)
1908' FNL 680' FWL
SECTION 33, T31N, R5W
LAT: 36.858104 °N
LONG: 107.373737 °W
DATUM: NAD1927

LAT: 36.858110 °N
LONG: 107.374339 °W
DATUM: NAD1983

S33°11.4'W 1837.5'

SURFACE LOCATION (A)
378' FNL 1695' FWL
SECTION 33, T31N, R5W
LAT: 36.862314 °N
LONG: 107.370273 °W
DATUM: NAD1927

LAT: 36.862321 °N
LONG: 107.370875 °W
DATUM: NAD1983



Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 31
Rosa Unit #742H

OH
Plan #4

Anticollision Report

24 January, 2022

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Reference Plan #4

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method	MD Interval 100.00ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 10,000.00ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 1/24/2022

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,443.21	Plan #4 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measure	Offset Measured	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation	Warning
Rosa Unit 31						
Rosa Unit #740H - OH - Plan #4	900.00	900.00	60.58	54.13	9.389	CC, ES
Rosa Unit #740H - OH - Plan #4	17,443.21	17,909.33	1,456.01	820.42	2.291	SF
Rosa Unit #741H - OH - Plan #1	882.14	883.29	15.24	8.96	2.427	CC, ES
Rosa Unit #741H - OH - Plan #1	17,400.00	18,262.96	736.85	129.27	1.213	Level 3, SF
Rosa Unit #744H - OH - Plan #3	500.00	500.00	45.76	42.18	12.766	CC
Rosa Unit #744H - OH - Plan #3	600.00	599.61	46.18	41.88	10.759	ES
Rosa Unit #744H - OH - Plan #3	1,000.00	998.04	60.44	53.33	8.499	SF
Rosa Unit #745H - OH - Plan #1	821.54	822.22	25.53	19.70	4.373	CC, ES
Rosa Unit #745H - OH - Plan #1	900.00	900.00	27.34	20.95	4.277	SF
Rosa Unit #746H - OH - Plan #3	500.00	500.00	9.48	5.90	2.645	CC, ES
Rosa Unit #746H - OH - Plan #3	7,046.57	7,000.60	100.26	46.15	1.853	SF

Offset Design Rosa Unit 31 - Rosa Unit #740H - OH - Plan #4

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM **Rule Assigned:** **Offset Well Error:** 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Maior Axis Reference (ft)	Semi Maior Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-13.98	58.79	-14.64	60.58				
100.00	100.00	100.00	100.00	0.36	0.36	-13.98	58.79	-14.64	60.58	59.87	0.72	84.504	
200.00	200.00	200.00	200.00	0.72	0.72	-13.98	58.79	-14.64	60.58	59.15	1.43	42.252	
300.00	300.00	300.00	300.00	1.08	1.08	-13.98	58.79	-14.64	60.58	58.43	2.15	28.168	
400.00	400.00	400.00	400.00	1.43	1.43	-13.98	58.79	-14.64	60.58	57.72	2.87	21.126	
500.00	500.00	500.00	500.00	1.79	1.79	-13.98	58.79	-14.64	60.58	57.00	3.58	16.901	
600.00	600.00	600.00	600.00	2.15	2.15	-13.98	58.79	-14.64	60.58	56.28	4.30	14.084	
700.00	700.00	700.00	700.00	2.51	2.51	-13.98	58.79	-14.64	60.58	55.57	5.02	12.072	
800.00	800.00	800.00	800.00	2.87	2.87	-13.98	58.79	-14.64	60.58	54.85	5.74	10.563	
900.00	900.00	900.00	900.00	3.23	3.23	-13.98	58.79	-14.64	60.58	54.13	6.45	9.389	CC, ES
1,000.00	999.99	999.99	999.99	3.57	3.58	163.97	58.79	-14.64	61.84	54.69	7.15	8.647	
1,100.00	1,099.91	1,099.91	1,099.91	3.90	3.94	164.91	58.79	-14.64	65.62	57.78	7.84	8.372	
1,200.00	1,199.69	1,199.69	1,199.69	4.23	4.30	166.24	58.79	-14.64	71.96	63.43	8.53	8.436	
1,300.00	1,299.27	1,299.27	1,299.27	4.57	4.66	167.75	58.79	-14.64	80.88	71.65	9.23	8.766	
1,400.00	1,398.57	1,398.57	1,398.57	4.92	5.01	169.27	58.79	-14.64	92.40	82.48	9.92	9.311	
1,500.00	1,497.54	1,498.53	1,498.52	5.28	5.36	171.33	58.46	-13.41	106.07	95.46	10.62	9.992	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

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Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #740H - OH - Plan #4

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,600.00	1,596.09	1,598.15	1,598.06	5.65	5.70	174.23	57.47	-9.67	121.59	110.29	11.30	10.759	
1,700.00	1,694.16	1,697.25	1,696.95	6.03	6.04	177.58	55.82	-3.46	139.25	127.25	11.99	11.612	
1,800.00	1,791.70	1,795.69	1,794.98	6.43	6.38	-178.92	53.53	5.15	159.30	146.61	12.69	12.555	
1,900.00	1,888.62	1,893.31	1,891.94	6.85	6.73	-175.46	50.62	16.11	181.97	168.58	13.39	13.589	
2,000.00	1,985.11	1,989.90	1,987.63	7.29	7.08	-172.29	47.24	28.83	206.57	192.47	14.10	14.651	
2,100.00	2,081.59	2,086.25	2,083.06	7.74	7.43	-169.77	43.82	41.67	231.67	216.86	14.81	15.639	
2,200.00	2,178.07	2,182.59	2,178.48	8.19	7.78	-167.74	40.41	54.51	257.12	241.58	15.54	16.547	
2,300.00	2,274.55	2,278.94	2,273.90	8.66	8.14	-166.07	37.00	67.36	282.81	266.54	16.27	17.382	
2,400.00	2,371.03	2,375.28	2,369.33	9.12	8.51	-164.69	33.58	80.20	308.69	291.68	17.01	18.148	
2,500.00	2,467.51	2,471.63	2,464.75	9.60	8.87	-163.51	30.17	93.04	334.71	316.95	17.76	18.851	
2,600.00	2,563.99	2,567.97	2,560.17	10.08	9.24	-162.51	26.75	105.88	360.84	342.34	18.51	19.498	
2,700.00	2,660.48	2,664.31	2,655.60	10.56	9.61	-161.64	23.34	118.73	387.07	367.80	19.26	20.093	
2,800.00	2,756.96	2,760.66	2,751.02	11.05	9.98	-160.88	19.93	131.57	413.37	393.34	20.03	20.642	
2,900.00	2,853.44	2,857.00	2,846.44	11.54	10.36	-160.21	16.51	144.41	439.72	418.93	20.79	21.150	
3,000.00	2,949.92	2,953.35	2,941.87	12.03	10.73	-159.62	13.10	157.25	466.13	444.57	21.56	21.620	
3,100.00	3,046.40	3,049.69	3,037.29	12.52	11.11	-159.09	9.68	170.10	492.58	470.24	22.33	22.057	
3,200.00	3,142.88	3,146.04	3,132.72	13.02	11.49	-158.61	6.27	182.94	519.06	495.95	23.11	22.462	
3,300.00	3,239.36	3,242.38	3,228.14	13.52	11.87	-158.18	2.86	195.78	545.57	521.69	23.89	22.841	
3,400.00	3,335.85	3,338.73	3,323.56	14.02	12.25	-157.79	-0.56	208.62	572.11	547.44	24.67	23.194	
3,500.00	3,432.33	3,435.07	3,418.99	14.52	12.63	-157.44	-3.97	221.47	598.67	573.22	25.45	23.524	
3,600.00	3,528.81	3,531.41	3,514.41	15.02	13.01	-157.11	-7.38	234.31	625.25	599.02	26.23	23.833	
3,700.00	3,625.29	3,627.76	3,609.83	15.53	13.39	-156.81	-10.80	247.15	651.85	624.83	27.02	24.124	
3,800.00	3,721.77	3,724.10	3,705.26	16.03	13.78	-156.54	-14.21	260.00	678.46	650.66	27.81	24.397	
3,900.00	3,818.25	3,820.45	3,800.68	16.54	14.16	-156.29	-17.63	272.84	705.09	676.49	28.60	24.654	
4,000.00	3,914.73	3,916.79	3,896.10	17.05	14.55	-156.05	-21.04	285.68	731.73	702.34	29.39	24.897	
4,100.00	4,011.22	4,013.14	3,991.53	17.55	14.93	-155.83	-24.45	298.52	758.38	728.20	30.18	25.126	
4,200.00	4,107.70	4,109.48	4,086.95	18.06	15.32	-155.63	-27.87	311.37	785.04	754.06	30.98	25.342	
4,300.00	4,204.18	4,205.83	4,182.37	18.57	15.70	-155.43	-31.28	324.21	811.71	779.93	31.77	25.547	
4,400.00	4,300.66	4,302.17	4,277.80	19.08	16.09	-155.26	-34.69	337.05	838.38	805.81	32.57	25.742	
4,500.00	4,397.14	4,398.51	4,373.22	19.59	16.48	-155.09	-38.11	349.89	865.07	831.70	33.37	25.927	
4,600.00	4,493.62	4,494.86	4,468.65	20.10	16.86	-154.93	-41.52	362.74	891.75	857.59	34.16	26.102	
4,700.00	4,590.10	4,591.20	4,564.07	20.62	17.25	-154.78	-44.94	375.58	918.45	883.49	34.96	26.269	
4,800.00	4,686.59	4,687.55	4,659.49	21.13	17.64	-154.64	-48.35	388.42	945.15	909.39	35.76	26.428	
4,900.00	4,783.07	4,783.89	4,754.92	21.64	18.03	-154.51	-51.76	401.26	971.86	935.29	36.56	26.580	
5,000.00	4,879.55	4,880.24	4,850.34	22.15	18.42	-154.38	-55.18	414.11	998.57	961.20	37.36	26.725	
5,100.00	4,976.03	4,976.58	4,945.76	22.67	18.81	-154.26	-58.59	426.95	1,025.28	987.11	38.17	26.863	
5,200.00	5,072.51	5,072.93	5,041.19	23.18	19.20	-154.15	-62.00	439.79	1,052.00	1,013.03	38.97	26.995	
5,300.00	5,168.99	5,169.27	5,136.61	23.69	19.59	-154.04	-65.42	452.64	1,078.72	1,038.95	39.77	27.122	
5,400.00	5,265.47	5,265.61	5,232.03	24.21	19.98	-153.94	-68.83	465.48	1,105.45	1,064.87	40.58	27.243	
5,500.00	5,361.95	5,361.96	5,327.46	24.72	20.37	-153.84	-72.25	478.32	1,132.17	1,090.79	41.38	27.360	
5,600.00	5,458.44	5,458.30	5,422.88	25.24	20.76	-153.75	-75.66	491.16	1,158.91	1,116.72	42.19	27.471	
5,700.00	5,554.92	5,554.65	5,518.30	25.75	21.15	-153.66	-79.07	504.01	1,185.64	1,142.65	42.99	27.578	
5,800.00	5,651.40	5,650.99	5,613.73	26.27	21.54	-153.58	-82.49	516.85	1,212.38	1,168.58	43.80	27.682	
5,900.00	5,747.88	5,747.34	5,709.15	26.78	21.93	-153.50	-85.90	529.69	1,239.11	1,194.51	44.60	27.781	
6,000.00	5,844.36	5,843.68	5,804.58	27.30	22.32	-153.42	-89.31	542.53	1,265.86	1,220.45	45.41	27.876	
6,100.00	5,940.84	5,940.02	5,900.00	27.81	22.71	-153.35	-92.73	555.38	1,292.60	1,246.38	46.22	27.968	
6,200.00	6,037.32	6,036.37	5,995.42	28.33	23.10	-153.27	-96.14	568.22	1,319.34	1,272.32	47.03	28.056	
6,300.00	6,133.81	6,305.22	6,263.22	28.85	23.97	-154.51	-105.25	566.77	1,339.94	1,291.40	48.54	27.606	
6,400.00	6,230.18	6,538.60	6,487.50	29.36	24.54	-174.32	-112.12	504.83	1,350.07	1,300.94	49.14	27.476	
6,500.00	6,325.65	6,784.76	6,700.62	29.87	25.17	163.82	-117.86	383.20	1,355.24	1,305.83	49.41	27.428	
6,600.00	6,419.17	6,976.88	6,841.06	30.35	25.95	147.59	-121.01	252.63	1,357.68	1,307.59	50.09	27.107	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #740H - OH - Plan #4

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,700.00	6,509.71	7,141.09	6,938.39	30.81	27.06	135.50	-122.67	120.62	1,359.22	1,307.84	51.38	26.455	
6,800.00	6,596.29	7,283.08	7,003.28	31.26	28.48	126.21	-123.30	-5.53	1,361.05	1,307.81	53.24	25.562	
6,900.00	6,677.95	7,407.97	7,044.36	31.69	30.09	118.81	-123.23	-123.37	1,363.88	1,308.39	55.49	24.578	
7,000.00	6,753.80	7,519.80	7,067.83	32.11	31.85	112.70	-122.65	-232.64	1,368.03	1,310.05	57.98	23.595	
7,100.00	6,823.01	7,621.60	7,077.97	32.54	33.63	107.50	-121.73	-333.88	1,373.57	1,313.02	60.55	22.685	
7,200.00	6,884.82	7,708.16	7,078.95	32.99	35.26	103.21	-120.68	-420.42	1,380.53	1,317.54	62.99	21.918	
7,300.00	6,938.56	7,791.04	7,078.86	33.48	36.92	99.61	-119.64	-503.29	1,388.93	1,323.44	65.49	21.207	
7,400.00	6,983.63	7,879.29	7,078.75	34.07	38.78	96.51	-118.53	-591.54	1,397.74	1,329.41	68.33	20.456	
7,500.00	7,019.54	7,971.97	7,078.64	34.79	40.83	93.98	-117.36	-684.21	1,405.94	1,334.42	71.52	19.657	
7,600.00	7,045.89	8,068.06	7,078.53	35.71	43.02	92.09	-116.15	-780.29	1,412.69	1,337.61	75.08	18.815	
7,700.00	7,062.41	8,166.50	7,078.42	36.86	45.35	90.88	-114.91	-878.72	1,417.35	1,338.36	78.99	17.943	
7,800.00	7,068.90	8,266.21	7,078.30	38.24	47.77	90.39	-113.66	-978.42	1,419.51	1,336.31	83.20	17.061	
7,900.00	7,068.77	8,366.21	7,078.18	39.84	50.26	90.38	-112.40	-1,078.41	1,419.93	1,332.29	87.64	16.202	
8,000.00	7,068.49	8,466.20	7,078.07	41.63	52.80	90.39	-111.14	-1,178.40	1,420.30	1,328.05	92.25	15.396	
8,100.00	7,068.21	8,566.20	7,077.95	43.59	55.37	90.39	-109.89	-1,278.40	1,420.68	1,323.67	97.01	14.644	
8,200.00	7,067.93	8,666.20	7,077.83	45.68	57.99	90.40	-108.63	-1,378.39	1,421.06	1,319.16	101.90	13.945	
8,300.00	7,067.65	8,766.20	7,077.71	47.88	60.64	90.41	-107.37	-1,478.38	1,421.44	1,314.53	106.90	13.297	
8,400.00	7,067.37	8,866.20	7,077.60	50.18	63.31	90.41	-106.11	-1,578.37	1,421.81	1,309.82	112.00	12.695	
8,500.00	7,067.08	8,966.20	7,077.48	52.54	66.01	90.42	-104.86	-1,678.36	1,422.19	1,305.02	117.17	12.138	
8,600.00	7,066.80	9,066.20	7,077.36	54.97	68.73	90.42	-103.60	-1,778.35	1,422.57	1,300.15	122.42	11.621	
8,700.00	7,066.52	9,166.20	7,077.25	57.46	71.47	90.43	-102.34	-1,878.34	1,422.95	1,295.22	127.73	11.141	
8,800.00	7,066.24	9,266.20	7,077.13	59.99	74.23	90.44	-101.08	-1,978.33	1,423.32	1,290.23	133.09	10.695	
8,900.00	7,065.96	9,366.20	7,077.01	62.57	77.00	90.44	-99.82	-2,078.33	1,423.70	1,285.20	138.50	10.280	
9,000.00	7,065.68	9,466.20	7,076.90	65.18	79.79	90.45	-98.57	-2,178.32	1,424.08	1,280.13	143.95	9.893	
9,100.00	7,065.40	9,566.20	7,076.78	67.81	82.59	90.46	-97.31	-2,278.31	1,424.45	1,275.02	149.44	9.532	
9,200.00	7,065.12	9,666.19	7,076.66	70.48	85.40	90.46	-96.05	-2,378.30	1,424.83	1,269.87	154.96	9.195	
9,300.00	7,064.84	9,766.19	7,076.55	73.17	88.22	90.47	-94.79	-2,478.29	1,425.21	1,264.70	160.51	8.879	
9,400.00	7,064.56	9,866.19	7,076.43	75.88	91.05	90.48	-93.53	-2,578.28	1,425.59	1,259.50	166.09	8.583	
9,500.00	7,064.28	9,966.19	7,076.31	78.61	93.88	90.48	-92.28	-2,678.27	1,425.97	1,254.28	171.69	8.305	
9,600.00	7,064.00	10,066.19	7,076.19	81.36	96.73	90.49	-91.02	-2,778.26	1,426.34	1,249.03	177.31	8.044	
9,700.00	7,063.72	10,166.19	7,076.08	84.12	99.58	90.50	-89.76	-2,878.26	1,426.72	1,243.77	182.95	7.798	
9,800.00	7,063.44	10,266.19	7,075.96	86.89	102.44	90.50	-88.50	-2,978.25	1,427.10	1,238.48	188.61	7.566	
9,900.00	7,063.16	10,366.19	7,075.84	89.68	105.30	90.51	-87.25	-3,078.24	1,427.48	1,233.19	194.29	7.347	
10,000.00	7,062.88	10,466.19	7,075.73	92.48	108.17	90.52	-85.99	-3,178.23	1,427.85	1,227.87	199.98	7.140	
10,100.00	7,062.60	10,566.19	7,075.61	95.29	111.04	90.52	-84.73	-3,278.22	1,428.23	1,222.55	205.68	6.944	
10,200.00	7,062.32	10,666.19	7,075.49	98.10	113.92	90.53	-83.47	-3,378.21	1,428.61	1,217.21	211.40	6.758	
10,300.00	7,062.04	10,766.19	7,075.38	100.93	116.80	90.53	-82.21	-3,478.20	1,428.99	1,211.86	217.13	6.581	
10,400.00	7,061.76	10,866.18	7,075.26	103.76	119.69	90.54	-80.96	-3,578.19	1,429.36	1,206.50	222.87	6.414	
10,500.00	7,061.47	10,966.18	7,075.14	106.60	122.58	90.55	-79.70	-3,678.18	1,429.74	1,201.13	228.61	6.254	
10,600.00	7,061.19	11,066.18	7,075.02	109.45	125.47	90.55	-78.44	-3,778.18	1,430.12	1,195.75	234.37	6.102	
10,700.00	7,060.91	11,166.18	7,074.91	112.31	128.37	90.56	-77.18	-3,878.17	1,430.50	1,190.36	240.13	5.957	
10,800.00	7,060.63	11,266.18	7,074.79	115.16	131.27	90.57	-75.93	-3,978.16	1,430.88	1,184.97	245.91	5.819	
10,900.00	7,060.35	11,366.18	7,074.67	118.03	134.17	90.57	-74.67	-4,078.15	1,431.25	1,179.57	251.69	5.687	
11,000.00	7,060.07	11,466.18	7,074.56	120.90	137.07	90.58	-73.41	-4,178.14	1,431.63	1,174.16	257.47	5.560	
11,100.00	7,059.79	11,566.18	7,074.44	123.77	139.98	90.59	-72.15	-4,278.13	1,432.01	1,168.74	263.26	5.439	
11,200.00	7,059.51	11,666.18	7,074.32	126.65	142.89	90.59	-70.89	-4,378.12	1,432.39	1,163.32	269.06	5.324	
11,300.00	7,059.23	11,766.18	7,074.21	129.53	145.80	90.60	-69.64	-4,478.11	1,432.76	1,157.90	274.86	5.213	
11,400.00	7,058.95	11,866.18	7,074.09	132.41	148.72	90.60	-68.38	-4,578.11	1,433.14	1,152.47	280.67	5.106	
11,500.00	7,058.67	11,966.18	7,073.97	135.30	151.63	90.61	-67.12	-4,678.10	1,433.52	1,147.03	286.49	5.004	
11,600.00	7,058.39	12,066.17	7,073.86	138.19	154.55	90.62	-65.86	-4,778.09	1,433.90	1,141.59	292.30	4.906	
11,700.00	7,058.11	12,166.17	7,073.74	141.08	157.47	90.62	-64.61	-4,878.08	1,434.28	1,136.15	298.12	4.811	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #740H - OH - Plan #4

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Rule Assigned: Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,800.00	7,057.83	12,266.17	7,073.62	143.98	160.39	90.63	-63.35	-4,978.07	1,434.65	1,130.70	303.95	4.720	
11,900.00	7,057.55	12,366.17	7,073.50	146.88	163.31	90.64	-62.09	-5,078.06	1,435.03	1,125.25	309.78	4.632	
12,000.00	7,057.27	12,466.17	7,073.39	149.78	166.23	90.64	-60.83	-5,178.05	1,435.41	1,119.80	315.61	4.548	
12,100.00	7,056.99	12,566.17	7,073.27	152.69	169.16	90.65	-59.57	-5,278.04	1,435.79	1,114.34	321.45	4.467	
12,200.00	7,056.71	12,666.17	7,073.15	155.59	172.08	90.66	-58.32	-5,378.03	1,436.17	1,108.88	327.29	4.388	
12,300.00	7,056.43	12,766.17	7,073.04	158.50	175.01	90.66	-57.06	-5,478.03	1,436.54	1,103.42	333.13	4.312	
12,400.00	7,056.15	12,866.17	7,072.92	161.41	177.94	90.67	-55.80	-5,578.02	1,436.92	1,097.95	338.97	4.239	
12,500.00	7,055.87	12,966.17	7,072.80	164.32	180.87	90.67	-54.54	-5,678.01	1,437.30	1,092.48	344.82	4.168	
12,600.00	7,055.58	13,066.17	7,072.69	167.24	183.80	90.68	-53.28	-5,778.00	1,437.68	1,087.01	350.67	4.100	
12,700.00	7,055.30	13,166.17	7,072.57	170.15	186.73	90.69	-52.03	-5,877.99	1,438.06	1,081.53	356.52	4.034	
12,800.00	7,055.02	13,266.16	7,072.45	173.07	189.66	90.69	-50.77	-5,977.98	1,438.43	1,076.06	362.38	3.969	
12,900.00	7,054.74	13,366.16	7,072.33	175.99	192.60	90.70	-49.51	-6,077.97	1,438.81	1,070.58	368.24	3.907	
13,000.00	7,054.46	13,466.16	7,072.22	178.91	195.53	90.71	-48.25	-6,177.96	1,439.19	1,065.10	374.09	3.847	
13,100.00	7,054.18	13,566.16	7,072.10	181.83	198.47	90.71	-47.00	-6,277.96	1,439.57	1,059.61	379.96	3.789	
13,200.00	7,053.90	13,666.16	7,071.98	184.75	201.40	90.72	-45.74	-6,377.95	1,439.95	1,054.13	385.82	3.732	
13,300.00	7,053.62	13,766.16	7,071.87	187.67	204.34	90.73	-44.48	-6,477.94	1,440.33	1,048.64	391.68	3.677	
13,400.00	7,053.34	13,866.16	7,071.75	190.60	207.28	90.73	-43.22	-6,577.93	1,440.70	1,043.16	397.55	3.624	
13,500.00	7,053.06	13,966.16	7,071.63	193.52	210.21	90.74	-41.96	-6,677.92	1,441.08	1,037.67	403.42	3.572	
13,600.00	7,052.78	14,066.16	7,071.52	196.45	213.15	90.74	-40.71	-6,777.91	1,441.46	1,032.17	409.29	3.522	
13,700.00	7,052.50	14,166.16	7,071.40	199.38	216.09	90.75	-39.45	-6,877.90	1,441.84	1,026.68	415.16	3.473	
13,800.00	7,052.22	14,266.16	7,071.28	202.31	219.03	90.76	-38.19	-6,977.89	1,442.22	1,021.19	421.03	3.425	
13,900.00	7,051.94	14,366.16	7,071.17	205.24	221.97	90.76	-36.93	-7,077.88	1,442.60	1,015.69	426.90	3.379	
14,000.00	7,051.66	14,466.15	7,071.05	208.17	224.91	90.77	-35.68	-7,177.88	1,442.97	1,010.20	432.78	3.334	
14,100.00	7,051.38	14,566.15	7,070.93	211.10	227.86	90.78	-34.42	-7,277.87	1,443.35	1,004.70	438.65	3.290	
14,200.00	7,051.10	14,666.15	7,070.81	214.03	230.80	90.78	-33.16	-7,377.86	1,443.73	999.20	444.53	3.248	
14,300.00	7,050.82	14,766.15	7,070.70	216.97	233.74	90.79	-31.90	-7,477.85	1,444.11	993.70	450.41	3.206	
14,400.00	7,050.54	14,866.15	7,070.58	219.90	236.68	90.79	-30.64	-7,577.84	1,444.49	988.20	456.29	3.166	
14,500.00	7,050.26	14,966.15	7,070.46	222.83	239.63	90.80	-29.39	-7,677.83	1,444.87	982.70	462.17	3.126	
14,600.00	7,049.98	15,066.15	7,070.35	225.77	242.57	90.81	-28.13	-7,777.82	1,445.24	977.19	468.05	3.088	
14,700.00	7,049.69	15,166.15	7,070.23	228.71	245.52	90.81	-26.87	-7,877.81	1,445.62	971.69	473.94	3.050	
14,800.00	7,049.41	15,266.15	7,070.11	231.64	248.46	90.82	-25.61	-7,977.81	1,446.00	966.18	479.82	3.014	
14,900.00	7,049.13	15,366.15	7,070.00	234.58	251.41	90.83	-24.35	-8,077.80	1,446.38	960.68	485.70	2.978	
15,000.00	7,048.85	15,466.15	7,069.88	237.52	254.35	90.83	-23.10	-8,177.79	1,446.76	955.17	491.59	2.943	
15,100.00	7,048.57	15,566.15	7,069.76	240.46	257.30	90.84	-21.84	-8,277.78	1,447.14	949.66	497.48	2.909	
15,200.00	7,048.29	15,666.14	7,069.64	243.39	260.25	90.84	-20.58	-8,377.77	1,447.52	944.15	503.36	2.876	
15,300.00	7,048.01	15,766.14	7,069.53	246.33	263.19	90.85	-19.32	-8,477.76	1,447.89	938.64	509.25	2.843	
15,400.00	7,047.73	15,866.14	7,069.41	249.27	266.14	90.86	-18.07	-8,577.75	1,448.27	933.13	515.14	2.811	
15,500.00	7,047.45	15,966.14	7,069.29	252.21	269.09	90.86	-16.81	-8,677.74	1,448.65	927.62	521.03	2.780	
15,600.00	7,047.17	16,066.14	7,069.18	255.15	272.04	90.87	-15.55	-8,777.73	1,449.03	922.11	526.92	2.750	
15,700.00	7,046.89	16,166.14	7,069.06	258.10	274.98	90.88	-14.29	-8,877.73	1,449.41	916.60	532.81	2.720	
15,800.00	7,046.61	16,266.14	7,068.94	261.04	277.93	90.88	-13.03	-8,977.72	1,449.79	911.09	538.70	2.691	
15,900.00	7,046.33	16,366.14	7,068.83	263.98	280.88	90.89	-11.78	-9,077.71	1,450.17	905.57	544.59	2.663	
16,000.00	7,046.05	16,466.14	7,068.71	266.92	283.83	90.89	-10.52	-9,177.70	1,450.54	900.06	550.49	2.635	
16,100.00	7,045.77	16,566.14	7,068.59	269.87	286.78	90.90	-9.26	-9,277.69	1,450.92	894.54	556.38	2.608	
16,200.00	7,045.49	16,666.14	7,068.47	272.81	289.73	90.91	-8.00	-9,377.68	1,451.30	889.03	562.27	2.581	
16,300.00	7,045.21	16,766.14	7,068.36	275.75	292.68	90.91	-6.75	-9,477.67	1,451.68	883.51	568.17	2.555	
16,400.00	7,044.93	16,866.13	7,068.24	278.70	295.63	90.92	-5.49	-9,577.66	1,452.06	878.00	574.06	2.529	
16,500.00	7,044.65	16,966.13	7,068.12	281.64	298.58	90.93	-4.23	-9,677.66	1,452.44	872.48	579.96	2.504	
16,600.00	7,044.37	17,066.13	7,068.01	284.59	301.53	90.93	-2.97	-9,777.65	1,452.82	866.96	585.85	2.480	
16,700.00	7,044.08	17,166.13	7,067.89	287.53	304.48	90.94	-1.71	-9,877.64	1,453.20	861.45	591.75	2.456	
16,800.00	7,043.80	17,266.13	7,067.77	290.48	307.43	90.94	-0.46	-9,977.63	1,453.58	855.93	597.65	2.432	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #740H - OH - Plan #4

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Rule Assigned: Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
16,900.00	7,043.52	17,366.13	7,067.66	293.42	310.38	90.95	0.80	-10,077.62	1,453.95	850.41	603.55	2.409	
17,000.00	7,043.24	17,466.13	7,067.54	296.37	313.33	90.96	2.06	-10,177.61	1,454.33	844.89	609.44	2.386	
17,100.00	7,042.96	17,566.13	7,067.42	299.32	316.29	90.96	3.32	-10,277.60	1,454.71	839.37	615.34	2.364	
17,200.00	7,042.68	17,666.13	7,067.31	302.26	319.24	90.97	4.58	-10,377.59	1,455.09	833.85	621.24	2.342	
17,300.00	7,042.40	17,766.13	7,067.19	305.21	322.19	90.98	5.83	-10,477.58	1,455.47	828.33	627.14	2.321	
17,400.00	7,042.12	17,866.13	7,067.07	308.16	325.14	90.98	7.09	-10,577.58	1,455.85	822.81	633.04	2.300	
17,443.21	7,042.00	17,909.33	7,067.02	309.43	326.42	90.98	7.63	-10,620.78	1,456.01	820.42	635.59	2.291	SF

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #741H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-5.93	29.63	-3.08	29.79				
100.00	100.00	100.00	100.00	0.36	0.36	-5.93	29.63	-3.08	29.79	29.08	0.72	41.555	
200.00	200.00	200.00	200.00	0.72	0.72	-5.93	29.63	-3.08	29.79	28.36	1.43	20.778	
300.00	300.00	300.00	300.00	1.08	1.08	-5.93	29.63	-3.08	29.79	27.64	2.15	13.852	
400.00	400.00	400.00	400.00	1.43	1.43	-5.93	29.63	-3.08	29.79	26.92	2.87	10.389	
500.00	500.00	500.00	500.00	1.79	1.79	-5.93	29.63	-3.08	29.79	26.21	3.58	8.311	
600.00	600.00	600.86	600.84	2.15	2.14	-4.09	28.21	-2.02	28.29	24.00	4.29	6.596	
700.00	700.00	701.47	701.30	2.51	2.48	2.76	23.95	1.15	24.02	19.03	4.98	4.819	
800.00	800.00	801.59	801.03	2.87	2.82	20.72	16.92	6.40	18.11	12.43	5.69	3.185	
882.14	882.14	883.29	882.14	3.16	3.12	53.31	9.10	12.22	15.24	8.96	6.28	2.427	CC, ES
900.00	900.00	900.97	899.66	3.23	3.18	62.31	7.17	13.66	15.43	9.03	6.41	2.409	
1,000.00	999.99	999.67	997.15	3.57	3.55	-82.64	-5.17	22.85	23.40	16.33	7.07	3.311	
1,100.00	1,099.91	1,098.70	1,094.80	3.90	3.94	-70.20	-18.40	32.71	35.83	28.10	7.73	4.634	
1,200.00	1,199.69	1,197.93	1,192.64	4.23	4.33	-67.04	-31.66	42.59	47.98	39.56	8.42	5.697	
1,300.00	1,299.27	1,297.30	1,290.62	4.57	4.73	-67.42	-44.94	52.49	59.16	50.03	9.13	6.480	
1,400.00	1,398.57	1,396.74	1,388.67	4.92	5.14	-69.66	-58.23	62.39	69.40	59.54	9.86	7.039	
1,500.00	1,497.54	1,496.17	1,486.71	5.28	5.55	-73.09	-71.52	72.29	78.94	68.33	10.61	7.439	
1,600.00	1,596.09	1,595.54	1,584.69	5.65	5.96	-77.40	-84.80	82.18	88.12	76.73	11.39	7.736	
1,700.00	1,694.16	1,694.77	1,682.53	6.03	6.38	-82.37	-98.06	92.06	97.35	85.15	12.20	7.980	
1,800.00	1,791.70	1,793.79	1,780.17	6.43	6.79	-87.81	-111.30	101.92	107.09	94.06	13.04	8.214	
1,900.00	1,888.62	1,892.54	1,877.54	6.85	7.21	-93.52	-124.49	111.76	117.82	103.92	13.90	8.476	
2,000.00	1,985.11	1,991.08	1,974.70	7.29	7.63	-99.09	-137.66	121.57	129.83	115.06	14.78	8.786	
2,100.00	2,081.59	2,089.61	2,071.85	7.74	8.05	-103.72	-150.83	131.38	142.88	127.23	15.65	9.128	
2,200.00	2,178.07	2,188.15	2,169.01	8.19	8.46	-107.57	-164.00	141.19	156.70	140.17	16.53	9.482	
2,300.00	2,274.55	2,286.68	2,266.16	8.66	8.88	-110.79	-177.17	151.00	171.10	153.71	17.39	9.837	
2,400.00	2,371.03	2,385.22	2,363.32	9.12	9.30	-113.51	-190.34	160.81	185.96	167.70	18.26	10.183	
2,500.00	2,467.51	2,483.75	2,460.48	9.60	9.73	-115.82	-203.51	170.63	201.16	182.04	19.13	10.517	
2,600.00	2,563.99	2,582.28	2,557.63	10.08	10.15	-117.80	-216.68	180.44	216.64	196.65	19.99	10.837	
2,700.00	2,660.48	2,680.82	2,654.79	10.56	10.57	-119.52	-229.84	190.25	232.34	211.49	20.85	11.142	
2,800.00	2,756.96	2,779.35	2,751.94	11.05	10.99	-121.03	-243.01	200.06	248.23	226.51	21.71	11.431	
2,900.00	2,853.44	2,877.89	2,849.10	11.54	11.42	-122.35	-256.18	209.87	264.25	241.68	22.58	11.705	
3,000.00	2,949.92	2,976.42	2,946.26	12.03	11.84	-123.52	-269.35	219.68	280.40	256.97	23.44	11.964	
3,100.00	3,046.40	3,074.96	3,043.41	12.52	12.26	-124.56	-282.52	229.49	296.66	272.36	24.30	12.208	
3,200.00	3,142.88	3,173.49	3,140.57	13.02	12.69	-125.49	-295.69	239.31	312.99	287.83	25.16	12.439	
3,300.00	3,239.36	3,272.02	3,237.72	13.52	13.11	-126.34	-308.86	249.12	329.40	303.38	26.02	12.658	
3,400.00	3,335.85	3,370.56	3,334.88	14.02	13.54	-127.10	-322.03	258.93	345.88	318.99	26.88	12.865	
3,500.00	3,432.33	3,469.09	3,432.04	14.52	13.96	-127.79	-335.19	268.74	362.41	334.66	27.75	13.061	
3,600.00	3,528.81	3,567.63	3,529.19	15.02	14.39	-128.42	-348.36	278.55	378.98	350.37	28.61	13.247	
3,700.00	3,625.29	3,666.16	3,626.35	15.53	14.81	-129.00	-361.53	288.36	395.60	366.12	29.47	13.423	
3,800.00	3,721.77	3,764.69	3,723.51	16.03	15.24	-129.54	-374.70	298.18	412.25	381.91	30.33	13.590	
3,900.00	3,818.25	3,863.23	3,820.66	16.54	15.66	-130.03	-387.87	307.99	428.93	397.74	31.20	13.749	
4,000.00	3,914.73	3,961.76	3,917.82	17.05	16.09	-130.48	-401.04	317.80	445.65	413.59	32.06	13.900	
4,100.00	4,011.22	4,060.30	4,014.97	17.55	16.51	-130.90	-414.21	327.61	462.38	429.46	32.92	14.044	
4,200.00	4,107.70	4,158.83	4,112.13	18.06	16.94	-131.30	-427.37	337.42	479.14	445.36	33.79	14.181	
4,300.00	4,204.18	4,257.37	4,209.29	18.57	17.37	-131.66	-440.54	347.23	495.92	461.27	34.65	14.312	
4,400.00	4,300.66	4,355.90	4,306.44	19.08	17.79	-132.00	-453.71	357.04	512.72	477.21	35.52	14.437	
4,500.00	4,397.14	4,454.43	4,403.60	19.59	18.22	-132.32	-466.88	366.86	529.54	493.16	36.38	14.556	
4,600.00	4,493.62	4,552.97	4,500.75	20.10	18.64	-132.62	-480.05	376.67	546.37	509.13	37.24	14.670	
4,700.00	4,590.10	4,651.50	4,597.91	20.62	19.07	-132.91	-493.22	386.48	563.22	525.11	38.11	14.779	
4,800.00	4,686.59	4,750.04	4,695.07	21.13	19.50	-133.17	-506.39	396.29	580.07	541.10	38.97	14.884	
4,900.00	4,783.07	4,848.57	4,792.22	21.64	19.92	-133.42	-519.56	406.10	596.94	557.10	39.84	14.984	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #741H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,879.55	4,947.10	4,889.38	22.15	20.35	-133.66	-532.72	415.91	613.82	573.12	40.70	15.080	
5,100.00	4,976.03	5,045.64	4,986.53	22.67	20.78	-133.88	-545.89	425.72	630.71	589.14	41.57	15.173	
5,200.00	5,072.51	5,144.17	5,083.69	23.18	21.20	-134.10	-559.06	435.54	647.61	605.17	42.43	15.261	
5,300.00	5,168.99	5,242.71	5,180.85	23.69	21.63	-134.30	-572.23	445.35	664.52	621.21	43.30	15.347	
5,400.00	5,265.47	5,341.24	5,278.00	24.21	22.05	-134.49	-585.40	455.16	681.43	637.26	44.17	15.429	
5,500.00	5,361.95	5,439.78	5,375.16	24.72	22.48	-134.67	-598.57	464.97	698.35	653.32	45.03	15.508	
5,600.00	5,458.44	5,538.31	5,472.31	25.24	22.91	-134.85	-611.74	474.78	715.28	669.38	45.90	15.584	
5,700.00	5,554.92	5,636.84	5,569.47	25.75	23.34	-135.01	-624.91	484.59	732.21	685.45	46.77	15.657	
5,800.00	5,651.40	5,735.38	5,666.63	26.27	23.76	-135.17	-638.07	494.40	749.15	701.52	47.63	15.728	
5,900.00	5,747.88	5,833.91	5,763.78	26.78	24.19	-135.32	-651.24	504.22	766.10	717.60	48.50	15.796	
6,000.00	5,844.36	5,932.45	5,860.94	27.30	24.62	-135.47	-664.41	514.03	783.04	733.68	49.36	15.862	
6,100.00	5,940.84	6,030.98	5,958.09	27.81	25.04	-135.61	-677.58	523.84	800.00	749.77	50.23	15.926	
6,200.00	6,037.32	6,129.51	6,055.25	28.33	25.47	-135.74	-690.75	533.65	816.96	765.86	51.10	15.988	
6,300.00	6,133.81	6,228.05	6,152.41	28.85	25.90	-135.87	-703.92	543.46	833.92	781.95	51.97	16.047	
6,400.00	6,230.18	6,326.16	6,249.14	29.36	26.32	-152.85	-717.03	553.23	853.08	800.25	52.83	16.146	
6,500.00	6,325.65	6,422.32	6,343.96	29.87	26.74	-170.65	-729.88	562.81	879.34	825.64	53.70	16.376	
6,600.00	6,419.17	6,515.46	6,435.80	30.35	27.14	176.88	-742.33	572.08	912.76	858.22	54.54	16.735	
6,700.00	6,509.71	7,799.47	7,270.00	30.81	32.01	142.66	-847.91	-126.13	932.43	888.80	43.63	21.372	
6,800.00	6,596.29	7,843.47	7,270.00	31.26	32.68	138.01	-847.48	-170.13	878.27	831.36	46.91	18.724	
6,900.00	6,677.95	7,896.61	7,270.00	31.69	33.50	133.81	-846.98	-223.27	832.86	782.49	50.36	16.537	
7,000.00	6,753.80	7,958.31	7,270.00	32.11	34.57	129.72	-846.39	-284.96	796.45	742.48	53.97	14.757	
7,100.00	6,823.01	8,027.89	7,270.00	32.54	35.84	125.61	-845.72	-354.54	768.78	711.16	57.62	13.342	
7,200.00	6,884.82	8,104.59	7,270.00	32.99	37.31	121.53	-844.98	-431.24	749.05	687.77	61.28	12.223	
7,300.00	6,938.56	8,187.57	7,270.00	33.48	39.01	117.57	-844.19	-514.21	736.04	671.07	64.97	11.329	
7,400.00	6,983.63	8,275.92	7,270.00	34.07	40.90	113.94	-843.34	-602.56	728.27	659.56	68.71	10.599	
7,500.00	7,019.54	8,368.67	7,270.00	34.79	42.97	110.81	-842.46	-695.31	724.22	651.68	72.54	9.984	
7,600.00	7,045.89	8,464.81	7,270.00	35.71	45.19	108.39	-841.54	-791.44	722.49	646.00	76.49	9.445	
7,700.00	7,062.41	8,563.28	7,270.00	36.86	47.53	106.81	-840.59	-889.91	721.99	641.41	80.57	8.960	
7,744.06	7,066.51	8,607.13	7,270.00	37.45	48.59	106.41	-840.17	-933.75	721.95	639.54	82.42	8.760	
7,800.00	7,068.90	8,663.01	7,270.00	38.24	49.96	106.18	-839.64	-989.63	721.99	637.25	84.75	8.519	
7,900.00	7,068.77	8,763.00	7,270.00	39.84	52.45	106.18	-838.68	-1,089.62	722.14	633.15	88.99	8.115	
8,000.00	7,068.49	8,863.00	7,270.00	41.63	54.99	106.20	-837.72	-1,189.62	722.29	628.89	93.40	7.733	
8,100.00	7,068.21	8,963.00	7,270.00	43.59	57.57	106.22	-836.77	-1,289.61	722.44	624.50	97.94	7.376	
8,200.00	7,067.93	9,063.00	7,270.00	45.68	60.19	106.24	-835.81	-1,389.61	722.59	619.98	102.61	7.042	
8,300.00	7,067.65	9,163.00	7,270.00	47.88	62.83	106.26	-834.85	-1,489.60	722.74	615.37	107.38	6.731	
8,400.00	7,067.37	9,263.00	7,270.00	50.18	65.50	106.28	-833.89	-1,589.60	722.90	610.66	112.24	6.441	
8,500.00	7,067.08	9,363.00	7,270.00	52.54	68.20	106.30	-832.94	-1,689.59	723.05	605.87	117.17	6.171	
8,600.00	7,066.80	9,463.00	7,270.00	54.97	70.92	106.32	-831.98	-1,789.59	723.20	601.02	122.18	5.919	
8,700.00	7,066.52	9,563.00	7,270.00	57.46	73.65	106.34	-831.02	-1,889.58	723.35	596.11	127.24	5.685	
8,800.00	7,066.24	9,663.00	7,270.00	59.99	76.41	106.36	-830.06	-1,989.58	723.50	591.14	132.36	5.466	
8,900.00	7,065.96	9,763.00	7,270.00	62.57	79.17	106.38	-829.11	-2,089.57	723.65	586.13	137.52	5.262	
9,000.00	7,065.68	9,863.00	7,270.00	65.18	81.95	106.40	-828.15	-2,189.57	723.81	581.08	142.72	5.071	
9,100.00	7,065.40	9,963.00	7,270.00	67.81	84.75	106.42	-827.19	-2,289.56	723.96	576.00	147.96	4.893	
9,200.00	7,065.12	10,063.00	7,270.00	70.48	87.55	106.44	-826.24	-2,389.56	724.11	570.88	153.23	4.726	
9,300.00	7,064.84	10,163.00	7,270.00	73.17	90.36	106.46	-825.28	-2,489.55	724.26	565.73	158.53	4.569	
9,400.00	7,064.56	10,263.00	7,270.00	75.88	93.19	106.47	-824.32	-2,589.55	724.41	560.56	163.85	4.421	
9,500.00	7,064.28	10,363.00	7,270.00	78.61	96.02	106.49	-823.36	-2,689.54	724.57	555.36	169.20	4.282	
9,600.00	7,064.00	10,463.00	7,270.00	81.36	98.86	106.51	-822.41	-2,789.54	724.72	550.15	174.57	4.151	
9,700.00	7,063.72	10,563.00	7,270.00	84.12	101.70	106.53	-821.45	-2,889.53	724.87	544.91	179.96	4.028	
9,800.00	7,063.44	10,663.00	7,270.00	86.89	104.56	106.55	-820.49	-2,989.53	725.02	539.66	185.36	3.911	
9,900.00	7,063.16	10,763.00	7,270.00	89.68	107.41	106.57	-819.53	-3,089.52	725.18	534.40	190.78	3.801	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #741H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.00	7,062.88	10,863.00	7,270.00	92.48	110.28	106.59	-818.58	-3,189.52	725.33	529.12	196.21	3.697	
10,100.00	7,062.60	10,963.00	7,270.00	95.29	113.15	106.61	-817.62	-3,289.51	725.48	523.83	201.66	3.598	
10,200.00	7,062.32	11,063.00	7,270.00	98.10	116.02	106.63	-816.66	-3,389.51	725.63	518.52	207.11	3.504	
10,300.00	7,062.04	11,162.99	7,270.00	100.93	118.90	106.65	-815.70	-3,489.50	725.79	513.21	212.58	3.414	
10,400.00	7,061.76	11,262.99	7,270.00	103.76	121.78	106.67	-814.75	-3,589.50	725.94	507.88	218.06	3.329	
10,500.00	7,061.47	11,362.99	7,270.00	106.60	124.66	106.69	-813.79	-3,689.49	726.09	502.55	223.54	3.248	
10,600.00	7,061.19	11,462.99	7,270.00	109.45	127.55	106.71	-812.83	-3,789.49	726.25	497.21	229.03	3.171	
10,700.00	7,060.91	11,562.99	7,270.00	112.31	130.44	106.73	-811.87	-3,889.48	726.40	491.86	234.54	3.097	
10,800.00	7,060.63	11,662.99	7,270.00	115.16	133.34	106.75	-810.92	-3,989.48	726.55	486.51	240.04	3.027	
10,900.00	7,060.35	11,762.99	7,270.00	118.03	136.24	106.77	-809.96	-4,089.47	726.71	481.15	245.56	2.959	
11,000.00	7,060.07	11,862.99	7,270.00	120.90	139.14	106.79	-809.00	-4,189.47	726.86	475.78	251.08	2.895	
11,100.00	7,059.79	11,962.99	7,270.00	123.77	142.04	106.81	-808.04	-4,289.46	727.01	470.41	256.60	2.833	
11,200.00	7,059.51	12,062.99	7,270.00	126.65	144.94	106.83	-807.09	-4,389.46	727.17	465.03	262.13	2.774	
11,300.00	7,059.23	12,162.99	7,270.00	129.53	147.85	106.85	-806.13	-4,489.45	727.32	459.65	267.67	2.717	
11,400.00	7,058.95	12,262.99	7,270.00	132.41	150.76	106.86	-805.17	-4,589.45	727.47	454.27	273.21	2.663	
11,500.00	7,058.67	12,362.99	7,270.00	135.30	153.67	106.88	-804.22	-4,689.44	727.63	448.88	278.75	2.610	
11,600.00	7,058.39	12,462.99	7,270.00	138.19	156.59	106.90	-803.26	-4,789.44	727.78	443.49	284.29	2.560	
11,700.00	7,058.11	12,562.99	7,270.00	141.08	159.50	106.92	-802.30	-4,889.43	727.94	438.09	289.84	2.511	
11,800.00	7,057.83	12,662.99	7,270.00	143.98	162.42	106.94	-801.34	-4,989.43	728.09	432.69	295.40	2.465	
11,900.00	7,057.55	12,762.99	7,270.00	146.88	165.34	106.96	-800.39	-5,089.42	728.24	427.29	300.95	2.420	
12,000.00	7,057.27	12,862.99	7,270.00	149.78	168.25	106.98	-799.43	-5,189.42	728.40	421.89	306.51	2.376	
12,100.00	7,056.99	12,962.99	7,270.00	152.69	171.18	107.00	-798.47	-5,289.41	728.55	416.48	312.07	2.335	
12,200.00	7,056.71	13,062.99	7,270.00	155.59	174.10	107.02	-797.51	-5,389.41	728.71	411.08	317.63	2.294	
12,300.00	7,056.43	13,162.99	7,270.00	158.50	177.02	107.04	-796.56	-5,489.40	728.86	405.67	323.20	2.255	
12,400.00	7,056.15	13,262.99	7,270.00	161.41	179.95	107.06	-795.60	-5,589.40	729.02	400.25	328.76	2.217	
12,500.00	7,055.87	13,362.99	7,270.00	164.32	182.87	107.08	-794.64	-5,689.39	729.17	394.84	334.33	2.181	
12,600.00	7,055.58	13,462.98	7,270.00	167.24	185.80	107.10	-793.68	-5,789.39	729.33	389.43	339.90	2.146	
12,700.00	7,055.30	13,562.98	7,270.00	170.15	188.73	107.12	-792.73	-5,889.38	729.48	384.01	345.47	2.112	
12,800.00	7,055.02	13,662.98	7,270.00	173.07	191.66	107.14	-791.77	-5,989.38	729.64	378.59	351.04	2.078	
12,900.00	7,054.74	13,762.98	7,270.00	175.99	194.59	107.15	-790.81	-6,089.37	729.79	373.17	356.62	2.046	
13,000.00	7,054.46	13,862.98	7,270.00	178.91	197.52	107.17	-789.85	-6,189.37	729.95	367.76	362.19	2.015	
13,100.00	7,054.18	13,962.98	7,270.00	181.83	200.45	107.19	-788.90	-6,289.36	730.10	362.34	367.77	1.985	
13,200.00	7,053.90	14,062.98	7,270.00	184.75	203.39	107.21	-787.94	-6,389.36	730.26	356.91	373.34	1.956	
13,300.00	7,053.62	14,162.98	7,270.00	187.67	206.32	107.23	-786.98	-6,489.35	730.41	351.49	378.92	1.928	
13,400.00	7,053.34	14,262.98	7,270.00	190.60	209.25	107.25	-786.03	-6,589.35	730.57	346.07	384.50	1.900	
13,500.00	7,053.06	14,362.98	7,270.00	193.52	212.19	107.27	-785.07	-6,689.34	730.72	340.65	390.08	1.873	
13,600.00	7,052.78	14,462.98	7,270.00	196.45	215.12	107.29	-784.11	-6,789.34	730.88	335.22	395.65	1.847	
13,700.00	7,052.50	14,562.98	7,270.00	199.38	218.06	107.31	-783.15	-6,889.33	731.03	329.80	401.23	1.822	
13,800.00	7,052.22	14,662.98	7,270.00	202.31	221.00	107.33	-782.20	-6,989.33	731.19	324.38	406.81	1.797	
13,900.00	7,051.94	14,762.98	7,270.00	205.24	223.94	107.35	-781.24	-7,089.32	731.35	318.95	412.39	1.773	
14,000.00	7,051.66	14,862.98	7,270.00	208.17	226.87	107.37	-780.28	-7,189.32	731.50	313.53	417.97	1.750	
14,100.00	7,051.38	14,962.98	7,270.00	211.10	229.81	107.39	-779.32	-7,289.31	731.66	308.10	423.55	1.727	
14,200.00	7,051.10	15,062.98	7,270.00	214.03	232.75	107.40	-778.37	-7,389.31	731.81	302.68	429.14	1.705	
14,300.00	7,050.82	15,162.98	7,270.00	216.97	235.69	107.42	-777.41	-7,489.30	731.97	297.25	434.72	1.684	
14,400.00	7,050.54	15,262.98	7,270.00	219.90	238.63	107.44	-776.45	-7,589.30	732.13	291.83	440.30	1.663	
14,500.00	7,050.26	15,362.98	7,270.00	222.83	241.58	107.46	-775.49	-7,689.29	732.28	286.40	445.88	1.642	
14,600.00	7,049.98	15,462.98	7,270.00	225.77	244.52	107.48	-774.54	-7,789.29	732.44	280.98	451.46	1.622	
14,700.00	7,049.69	15,562.98	7,270.00	228.71	247.46	107.50	-773.58	-7,889.28	732.60	275.56	457.04	1.603	
14,800.00	7,049.41	15,662.98	7,270.00	231.64	250.40	107.52	-772.62	-7,989.28	732.75	270.13	462.62	1.584	
14,900.00	7,049.13	15,762.98	7,270.00	234.58	253.34	107.54	-771.66	-8,089.27	732.91	264.71	468.20	1.565	
15,000.00	7,048.85	15,862.97	7,270.00	237.52	256.29	107.56	-770.71	-8,189.27	733.07	259.28	473.78	1.547	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #741H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,100.00	7,048.57	15,962.97	7,270.00	240.46	259.23	107.58	-769.75	-8,289.26	733.22	253.86	479.36	1.530	
15,200.00	7,048.29	16,062.97	7,270.00	243.39	262.18	107.60	-768.79	-8,389.26	733.38	248.44	484.94	1.512	
15,300.00	7,048.01	16,162.97	7,270.00	246.33	265.12	107.62	-767.83	-8,489.25	733.54	243.02	490.52	1.495	Level 3
15,400.00	7,047.73	16,262.97	7,270.00	249.27	268.07	107.63	-766.88	-8,589.25	733.69	237.59	496.10	1.479	Level 3
15,500.00	7,047.45	16,362.97	7,270.00	252.21	271.01	107.65	-765.92	-8,689.24	733.85	232.17	501.68	1.463	Level 3
15,600.00	7,047.17	16,462.97	7,270.00	255.15	273.96	107.67	-764.96	-8,789.24	734.01	226.75	507.26	1.447	Level 3
15,700.00	7,046.89	16,562.97	7,270.00	258.10	276.90	107.69	-764.01	-8,889.23	734.17	221.33	512.84	1.432	Level 3
15,800.00	7,046.61	16,662.97	7,270.00	261.04	279.85	107.71	-763.05	-8,989.23	734.32	215.91	518.42	1.416	Level 3
15,900.00	7,046.33	16,762.97	7,270.00	263.98	282.80	107.73	-762.09	-9,089.22	734.48	210.49	523.99	1.402	Level 3
16,000.00	7,046.05	16,862.97	7,270.00	266.92	285.74	107.75	-761.13	-9,189.22	734.64	205.07	529.57	1.387	Level 3
16,100.00	7,045.77	16,962.97	7,270.00	269.87	288.69	107.77	-760.18	-9,289.21	734.80	199.65	535.15	1.373	Level 3
16,200.00	7,045.49	17,062.97	7,270.00	272.81	291.64	107.79	-759.22	-9,389.21	734.95	194.23	540.72	1.359	Level 3
16,300.00	7,045.21	17,162.97	7,270.00	275.75	294.58	107.81	-758.26	-9,489.20	735.11	188.81	546.30	1.346	Level 3
16,400.00	7,044.93	17,262.97	7,270.00	278.70	297.53	107.82	-757.30	-9,589.20	735.27	183.40	551.87	1.332	Level 3
16,500.00	7,044.65	17,362.97	7,270.00	281.64	300.48	107.84	-756.35	-9,689.19	735.43	177.98	557.45	1.319	Level 3
16,600.00	7,044.37	17,462.97	7,270.00	284.59	303.43	107.86	-755.39	-9,789.19	735.59	172.57	563.02	1.306	Level 3
16,700.00	7,044.08	17,562.97	7,270.00	287.53	306.38	107.88	-754.43	-9,889.18	735.74	167.15	568.59	1.294	Level 3
16,800.00	7,043.80	17,662.97	7,270.00	290.48	309.33	107.90	-753.47	-9,989.18	735.90	161.74	574.17	1.282	Level 3
16,900.00	7,043.52	17,762.97	7,270.00	293.42	312.28	107.92	-752.52	-10,089.17	736.06	156.32	579.74	1.270	Level 3
17,000.00	7,043.24	17,862.97	7,270.00	296.37	315.23	107.94	-751.56	-10,189.17	736.22	150.91	585.31	1.258	Level 3
17,100.00	7,042.96	17,962.97	7,270.00	299.32	318.18	107.96	-750.60	-10,289.16	736.38	145.50	590.88	1.246	Level 3
17,200.00	7,042.68	18,062.97	7,270.00	302.26	321.13	107.98	-749.64	-10,389.16	736.54	140.09	596.45	1.235	Level 3
17,300.00	7,042.40	18,162.97	7,270.00	305.21	324.08	108.00	-748.69	-10,489.15	736.70	134.68	602.02	1.224	Level 3
17,400.00	7,042.12	18,262.96	7,270.00	308.16	327.03	108.01	-747.73	-10,589.15	736.85	129.27	607.59	1.213	Level 3, SF
17,443.21	7,042.00	18,271.75	7,270.00	309.43	327.29	108.02	-747.65	-10,597.93	737.73	130.01	607.71	1.214	Level 3

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #744H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Rule Assigned: Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-16.91	43.78	-13.31	45.76				
100.00	100.00	100.00	100.00	0.36	0.36	-16.91	43.78	-13.31	45.76	45.04	0.72	63.828	
200.00	200.00	200.00	200.00	0.72	0.72	-16.91	43.78	-13.31	45.76	44.33	1.43	31.914	
300.00	300.00	300.00	300.00	1.08	1.08	-16.91	43.78	-13.31	45.76	43.61	2.15	21.276	
400.00	400.00	400.00	400.00	1.43	1.43	-16.91	43.78	-13.31	45.76	42.89	2.87	15.957	
500.00	500.00	500.00	500.00	1.79	1.79	-16.91	43.78	-13.31	45.76	42.18	3.58	12.766	CC
600.00	600.00	599.61	599.59	2.15	2.14	-19.00	43.66	-15.04	46.18	41.88	4.29	10.759	ES
700.00	700.00	698.98	698.82	2.51	2.49	-25.02	43.28	-20.20	47.78	42.78	4.99	9.567	
800.00	800.00	798.61	798.17	2.87	2.84	-32.84	42.75	-27.59	50.91	45.20	5.70	8.926	
900.00	900.00	898.33	897.61	3.23	3.20	-39.69	42.20	-35.02	54.90	48.48	6.42	8.557	
1,000.00	999.99	998.04	997.05	3.57	3.56	132.93	41.66	-42.46	60.44	53.33	7.11	8.499	SF
1,100.00	1,099.91	1,097.72	1,096.45	3.90	3.92	130.48	41.12	-49.89	68.03	60.23	7.80	8.724	
1,200.00	1,199.69	1,197.28	1,195.73	4.23	4.28	130.00	40.58	-57.32	77.37	68.88	8.49	9.111	
1,300.00	1,299.27	1,296.65	1,294.82	4.57	4.65	130.90	40.05	-64.73	88.39	79.20	9.19	9.615	
1,400.00	1,398.57	1,395.78	1,393.67	4.92	5.01	132.66	39.51	-72.12	101.18	91.28	9.90	10.219	
1,500.00	1,497.54	1,494.59	1,492.20	5.28	5.38	134.92	38.97	-79.49	115.88	105.27	10.62	10.915	
1,600.00	1,596.09	1,593.01	1,590.35	5.65	5.74	137.39	38.44	-86.83	132.64	121.30	11.34	11.699	
1,700.00	1,694.16	1,690.98	1,688.04	6.03	6.11	139.91	37.91	-94.14	151.57	139.51	12.06	12.565	
1,800.00	1,791.70	1,788.42	1,785.22	6.43	6.47	142.35	37.38	-101.40	172.78	159.99	12.79	13.508	
1,900.00	1,888.62	1,885.28	1,881.80	6.85	6.83	144.65	36.86	-108.63	196.35	182.83	13.52	14.521	
2,000.00	1,985.11	1,981.73	1,977.98	7.29	7.19	146.84	36.33	-115.82	221.59	207.33	14.25	15.546	
2,100.00	2,081.59	2,078.16	2,074.14	7.74	7.54	148.61	35.81	-123.01	247.10	232.11	14.98	16.490	
2,200.00	2,178.07	2,174.60	2,170.31	8.19	7.90	150.06	35.29	-130.20	272.79	257.07	15.72	17.354	
2,300.00	2,274.55	2,271.03	2,266.47	8.66	8.26	151.25	34.76	-137.39	298.62	282.16	16.46	18.147	
2,400.00	2,371.03	2,367.47	2,362.64	9.12	8.62	152.26	34.24	-144.59	324.55	307.35	17.19	18.876	
2,500.00	2,467.51	2,463.90	2,458.80	9.60	8.98	153.12	33.72	-151.78	350.56	332.62	17.93	19.547	
2,600.00	2,563.99	2,560.34	2,554.97	10.08	9.34	153.85	33.20	-158.97	376.63	357.95	18.68	20.167	
2,700.00	2,660.48	2,656.77	2,651.13	10.56	9.70	154.50	32.67	-166.16	402.75	383.33	19.42	20.740	
2,800.00	2,756.96	2,753.21	2,747.30	11.05	10.06	155.06	32.15	-173.35	428.92	408.75	20.16	21.271	
2,900.00	2,853.44	2,849.64	2,843.47	11.54	10.42	155.56	31.63	-180.54	455.12	434.21	20.91	21.765	
3,000.00	2,949.92	2,946.08	2,939.63	12.03	10.78	156.01	31.11	-187.74	481.34	459.69	21.66	22.225	
3,100.00	3,046.40	3,042.51	3,035.80	12.52	11.14	156.41	30.58	-194.93	507.60	485.19	22.41	22.654	
3,200.00	3,142.88	3,138.95	3,131.96	13.02	11.50	156.77	30.06	-202.12	533.87	510.71	23.16	23.055	
3,300.00	3,239.36	3,235.38	3,228.13	13.52	11.86	157.09	29.54	-209.31	560.16	536.25	23.91	23.431	
3,400.00	3,335.85	3,331.82	3,324.29	14.02	12.22	157.39	29.01	-216.50	586.47	561.81	24.66	23.785	
3,500.00	3,432.33	3,428.25	3,420.46	14.52	12.58	157.66	28.49	-223.70	612.79	587.38	25.41	24.117	
3,600.00	3,528.81	3,524.69	3,516.62	15.02	12.94	157.91	27.97	-230.89	639.12	612.96	26.16	24.430	
3,700.00	3,625.29	3,621.12	3,612.79	15.53	13.30	158.14	27.45	-238.08	665.46	638.55	26.91	24.725	
3,800.00	3,721.77	3,717.56	3,708.95	16.03	13.66	158.35	26.92	-245.27	691.81	664.14	27.67	25.004	
3,900.00	3,818.25	3,813.99	3,805.12	16.54	14.02	158.55	26.40	-252.46	718.17	689.75	28.42	25.267	
4,000.00	3,914.73	3,910.43	3,901.28	17.05	14.38	158.73	25.88	-259.65	744.54	715.36	29.18	25.517	
4,100.00	4,011.22	4,006.86	3,997.45	17.55	14.74	158.90	25.36	-266.85	770.91	740.98	29.93	25.755	
4,200.00	4,107.70	4,103.30	4,093.61	18.06	15.10	159.06	24.83	-274.04	797.29	766.60	30.69	25.980	
4,300.00	4,204.18	4,199.74	4,189.78	18.57	15.46	159.21	24.31	-281.23	823.67	792.23	31.44	26.194	
4,400.00	4,300.66	4,296.17	4,285.94	19.08	15.82	159.35	23.79	-288.42	850.06	817.86	32.20	26.399	
4,500.00	4,397.14	4,392.61	4,382.11	19.59	16.18	159.48	23.26	-295.61	876.46	843.50	32.96	26.593	
4,600.00	4,493.62	4,489.04	4,478.27	20.10	16.54	159.60	22.74	-302.80	902.85	869.14	33.72	26.779	
4,700.00	4,590.10	4,585.48	4,574.44	20.62	16.90	159.72	22.22	-310.00	929.26	894.78	34.47	26.956	
4,800.00	4,686.59	4,681.91	4,670.60	21.13	17.26	159.83	21.70	-317.19	955.66	920.43	35.23	27.126	
4,900.00	4,783.07	4,778.35	4,766.77	21.64	17.62	159.93	21.17	-324.38	982.07	946.08	35.99	27.288	
5,000.00	4,879.55	4,874.78	4,862.93	22.15	17.98	160.03	20.65	-331.57	1,008.48	971.73	36.75	27.444	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #744H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,976.03	4,971.22	4,959.10	22.67	18.34	160.13	20.13	-338.76	1,034.89	997.39	37.51	27.593	
5,200.00	5,072.51	5,067.65	5,055.27	23.18	18.70	160.22	19.61	-345.95	1,061.31	1,023.04	38.26	27.736	
5,300.00	5,168.99	5,164.09	5,151.43	23.69	19.07	160.30	19.08	-353.15	1,087.73	1,048.70	39.02	27.873	
5,400.00	5,265.47	5,260.52	5,247.60	24.21	19.43	160.38	18.56	-360.34	1,114.15	1,074.36	39.78	28.005	
5,500.00	5,361.95	5,356.96	5,343.76	24.72	19.79	160.46	18.04	-367.53	1,140.57	1,100.03	40.54	28.132	
5,600.00	5,458.44	5,453.39	5,439.93	25.24	20.15	160.53	17.51	-374.72	1,166.99	1,125.69	41.30	28.255	
5,700.00	5,554.92	5,549.83	5,536.09	25.75	20.51	160.60	16.99	-381.91	1,193.42	1,151.35	42.06	28.372	
5,800.00	5,651.40	5,646.26	5,632.26	26.27	20.87	160.67	16.47	-389.11	1,219.84	1,177.02	42.82	28.486	
5,900.00	5,747.88	5,742.70	5,728.42	26.78	21.23	160.73	15.95	-396.30	1,246.27	1,202.69	43.58	28.595	
6,000.00	5,844.36	5,839.13	5,824.59	27.30	21.59	160.79	15.42	-403.49	1,272.70	1,228.36	44.34	28.701	
6,100.00	5,940.84	5,935.57	5,920.75	27.81	21.95	160.85	14.90	-410.68	1,299.14	1,254.03	45.11	28.802	
6,200.00	6,037.32	6,032.00	6,016.92	28.33	22.31	160.91	14.38	-417.87	1,325.57	1,279.70	45.87	28.901	
6,300.00	6,133.81	6,128.44	6,113.08	28.85	22.67	160.96	13.86	-425.06	1,352.00	1,305.37	46.63	28.996	
6,400.00	6,230.18	6,225.00	6,209.37	29.36	23.03	143.64	13.33	-432.26	1,377.53	1,330.14	47.39	29.069	
6,500.00	6,325.65	6,321.41	6,305.52	29.87	23.39	125.76	12.81	-439.46	1,400.05	1,351.90	48.15	29.079	
6,600.00	6,419.17	6,416.64	6,400.48	30.35	23.75	113.66	12.29	-446.56	1,419.51	1,370.62	48.89	29.037	
6,700.00	6,509.71	6,607.36	6,590.10	30.81	24.34	108.32	10.80	-434.50	1,433.23	1,383.20	50.02	28.652	
6,800.00	6,596.29	6,738.13	6,714.18	31.26	24.68	106.07	9.25	-393.96	1,441.68	1,391.03	50.65	28.465	
6,900.00	6,677.95	6,812.78	6,780.45	31.69	24.86	104.24	8.19	-359.70	1,450.47	1,399.37	51.10	28.386	
7,000.00	6,753.80	6,852.24	6,813.73	32.11	24.96	102.18	7.59	-338.52	1,462.48	1,411.03	51.45	28.423	
7,100.00	6,823.01	6,870.26	6,828.48	32.54	25.01	99.79	7.31	-328.17	1,478.85	1,427.11	51.74	28.582	
7,200.00	6,884.82	6,874.81	6,832.16	32.99	25.02	97.13	7.24	-325.49	1,499.74	1,447.75	51.99	28.848	
7,300.00	6,938.56	6,870.54	6,828.71	33.48	25.01	94.25	7.31	-328.01	1,524.86	1,472.61	52.25	29.186	
7,400.00	6,983.63	6,860.26	6,820.33	34.07	24.98	91.21	7.47	-333.97	1,553.66	1,501.10	52.57	29.556	
7,500.00	7,019.54	6,850.00	6,811.88	34.79	24.95	88.24	7.63	-339.78	1,585.50	1,532.48	53.02	29.903	
7,600.00	7,045.89	6,828.13	6,793.55	35.71	24.90	84.95	7.96	-351.71	1,619.61	1,566.07	53.54	30.251	
7,700.00	7,062.41	6,800.00	6,769.40	36.86	24.83	81.59	8.38	-366.11	1,655.34	1,601.20	54.15	30.572	
7,800.00	7,068.90	6,786.58	6,757.65	38.24	24.79	78.92	8.57	-372.61	1,691.85	1,636.85	55.00	30.761	
7,900.00	7,068.77	6,764.98	6,738.48	39.84	24.74	77.88	8.88	-382.53	1,730.14	1,674.28	55.86	30.970	
8,000.00	7,068.49	6,750.00	6,724.98	41.63	24.70	77.41	9.09	-389.03	1,772.68	1,715.89	56.79	31.214	
8,100.00	7,068.21	6,729.03	6,705.84	43.59	24.65	76.74	9.37	-397.59	1,819.30	1,761.64	57.65	31.556	
8,200.00	7,067.93	6,700.00	6,678.90	45.68	24.58	75.80	9.74	-408.40	1,869.91	1,811.49	58.42	32.010	
8,300.00	7,067.65	6,700.00	6,678.90	47.88	24.58	75.80	9.74	-408.40	1,923.85	1,864.47	59.38	32.397	
8,400.00	7,067.37	6,700.00	6,678.90	50.18	24.58	75.80	9.74	-408.40	1,981.37	1,921.08	60.30	32.861	
8,500.00	7,067.08	6,677.49	6,657.69	52.54	24.53	75.06	10.01	-415.92	2,041.79	1,980.81	60.98	33.485	
8,600.00	7,066.80	6,667.56	6,648.24	54.97	24.50	74.74	10.13	-419.01	2,105.16	2,043.46	61.70	34.118	
8,700.00	7,066.52	6,650.00	6,631.44	57.46	24.46	74.17	10.34	-424.09	2,171.21	2,108.89	62.32	34.841	
8,800.00	7,066.24	6,650.00	6,631.44	59.99	24.46	74.17	10.34	-424.09	2,239.56	2,176.54	63.01	35.541	
8,900.00	7,065.96	6,650.00	6,631.44	62.57	24.46	74.17	10.34	-424.09	2,310.21	2,246.56	63.65	36.293	
9,000.00	7,065.68	6,650.00	6,631.44	65.18	24.46	74.17	10.34	-424.09	2,382.97	2,318.73	64.24	37.093	
9,100.00	7,065.40	6,629.15	6,611.31	67.81	24.40	73.48	10.57	-429.52	2,457.29	2,392.64	64.65	38.011	
9,200.00	7,065.12	6,623.16	6,605.50	70.48	24.38	73.28	10.63	-430.96	2,533.47	2,468.36	65.11	38.909	
9,300.00	7,064.84	6,600.00	6,582.90	73.17	24.32	72.52	10.87	-436.01	2,611.47	2,546.04	65.42	39.916	
9,400.00	7,064.56	6,600.00	6,582.90	75.88	24.32	72.52	10.87	-436.01	2,690.50	2,624.65	65.86	40.853	
9,500.00	7,064.28	6,600.00	6,582.90	78.61	24.32	72.52	10.87	-436.01	2,770.90	2,704.64	66.26	41.820	
9,600.00	7,064.00	6,600.00	6,582.90	81.36	24.32	72.52	10.87	-436.01	2,852.53	2,785.90	66.62	42.815	
9,700.00	7,063.72	6,600.00	6,582.90	84.12	24.32	72.52	10.87	-436.01	2,935.30	2,868.33	66.96	43.834	
9,800.00	7,063.44	6,600.00	6,582.90	86.89	24.32	72.52	10.87	-436.01	3,019.11	2,951.83	67.28	44.876	
9,900.00	7,063.16	6,600.00	6,582.90	89.68	24.32	72.52	10.87	-436.01	3,103.88	3,036.31	67.57	45.938	
10,000.00	7,062.88	6,600.00	6,582.90	92.48	24.32	72.52	10.87	-436.01	3,189.53	3,121.70	67.83	47.020	
10,100.00	7,062.60	6,600.00	6,582.90	95.29	24.32	72.52	10.87	-436.01	3,276.00	3,207.92	68.08	48.118	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #744H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,200.00	7,062.32	6,600.00	6,582.90	98.10	24.32	72.52	10.87	-436.01	3,363.22	3,294.90	68.31	49.232	
10,300.00	7,062.04	6,578.09	6,561.36	100.93	24.26	71.80	11.09	-440.02	3,450.72	3,382.30	68.42	50.435	
10,400.00	7,061.76	6,575.26	6,558.57	103.76	24.25	71.71	11.12	-440.49	3,539.16	3,470.55	68.61	51.585	
10,500.00	7,061.47	6,572.58	6,555.92	106.60	24.25	71.62	11.14	-440.92	3,628.19	3,559.40	68.79	52.746	
10,600.00	7,061.19	6,550.00	6,533.57	109.45	24.18	70.88	11.35	-444.08	3,718.10	3,649.25	68.85	54.002	
10,700.00	7,060.91	6,550.00	6,533.57	112.31	24.18	70.88	11.35	-444.08	3,808.11	3,739.09	69.02	55.173	
10,800.00	7,060.63	6,550.00	6,533.57	115.16	24.18	70.88	11.35	-444.08	3,898.60	3,829.42	69.18	56.353	
10,900.00	7,060.35	6,550.00	6,533.57	118.03	24.18	70.88	11.35	-444.08	3,989.55	3,920.22	69.33	57.541	
11,000.00	7,060.07	6,550.00	6,533.57	120.90	24.18	70.88	11.35	-444.08	4,080.92	4,011.45	69.48	58.738	
11,100.00	7,059.79	6,550.00	6,533.57	123.77	24.18	70.88	11.35	-444.08	4,172.69	4,103.08	69.61	59.942	
11,200.00	7,059.51	6,550.00	6,533.57	126.65	24.18	70.88	11.35	-444.08	4,264.83	4,195.09	69.74	61.153	
11,300.00	7,059.23	6,550.00	6,533.57	129.53	24.18	70.88	11.35	-444.08	4,357.31	4,287.45	69.86	62.371	
11,400.00	7,058.95	6,550.00	6,533.57	132.41	24.18	70.88	11.35	-444.08	4,450.12	4,380.14	69.98	63.594	
11,500.00	7,058.67	6,550.00	6,533.57	135.30	24.18	70.88	11.35	-444.08	4,543.23	4,473.15	70.09	64.822	
11,600.00	7,058.39	6,550.00	6,533.57	138.19	24.18	70.88	11.35	-444.08	4,636.64	4,566.44	70.19	66.056	
11,700.00	7,058.11	6,550.00	6,533.57	141.08	24.18	70.88	11.35	-444.08	4,730.31	4,660.01	70.29	67.294	
11,800.00	7,057.83	6,550.00	6,533.57	143.98	24.18	70.88	11.35	-444.08	4,824.23	4,753.84	70.39	68.536	
11,900.00	7,057.55	6,550.00	6,533.57	146.88	24.18	70.88	11.35	-444.08	4,918.40	4,847.91	70.48	69.782	
12,000.00	7,057.27	6,550.00	6,533.57	149.78	24.18	70.88	11.35	-444.08	5,012.79	4,942.21	70.57	71.031	
12,100.00	7,056.99	6,550.00	6,533.57	152.69	24.18	70.88	11.35	-444.08	5,107.39	5,036.73	70.66	72.283	
12,200.00	7,056.71	6,550.00	6,533.57	155.59	24.18	70.88	11.35	-444.08	5,202.20	5,131.45	70.74	73.538	
12,300.00	7,056.43	6,550.00	6,533.57	158.50	24.18	70.88	11.35	-444.08	5,297.19	5,226.37	70.82	74.796	
12,400.00	7,056.15	6,550.00	6,533.57	161.41	24.18	70.88	11.35	-444.08	5,392.37	5,321.47	70.90	76.057	
12,500.00	7,055.87	6,550.00	6,533.57	164.32	24.18	70.88	11.35	-444.08	5,487.72	5,416.74	70.98	77.319	
12,600.00	7,055.58	6,550.00	6,533.57	167.24	24.18	70.88	11.35	-444.08	5,583.23	5,512.18	71.05	78.583	
12,700.00	7,055.30	6,550.00	6,533.57	170.15	24.18	70.88	11.35	-444.08	5,678.90	5,607.78	71.12	79.849	
12,800.00	7,055.02	6,550.00	6,533.57	173.07	24.18	70.88	11.35	-444.08	5,774.71	5,703.52	71.19	81.117	
12,900.00	7,054.74	6,550.00	6,533.57	175.99	24.18	70.88	11.35	-444.08	5,870.66	5,799.41	71.26	82.386	
13,000.00	7,054.46	6,550.00	6,533.57	178.91	24.18	70.88	11.35	-444.08	5,966.75	5,895.43	71.32	83.656	
13,100.00	7,054.18	6,550.00	6,533.57	181.83	24.18	70.88	11.35	-444.08	6,062.96	5,991.57	71.39	84.927	
13,200.00	7,053.90	6,550.00	6,533.57	184.75	24.18	70.88	11.35	-444.08	6,159.30	6,087.84	71.45	86.199	
13,300.00	7,053.62	6,550.00	6,533.57	187.67	24.18	70.88	11.35	-444.08	6,255.74	6,184.23	71.52	87.472	
13,400.00	7,053.34	6,550.00	6,533.57	190.60	24.18	70.88	11.35	-444.08	6,352.30	6,280.72	71.58	88.745	
13,500.00	7,053.06	6,550.00	6,533.57	193.52	24.18	70.88	11.35	-444.08	6,448.96	6,377.32	71.64	90.019	
13,600.00	7,052.78	6,527.14	6,510.84	196.45	24.12	70.14	11.55	-446.48	6,545.29	6,473.67	71.62	91.390	
13,700.00	7,052.50	6,526.34	6,510.04	199.38	24.12	70.11	11.55	-446.55	6,642.12	6,570.44	71.68	92.668	
13,800.00	7,052.22	6,525.55	6,509.26	202.31	24.11	70.09	11.56	-446.62	6,739.04	6,667.30	71.73	93.946	
13,900.00	7,051.94	6,524.79	6,508.50	205.24	24.11	70.06	11.57	-446.68	6,836.05	6,764.26	71.79	95.224	
14,000.00	7,051.66	6,524.05	6,507.76	208.17	24.11	70.04	11.57	-446.74	6,933.14	6,861.29	71.84	96.502	
14,100.00	7,051.38	6,523.32	6,507.04	211.10	24.11	70.01	11.58	-446.80	7,030.31	6,958.41	71.90	97.780	
14,200.00	7,051.10	6,500.00	6,483.76	214.03	24.04	69.26	11.76	-448.26	7,127.99	7,056.11	71.87	99.175	
14,300.00	7,050.82	6,500.00	6,483.76	216.97	24.04	69.26	11.76	-448.26	7,225.28	7,153.35	71.93	100.449	
14,400.00	7,050.54	6,500.00	6,483.76	219.90	24.04	69.26	11.76	-448.26	7,322.65	7,250.67	71.99	101.722	
14,500.00	7,050.26	6,500.00	6,483.76	222.83	24.04	69.26	11.76	-448.26	7,420.09	7,348.05	72.04	102.995	
14,600.00	7,049.98	6,500.00	6,483.76	225.77	24.04	69.26	11.76	-448.26	7,517.60	7,445.50	72.10	104.268	
14,700.00	7,049.69	6,500.00	6,483.76	228.71	24.04	69.26	11.76	-448.26	7,615.18	7,543.02	72.15	105.540	
14,800.00	7,049.41	6,500.00	6,483.76	231.64	24.04	69.26	11.76	-448.26	7,712.81	7,640.60	72.21	106.811	
14,900.00	7,049.13	6,500.00	6,483.76	234.58	24.04	69.26	11.76	-448.26	7,810.50	7,738.24	72.27	108.081	
15,000.00	7,048.85	6,500.00	6,483.76	237.52	24.04	69.26	11.76	-448.26	7,908.26	7,835.94	72.32	109.350	
15,100.00	7,048.57	6,500.00	6,483.76	240.46	24.04	69.26	11.76	-448.26	8,006.06	7,933.69	72.38	110.619	
15,200.00	7,048.29	6,500.00	6,483.76	243.39	24.04	69.26	11.76	-448.26	8,103.93	8,031.50	72.43	111.886	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #744H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,300.00	7,048.01	6,500.00	6,483.76	246.33	24.04	69.26	11.76	-448.26	8,201.84	8,129.35	72.48	113.153	
15,400.00	7,047.73	6,500.00	6,483.76	249.27	24.04	69.26	11.76	-448.26	8,299.80	8,227.26	72.54	114.418	
15,500.00	7,047.45	6,500.00	6,483.76	252.21	24.04	69.26	11.76	-448.26	8,397.81	8,325.22	72.59	115.682	
15,600.00	7,047.17	6,500.00	6,483.76	255.15	24.04	69.26	11.76	-448.26	8,495.87	8,423.22	72.65	116.945	
15,700.00	7,046.89	6,500.00	6,483.76	258.10	24.04	69.26	11.76	-448.26	8,593.97	8,521.27	72.70	118.207	
15,800.00	7,046.61	6,500.00	6,483.76	261.04	24.04	69.26	11.76	-448.26	8,692.12	8,619.36	72.76	119.467	
15,900.00	7,046.33	6,500.00	6,483.76	263.98	24.04	69.26	11.76	-448.26	8,790.30	8,717.49	72.81	120.726	
16,000.00	7,046.05	6,500.00	6,483.76	266.92	24.04	69.26	11.76	-448.26	8,888.53	8,815.66	72.87	121.984	
16,100.00	7,045.77	6,500.00	6,483.76	269.87	24.04	69.26	11.76	-448.26	8,986.80	8,913.87	72.92	123.240	
16,200.00	7,045.49	6,500.00	6,483.76	272.81	24.04	69.26	11.76	-448.26	9,085.10	9,012.12	72.98	124.494	
16,300.00	7,045.21	6,500.00	6,483.76	275.75	24.04	69.26	11.76	-448.26	9,183.44	9,110.41	73.03	125.747	
16,400.00	7,044.93	6,500.00	6,483.76	278.70	24.04	69.26	11.76	-448.26	9,281.82	9,208.73	73.09	126.999	
16,500.00	7,044.65	6,500.00	6,483.76	281.64	24.04	69.26	11.76	-448.26	9,380.23	9,307.09	73.14	128.248	
16,600.00	7,044.37	6,500.00	6,483.76	284.59	24.04	69.26	11.76	-448.26	9,478.67	9,405.48	73.20	129.497	
16,700.00	7,044.08	6,500.00	6,483.76	287.53	24.04	69.26	11.76	-448.26	9,577.15	9,503.90	73.25	130.743	
16,800.00	7,043.80	6,500.00	6,483.76	290.48	24.04	69.26	11.76	-448.26	9,675.66	9,602.35	73.31	131.988	
16,900.00	7,043.52	6,500.00	6,483.76	293.42	24.04	69.26	11.76	-448.26	9,774.19	9,700.83	73.36	133.231	
17,000.00	7,043.24	6,500.00	6,483.76	296.37	24.04	69.26	11.76	-448.26	9,872.76	9,799.34	73.42	134.472	
17,100.00	7,042.96	6,500.00	6,483.76	299.32	24.04	69.26	11.76	-448.26	9,971.36	9,897.88	73.47	135.711	

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #745H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-22.70	28.88	-12.08	31.30				
100.00	100.00	100.00	100.00	0.36	0.36	-22.70	28.88	-12.08	31.30	30.59	0.72	43.661	
200.00	200.00	200.00	200.00	0.72	0.72	-22.70	28.88	-12.08	31.30	29.87	1.43	21.830	
300.00	300.00	300.00	300.00	1.08	1.08	-22.70	28.88	-12.08	31.30	29.15	2.15	14.554	
400.00	400.00	400.00	400.00	1.43	1.43	-22.70	28.88	-12.08	31.30	28.43	2.87	10.915	
500.00	500.00	500.00	500.00	1.79	1.79	-22.70	28.88	-12.08	31.30	27.72	3.58	8.732	
600.00	600.00	600.59	600.57	2.15	2.14	-25.43	27.38	-13.02	30.32	26.03	4.29	7.071	
700.00	700.00	700.94	700.78	2.51	2.48	-34.62	22.90	-15.81	27.84	22.86	4.98	5.588	
800.00	800.00	800.80	800.25	2.87	2.82	-52.83	15.49	-20.43	25.64	19.96	5.69	4.510	
821.54	821.54	822.22	821.54	2.94	2.90	-58.03	13.52	-21.66	25.53	19.70	5.84	4.373	CC, ES
900.00	900.00	900.00	898.72	3.23	3.17	-78.82	5.29	-26.79	27.34	20.95	6.39	4.277	SF
1,000.00	999.99	999.27	997.12	3.57	3.54	79.92	-5.78	-33.70	34.06	26.98	7.08	4.813	
1,100.00	1,099.91	1,098.77	1,095.76	3.90	3.91	71.28	-16.88	-40.62	42.26	34.50	7.75	5.449	
1,200.00	1,199.69	1,198.44	1,194.56	4.23	4.30	68.22	-28.00	-47.56	50.05	41.61	8.45	5.926	
1,300.00	1,299.27	1,298.20	1,293.45	4.57	4.68	68.39	-39.13	-54.50	56.94	47.78	9.16	6.219	
1,400.00	1,398.57	1,397.98	1,392.37	4.92	5.07	70.73	-50.26	-61.44	62.92	53.04	9.88	6.367	
1,500.00	1,497.54	1,497.73	1,491.25	5.28	5.46	74.76	-61.39	-68.38	68.26	57.63	10.63	6.422	
1,600.00	1,596.09	1,597.36	1,590.02	5.65	5.85	80.17	-72.50	-75.32	73.42	62.01	11.40	6.439	
1,700.00	1,694.16	1,696.82	1,688.61	6.03	6.25	86.69	-83.60	-82.24	78.96	66.76	12.20	6.473	
1,800.00	1,791.70	1,796.03	1,786.96	6.43	6.64	94.00	-94.66	-89.14	85.57	72.55	13.02	6.573	
1,900.00	1,888.62	1,894.92	1,885.00	6.85	7.03	101.68	-105.69	-96.02	93.90	80.05	13.85	6.780	
2,000.00	1,985.11	1,993.57	1,982.79	7.29	7.43	108.98	-116.70	-102.89	104.22	89.55	14.67	7.102	
2,100.00	2,081.59	2,092.23	2,080.59	7.74	7.82	114.93	-127.71	-109.75	115.95	100.46	15.49	7.486	
2,200.00	2,178.07	2,190.88	2,178.38	8.19	8.22	119.77	-138.71	-116.62	128.70	112.41	16.30	7.898	
2,300.00	2,274.55	2,289.53	2,276.18	8.66	8.61	123.71	-149.72	-123.48	142.19	125.10	17.10	8.318	
2,400.00	2,371.03	2,388.18	2,373.97	9.12	9.01	126.97	-160.72	-130.34	156.24	138.35	17.89	8.733	
2,500.00	2,467.51	2,486.83	2,471.77	9.60	9.41	129.68	-171.73	-137.21	170.70	152.02	18.68	9.136	
2,600.00	2,563.99	2,585.48	2,569.56	10.08	9.80	131.97	-182.73	-144.07	185.48	166.00	19.48	9.523	
2,700.00	2,660.48	2,684.13	2,667.35	10.56	10.20	133.92	-193.74	-150.94	200.50	180.24	20.27	9.892	
2,800.00	2,756.96	2,782.78	2,765.15	11.05	10.60	135.60	-204.74	-157.80	215.73	194.67	21.06	10.243	
2,900.00	2,853.44	2,881.43	2,862.94	11.54	11.00	137.06	-215.75	-164.67	231.11	209.25	21.85	10.576	
3,000.00	2,949.92	2,980.08	2,960.74	12.03	11.40	138.33	-226.75	-171.53	246.61	223.97	22.65	10.890	
3,100.00	3,046.40	3,078.73	3,058.53	12.52	11.79	139.45	-237.76	-178.40	262.23	238.79	23.44	11.188	
3,200.00	3,142.88	3,177.38	3,156.32	13.02	12.19	140.45	-248.76	-185.26	277.93	253.70	24.23	11.469	
3,300.00	3,239.36	3,276.03	3,254.12	13.52	12.59	141.34	-259.77	-192.12	293.70	268.67	25.03	11.736	
3,400.00	3,335.85	3,374.68	3,351.91	14.02	12.99	142.14	-270.77	-198.99	309.54	283.72	25.82	11.987	
3,500.00	3,432.33	3,473.33	3,449.71	14.52	13.39	142.86	-281.78	-205.85	325.43	298.81	26.62	12.226	
3,600.00	3,528.81	3,571.98	3,547.50	15.02	13.79	143.52	-292.78	-212.72	341.36	313.95	27.41	12.452	
3,700.00	3,625.29	3,670.63	3,645.29	15.53	14.19	144.11	-303.79	-219.58	357.34	329.13	28.21	12.667	
3,800.00	3,721.77	3,769.28	3,743.09	16.03	14.59	144.66	-314.79	-226.45	373.35	344.34	29.01	12.870	
3,900.00	3,818.25	3,867.93	3,840.88	16.54	14.99	145.16	-325.80	-233.31	389.38	359.58	29.81	13.064	
4,000.00	3,914.73	3,966.59	3,938.68	17.05	15.39	145.62	-336.80	-240.18	405.45	374.85	30.60	13.248	
4,100.00	4,011.22	4,065.24	4,036.47	17.55	15.79	146.05	-347.81	-247.04	421.54	390.14	31.40	13.423	
4,200.00	4,107.70	4,163.89	4,134.27	18.06	16.19	146.44	-358.81	-253.90	437.65	405.45	32.20	13.591	
4,300.00	4,204.18	4,262.54	4,232.06	18.57	16.59	146.81	-369.82	-260.77	453.78	420.78	33.00	13.750	
4,400.00	4,300.66	4,361.19	4,329.85	19.08	16.99	147.15	-380.82	-267.63	469.93	436.12	33.80	13.902	
4,500.00	4,397.14	4,459.84	4,427.65	19.59	17.39	147.47	-391.83	-274.50	486.09	451.49	34.60	14.048	
4,600.00	4,493.62	4,558.49	4,525.44	20.10	17.79	147.76	-402.83	-281.36	502.26	466.86	35.40	14.187	
4,700.00	4,590.10	4,657.14	4,623.24	20.62	18.19	148.04	-413.84	-288.23	518.45	482.25	36.20	14.320	
4,800.00	4,686.59	4,755.79	4,721.03	21.13	18.59	148.31	-424.84	-295.09	534.65	497.64	37.01	14.448	
4,900.00	4,783.07	4,854.44	4,818.82	21.64	18.99	148.55	-435.85	-301.96	550.86	513.05	37.81	14.570	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #745H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,879.55	4,953.09	4,916.62	22.15	19.39	148.79	-446.85	-308.82	567.08	528.47	38.61	14.687	
5,100.00	4,976.03	5,051.74	5,014.41	22.67	19.79	149.01	-457.86	-315.68	583.31	543.89	39.41	14.800	
5,200.00	5,072.51	5,150.39	5,112.21	23.18	20.19	149.21	-468.86	-322.55	599.54	559.33	40.21	14.909	
5,300.00	5,168.99	5,249.04	5,210.00	23.69	20.59	149.41	-479.87	-329.41	615.78	574.77	41.02	15.013	
5,400.00	5,265.47	5,347.69	5,307.80	24.21	20.99	149.60	-490.87	-336.28	632.03	590.21	41.82	15.113	
5,500.00	5,361.95	5,446.34	5,405.59	24.72	21.39	149.78	-501.88	-343.14	648.29	605.66	42.62	15.210	
5,600.00	5,458.44	5,544.99	5,503.38	25.24	21.79	149.95	-512.88	-350.01	664.55	621.12	43.43	15.303	
5,700.00	5,554.92	5,643.64	5,601.18	25.75	22.19	150.11	-523.89	-356.87	680.82	636.58	44.23	15.392	
5,800.00	5,651.40	5,742.29	5,698.97	26.27	22.59	150.26	-534.89	-363.74	697.09	652.05	45.03	15.479	
5,900.00	5,747.88	5,840.95	5,796.77	26.78	22.99	150.41	-545.90	-370.60	713.36	667.52	45.84	15.563	
6,000.00	5,844.36	5,939.60	5,894.56	27.30	23.39	150.55	-556.90	-377.47	729.64	683.00	46.64	15.643	
6,100.00	5,940.84	6,038.25	5,992.35	27.81	23.80	150.68	-567.91	-384.33	745.93	698.48	47.45	15.721	
6,200.00	6,037.32	6,136.90	6,090.15	28.33	24.20	150.81	-578.91	-391.19	762.22	713.97	48.25	15.797	
6,300.00	6,133.81	6,235.55	6,187.94	28.85	24.60	150.93	-589.92	-398.06	778.51	729.45	49.06	15.870	
6,400.00	6,230.18	6,334.30	6,285.84	29.36	25.00	134.30	-600.93	-404.93	793.39	743.54	49.85	15.916	
6,500.00	6,325.65	6,432.83	6,383.51	29.87	25.40	117.55	-611.93	-411.79	803.73	753.13	50.59	15.886	
6,600.00	6,419.17	6,530.07	6,479.91	30.35	25.79	106.87	-622.77	-418.55	809.73	758.45	51.28	15.791	
6,700.00	6,509.71	6,624.96	6,573.97	30.81	26.18	100.82	-633.36	-425.16	812.08	760.20	51.89	15.650	
6,800.00	6,596.29	6,766.65	6,714.48	31.26	26.70	100.18	-649.35	-423.54	809.60	757.04	52.56	15.403	
6,900.00	6,677.95	6,877.05	6,821.66	31.69	27.03	102.17	-661.89	-400.88	802.75	749.98	52.77	15.211	
7,000.00	6,753.80	6,945.17	6,885.24	32.11	27.19	103.70	-669.49	-377.72	799.09	746.17	52.92	15.100	
7,002.98	6,755.96	6,946.69	6,886.63	32.12	27.20	103.73	-669.65	-377.12	799.09	746.16	52.92	15.099	
7,100.00	6,823.01	6,984.20	6,920.43	32.54	27.28	103.95	-673.74	-361.41	803.36	750.31	53.05	15.143	
7,200.00	6,884.82	7,004.06	6,937.94	32.99	27.32	102.88	-675.88	-352.27	817.69	764.57	53.12	15.394	
7,300.00	6,938.56	7,011.17	6,944.13	33.48	27.33	100.67	-676.64	-348.88	842.41	789.28	53.12	15.857	
7,400.00	6,983.63	7,009.54	6,942.72	34.07	27.33	97.49	-676.46	-349.66	876.68	823.56	53.12	16.503	
7,500.00	7,019.54	7,000.00	6,934.38	34.79	27.31	93.41	-675.45	-354.19	919.06	865.90	53.16	17.288	
7,600.00	7,045.89	7,000.00	6,934.38	35.71	27.31	89.71	-675.45	-354.19	967.92	914.42	53.50	18.091	
7,700.00	7,062.41	6,973.90	6,911.24	36.86	27.26	84.15	-672.63	-365.92	1,021.28	967.63	53.65	19.036	
7,800.00	7,068.90	6,950.00	6,889.65	38.24	27.21	78.87	-670.02	-375.82	1,077.90	1,023.93	53.97	19.970	
7,900.00	7,068.77	6,950.00	6,889.65	39.84	27.21	78.22	-670.02	-375.82	1,137.74	1,083.01	54.73	20.788	
8,000.00	7,068.49	6,920.84	6,862.82	41.63	27.14	76.58	-666.80	-386.78	1,202.05	1,147.01	55.05	21.837	
8,100.00	7,068.21	6,900.00	6,843.35	43.59	27.09	75.42	-664.47	-393.85	1,270.74	1,215.29	55.45	22.917	
8,200.00	7,067.93	6,900.00	6,843.35	45.68	27.09	75.42	-664.47	-393.85	1,342.98	1,286.90	56.08	23.947	
8,300.00	7,067.65	6,882.21	6,826.56	47.88	27.04	74.42	-662.47	-399.37	1,418.28	1,361.85	56.44	25.130	
8,400.00	7,067.37	6,871.95	6,816.81	50.18	27.01	73.85	-661.32	-402.34	1,496.30	1,439.46	56.84	26.324	
8,500.00	7,067.08	6,850.00	6,795.79	52.54	26.95	72.64	-658.84	-408.16	1,576.79	1,519.71	57.08	27.626	
8,600.00	7,066.80	6,850.00	6,795.79	54.97	26.95	72.64	-658.84	-408.16	1,658.97	1,601.46	57.51	28.847	
8,700.00	7,066.52	6,850.00	6,795.79	57.46	26.95	72.64	-658.84	-408.16	1,743.02	1,685.12	57.89	30.108	
8,800.00	7,066.24	6,850.00	6,795.79	59.99	26.95	72.64	-658.84	-408.16	1,828.67	1,770.43	58.23	31.402	
8,900.00	7,065.96	6,850.00	6,795.79	62.57	26.95	72.64	-658.84	-408.16	1,915.71	1,857.17	58.54	32.725	
9,000.00	7,065.68	6,827.38	6,773.93	65.18	26.89	71.40	-656.27	-413.39	2,003.47	1,944.84	58.63	34.169	
9,100.00	7,065.40	6,821.93	6,768.65	67.81	26.87	71.11	-655.65	-414.54	2,092.52	2,033.67	58.85	35.557	
9,200.00	7,065.12	6,800.00	6,747.26	70.48	26.81	69.93	-653.15	-418.68	2,182.74	2,123.82	58.92	37.045	
9,300.00	7,064.84	6,800.00	6,747.26	73.17	26.81	69.93	-653.15	-418.68	2,273.35	2,214.21	59.14	38.438	
9,400.00	7,064.56	6,800.00	6,747.26	75.88	26.81	69.93	-653.15	-418.68	2,364.72	2,305.38	59.34	39.848	
9,500.00	7,064.28	6,800.00	6,747.26	78.61	26.81	69.93	-653.15	-418.68	2,456.76	2,397.24	59.53	41.271	
9,600.00	7,064.00	6,800.00	6,747.26	81.36	26.81	69.93	-653.15	-418.68	2,549.40	2,489.71	59.70	42.706	
9,700.00	7,063.72	6,800.00	6,747.26	84.12	26.81	69.93	-653.15	-418.68	2,642.58	2,582.73	59.85	44.152	
9,800.00	7,063.44	6,800.00	6,747.26	86.89	26.81	69.93	-653.15	-418.68	2,736.24	2,676.25	60.00	45.608	
9,900.00	7,063.16	6,800.00	6,747.26	89.68	26.81	69.93	-653.15	-418.68	2,830.34	2,770.21	60.13	47.071	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #745H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.00	7,062.88	6,800.00	6,747.26	92.48	26.81	69.93	-653.15	-418.68	2,924.82	2,864.57	60.25	48.542	
10,100.00	7,062.60	6,800.00	6,747.26	95.29	26.81	69.93	-653.15	-418.68	3,019.66	2,959.29	60.37	50.019	
10,200.00	7,062.32	6,800.00	6,747.26	98.10	26.81	69.93	-653.15	-418.68	3,114.83	3,054.35	60.48	51.502	
10,300.00	7,062.04	6,779.00	6,726.65	100.93	26.74	68.81	-650.76	-421.94	3,209.88	3,149.40	60.48	53.072	
10,400.00	7,061.76	6,776.62	6,724.31	103.76	26.74	68.69	-650.49	-422.27	3,305.51	3,244.94	60.57	54.572	
10,500.00	7,061.47	6,774.36	6,722.08	106.60	26.73	68.57	-650.23	-422.57	3,401.39	3,340.73	60.66	56.075	
10,600.00	7,061.19	6,772.21	6,719.97	109.45	26.72	68.45	-649.99	-422.85	3,497.48	3,436.74	60.74	57.581	
10,700.00	7,060.91	6,750.00	6,698.04	112.31	26.65	67.30	-647.46	-425.32	3,594.15	3,533.42	60.73	59.183	
10,800.00	7,060.63	6,750.00	6,698.04	115.16	26.65	67.30	-647.46	-425.32	3,690.57	3,629.76	60.82	60.684	
10,900.00	7,060.35	6,750.00	6,698.04	118.03	26.65	67.30	-647.46	-425.32	3,787.18	3,726.28	60.90	62.187	
11,000.00	7,060.07	6,750.00	6,698.04	120.90	26.65	67.30	-647.46	-425.32	3,883.96	3,822.98	60.98	63.691	
11,100.00	7,059.79	6,750.00	6,698.04	123.77	26.65	67.30	-647.46	-425.32	3,980.90	3,919.84	61.06	65.198	
11,200.00	7,059.51	6,750.00	6,698.04	126.65	26.65	67.30	-647.46	-425.32	4,077.99	4,016.85	61.13	66.705	
11,300.00	7,059.23	6,750.00	6,698.04	129.53	26.65	67.30	-647.46	-425.32	4,175.21	4,114.01	61.21	68.214	
11,400.00	7,058.95	6,750.00	6,698.04	132.41	26.65	67.30	-647.46	-425.32	4,272.57	4,211.29	61.28	69.723	
11,500.00	7,058.67	6,750.00	6,698.04	135.30	26.65	67.30	-647.46	-425.32	4,370.04	4,308.69	61.35	71.233	
11,600.00	7,058.39	6,750.00	6,698.04	138.19	26.65	67.30	-647.46	-425.32	4,467.62	4,406.21	61.42	72.743	
11,700.00	7,058.11	6,750.00	6,698.04	141.08	26.65	67.30	-647.46	-425.32	4,565.31	4,503.83	61.48	74.253	
11,800.00	7,057.83	6,750.00	6,698.04	143.98	26.65	67.30	-647.46	-425.32	4,663.10	4,601.55	61.55	75.762	
11,900.00	7,057.55	6,750.00	6,698.04	146.88	26.65	67.30	-647.46	-425.32	4,760.98	4,699.36	61.61	77.272	
12,000.00	7,057.27	6,750.00	6,698.04	149.78	26.65	67.30	-647.46	-425.32	4,858.94	4,797.26	61.68	78.781	
12,100.00	7,056.99	6,750.00	6,698.04	152.69	26.65	67.30	-647.46	-425.32	4,956.99	4,895.25	61.74	80.289	
12,200.00	7,056.71	6,750.00	6,698.04	155.59	26.65	67.30	-647.46	-425.32	5,055.11	4,993.31	61.80	81.797	
12,300.00	7,056.43	6,750.00	6,698.04	158.50	26.65	67.30	-647.46	-425.32	5,153.30	5,091.44	61.86	83.304	
12,400.00	7,056.15	6,750.00	6,698.04	161.41	26.65	67.30	-647.46	-425.32	5,251.57	5,189.65	61.92	84.809	
12,500.00	7,055.87	6,750.00	6,698.04	164.32	26.65	67.30	-647.46	-425.32	5,349.89	5,287.91	61.98	86.314	
12,600.00	7,055.58	6,750.00	6,698.04	167.24	26.65	67.30	-647.46	-425.32	5,448.28	5,386.24	62.04	87.817	
12,700.00	7,055.30	6,750.00	6,698.04	170.15	26.65	67.30	-647.46	-425.32	5,546.73	5,484.63	62.10	89.318	
12,800.00	7,055.02	6,750.00	6,698.04	173.07	26.65	67.30	-647.46	-425.32	5,645.23	5,583.07	62.16	90.819	
12,900.00	7,054.74	6,750.00	6,698.04	175.99	26.65	67.30	-647.46	-425.32	5,743.78	5,681.56	62.22	92.317	
13,000.00	7,054.46	6,750.00	6,698.04	178.91	26.65	67.30	-647.46	-425.32	5,842.38	5,780.11	62.28	93.814	
13,100.00	7,054.18	6,750.00	6,698.04	181.83	26.65	67.30	-647.46	-425.32	5,941.03	5,878.70	62.33	95.309	
13,200.00	7,053.90	6,750.00	6,698.04	184.75	26.65	67.30	-647.46	-425.32	6,039.72	5,977.33	62.39	96.802	
13,300.00	7,053.62	6,750.00	6,698.04	187.67	26.65	67.30	-647.46	-425.32	6,138.46	6,076.01	62.45	98.293	
13,400.00	7,053.34	6,750.00	6,698.04	190.60	26.65	67.30	-647.46	-425.32	6,237.24	6,174.73	62.51	99.782	
13,500.00	7,053.06	6,750.00	6,698.04	193.52	26.65	67.30	-647.46	-425.32	6,336.05	6,273.48	62.57	101.269	
13,600.00	7,052.78	6,750.00	6,698.04	196.45	26.65	67.30	-647.46	-425.32	6,434.90	6,372.27	62.62	102.753	
13,700.00	7,052.50	6,750.00	6,698.04	199.38	26.65	67.30	-647.46	-425.32	6,533.78	6,471.10	62.68	104.235	
13,800.00	7,052.22	6,750.00	6,698.04	202.31	26.65	67.30	-647.46	-425.32	6,632.70	6,569.96	62.74	105.715	
13,900.00	7,051.94	6,750.00	6,698.04	205.24	26.65	67.30	-647.46	-425.32	6,731.65	6,668.85	62.80	107.193	
14,000.00	7,051.66	6,750.00	6,698.04	208.17	26.65	67.30	-647.46	-425.32	6,830.64	6,767.78	62.86	108.668	
14,100.00	7,051.38	6,750.00	6,698.04	211.10	26.65	67.30	-647.46	-425.32	6,929.65	6,866.73	62.92	110.140	
14,200.00	7,051.10	6,750.00	6,698.04	214.03	26.65	67.30	-647.46	-425.32	7,028.68	6,965.71	62.98	111.610	
14,300.00	7,050.82	6,750.00	6,698.04	216.97	26.65	67.30	-647.46	-425.32	7,127.75	7,064.72	63.03	113.077	
14,400.00	7,050.54	6,750.00	6,698.04	219.90	26.65	67.30	-647.46	-425.32	7,226.84	7,163.75	63.09	114.542	
14,500.00	7,050.26	6,750.00	6,698.04	222.83	26.65	67.30	-647.46	-425.32	7,325.96	7,262.80	63.15	116.003	
14,600.00	7,049.98	6,750.00	6,698.04	225.77	26.65	67.30	-647.46	-425.32	7,425.10	7,361.88	63.21	117.462	
14,700.00	7,049.69	6,750.00	6,698.04	228.71	26.65	67.30	-647.46	-425.32	7,524.26	7,460.99	63.27	118.918	
14,800.00	7,049.41	6,750.00	6,698.04	231.64	26.65	67.30	-647.46	-425.32	7,623.44	7,560.11	63.33	120.371	
14,900.00	7,049.13	6,750.00	6,698.04	234.58	26.65	67.30	-647.46	-425.32	7,722.65	7,659.26	63.39	121.821	
15,000.00	7,048.85	6,750.00	6,698.04	237.52	26.65	67.30	-647.46	-425.32	7,821.87	7,758.42	63.45	123.268	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #745H - OH - Plan #1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,100.00	7,048.57	6,750.00	6,698.04	240.46	26.65	67.30	-647.46	-425.32	7,921.12	7,857.60	63.52	124.712	
15,200.00	7,048.29	6,750.00	6,698.04	243.39	26.65	67.30	-647.46	-425.32	8,020.38	7,956.81	63.58	126.153	
15,300.00	7,048.01	6,726.66	6,674.92	246.33	26.57	66.11	-644.80	-427.09	8,119.21	8,055.63	63.57	127.713	
15,400.00	7,047.73	6,726.22	6,674.48	249.27	26.57	66.08	-644.75	-427.12	8,218.49	8,154.85	63.64	129.150	
15,500.00	7,047.45	6,725.78	6,674.05	252.21	26.57	66.06	-644.70	-427.14	8,317.79	8,254.09	63.70	130.585	
15,600.00	7,047.17	6,725.36	6,673.63	255.15	26.56	66.04	-644.65	-427.17	8,417.10	8,353.34	63.76	132.016	
15,700.00	7,046.89	6,724.95	6,673.22	258.10	26.56	66.02	-644.61	-427.19	8,516.43	8,452.61	63.82	133.444	
15,800.00	7,046.61	6,724.54	6,672.82	261.04	26.56	66.00	-644.56	-427.21	8,615.78	8,551.90	63.88	134.868	
15,900.00	7,046.33	6,724.15	6,672.43	263.98	26.56	65.98	-644.51	-427.23	8,715.14	8,651.19	63.95	136.289	
16,000.00	7,046.05	6,723.76	6,672.04	266.92	26.56	65.96	-644.47	-427.25	8,814.52	8,750.51	64.01	137.707	
16,100.00	7,045.77	6,723.38	6,671.67	269.87	26.56	65.94	-644.43	-427.27	8,913.90	8,849.83	64.07	139.121	
16,200.00	7,045.49	6,700.00	6,648.45	272.81	26.47	64.78	-641.78	-428.07	9,013.75	8,949.67	64.08	140.674	
16,300.00	7,045.21	6,700.00	6,648.45	275.75	26.47	64.78	-641.78	-428.07	9,113.15	9,049.01	64.14	142.080	
16,400.00	7,044.93	6,700.00	6,648.45	278.70	26.47	64.78	-641.78	-428.07	9,212.56	9,148.36	64.21	143.482	
16,500.00	7,044.65	6,700.00	6,648.45	281.64	26.47	64.78	-641.78	-428.07	9,311.99	9,247.72	64.27	144.881	
16,600.00	7,044.37	6,700.00	6,648.45	284.59	26.47	64.78	-641.78	-428.07	9,411.43	9,347.09	64.34	146.276	
16,700.00	7,044.08	6,700.00	6,648.45	287.53	26.47	64.78	-641.78	-428.07	9,510.88	9,446.47	64.41	147.667	
16,800.00	7,043.80	6,700.00	6,648.45	290.48	26.47	64.78	-641.78	-428.07	9,610.34	9,545.87	64.47	149.056	
16,900.00	7,043.52	6,700.00	6,648.45	293.42	26.47	64.78	-641.78	-428.07	9,709.81	9,645.27	64.54	150.440	
17,000.00	7,043.24	6,700.00	6,648.45	296.37	26.47	64.78	-641.78	-428.07	9,809.30	9,744.69	64.61	151.821	
17,100.00	7,042.96	6,700.00	6,648.45	299.32	26.47	64.78	-641.78	-428.07	9,908.79	9,844.11	64.68	153.198	

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #746H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-96.26	-1.03	-9.43	9.48	9.48	0.00	N/A	
100.00	100.00	100.00	100.00	0.36	0.36	-96.26	-1.03	-9.43	9.48	8.77	0.72	13.227	
200.00	200.00	200.00	200.00	0.72	0.72	-96.26	-1.03	-9.43	9.48	8.05	1.43	6.613	
300.00	300.00	300.00	300.00	1.08	1.08	-96.26	-1.03	-9.43	9.48	7.33	2.15	4.409	
400.00	400.00	400.00	400.00	1.43	1.43	-96.26	-1.03	-9.43	9.48	6.61	2.87	3.307	
500.00	500.00	500.00	500.00	1.79	1.79	-96.26	-1.03	-9.43	9.48	5.90	3.58	2.645	CC, ES
600.00	600.00	599.82	599.80	2.15	2.13	-105.05	-2.68	-9.98	10.34	6.05	4.28	2.413	
700.00	700.00	699.40	699.24	2.51	2.47	-123.20	-7.61	-11.63	13.92	8.95	4.97	2.800	
800.00	800.00	798.50	797.96	2.87	2.81	-137.66	-15.77	-14.37	21.43	15.77	5.66	3.786	
900.00	900.00	896.89	895.62	3.23	3.16	-146.15	-27.06	-18.15	32.88	26.54	6.34	5.185	
1,000.00	999.99	994.54	992.09	3.57	3.52	27.25	-41.41	-22.96	46.85	39.85	7.00	6.695	
1,100.00	1,099.91	1,091.57	1,087.38	3.90	3.90	25.47	-58.74	-28.77	61.93	54.30	7.63	8.113	
1,200.00	1,199.69	1,188.27	1,181.67	4.23	4.30	24.79	-79.02	-35.58	77.97	69.70	8.28	9.422	
1,300.00	1,299.27	1,287.14	1,277.80	4.57	4.72	24.86	-100.95	-42.93	92.93	83.97	8.97	10.364	
1,400.00	1,398.57	1,386.33	1,374.24	4.92	5.16	25.50	-122.94	-50.30	105.55	95.87	9.68	10.906	
1,500.00	1,497.54	1,485.77	1,470.92	5.28	5.61	26.58	-144.99	-57.69	115.85	105.45	10.40	11.139	
1,600.00	1,596.09	1,585.39	1,567.78	5.65	6.06	28.04	-167.08	-65.10	123.88	112.74	11.14	11.123	
1,700.00	1,694.16	1,685.13	1,664.75	6.03	6.52	29.90	-189.20	-72.52	129.72	117.83	11.89	10.909	
1,800.00	1,791.70	1,784.91	1,761.77	6.43	6.99	32.19	-211.33	-79.94	133.47	120.80	12.66	10.539	
1,900.00	1,888.62	1,884.68	1,858.77	6.85	7.46	34.99	-233.45	-87.35	135.27	121.81	13.46	10.046	
2,000.00	1,985.11	1,984.39	1,955.71	7.29	7.93	38.16	-255.56	-94.77	136.06	121.76	14.30	9.517	
2,100.00	2,081.59	2,084.10	2,052.66	7.74	8.40	41.29	-277.67	-102.18	137.23	122.07	15.15	9.055	
2,200.00	2,178.07	2,183.81	2,149.61	8.19	8.87	44.36	-299.78	-109.59	138.80	122.76	16.04	8.654	
2,300.00	2,274.55	2,283.53	2,246.55	8.66	9.35	47.36	-321.89	-117.01	140.77	123.82	16.95	8.306	
2,400.00	2,371.03	2,383.24	2,343.50	9.12	9.83	50.26	-344.00	-124.42	143.11	125.23	17.88	8.004	
2,500.00	2,467.51	2,482.95	2,440.45	9.60	10.31	53.07	-366.11	-131.83	145.81	126.98	18.83	7.742	
2,600.00	2,563.99	2,582.66	2,537.39	10.08	10.79	55.76	-388.22	-139.25	148.85	129.04	19.80	7.516	
2,700.00	2,660.48	2,682.37	2,634.34	10.56	11.27	58.35	-410.33	-146.66	152.20	131.41	20.79	7.321	
2,800.00	2,756.96	2,782.09	2,731.29	11.05	11.75	60.82	-432.44	-154.07	155.85	134.06	21.79	7.152	
2,900.00	2,853.44	2,881.80	2,828.24	11.54	12.23	63.17	-454.56	-161.49	159.78	136.98	22.80	7.008	
3,000.00	2,949.92	2,981.51	2,925.18	12.03	12.71	65.40	-476.67	-168.90	163.96	140.14	23.82	6.884	
3,100.00	3,046.40	3,081.22	3,022.13	12.52	13.20	67.53	-498.78	-176.31	168.38	143.54	24.84	6.778	
3,200.00	3,142.88	3,180.94	3,119.08	13.02	13.68	69.54	-520.89	-183.73	173.02	147.15	25.87	6.687	
3,300.00	3,239.36	3,280.65	3,216.02	13.52	14.17	71.44	-543.00	-191.14	177.86	150.96	26.91	6.611	
3,400.00	3,335.85	3,380.36	3,312.97	14.02	14.65	73.24	-565.11	-198.56	182.89	154.95	27.94	6.546	
3,500.00	3,432.33	3,480.07	3,409.92	14.52	15.14	74.95	-587.22	-205.97	188.09	159.12	28.98	6.491	
3,600.00	3,528.81	3,579.78	3,506.86	15.02	15.62	76.56	-609.33	-213.38	193.45	163.44	30.01	6.446	
3,700.00	3,625.29	3,679.50	3,603.81	15.53	16.11	78.08	-631.44	-220.80	198.95	167.90	31.05	6.408	
3,800.00	3,721.77	3,779.21	3,700.76	16.03	16.59	79.52	-653.55	-228.21	204.59	172.51	32.08	6.377	
3,900.00	3,818.25	3,878.92	3,797.70	16.54	17.08	80.88	-675.66	-235.62	210.35	177.23	33.12	6.352	
4,000.00	3,914.73	3,978.63	3,894.65	17.05	17.57	82.17	-697.77	-243.04	216.22	182.07	34.15	6.332	
4,100.00	4,011.22	4,078.35	3,991.60	17.55	18.05	83.40	-719.88	-250.45	222.19	187.01	35.18	6.316	
4,200.00	4,107.70	4,178.06	4,088.54	18.06	18.54	84.55	-741.99	-257.86	228.26	192.05	36.21	6.304	
4,300.00	4,204.18	4,277.77	4,185.49	18.57	19.03	85.65	-764.10	-265.28	234.42	197.18	37.23	6.296	
4,400.00	4,300.66	4,377.48	4,282.44	19.08	19.51	86.69	-786.21	-272.69	240.65	202.39	38.26	6.290	
4,500.00	4,397.14	4,477.19	4,379.38	19.59	20.00	87.68	-808.33	-280.10	246.97	207.68	39.28	6.287	
4,600.00	4,493.62	4,576.91	4,476.33	20.10	20.49	88.61	-830.44	-287.52	253.35	213.05	40.30	6.286	
4,700.00	4,590.10	4,676.62	4,573.28	20.62	20.98	89.51	-852.55	-294.93	259.80	218.48	41.32	6.287	
4,800.00	4,686.59	4,776.33	4,670.22	21.13	21.46	90.35	-874.66	-302.34	266.31	223.97	42.34	6.290	
4,900.00	4,783.07	4,876.04	4,767.17	21.64	21.95	91.16	-896.77	-309.76	272.87	229.51	43.36	6.294	
5,000.00	4,879.55	4,975.76	4,864.12	22.15	22.44	91.93	-918.88	-317.17	279.48	235.11	44.37	6.299	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #746H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Rule Assigned: Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,976.03	5,075.47	4,961.07	22.67	22.93	92.67	-940.99	-324.58	286.14	240.76	45.38	6.305	
5,200.00	5,072.51	5,175.18	5,058.01	23.18	23.42	93.37	-963.10	-332.00	292.85	246.46	46.39	6.313	
5,300.00	5,168.99	5,274.89	5,154.96	23.69	23.90	94.04	-985.21	-339.41	299.60	252.20	47.40	6.321	
5,400.00	5,265.47	5,374.60	5,251.91	24.21	24.39	94.68	-1,007.32	-346.82	306.39	257.98	48.41	6.329	
5,500.00	5,361.95	5,474.32	5,348.85	24.72	24.88	95.29	-1,029.43	-354.24	313.21	263.80	49.41	6.338	
5,600.00	5,458.44	5,574.03	5,445.80	25.24	25.37	95.87	-1,051.54	-361.65	320.07	269.65	50.42	6.348	
5,700.00	5,554.92	5,673.74	5,542.75	25.75	25.86	96.43	-1,073.65	-369.07	326.96	275.54	51.42	6.358	
5,800.00	5,651.40	5,773.45	5,639.69	26.27	26.35	96.97	-1,095.76	-376.48	333.88	281.45	52.43	6.369	
5,900.00	5,747.88	5,873.17	5,736.64	26.78	26.84	97.49	-1,117.87	-383.89	340.83	287.40	53.43	6.379	
6,000.00	5,844.36	5,972.88	5,833.59	27.30	27.33	97.98	-1,139.98	-391.31	347.80	293.37	54.43	6.390	
6,100.00	5,940.84	6,072.59	5,930.53	27.81	27.81	98.46	-1,162.10	-398.72	354.80	299.37	55.43	6.401	
6,200.00	6,037.32	6,172.30	6,027.48	28.33	28.30	98.92	-1,184.21	-406.13	361.82	305.40	56.43	6.412	
6,300.00	6,133.81	6,272.01	6,124.43	28.85	28.79	99.36	-1,206.32	-413.55	368.87	311.45	57.42	6.424	
6,400.00	6,230.18	6,371.84	6,221.49	29.36	29.28	83.50	-1,228.45	-420.97	372.88	314.46	58.42	6.383	
6,500.00	6,325.65	6,471.47	6,318.35	29.87	29.77	67.27	-1,250.55	-428.38	366.96	307.55	59.41	6.176	
6,600.00	6,419.17	6,572.58	6,416.65	30.35	30.27	56.91	-1,272.96	-435.87	351.02	290.61	60.41	5.811	
6,700.00	6,509.71	6,755.51	6,593.80	30.81	31.05	55.30	-1,313.65	-421.79	311.35	251.50	59.85	5.202	
6,800.00	6,596.29	6,877.45	6,706.50	31.26	31.44	63.72	-1,339.82	-383.87	246.19	188.93	57.26	4.300	
6,900.00	6,677.95	6,949.77	6,769.27	31.69	31.63	83.35	-1,354.51	-351.18	171.51	116.10	55.40	3.096	
7,000.00	6,753.80	6,989.59	6,802.16	32.11	31.72	103.89	-1,362.25	-330.12	110.01	55.12	54.89	2.004	
7,046.57	6,786.91	7,000.60	6,811.02	32.31	31.75	109.53	-1,364.34	-323.93	100.26	46.15	54.11	1.853	SF
7,100.00	6,823.01	7,008.87	6,817.61	32.54	31.76	112.32	-1,365.90	-319.17	113.24	60.95	52.29	2.166	
7,200.00	6,884.82	7,014.90	6,822.37	32.99	31.77	108.07	-1,367.02	-315.65	182.23	131.64	50.59	3.602	
7,300.00	6,938.56	7,012.06	6,820.13	33.48	31.77	93.53	-1,366.49	-317.32	271.11	220.56	50.55	5.363	
7,400.00	6,983.63	7,000.00	6,810.54	34.07	31.75	72.41	-1,364.23	-324.27	364.86	314.14	50.72	7.193	
7,500.00	7,019.54	6,989.63	6,802.19	34.79	31.72	56.02	-1,362.26	-330.10	459.25	407.57	51.68	8.886	
7,600.00	7,045.89	6,972.95	6,788.57	35.71	31.68	43.89	-1,359.05	-339.18	552.64	500.14	52.49	10.528	
7,700.00	7,062.41	6,950.00	6,769.47	36.86	31.63	35.87	-1,354.56	-351.07	644.09	590.91	53.18	12.111	
7,800.00	7,068.90	6,932.74	6,754.82	38.24	31.59	31.19	-1,351.12	-359.54	732.91	678.61	54.30	13.497	
7,900.00	7,068.77	6,900.00	6,726.46	39.84	31.51	29.41	-1,344.48	-374.47	820.61	765.86	54.75	14.989	
8,000.00	7,068.49	6,900.00	6,726.46	41.63	31.51	29.41	-1,344.48	-374.47	909.52	853.34	56.18	16.188	
8,100.00	7,068.21	6,876.12	6,705.32	43.59	31.44	28.56	-1,339.54	-384.40	999.80	943.21	56.59	17.667	
8,200.00	7,067.93	6,850.00	6,681.79	45.68	31.36	27.71	-1,334.06	-394.33	1,091.40	1,034.55	56.85	19.198	
8,300.00	7,067.65	6,850.00	6,681.79	47.88	31.36	27.71	-1,334.06	-394.33	1,183.63	1,125.95	57.68	20.522	
8,400.00	7,067.37	6,850.00	6,681.79	50.18	31.36	27.71	-1,334.06	-394.33	1,277.02	1,218.68	58.34	21.888	
8,500.00	7,067.08	6,824.78	6,658.71	52.54	31.28	26.96	-1,328.69	-402.97	1,370.62	1,312.22	58.40	23.469	
8,600.00	7,066.80	6,800.00	6,635.73	54.97	31.21	26.29	-1,323.35	-410.53	1,465.28	1,406.84	58.45	25.069	
8,700.00	7,066.52	6,800.00	6,635.73	57.46	31.21	26.29	-1,323.35	-410.53	1,560.00	1,501.09	58.91	26.482	
8,800.00	7,066.24	6,800.00	6,635.73	59.99	31.21	26.29	-1,323.35	-410.53	1,655.33	1,596.03	59.30	27.916	
8,900.00	7,065.96	6,800.00	6,635.73	62.57	31.21	26.29	-1,323.35	-410.53	1,751.18	1,691.55	59.63	29.366	
9,000.00	7,065.68	6,800.00	6,635.73	65.18	31.21	26.29	-1,323.35	-410.53	1,847.48	1,787.55	59.93	30.829	
9,100.00	7,065.40	6,776.06	6,613.27	67.81	31.12	25.69	-1,318.15	-416.97	1,943.55	1,883.68	59.87	32.464	
9,200.00	7,065.12	6,769.99	6,607.53	70.48	31.10	25.54	-1,316.82	-418.46	2,040.21	1,980.17	60.04	33.983	
9,300.00	7,064.84	6,750.00	6,588.56	73.17	31.03	25.09	-1,312.43	-422.98	2,137.32	2,077.30	60.02	35.611	
9,400.00	7,064.56	6,750.00	6,588.56	75.88	31.03	25.09	-1,312.43	-422.98	2,234.30	2,174.08	60.23	37.097	
9,500.00	7,064.28	6,750.00	6,588.56	78.61	31.03	25.09	-1,312.43	-422.98	2,331.55	2,271.13	60.42	38.590	
9,600.00	7,064.00	6,750.00	6,588.56	81.36	31.03	25.09	-1,312.43	-422.98	2,429.01	2,368.42	60.59	40.089	
9,700.00	7,063.72	6,750.00	6,588.56	84.12	31.03	25.09	-1,312.43	-422.98	2,526.68	2,465.93	60.75	41.592	
9,800.00	7,063.44	6,750.00	6,588.56	86.89	31.03	25.09	-1,312.43	-422.98	2,624.52	2,563.62	60.89	43.100	
9,900.00	7,063.16	6,750.00	6,588.56	89.68	31.03	25.09	-1,312.43	-422.98	2,722.51	2,661.49	61.03	44.611	
10,000.00	7,062.88	6,750.00	6,588.56	92.48	31.03	25.09	-1,312.43	-422.98	2,820.65	2,759.50	61.15	46.125	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #746H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.00	7,062.60	6,750.00	6,588.56	95.29	31.03	25.09	-1,312.43	-422.98	2,918.92	2,857.65	61.27	47.641	
10,200.00	7,062.32	6,727.08	6,566.65	98.10	30.94	24.60	-1,307.38	-427.40	3,016.80	2,955.62	61.18	49.312	
10,300.00	7,062.04	6,724.03	6,563.72	100.93	30.93	24.53	-1,306.70	-427.93	3,115.14	3,053.88	61.26	50.851	
10,400.00	7,061.76	6,721.13	6,560.93	103.76	30.92	24.47	-1,306.06	-428.42	3,213.57	3,152.23	61.34	52.390	
10,500.00	7,061.47	6,700.00	6,540.58	106.60	30.84	24.06	-1,301.37	-431.59	3,312.39	3,251.13	61.27	54.066	
10,600.00	7,061.19	6,700.00	6,540.58	109.45	30.84	24.06	-1,301.37	-431.59	3,410.89	3,349.53	61.36	55.585	
10,700.00	7,060.91	6,700.00	6,540.58	112.31	30.84	24.06	-1,301.37	-431.59	3,509.47	3,448.02	61.46	57.104	
10,800.00	7,060.63	6,700.00	6,540.58	115.16	30.84	24.06	-1,301.37	-431.59	3,608.13	3,546.59	61.55	58.624	
10,900.00	7,060.35	6,700.00	6,540.58	118.03	30.84	24.06	-1,301.37	-431.59	3,706.87	3,645.23	61.63	60.144	
11,000.00	7,060.07	6,700.00	6,540.58	120.90	30.84	24.06	-1,301.37	-431.59	3,805.66	3,743.95	61.72	61.664	
11,100.00	7,059.79	6,700.00	6,540.58	123.77	30.84	24.06	-1,301.37	-431.59	3,904.52	3,842.73	61.80	63.184	
11,200.00	7,059.51	6,700.00	6,540.58	126.65	30.84	24.06	-1,301.37	-431.59	4,003.44	3,941.57	61.87	64.703	
11,300.00	7,059.23	6,700.00	6,540.58	129.53	30.84	24.06	-1,301.37	-431.59	4,102.41	4,040.46	61.95	66.221	
11,400.00	7,058.95	6,700.00	6,540.58	132.41	30.84	24.06	-1,301.37	-431.59	4,201.43	4,139.40	62.02	67.738	
11,500.00	7,058.67	6,700.00	6,540.58	135.30	30.84	24.06	-1,301.37	-431.59	4,300.49	4,238.39	62.10	69.255	
11,600.00	7,058.39	6,700.00	6,540.58	138.19	30.84	24.06	-1,301.37	-431.59	4,399.59	4,337.43	62.17	70.770	
11,700.00	7,058.11	6,700.00	6,540.58	141.08	30.84	24.06	-1,301.37	-431.59	4,498.74	4,436.50	62.24	72.284	
11,800.00	7,057.83	6,700.00	6,540.58	143.98	30.84	24.06	-1,301.37	-431.59	4,597.92	4,535.62	62.31	73.796	
11,900.00	7,057.55	6,700.00	6,540.58	146.88	30.84	24.06	-1,301.37	-431.59	4,697.14	4,634.77	62.37	75.307	
12,000.00	7,057.27	6,700.00	6,540.58	149.78	30.84	24.06	-1,301.37	-431.59	4,796.39	4,733.95	62.44	76.816	
12,100.00	7,056.99	6,700.00	6,540.58	152.69	30.84	24.06	-1,301.37	-431.59	4,895.67	4,833.16	62.51	78.323	
12,200.00	7,056.71	6,700.00	6,540.58	155.59	30.84	24.06	-1,301.37	-431.59	4,994.98	4,932.41	62.57	79.829	
12,300.00	7,056.43	6,700.00	6,540.58	158.50	30.84	24.06	-1,301.37	-431.59	5,094.31	5,031.68	62.64	81.332	
12,400.00	7,056.15	6,700.00	6,540.58	161.41	30.84	24.06	-1,301.37	-431.59	5,193.67	5,130.97	62.70	82.834	
12,500.00	7,055.87	6,700.00	6,540.58	164.32	30.84	24.06	-1,301.37	-431.59	5,293.06	5,230.30	62.76	84.333	
12,600.00	7,055.58	6,700.00	6,540.58	167.24	30.84	24.06	-1,301.37	-431.59	5,392.47	5,329.64	62.83	85.830	
12,700.00	7,055.30	6,700.00	6,540.58	170.15	30.84	24.06	-1,301.37	-431.59	5,491.90	5,429.01	62.89	87.325	
12,800.00	7,055.02	6,700.00	6,540.58	173.07	30.84	24.06	-1,301.37	-431.59	5,591.35	5,528.39	62.95	88.818	
12,900.00	7,054.74	6,700.00	6,540.58	175.99	30.84	24.06	-1,301.37	-431.59	5,690.82	5,627.80	63.02	90.308	
13,000.00	7,054.46	6,677.08	6,518.40	178.91	30.74	23.64	-1,296.26	-434.23	5,789.85	5,726.91	62.94	91.990	
13,100.00	7,054.18	6,676.09	6,517.43	181.83	30.74	23.63	-1,296.04	-434.33	5,889.31	5,826.31	63.00	93.485	
13,200.00	7,053.90	6,675.12	6,516.49	184.75	30.73	23.61	-1,295.83	-434.42	5,988.79	5,925.74	63.05	94.978	
13,300.00	7,053.62	6,674.18	6,515.58	187.67	30.73	23.59	-1,295.62	-434.51	6,088.29	6,025.17	63.11	96.467	
13,400.00	7,053.34	6,673.27	6,514.69	190.60	30.73	23.58	-1,295.41	-434.59	6,187.80	6,124.63	63.17	97.953	
13,500.00	7,053.06	6,650.00	6,492.08	193.52	30.63	23.18	-1,290.22	-436.30	6,287.76	6,224.66	63.10	99.649	
13,600.00	7,052.78	6,650.00	6,492.08	196.45	30.63	23.18	-1,290.22	-436.30	6,387.26	6,324.10	63.16	101.123	
13,700.00	7,052.50	6,650.00	6,492.08	199.38	30.63	23.18	-1,290.22	-436.30	6,486.78	6,423.56	63.23	102.594	
13,800.00	7,052.22	6,650.00	6,492.08	202.31	30.63	23.18	-1,290.22	-436.30	6,586.32	6,523.03	63.29	104.062	
13,900.00	7,051.94	6,650.00	6,492.08	205.24	30.63	23.18	-1,290.22	-436.30	6,685.87	6,622.51	63.36	105.527	
14,000.00	7,051.66	6,650.00	6,492.08	208.17	30.63	23.18	-1,290.22	-436.30	6,785.43	6,722.01	63.42	106.989	
14,100.00	7,051.38	6,650.00	6,492.08	211.10	30.63	23.18	-1,290.22	-436.30	6,885.01	6,821.52	63.49	108.448	
14,200.00	7,051.10	6,650.00	6,492.08	214.03	30.63	23.18	-1,290.22	-436.30	6,984.59	6,921.04	63.55	109.904	
14,300.00	7,050.82	6,650.00	6,492.08	216.97	30.63	23.18	-1,290.22	-436.30	7,084.19	7,020.58	63.62	111.357	
14,400.00	7,050.54	6,650.00	6,492.08	219.90	30.63	23.18	-1,290.22	-436.30	7,183.80	7,120.12	63.68	112.807	
14,500.00	7,050.26	6,650.00	6,492.08	222.83	30.63	23.18	-1,290.22	-436.30	7,283.42	7,219.68	63.75	114.253	
14,600.00	7,049.98	6,650.00	6,492.08	225.77	30.63	23.18	-1,290.22	-436.30	7,383.05	7,319.24	63.81	115.696	
14,700.00	7,049.69	6,650.00	6,492.08	228.71	30.63	23.18	-1,290.22	-436.30	7,482.70	7,418.81	63.88	117.136	
14,800.00	7,049.41	6,650.00	6,492.08	231.64	30.63	23.18	-1,290.22	-436.30	7,582.35	7,518.40	63.95	118.572	
14,900.00	7,049.13	6,650.00	6,492.08	234.58	30.63	23.18	-1,290.22	-436.30	7,682.00	7,617.99	64.01	120.005	
15,000.00	7,048.85	6,650.00	6,492.08	237.52	30.63	23.18	-1,290.22	-436.30	7,781.67	7,717.59	64.08	121.435	
15,100.00	7,048.57	6,650.00	6,492.08	240.46	30.63	23.18	-1,290.22	-436.30	7,881.35	7,817.20	64.15	122.861	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC

Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Offset Design Rosa Unit 31 - Rosa Unit #746H - OH - Plan #3

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 ft

Rule Assigned:

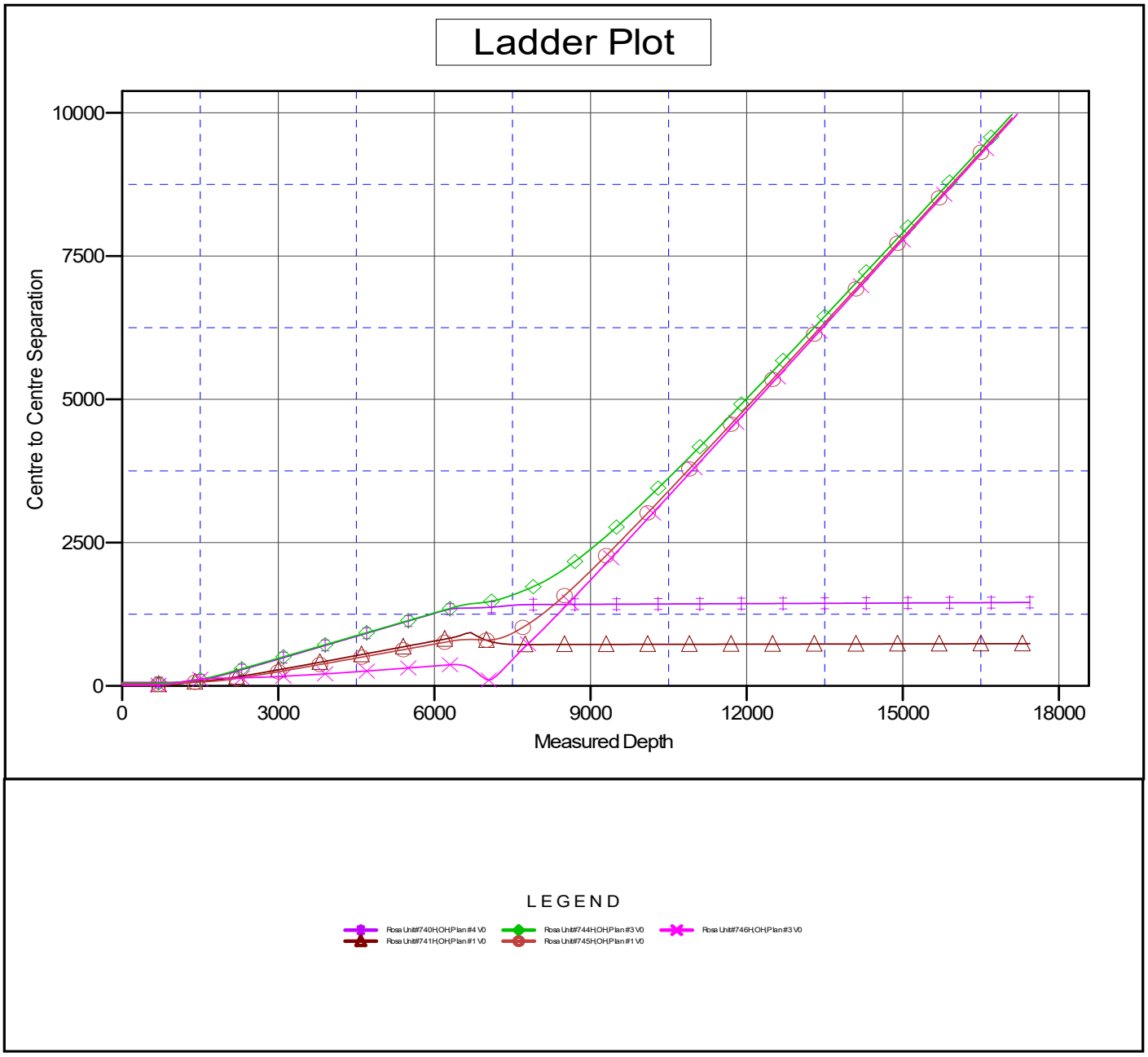
Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,200.00	7,048.29	6,650.00	6,492.08	243.39	30.63	23.18	-1,290.22	-436.30	7,981.03	7,916.82	64.22	124.284	
15,300.00	7,048.01	6,650.00	6,492.08	246.33	30.63	23.18	-1,290.22	-436.30	8,080.73	8,016.44	64.28	125.703	
15,400.00	7,047.73	6,650.00	6,492.08	249.27	30.63	23.18	-1,290.22	-436.30	8,180.43	8,116.07	64.35	127.119	
15,500.00	7,047.45	6,650.00	6,492.08	252.21	30.63	23.18	-1,290.22	-436.30	8,280.13	8,215.71	64.42	128.531	
15,600.00	7,047.17	6,650.00	6,492.08	255.15	30.63	23.18	-1,290.22	-436.30	8,379.85	8,315.36	64.49	129.939	
15,700.00	7,046.89	6,650.00	6,492.08	258.10	30.63	23.18	-1,290.22	-436.30	8,479.57	8,415.01	64.56	131.344	
15,800.00	7,046.61	6,650.00	6,492.08	261.04	30.63	23.18	-1,290.22	-436.30	8,579.30	8,514.67	64.63	132.745	
15,900.00	7,046.33	6,650.00	6,492.08	263.98	30.63	23.18	-1,290.22	-436.30	8,679.03	8,614.33	64.70	134.143	
16,000.00	7,046.05	6,650.00	6,492.08	266.92	30.63	23.18	-1,290.22	-436.30	8,778.77	8,714.00	64.77	135.537	
16,100.00	7,045.77	6,650.00	6,492.08	269.87	30.63	23.18	-1,290.22	-436.30	8,878.52	8,813.67	64.84	136.927	
16,200.00	7,045.49	6,650.00	6,492.08	272.81	30.63	23.18	-1,290.22	-436.30	8,978.27	8,913.35	64.91	138.313	
16,300.00	7,045.21	6,650.00	6,492.08	275.75	30.63	23.18	-1,290.22	-436.30	9,078.02	9,013.04	64.98	139.695	
16,400.00	7,044.93	6,650.00	6,492.08	278.70	30.63	23.18	-1,290.22	-436.30	9,177.79	9,112.73	65.06	141.074	
16,500.00	7,044.65	6,650.00	6,492.08	281.64	30.63	23.18	-1,290.22	-436.30	9,277.55	9,212.42	65.13	142.449	
16,600.00	7,044.37	6,650.00	6,492.08	284.59	30.63	23.18	-1,290.22	-436.30	9,377.32	9,312.12	65.20	143.820	
16,700.00	7,044.08	6,650.00	6,492.08	287.53	30.63	23.18	-1,290.22	-436.30	9,477.10	9,411.83	65.28	145.187	
16,800.00	7,043.80	6,650.00	6,492.08	290.48	30.63	23.18	-1,290.22	-436.30	9,576.88	9,511.53	65.35	146.550	
16,900.00	7,043.52	6,650.00	6,492.08	293.42	30.63	23.18	-1,290.22	-436.30	9,676.67	9,611.25	65.42	147.909	
17,000.00	7,043.24	6,650.00	6,492.08	296.37	30.63	23.18	-1,290.22	-436.30	9,776.46	9,710.96	65.50	149.265	
17,100.00	7,042.96	6,650.00	6,492.08	299.32	30.63	23.18	-1,290.22	-436.30	9,876.25	9,810.68	65.57	150.616	
17,200.00	7,042.68	6,650.00	6,492.08	302.26	30.63	23.18	-1,290.22	-436.30	9,976.05	9,910.41	65.65	151.964	

Lonestar Consulting, LLC
Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to GL 6492' @ 6492.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #742H - Slot B5
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



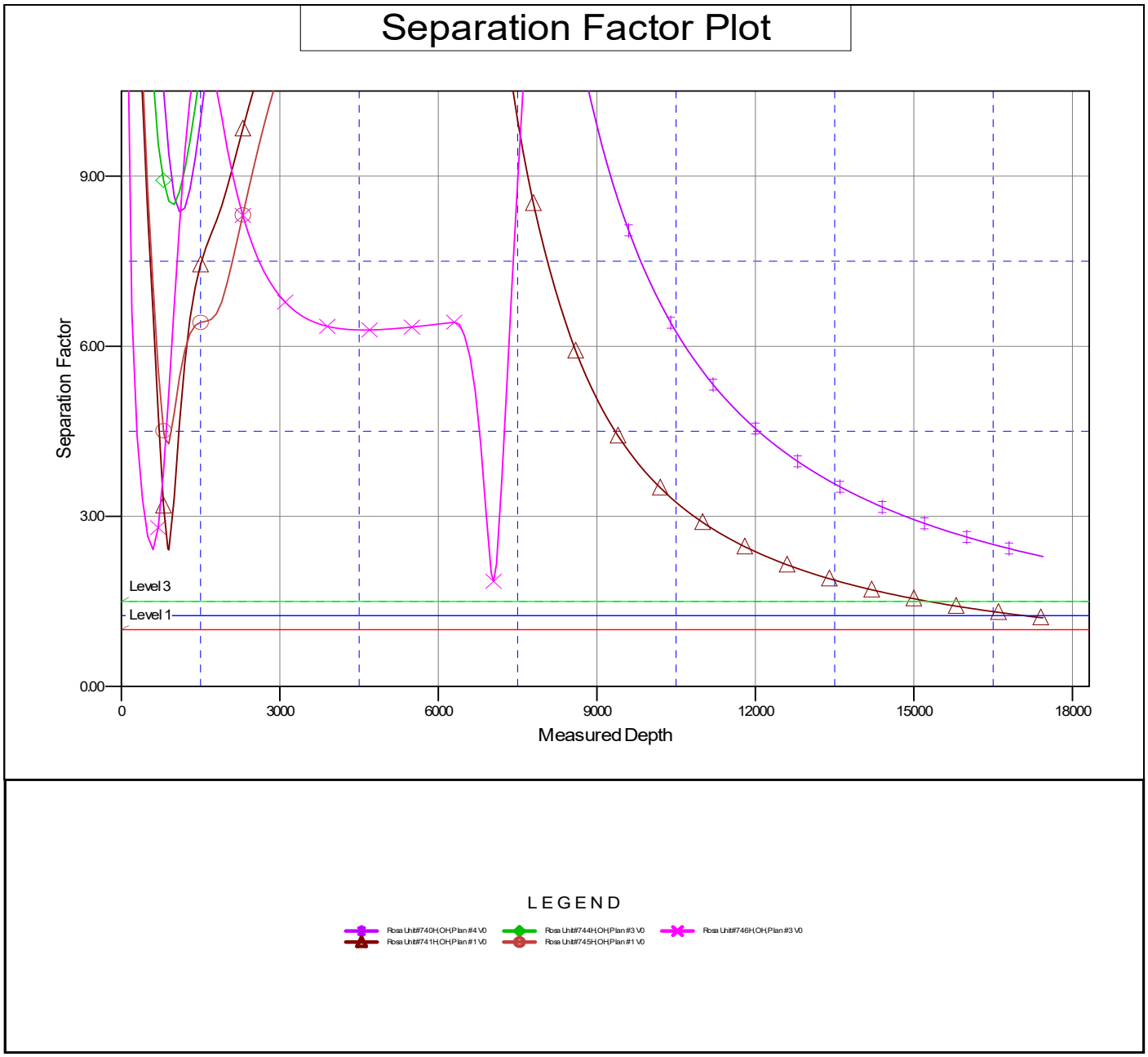
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting, LLC
Anticollision Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	Grand Junction
Reference Design:	Plan #4	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to GL 6492' @ 6492.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #742H - Slot B5
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

LOGOS RESOURCES II, LLC

Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 31
Well: Rosa Unit #742H
Wellbore: OH
Design: Plan #4

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

LONESTAR CONSULTING

WELL DETAILS: Rosa Unit #742H

GL 6492' @ 6492.00ft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2133536.35	2858376.76	36.8623210	-107.3708750	B5

Plan: Plan #4 (Rosa Unit #742H/OH)

Created By: Janie Collins Date: 9:06, January 24 2022

Azimuths to True North
Magnetic North: 10.49°
Magnetic Field
Strength: 51651.6nT
Dip Angle: 63.39°
Date: 12/31/2004
Model: IGRF2000

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
742H POE Rev 1	7069.00	-1532.92	-1013.38	2131998.55	2857370.82	36.8581104	-107.3743389
742H BHL Rev 3	7042.00	-1448.05	-10639.06	2132036.80	2847744.86	36.8583380	-107.4072410
742H FPerf	7042.00	-1449.57	-10469.09	2132036.11	2847914.84	36.8583340	-107.4066600

SECTION DETAILS

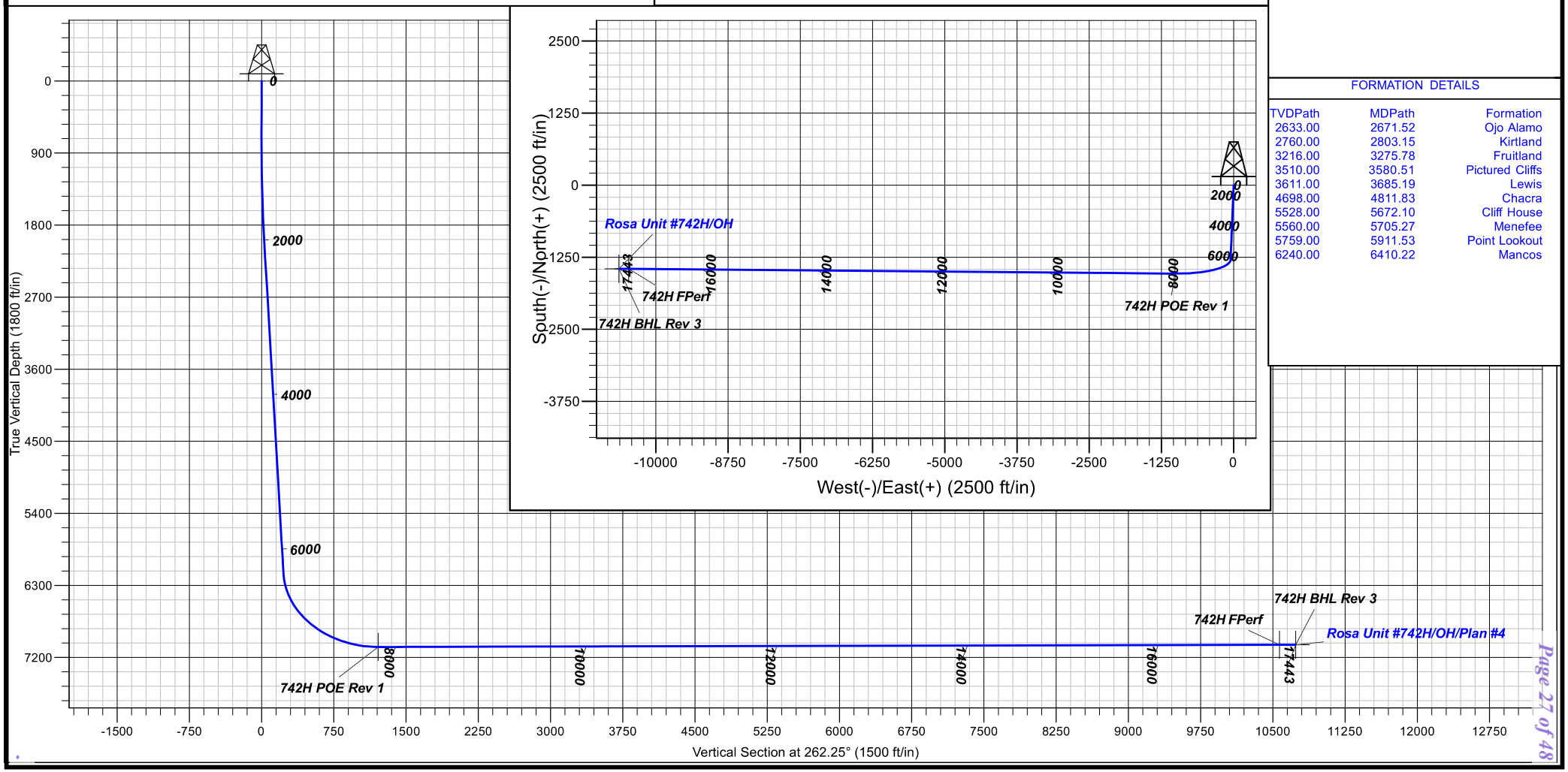
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00
1916.28	15.24	182.38	1904.33	-134.29	-5.59	1.50	182.38	23.65
6322.75	15.24	182.38	6155.76	-1291.90	-53.74	0.00	0.00	227.48
7817.11	90.16	270.51	7069.00	-1532.92	-1013.38	6.00	88.15	1210.86
17443.21	90.16	270.51	7042.00	-1448.05	-10639.06	0.00	0.00	10737.15

CASING DETAILS

TVD	MD	Name

FORMATION DETAILS

TVDPath	MDPath	Formation
2633.00	2671.52	Ojo Alamo
2760.00	2803.15	Kirtland
3216.00	3275.78	Fruitland
3510.00	3580.51	Pictured Cliffs
3611.00	3685.19	Lewis
4698.00	4811.83	Chacra
5528.00	5672.10	Cliff House
5560.00	5705.27	Menefee
5759.00	5911.53	Point Lookout
6240.00	6410.22	Mancos



Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 31
Rosa Unit #742H - Slot B5

OH

Plan: Plan #4

Standard Planning Report

24 January, 2022

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

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 31

Site Position:		**Northing:**	2,133,595.07 usft	**Latitude:**	36.8624824
From:	Map	**Easting:**	2,858,361.84 usft	**Longitude:**	-107.3709251
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.28 °

Well Rosa Unit #742H - Slot B5

Well Position	**+N/-S**	-58.79 ft	**Northing:**	2,133,536.35 usft	**Latitude:**	36.8623210
	+E/-W	14.64 ft	**Easting:**	2,858,376.76 usft	**Longitude:**	-107.3708751
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	6,492.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	10.79	63.87	51,651.91913015

Design Plan #4

Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	262.25

Plan Survey Tool Program **Date** 1/24/2022

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,443.21	Plan #4 (OH)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,916.28	15.24	182.38	1,904.33	-134.29	-5.59	1.50	1.50	0.00	182.38	
6,322.75	15.24	182.38	6,155.76	-1,291.90	-53.74	0.00	0.00	0.00	0.00	
7,817.11	90.16	270.51	7,069.00	-1,532.92	-1,013.38	6.00	5.01	5.90	88.15	742H POE Rev 1
17,443.21	90.16	270.51	7,042.00	-1,448.05	-10,639.06	0.00	0.00	0.00	0.00	742H BHL Rev 3

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	1.50	182.38	999.99	-1.31	-0.05	0.23	1.50	1.50	0.00
1,100.00	3.00	182.38	1,099.91	-5.23	-0.22	0.92	1.50	1.50	0.00
1,200.00	4.50	182.38	1,199.69	-11.76	-0.49	2.07	1.50	1.50	0.00
1,300.00	6.00	182.38	1,299.27	-20.91	-0.87	3.68	1.50	1.50	0.00
1,400.00	7.50	182.38	1,398.58	-32.65	-1.36	5.75	1.50	1.50	0.00
1,500.00	9.00	182.38	1,497.54	-46.99	-1.95	8.27	1.50	1.50	0.00
1,600.00	10.50	182.38	1,596.09	-63.91	-2.66	11.25	1.50	1.50	0.00
1,700.00	12.00	182.38	1,694.17	-83.40	-3.47	14.68	1.50	1.50	0.00
1,800.00	13.50	182.38	1,791.70	-105.45	-4.39	18.57	1.50	1.50	0.00
1,900.00	15.00	182.38	1,888.62	-130.04	-5.41	22.90	1.50	1.50	0.00
1,916.28	15.24	182.38	1,904.33	-134.29	-5.59	23.65	1.50	1.50	0.00
2,000.00	15.24	182.38	1,985.11	-156.28	-6.50	27.52	0.00	0.00	0.00
2,100.00	15.24	182.38	2,081.59	-182.55	-7.59	32.14	0.00	0.00	0.00
2,200.00	15.24	182.38	2,178.07	-208.82	-8.69	36.77	0.00	0.00	0.00
2,300.00	15.24	182.38	2,274.56	-235.09	-9.78	41.40	0.00	0.00	0.00
2,400.00	15.24	182.38	2,371.04	-261.36	-10.87	46.02	0.00	0.00	0.00
2,500.01	15.24	182.38	2,467.52	-287.63	-11.96	50.65	0.00	0.00	0.00
2,600.01	15.24	182.38	2,564.00	-313.90	-13.06	55.27	0.00	0.00	0.00
2,700.01	15.24	182.38	2,660.48	-340.17	-14.15	59.90	0.00	0.00	0.00
2,800.01	15.24	182.38	2,756.96	-366.45	-15.24	64.52	0.00	0.00	0.00
2,900.01	15.24	182.38	2,853.44	-392.72	-16.34	69.15	0.00	0.00	0.00
3,000.01	15.24	182.38	2,949.93	-418.99	-17.43	73.78	0.00	0.00	0.00
3,100.01	15.24	182.38	3,046.41	-445.26	-18.52	78.40	0.00	0.00	0.00
3,200.01	15.24	182.38	3,142.89	-471.53	-19.61	83.03	0.00	0.00	0.00
3,300.01	15.24	182.38	3,239.37	-497.80	-20.71	87.65	0.00	0.00	0.00
3,400.01	15.24	182.38	3,335.85	-524.07	-21.80	92.28	0.00	0.00	0.00
3,500.01	15.24	182.38	3,432.33	-550.34	-22.89	96.90	0.00	0.00	0.00
3,600.01	15.24	182.38	3,528.82	-576.61	-23.99	101.53	0.00	0.00	0.00
3,700.01	15.24	182.38	3,625.30	-602.88	-25.08	106.16	0.00	0.00	0.00
3,800.01	15.24	182.38	3,721.78	-629.15	-26.17	110.78	0.00	0.00	0.00
3,900.01	15.24	182.38	3,818.26	-655.42	-27.26	115.41	0.00	0.00	0.00
4,000.01	15.24	182.38	3,914.74	-681.69	-28.36	120.03	0.00	0.00	0.00
4,100.01	15.24	182.38	4,011.22	-707.97	-29.45	124.66	0.00	0.00	0.00
4,200.01	15.24	182.38	4,107.70	-734.24	-30.54	129.28	0.00	0.00	0.00
4,300.01	15.24	182.38	4,204.19	-760.51	-31.64	133.91	0.00	0.00	0.00
4,400.01	15.24	182.38	4,300.67	-786.78	-32.73	138.54	0.00	0.00	0.00
4,500.01	15.24	182.38	4,397.15	-813.05	-33.82	143.16	0.00	0.00	0.00
4,600.01	15.24	182.38	4,493.63	-839.32	-34.91	147.79	0.00	0.00	0.00
4,700.01	15.24	182.38	4,590.11	-865.59	-36.01	152.41	0.00	0.00	0.00
4,800.01	15.24	182.38	4,686.59	-891.86	-37.10	157.04	0.00	0.00	0.00
4,900.01	15.24	182.38	4,783.08	-918.13	-38.19	161.67	0.00	0.00	0.00
5,000.01	15.24	182.38	4,879.56	-944.40	-39.28	166.29	0.00	0.00	0.00
5,100.01	15.24	182.38	4,976.04	-970.67	-40.38	170.92	0.00	0.00	0.00

LOGOS RESOURCES II, LLC

Lonestar Consulting, LLC

Planning Report

LONESTAR CONSULTING

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.01	15.24	182.38	5,072.52	-996.94	-41.47	175.54	0.00	0.00	0.00
5,300.01	15.24	182.38	5,169.00	-1,023.21	-42.56	180.17	0.00	0.00	0.00
5,400.01	15.24	182.38	5,265.48	-1,049.48	-43.66	184.79	0.00	0.00	0.00
5,500.01	15.24	182.38	5,361.97	-1,075.76	-44.75	189.42	0.00	0.00	0.00
5,600.01	15.24	182.38	5,458.45	-1,102.03	-45.84	194.05	0.00	0.00	0.00
5,700.01	15.24	182.38	5,554.93	-1,128.30	-46.93	198.67	0.00	0.00	0.00
5,800.01	15.24	182.38	5,651.41	-1,154.57	-48.03	203.30	0.00	0.00	0.00
5,900.01	15.24	182.38	5,747.89	-1,180.84	-49.12	207.92	0.00	0.00	0.00
6,000.01	15.24	182.38	5,844.37	-1,207.11	-50.21	212.55	0.00	0.00	0.00
6,100.01	15.24	182.38	5,940.85	-1,233.38	-51.31	217.17	0.00	0.00	0.00
6,200.01	15.24	182.38	6,037.34	-1,259.65	-52.40	221.80	0.00	0.00	0.00
6,300.01	15.24	182.38	6,133.82	-1,285.92	-53.49	226.43	0.00	0.00	0.00
6,322.75	15.24	182.38	6,155.76	-1,291.90	-53.74	227.48	0.00	0.00	0.00
6,400.01	16.06	199.36	6,230.19	-1,312.14	-57.71	234.14	6.00	1.06	21.97
6,500.01	18.80	217.31	6,325.66	-1,338.03	-72.07	251.86	6.00	2.74	17.95
6,600.01	22.78	230.03	6,419.18	-1,363.30	-96.69	279.67	6.00	3.98	12.72
6,700.01	27.47	238.87	6,509.72	-1,387.68	-131.31	317.25	6.00	4.69	8.85
6,800.01	32.57	245.22	6,596.30	-1,410.91	-175.53	364.21	6.00	5.10	6.35
6,900.01	37.91	249.99	6,677.96	-1,432.72	-228.89	420.02	6.00	5.34	4.76
7,000.01	43.39	253.72	6,753.81	-1,452.88	-290.78	484.07	6.00	5.49	3.73
7,100.01	48.98	256.76	6,823.02	-1,471.17	-360.54	555.65	6.00	5.59	3.04
7,200.01	54.64	259.32	6,884.83	-1,487.39	-437.40	634.00	6.00	5.65	2.56
7,300.01	60.34	261.54	6,938.57	-1,501.36	-520.52	718.24	6.00	5.70	2.22
7,400.01	66.07	263.52	6,983.63	-1,512.92	-608.98	807.46	6.00	5.73	1.98
7,500.02	71.83	265.33	7,019.54	-1,521.95	-701.83	900.67	6.00	5.76	1.81
7,600.02	77.60	267.03	7,045.90	-1,528.36	-798.03	996.86	6.00	5.77	1.70
7,700.02	83.38	268.65	7,062.41	-1,532.06	-896.54	1,094.97	6.00	5.78	1.62
7,800.02	89.17	270.24	7,068.90	-1,533.03	-996.28	1,193.93	6.00	5.79	1.58
7,817.11	90.16	270.51	7,069.00	-1,532.92	-1,013.38	1,210.86	6.01	5.79	1.58
7,900.02	90.16	270.51	7,068.77	-1,532.18	-1,096.28	1,292.90	0.00	0.00	0.00
8,000.02	90.16	270.51	7,068.49	-1,531.30	-1,196.27	1,391.86	0.00	0.00	0.00
8,100.02	90.16	270.51	7,068.21	-1,530.42	-1,296.27	1,490.83	0.00	0.00	0.00
8,200.02	90.16	270.51	7,067.93	-1,529.54	-1,396.27	1,589.79	0.00	0.00	0.00
8,300.02	90.16	270.51	7,067.65	-1,528.66	-1,496.26	1,688.75	0.00	0.00	0.00
8,400.02	90.16	270.51	7,067.37	-1,527.78	-1,596.26	1,787.72	0.00	0.00	0.00
8,500.02	90.16	270.51	7,067.08	-1,526.90	-1,696.25	1,886.68	0.00	0.00	0.00
8,600.02	90.16	270.51	7,066.80	-1,526.01	-1,796.25	1,985.64	0.00	0.00	0.00
8,700.02	90.16	270.51	7,066.52	-1,525.13	-1,896.25	2,084.61	0.00	0.00	0.00
8,800.02	90.16	270.51	7,066.24	-1,524.25	-1,996.24	2,183.57	0.00	0.00	0.00
8,900.02	90.16	270.51	7,065.96	-1,523.37	-2,096.24	2,282.53	0.00	0.00	0.00
9,000.02	90.16	270.51	7,065.68	-1,522.49	-2,196.23	2,381.50	0.00	0.00	0.00
9,100.02	90.16	270.51	7,065.40	-1,521.61	-2,296.23	2,480.46	0.00	0.00	0.00
9,200.02	90.16	270.51	7,065.12	-1,520.72	-2,396.23	2,579.42	0.00	0.00	0.00
9,300.02	90.16	270.51	7,064.84	-1,519.84	-2,496.22	2,678.39	0.00	0.00	0.00
9,400.02	90.16	270.51	7,064.56	-1,518.96	-2,596.22	2,777.35	0.00	0.00	0.00
9,500.02	90.16	270.51	7,064.28	-1,518.08	-2,696.21	2,876.31	0.00	0.00	0.00
9,600.02	90.16	270.51	7,064.00	-1,517.20	-2,796.21	2,975.28	0.00	0.00	0.00
9,700.02	90.16	270.51	7,063.72	-1,516.32	-2,896.21	3,074.24	0.00	0.00	0.00
9,800.02	90.16	270.51	7,063.44	-1,515.43	-2,996.20	3,173.20	0.00	0.00	0.00
9,900.02	90.16	270.51	7,063.16	-1,514.55	-3,096.20	3,272.17	0.00	0.00	0.00
10,000.02	90.16	270.51	7,062.88	-1,513.67	-3,196.19	3,371.13	0.00	0.00	0.00
10,100.02	90.16	270.51	7,062.60	-1,512.79	-3,296.19	3,470.10	0.00	0.00	0.00
10,200.02	90.16	270.51	7,062.32	-1,511.91	-3,396.18	3,569.06	0.00	0.00	0.00

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,300.02	90.16	270.51	7,062.04	-1,511.03	-3,496.18	3,668.02	0.00	0.00	0.00
10,400.02	90.16	270.51	7,061.76	-1,510.14	-3,596.18	3,766.99	0.00	0.00	0.00
10,500.02	90.16	270.51	7,061.47	-1,509.26	-3,696.17	3,865.95	0.00	0.00	0.00
10,600.02	90.16	270.51	7,061.19	-1,508.38	-3,796.17	3,964.91	0.00	0.00	0.00
10,700.02	90.16	270.51	7,060.91	-1,507.50	-3,896.16	4,063.88	0.00	0.00	0.00
10,800.02	90.16	270.51	7,060.63	-1,506.62	-3,996.16	4,162.84	0.00	0.00	0.00
10,900.02	90.16	270.51	7,060.35	-1,505.74	-4,096.16	4,261.80	0.00	0.00	0.00
11,000.02	90.16	270.51	7,060.07	-1,504.85	-4,196.15	4,360.77	0.00	0.00	0.00
11,100.02	90.16	270.51	7,059.79	-1,503.97	-4,296.15	4,459.73	0.00	0.00	0.00
11,200.02	90.16	270.51	7,059.51	-1,503.09	-4,396.14	4,558.69	0.00	0.00	0.00
11,300.02	90.16	270.51	7,059.23	-1,502.21	-4,496.14	4,657.66	0.00	0.00	0.00
11,400.02	90.16	270.51	7,058.95	-1,501.33	-4,596.14	4,756.62	0.00	0.00	0.00
11,500.02	90.16	270.51	7,058.67	-1,500.45	-4,696.13	4,855.58	0.00	0.00	0.00
11,600.02	90.16	270.51	7,058.39	-1,499.56	-4,796.13	4,954.55	0.00	0.00	0.00
11,700.02	90.16	270.51	7,058.11	-1,498.68	-4,896.12	5,053.51	0.00	0.00	0.00
11,800.02	90.16	270.51	7,057.83	-1,497.80	-4,996.12	5,152.47	0.00	0.00	0.00
11,900.02	90.16	270.51	7,057.55	-1,496.92	-5,096.12	5,251.44	0.00	0.00	0.00
12,000.02	90.16	270.51	7,057.27	-1,496.04	-5,196.11	5,350.40	0.00	0.00	0.00
12,100.02	90.16	270.51	7,056.99	-1,495.16	-5,296.11	5,449.36	0.00	0.00	0.00
12,200.02	90.16	270.51	7,056.71	-1,494.27	-5,396.10	5,548.33	0.00	0.00	0.00
12,300.02	90.16	270.51	7,056.43	-1,493.39	-5,496.10	5,647.29	0.00	0.00	0.00
12,400.03	90.16	270.51	7,056.15	-1,492.51	-5,596.09	5,746.26	0.00	0.00	0.00
12,500.03	90.16	270.51	7,055.87	-1,491.63	-5,696.09	5,845.22	0.00	0.00	0.00
12,600.03	90.16	270.51	7,055.58	-1,490.75	-5,796.09	5,944.18	0.00	0.00	0.00
12,700.03	90.16	270.51	7,055.30	-1,489.87	-5,896.08	6,043.15	0.00	0.00	0.00
12,800.03	90.16	270.51	7,055.02	-1,488.98	-5,996.08	6,142.11	0.00	0.00	0.00
12,900.03	90.16	270.51	7,054.74	-1,488.10	-6,096.07	6,241.07	0.00	0.00	0.00
13,000.03	90.16	270.51	7,054.46	-1,487.22	-6,196.07	6,340.04	0.00	0.00	0.00
13,100.03	90.16	270.51	7,054.18	-1,486.34	-6,296.07	6,439.00	0.00	0.00	0.00
13,200.03	90.16	270.51	7,053.90	-1,485.46	-6,396.06	6,537.96	0.00	0.00	0.00
13,300.03	90.16	270.51	7,053.62	-1,484.58	-6,496.06	6,636.93	0.00	0.00	0.00
13,400.03	90.16	270.51	7,053.34	-1,483.69	-6,596.05	6,735.89	0.00	0.00	0.00
13,500.03	90.16	270.51	7,053.06	-1,482.81	-6,696.05	6,834.85	0.00	0.00	0.00
13,600.03	90.16	270.51	7,052.78	-1,481.93	-6,796.05	6,933.82	0.00	0.00	0.00
13,700.03	90.16	270.51	7,052.50	-1,481.05	-6,896.04	7,032.78	0.00	0.00	0.00
13,800.03	90.16	270.51	7,052.22	-1,480.17	-6,996.04	7,131.74	0.00	0.00	0.00
13,900.03	90.16	270.51	7,051.94	-1,479.29	-7,096.03	7,230.71	0.00	0.00	0.00
14,000.03	90.16	270.51	7,051.66	-1,478.40	-7,196.03	7,329.67	0.00	0.00	0.00
14,100.03	90.16	270.51	7,051.38	-1,477.52	-7,296.03	7,428.63	0.00	0.00	0.00
14,200.03	90.16	270.51	7,051.10	-1,476.64	-7,396.02	7,527.60	0.00	0.00	0.00
14,300.03	90.16	270.51	7,050.82	-1,475.76	-7,496.02	7,626.56	0.00	0.00	0.00
14,400.03	90.16	270.51	7,050.54	-1,474.88	-7,596.01	7,725.52	0.00	0.00	0.00
14,500.03	90.16	270.51	7,050.26	-1,474.00	-7,696.01	7,824.49	0.00	0.00	0.00
14,600.03	90.16	270.51	7,049.97	-1,473.12	-7,796.01	7,923.45	0.00	0.00	0.00
14,700.03	90.16	270.51	7,049.69	-1,472.23	-7,896.00	8,022.42	0.00	0.00	0.00
14,800.03	90.16	270.51	7,049.41	-1,471.35	-7,996.00	8,121.38	0.00	0.00	0.00
14,900.03	90.16	270.51	7,049.13	-1,470.47	-8,095.99	8,220.34	0.00	0.00	0.00
15,000.03	90.16	270.51	7,048.85	-1,469.59	-8,195.99	8,319.31	0.00	0.00	0.00
15,100.03	90.16	270.51	7,048.57	-1,468.71	-8,295.98	8,418.27	0.00	0.00	0.00
15,200.03	90.16	270.51	7,048.29	-1,467.83	-8,395.98	8,517.23	0.00	0.00	0.00
15,300.03	90.16	270.51	7,048.01	-1,466.94	-8,495.98	8,616.20	0.00	0.00	0.00
15,400.03	90.16	270.51	7,047.73	-1,466.06	-8,595.97	8,715.16	0.00	0.00	0.00
15,500.03	90.16	270.51	7,047.45	-1,465.18	-8,695.97	8,814.12	0.00	0.00	0.00

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,600.03	90.16	270.51	7,047.17	-1,464.30	-8,795.96	8,913.09	0.00	0.00	0.00
15,700.03	90.16	270.51	7,046.89	-1,463.42	-8,895.96	9,012.05	0.00	0.00	0.00
15,800.03	90.16	270.51	7,046.61	-1,462.54	-8,995.96	9,111.01	0.00	0.00	0.00
15,900.03	90.16	270.51	7,046.33	-1,461.65	-9,095.95	9,209.98	0.00	0.00	0.00
16,000.03	90.16	270.51	7,046.05	-1,460.77	-9,195.95	9,308.94	0.00	0.00	0.00
16,100.03	90.16	270.51	7,045.77	-1,459.89	-9,295.94	9,407.90	0.00	0.00	0.00
16,200.03	90.16	270.51	7,045.49	-1,459.01	-9,395.94	9,506.87	0.00	0.00	0.00
16,300.03	90.16	270.51	7,045.21	-1,458.13	-9,495.94	9,605.83	0.00	0.00	0.00
16,400.03	90.16	270.51	7,044.93	-1,457.25	-9,595.93	9,704.79	0.00	0.00	0.00
16,500.03	90.16	270.51	7,044.65	-1,456.36	-9,695.93	9,803.76	0.00	0.00	0.00
16,600.03	90.16	270.51	7,044.37	-1,455.48	-9,795.92	9,902.72	0.00	0.00	0.00
16,700.03	90.16	270.51	7,044.08	-1,454.60	-9,895.92	10,001.68	0.00	0.00	0.00
16,800.03	90.16	270.51	7,043.80	-1,453.72	-9,995.92	10,100.65	0.00	0.00	0.00
16,900.03	90.16	270.51	7,043.52	-1,452.84	-10,095.91	10,199.61	0.00	0.00	0.00
17,000.03	90.16	270.51	7,043.24	-1,451.96	-10,195.91	10,298.58	0.00	0.00	0.00
17,100.03	90.16	270.51	7,042.96	-1,451.07	-10,295.90	10,397.54	0.00	0.00	0.00
17,200.03	90.16	270.51	7,042.68	-1,450.19	-10,395.90	10,496.50	0.00	0.00	0.00
17,300.03	90.16	270.51	7,042.40	-1,449.31	-10,495.90	10,595.47	0.00	0.00	0.00
17,400.04	90.16	270.51	7,042.12	-1,448.43	-10,595.89	10,694.43	0.00	0.00	0.00
17,443.21	90.16	270.51	7,042.00	-1,448.05	-10,639.06	10,737.15	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
742H FPerf - plan misses target center by 0.48ft at 17273.23ft MD (7042.48 TVD, -1449.55 N, -10469.09 E) - Point	0.00	0.00	7,042.00	-1,449.57	-10,469.09	2,132,036.10	2,847,914.84	36.8583340	-107.4066600
742H BHL Rev 3 - plan hits target center - Point	0.00	0.00	7,042.00	-1,448.05	-10,639.06	2,132,036.80	2,847,744.86	36.8583380	-107.4072410
742H POE Rev 1 - plan hits target center - Point	0.00	0.00	7,069.00	-1,532.92	-1,013.38	2,131,998.55	2,857,370.82	36.8581104	-107.3743389

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #4		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,671.52	2,633.00	Ojo Alamo		0.00	0.00
2,803.15	2,760.00	Kirtland		0.00	0.00
3,275.78	3,216.00	Fruitland		0.00	0.00
3,580.51	3,510.00	Pictured Cliffs		0.00	0.00
3,685.19	3,611.00	Lewis		0.00	0.00
4,811.83	4,698.00	Chacra		0.00	0.00
5,672.10	5,528.00	Cliff House		0.00	0.00
5,705.27	5,560.00	Menefee		0.00	0.00
5,911.53	5,759.00	Point Lookout		0.00	0.00
6,410.22	6,240.00	Mancos		0.00	0.00

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
900.00	900.00	0.00	0.00	Start Build 1.50
1,916.28	1,904.33	-134.29	-5.59	Start 4406.47 hold at 1916.28 MD
6,322.75	6,155.76	-1,291.90	-53.74	Start DLS 6.00 TFO 88.15
7,817.11	7,069.00	-1,532.92	-1,013.38	36.8581104, -107.3743389
7,817.11	7,069.00	-1,532.92	-1,013.38	POE @ 7817' MD
17,273.23	7,042.48	-1,449.55	-10,469.09	First Perf @ 17,273' MD
17,273.23	7,042.48	-1,449.55	-10,469.09	36.8583341, -107.4066600
17,443.21	7,042.00	-1,448.05	-10,639.06	TD at 17443.21

LOGOS Operating, LLC
Operations Plan

Note: This procedure will be adjusted onsite based upon actual conditions

Date:	January 24, 2022	Pool:	Basin Mancos
Well Name:	**Rosa Unit 742H**	GL Elevation:	6,492’
Surface Location:	Sec 33, T31N, R5W 378 FNL, 1695 FWL (36.862321º N, 107.370875º W – NAD83)	Measured Depth:	17,443’ (GL)
Bottom Hole Location:	Sec 31, T31N, R5W 1827 FNL, 160 FWL (36.858338º N, 107.407241º W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078773, CA Serial # NMNM78407E

I. GEOLOGY

A. Formation Tops (Based on GL Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,672'	2,633'	*POINT LOOKOUT	5,912'	5,759'
KIRTLAND	2,803'	2,760'	*MANCOS	6,410'	6,240'
*FRUITLAND	3,276'	3,216'	KICKOFF POINT	6,323'	6,156'
*PICTURED CLIFFS	3,581'	3,510'	POINT OF ENTRY	7,817'	7,069'
LEWIS	3,685'	3,611'			
CHACRA	4,812'	4,698'			
*CLIFF HOUSE	5,672'	5,528'			
MENEFEE	5,705'	5,560'	TD	17,443'	7,042'

* Indicates depth at which anticipated water, oil, gas, or other mineral-bearing formations are expected to be encountered.

B. **MUD LOGGING PROGRAM:** Mudlogger on location from KOP to TD.

C. **LOGGING PROGRAM:** LWD GR from surface casing to TD.

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in the Tour book and on morning reports.

II. DRILLING

A. **MUD PROGRAM:** LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4” directional vertical hole. An LSND (WBM) or (OBM) system will be used to drill the 8-3/4” curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses. Mud weights of 8.8-13 ppg will be used as necessary to maintain sufficient overbalance of reservoir pressure.

Above ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed. Any leaks, spills, or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all

times.

B. **BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes.** Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested a minimum of every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30-day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30-day interval of the first full test.

C. **GeoHazards:** There are no Geohazards

D. **Maximum Anticipated Pressure:** 7069' TVD x 0.43 = 3040 psi

E. **H2S Concerns:** – There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	GL DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	320'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,485'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	17,443'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

NOTE: All casing depths are approximate, based on GL elevation and will be based on drilling conditions +/- 50'. Weights, grades, and connections will be based on availability and may vary but will be equivalent or greater.

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
2. INTERMEDIATE CASING: 9-5/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered.
3. PRODUCTION CASING: Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. The centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)

1. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface. 263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 cuf/sk yield, 30% excess.

2. INTERMEDIATE: Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to the surface, a CBL will be run to determine TOC.

	Top (ft)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	6,012	473	0.31318	1.3	210	37	1.15	183	15.8
Stage 1 Lead	4,864	1,148	0.31318	1.3	467	83	2.30	203	12.3
					678	121		386	
Stage 2 Tail	3,781	1,083	0.31318	1.3	441	79	1.50	294	13.5
Stage 2 Lead	3,328	453	0.31318	1.3	184	33	2.30	80	12.3
					625	111		374	
Stage 3 Tail	2,578	750	0.31318	1.3	305	54	1.99	153	12.8
Stage 3 Lead	320	2,258	0.31318	1.3	919	164	2.53	363	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.53	46	12
					1,341	239		563	
					2,644	471		1,323	

Calculations based on 30% excess for open hole and cement to the surface. Actual excess pumped will be determined by well conditions.

3. PRODUCTION: Production casing will be cemented in 1 stage with 100' of cement overlap above the intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

	Top (ft)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,385	100	0.2531	1	25	5	1.56	16	13
Open Hole Lead	6,485	10,958	0.2291	1.15	2,898	516	1.56	1,857	13
					2,923	521		1,874	

Calculations based on 15% excess for the open hole and 100' overlap into the intermediate casing. Actual volumes will vary.

Cement calculations are used for volume estimation. Well conditions will dictate the final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on the service provider selected. Cement yields may change depending on the slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

IV. COMPLETION

A. CBL

ROSA UNIT 742H

CBLs and/or Temperature Surveys will be performed as needed or required to determine cement top if cement is not circulated.

B. PRESSURE TEST

C. Pressure test 5-1/2" casing to 1555 psi (0.22 psi/ft * 7,069' TVD) for 30 minutes. Increase pressure to Open Toe sleeves.

D. STIMULATION

Stimulate with sand and water. Isolate stages with flow through or dissolvable frac plugs. Drill out frac plugs as required and flowback lateral.

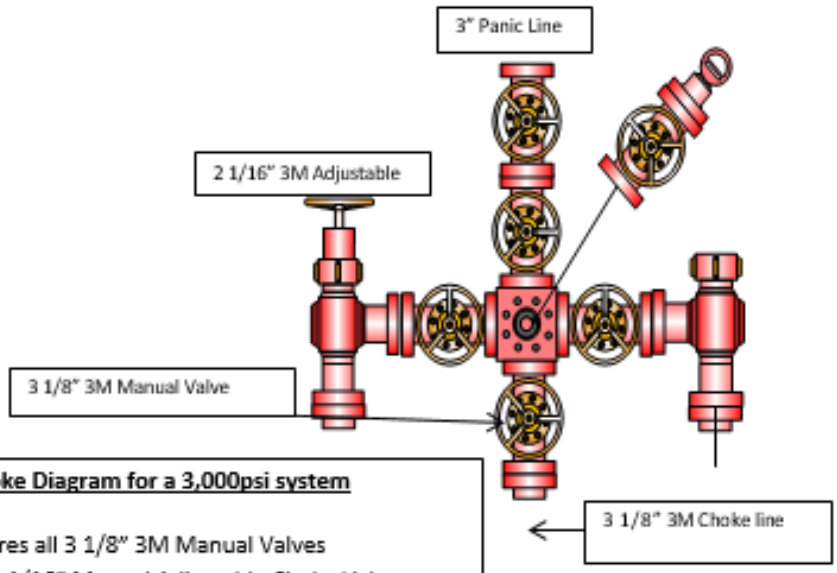
E. PRODUCTION TUBING

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-18 months after completion.

*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 8(2) NMAC, 19.15.16.15 8(2)NMAC, and 19.15.16.15. 8(4) NMAC.

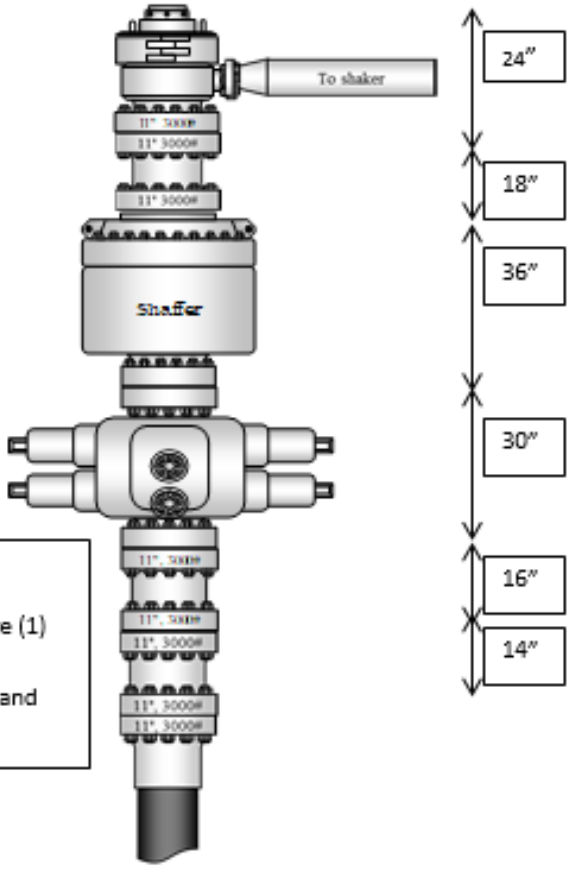
LOGOS RESOURCES II, LLC

3M 11" B.O.P.E Diagram



Choke Diagram for a 3,000psi system

- Features all 3 1/8" 3M Manual Valves
- Two 2 1/16" Manual Adjustable Choke Valves
- 3" Panic Line and 2" Vent lines
- (2) 3 1/8" 3M Coflex Hose f/Choke to BOP



11" 3,000psi BOP

- Choke Side has (1) manual 3 1/8" Valve (1) HCR
- Kill Side has (2) 2 1/16" Manual Valve and (1) check valve

ROSA UNIT 742H

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: LOGOS Operating, LLC **OGRID:** 289408 **Date:** 03/02/ 2022

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Rosa Unit 740H	30-039-31364	K 33 T31N R5W	319FNL 1681FWL	N/A	12,138	600
Rosa Unit 742H	30-039-31358	K 33 T31N R5W	378FNL 1695FWL	N/A	12,162	600

IV. Central Delivery Point Name: Harvest Gathering System [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Rosa Unit 740H	30-039-31364	8/25/2021	Pending	Pending	Pending	Pending
Rosa Unit 742H	30-039-31358	Pending	Pending	Pending	Pending	Pending

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	Etta Trujillo
Printed Name:	Etta Trujillo
Title:	Regulatory Specialist
E-mail Address:	etrujillo@logosresourcesllc.com
Date:	03/02/2022
Phone:	(505) 324-4154

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

LOGOS Operating, LLC

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
B. Venting and flaring during drilling operations:
    a. New Drill HZ Gas Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured and routed to sales if technically and safely feasible.
C. Venting and flaring during completion or recompletion operations:
    a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.

D. Venting and flaring during production operations:
    a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

    Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

(a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
(b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
(c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
(d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
(e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
(f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
(g) No dehydration or amine units are anticipated to be set on location.
(h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
(i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
(j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
(k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:
    a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.
    b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
    c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
    d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.

F. Measurement or estimation of vented and flared natural gas.
    a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
    b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical then the volume of gas will be estimated.

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Well Name: ROSA UNIT	**Well Location:** T31N / R05W / SEC 33 / NENW /	**County or Parish/State:**
Well Number: 742H	**Type of Well:** CONVENTIONAL GAS WELL	**Allottee or Tribe Name:**
Lease Number: NMSF0078773	**Unit or CA Name:**	**Unit or CA Number:** NMNM078407E
US Well Number: 3003931419	**Well Status:** Approved Application for Permit to Drill	**Operator:** LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2664985

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 04/01/2022

Time Sundry Submitted: 01:01

Date proposed operation will begin: 04/25/2022

Procedure Description: LOGOS Operating request a change in plans for the following: Original bottom-hole location from 1827' FNL & 230' FWL to new bottom-hole location 1827' FNL & 160' FWL Original TD @ 18,435' MD 7,042' TVD to new TD @ 17,443' MD 7,042' TVD. Geology tops have been updated per changes. Original KOP @ 6,215' MD 5,969' TVD to new KOP @ 6,323' MD 6,156' TVD Original Landing point @ 7,904 MD 7,069' TVD to new Landing point @ 7,817' MD 7,069' TVD Original 9.625" casing Intermediate @ 6,572' MD to 6,485' MD 6,311' TVD Original 5.5" casing Production @ 18,435' MD to 17,443' MD 7,042' TVD The 9.625" Intermediate & 5.5" production cementing bbls and 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_742H_Change_in_Plans_20220331_20220401125836.pdf

Well Name: ROSA UNIT

Well Location: T31N / R05W / SEC 33 / NENW /

County or Parish/State:

Well Number: 742H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMSF0078773

Unit or CA Name:

Unit or CA Number: NMNM078407E

US Well Number: 3003931419

Well Status: Approved Application for Permit to Drill

Operator: LOGOS OPERATING LLC

Operator Certification

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 submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: ETTA TRUJILLO

Signed on: APR 01, 2022 12:59 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

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: 04/01/2022

Signature: Kenneth Rennick

District I
1625 N. French Dr., Hobbs, NM 88240
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District II
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District III
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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 97286

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 97286
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	4/13/2022