Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

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.
NMSF078924

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No.
FEDERAL 2407 28M 2H

2. Name of Operator
LOGOS OPERATING LLC
Contact: MARIE E FLOREZ
E-Mail: mflorez@logosresourcesllc.com

9. API Well No.
30-039-31382-00-X1

3a. Address
2010 AFTON PLACE
FARMINGTON, NM 87401

3b. Phone No. (include area code)
Ph: 505.787.2218

10. Field and Pool or Exploratory Area
ESCRITO GALLUP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 28 T24N R7W SWSW 5FSL 893FWL
36.277374 N Lat, 107.586189 W Lon

11. County 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 to Original A PD
BP	☐ 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 zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or 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 name change from Federal 2407 28M 2H to Nautilus 2407 28M 2H and request a change in plans for the following:

Original bottom-hole location from 195' FSL & 1055' FWL to new bottom-hole location 1039' FSL & 326' FWL.

Original TD @ 13122'MD 6198' TVD to new TD @ 14464'MD 6180' TVD.

Geology tops have been updated per changes.

Original KOP @ 5499' MD 5481' TVD to new KOP @ 5433'MD 5416' TVD.

ADHERE TO PREVIOUS NMOCD CONDITIONS OF APPROVAL

NMOCD

MAR 11 2020

DISTRICT III

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #504862 verified by the BLM Well Information System
For LOGOS OPERATING LLC, sent to the Farmington
Committed to AFMSS for processing by JOE KILLINS on 03/09/2020 (20JK0127SE)

Name *(Printed/Typed)* MARIE E FLOREZ — Title REGULATORY SPECIALIST

Signature (Electronic Submission) — Date 02/27/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By JOE KILLINS — Title ENGINEER — Date 03/10/2020

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 Farmington

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)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

NMOCD PV

27

Additional data for EC transaction #504862 that would not fit on the form

32. Additional remarks, continued

Original Landing point @ 6578' MD 6153' TVD to new Landing point @ 6551'MD 6131' TVD.

Original 7" Casing Intermediate @ 6578'MD to new 6551'MD.
Original 4.5" Casing Production @ 6428' - 13122' to new 6451'-14464'.

Original 7" Intermediate & 4.5" production cementing bbls and sacks have been updated per casing depth changes.

Attached: New C102 Plat, Operation and Directional Drill plans.

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

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

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

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-039-31382	22619	ESCRITO GALLUP

[4] Property Code	[5] Property Name	[6] Well Number
327361	NAUTILUS 2407 28M	2H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	7389

[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
M	28	24-N	7-W		5'	SOUTH	893'	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
M	20	24-N	7-W		1039'	SOUTH	326'	WEST	RIO ARRIBA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
EG=SW/SW SEC 28. S2/SW SEC 20. E2/SE, NW/SE, SW/NE, E2/NW, NW/NW SEC 29 TOTAL 400 ACRES			

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

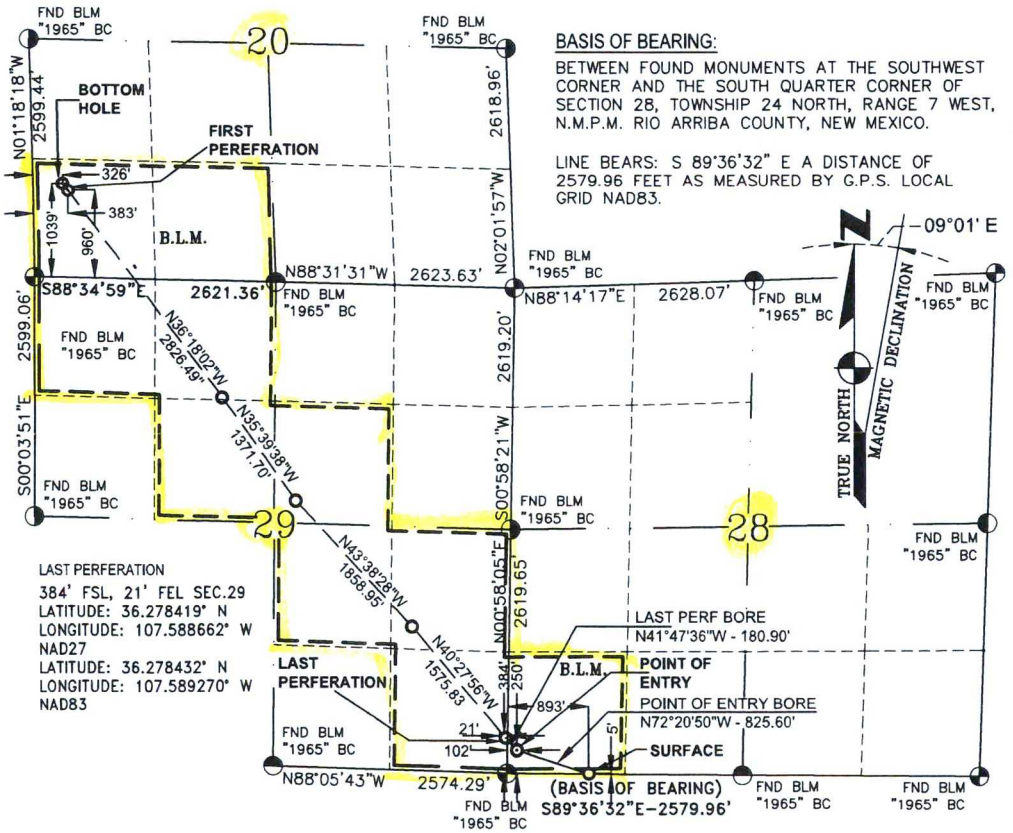
16

BOTTOM HOLE
1039' FSL, 326' FWL SEC.20
LATITUDE: 36.294939° N
LONGITUDE: 107.605075° W
NAD27
LATITUDE: 36.294951° N
LONGITUDE: 107.605683° W
NAD83

FIRST PERFERATION
960' FSL, 383' FWL SEC.20
LATITUDE: 36.294717° N
LONGITUDE: 107.604874° W
NAD27
LATITUDE: 36.294730° N
LONGITUDE: 107.605482° W
NAD83

POINT OF ENTRY
250' FSL, 102' FWL SEC. 28
LATITUDE: 36.278049° N
LONGITUDE: 107.588253° W
NAD27
LATITUDE: 36.278061° N
LONGITUDE: 107.588861° W
NAD83

SURFACE
5' FSL, 893' FWL SEC. 28
LATITUDE: 36.277361° N
LONGITUDE: 107.585585° W
NAD27
LATITUDE: 36.277374° N
LONGITUDE: 107.586193° W
NAD83



BASIS OF BEARING:

BETWEEN FOUND MONUMENTS AT THE SOUTHWEST CORNER AND THE SOUTH QUARTER CORNER OF SECTION 28, TOWNSHIP 24 NORTH, RANGE 7 WEST, N.M.P.M. RIO ARRIBA COUNTY, NEW MEXICO.

LINE BEARS: S 89°36'32" E A DISTANCE OF 2579.96 FEET AS MEASURED BY G.P.S. LOCAL GRID NAD83.

[17] OPERATOR CERTIFICATION

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

Tam Sessions 2/26/20
Signature Date

Tamra Sessions
Printed Name

tsessions@logosresourcesllc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

FEBRUARY 21, 2020
Date of Survey

Signature and Seal of Professional Surveyor:

GLEN W. RUSSELL NEW MEXICO 15703 LICENSED PROFESSIONAL SURVEYOR

GLEN W. RUSSELL
Certificate Number 15703

LOGOS Operating, LLC
Operations Plan

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

Date:	February 21, 2020	Pool:	Escrito Gallup
Well Name:	**Nautilus 2407 28M 2H**	Design Elevation:	7,385'
Surface Location:	Sec 28, T24N, R7W 5 FSL, 893 FWL (36.277374° N, 107.586193° W – NAD83)	Measured Depth:	14,464'
Bottom Hole Location:	Sec 20, T24N, R7W 1039 FSL, 326 FWL (36.294951° N, 107.605683° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF-0078924

I. GEOLOGY

A. Formation Tops (Design GL): Estimated top of important geological markers:

NOTE: All Formation Tops/Kickoff points/Landing Depths are based on Design Ground Level elevation as a reference point and will be adjusted to actual KB when the actual rig is selected.

SURFACE FORMATION - NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	1848	1847	MENEFEE	4138	4127
KIRTLAND	1989	1987	*POINT LOOKOUT	4840	4826
*FRUITLAND	2195	2192	*MANCOS	5090	5075
*PICTURED CLIFFS	2527	2523	GALLUP	5932	5875
LEWIS	2602	2597	KICKOFF POINT	5433	5416
CHACRA	3393	3385	LANDING POINT	6551	6131
*CLIFF HOUSE	4050	4040	TD	14464	6180

* 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 Tour book and on morning reports.

II. DRILLING

A. **MUD PROGRAM:** LSND mud (WBM) will be used to drill the 12-1/4" Surface hole, the 8 ¾" Directional Vertical hole, and the curve portion of the wellbore. A LSND (WBM) or (OBM) will be used to drill the lateral portion of well. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

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:** While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. 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. **All tests and inspections will be recorded and logged with time and results.**

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE (IN)	WEIGHT	GRADE	CONN
SURFACE	12.25"	320'	9.625"	36 LBS	J-55 or equiv	STC or LTC
INTERMEDIATE	8.75"	6,551'	7"	23 LBS	J-55 or equiv	LTC
PRODUCTION	6.125"	6,451' – 14,464'	4.5"	11.6 LBS	P-110 or equiv	LTC or BTC
TIE BACK	6.125"	Surf. – 6,451'	4.5"	11.6 LBS	P-110 or equiv	LTC or BTC

NOTE: All casing depths are approximate 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: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
2. INTERMEDIATE CASING: 7" 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.
3. PRODUCTION LINER: Run 4-1/2" Liner with cement nose guide Float Shoe+ 2jts. of 4-1/2" casing+ Landing Collar+ 4-1/2" pup joint+ 1 RSI (Sliding Sleeve) positioned inside the legal setback. Centralizer program will be determined by wellbore condition. Set seals on Liner Hanger. Liner to be pressure tested during completion operations.

NOTE: Use of DV tool would be considered by operator as back up in case we experience heavy losses and are concerned with cement not reaching surface. If major losses are not encountered we will not run DV tool. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered.

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: 5 bbl Fresh Water Spacer, 100 sx (161 cu.ft.) of 14.5 ppg Type 1-11 (Neat G) + 20% Fly Ash cement w/ 7.41 gal/sack mix water ratio @ 1.61 cu ft/sx yield. Calculated @volume+ 50% excess. WOC 12 hours. Test csg to 600 psi. Total Volume: (160cu-ft/100 sx/ Bbls). TOC at Surface.

2. INTERMEDIATE: Stage 1: Spacer #1: 20 bbl (112 cuft) Chemwash. Lead Cement: 261 bbls,

626 sks (1464 cu.ft.), 12.3 ppg @ 2.3404 cuft/sk yield. Tail Cement: 53 bbls, 197 sks, (295 cuft), 13.5 ppg @ 1.4956 cu'ft/sk yield. Displacement: Displace w/ +/- 256 bbl Drilling mud or water. Total Cement: 313 bbls, 823 sks, (1759 cuft)

3. PRODUCTION LINER: Spacer #1:10 bbl (56.cu-ft) Water Spacer. Spacer #2: 40 bbl 9.5 ppg (224.6 cu-ft) Tuned Spacer Ill. Spacer #3: 10 bbl Water Spacer. Lead Cement: Extencem TM System. Yield 1.5641 cuft/sk 13.3 ppg (647 sx / 1011 cuft /180 bbls). Tail Spacer: 40 BBL of MMCR. Displacement: Displace w/ +/- 194 bbl.

IV. COMPLETION

A. CBL

CBLs and/or Temperature Surveys Will Be Performed as Needed or Required

B. PRESSURE TEST

Pressure test 4-1/2" casing to 4000 psi max, hold at 1500 psi for 30 minutes. Increase pressure to Open RSI sleeves.

C. STIMULATION

Stimulate with sand, water and N2. Isolate stages with flow through frac plugs. Drill out frac plugs and flowback lateral.

D. PRODUCTION TUBING

Run 2-7/8", 6.5#, J-55, EUE tubing

*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

Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Nautilus 2407-28M
Well: Nautilus 2407-28M 2H
Wellbore: OH
Design: Plan #3

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

Azimuths to True North
Magnetic North: 8.75°

Magnetic Field
Strength: 49492.9nT
Dip Angle: 62.87°
Date: 12/17/2018
Model: HDGM

WELL DETAILS: Nautilus 2407-28M 2H

GL 7385' @ 7385.00usft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1920356.26	2795935.88	36.2773740	-107.5861930

Plan: Plan #3 (Nautilus 2407-28M 2H/OH)

Created By: Janie Collins Date: 10:33, February 19 2020

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Nautilus 28M 2H POE Rev	6131.00	250.20	-786.48	1920604.44	2795148.77	36.2780613	-107.5888613
Nautilus 28M 2H M2B	6150.00	1583.22	-1929.33	1921934.54	2794002.52	36.2817230	-107.5927390
Nautilus 28M 2H M2C	6161.00	2927.68	-3211.85	1923275.73	2792716.57	36.2854160	-107.5970910
Nautilus 28M 2H M2D	6168.00	4041.71	-4011.27	1924387.71	2791914.31	36.2884760	-107.5998040
Nautilus 28M 2H BHL	6180.00	6399.08	-5743.39	1926740.66	2790176.18	36.2949510	-107.6056830
Nautilus 28M 2H FPerf	6180.00	6318.62	-5684.17	1926660.35	2790235.60	36.2947300	-107.6054820
Nautilus 28M 2H LPerf	6131.00	385.00	-906.99	1920738.93	2795027.91	36.2784316	-107.5892702

SECTION DETAILS

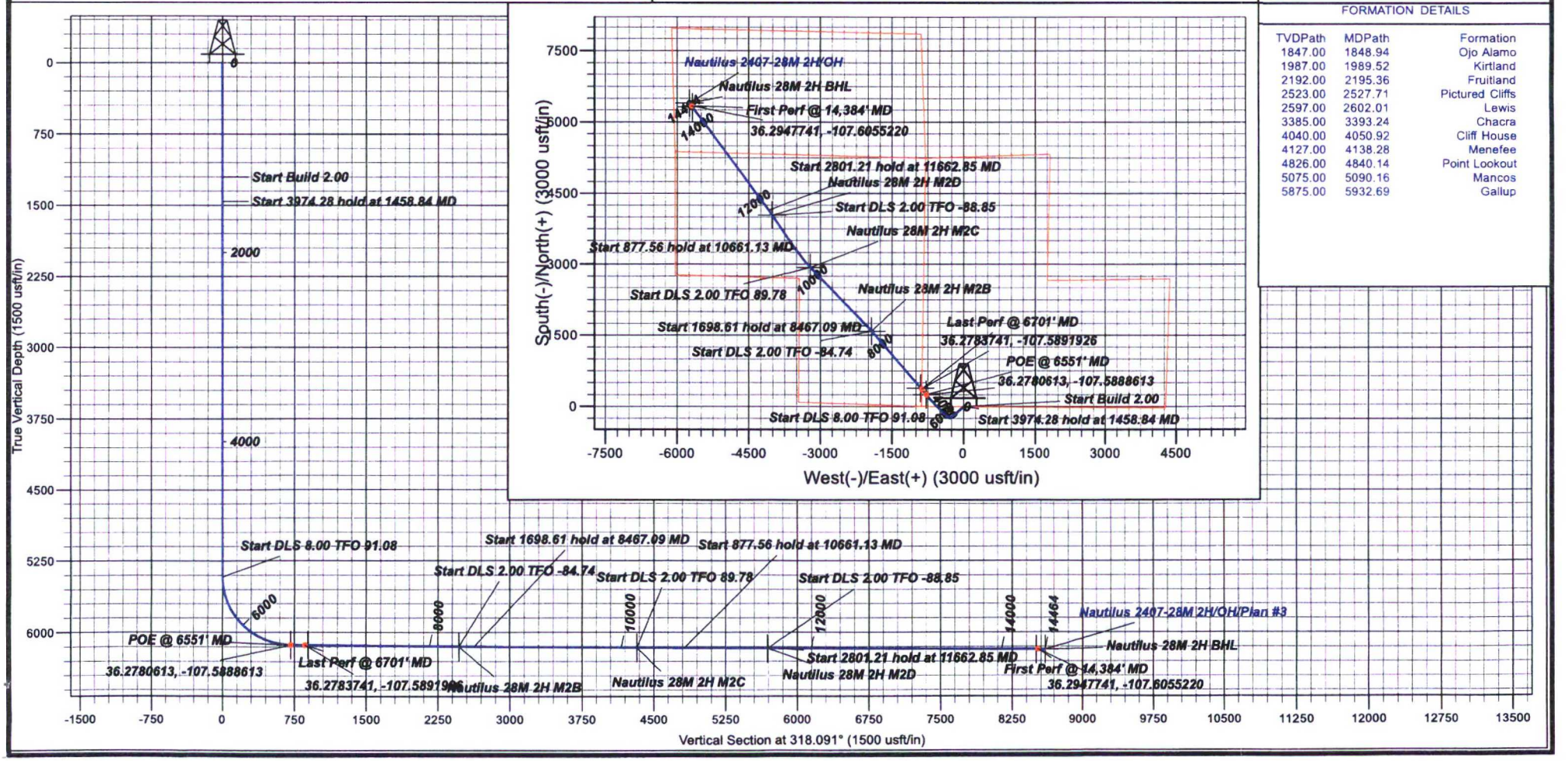
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
1200.00	0.00	0.000	1200.00	0.00	0.00	0.00	0.00	0.00	
1458.84	5.18	228.366	1458.48	-7.76	-8.73	2.00	228.37	0.06	
5433.11	5.18	228.366	5416.55	-246.00	-276.75	0.00	0.00	1.78	
6551.55	89.38	319.392	6131.00	250.20	-786.48	8.00	91.08	711.53	Nautilus 28M 2H POE Rev
8307.51	89.38	319.392	6150.00	1583.22	-1929.33	0.00	0.00	2466.93	Nautilus 28M 2H M2B
8467.09	89.67	316.214	6151.32	1701.42	-2036.49	2.00	-84.74	2626.49	
10165.70	89.67	316.214	6161.00	2927.68	-3211.85	0.00	0.00	4324.16	Nautilus 28M 2H M2C
10661.13	89.72	326.123	6163.65	3313.14	-3522.11	2.00	89.78	4818.25	
11538.70	89.72	326.123	6168.00	4041.71	-4011.27	0.00	0.00	5687.19	Nautilus 28M 2H M2D
11662.85	89.77	323.640	6168.56	4143.26	-4082.69	2.00	-88.85	5810.47	
14464.07	89.77	323.640	6180.00	6399.08	-5743.39	0.00	0.00	8598.53	Nautilus 28M 2H BHL

CASING DETAILS

No casing data is available

FORMATION DETAILS

TVDPath	MDPath	Formation
1847.00	1848.94	Ojo Alamo
1987.00	1989.52	Kirtland
2192.00	2195.36	Fruitland
2523.00	2527.71	Pictured Cliffs
2597.00	2602.01	Lewis
3385.00	3393.24	Chacra
4040.00	4050.92	Cliff House
4127.00	4138.28	Menefee
4826.00	4840.14	Point Lookout
5075.00	5090.16	Mancos
5875.00	5932.69	Gallup



Logos Operating LLC

Rio Arriba, NM NAD83
Nautilus 2407-28M
Nautilus 2407-28M 2H

OH

Plan: Plan #3

Standard Planning Report

19 February, 2020

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

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	Nautilus 2407-28M				
Site Position:		**Northing:**	1,920,350.72 usft	**Latitude:**	36.2773590
From:	Lat/Long	**Easting:**	2,795,906.42 usft	**Longitude:**	-107.5862930
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.20 in	**Grid Convergence:**	0.15 °

Well	Nautilus 2407-28M 2H				
Well Position	**+N/-S**	5.46 usft	**Northing:**	1,920,356.26 usft	**Latitude:**	36.2773740
	+E/-W	29.47 usft	**Easting:**	2,795,935.89 usft	**Longitude:**	-107.5861930
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	7,385.00 usft

Wellbore	OH			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	HDGM	12/17/2018	8.75	62.87	49,492.90000000

Design	Plan #3				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	318.091	

Plan Survey Tool Program **Date** 2/19/2020

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	14,464.07	Plan #3 (OH)	MWD+HDGM	
				OWSG MWD + HDGM	

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,458.84	5.18	228.366	1,458.48	-7.76	-8.73	2.00	2.00	0.00	228.37	
5,433.11	5.18	228.366	5,416.55	-246.00	-276.75	0.00	0.00	0.00	0.00	
6,551.55	89.38	319.392	6,131.00	250.20	-786.48	8.00	7.53	8.14	91.08	Nautilus 28M 2H POE
8,307.51	89.38	319.392	6,150.00	1,583.22	-1,929.33	0.00	0.00	0.00	0.00	Nautilus 28M 2H M2E
8,467.09	89.67	316.214	6,151.32	1,701.42	-2,036.49	2.00	0.18	-1.99	-84.74	
10,165.70	89.67	316.214	6,161.00	2,927.68	-3,211.85	0.00	0.00	0.00	0.00	Nautilus 28M 2H M2C
10,661.13	89.72	326.123	6,163.65	3,313.14	-3,522.11	2.00	0.01	2.00	89.78	
11,538.70	89.72	326.123	6,168.00	4,041.71	-4,011.27	0.00	0.00	0.00	0.00	Nautilus 28M 2H M2D
11,662.85	89.77	323.640	6,168.56	4,143.26	-4,082.69	2.00	0.04	-2.00	-88.85	
14,464.07	89.77	323.640	6,180.00	6,399.08	-5,743.39	0.00	0.00	0.00	0.00	Nautilus 28M 2H BHL

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	2.00	228.366	1,299.98	-1.16	-1.30	0.01	2.00	2.00	0.00
1,400.00	4.00	228.366	1,399.84	-4.64	-5.22	0.03	2.00	2.00	0.00
1,458.84	5.18	228.366	1,458.48	-7.76	-8.73	0.06	2.00	2.00	0.00
1,500.00	5.18	228.366	1,499.48	-10.23	-11.51	0.07	0.00	0.00	0.00
1,600.00	5.18	228.366	1,599.07	-16.23	-18.25	0.12	0.00	0.00	0.00
1,700.00	5.18	228.366	1,698.66	-22.22	-25.00	0.16	0.00	0.00	0.00
1,800.00	5.18	228.366	1,798.26	-28.21	-31.74	0.20	0.00	0.00	0.00
1,900.00	5.18	228.366	1,897.85	-34.21	-38.48	0.25	0.00	0.00	0.00
2,000.00	5.18	228.366	1,997.44	-40.20	-45.23	0.29	0.00	0.00	0.00
2,100.00	5.18	228.366	2,097.03	-46.20	-51.97	0.33	0.00	0.00	0.00
2,200.00	5.18	228.366	2,196.62	-52.19	-58.72	0.38	0.00	0.00	0.00
2,300.00	5.18	228.366	2,296.22	-58.19	-65.46	0.42	0.00	0.00	0.00
2,400.00	5.18	228.366	2,395.81	-64.18	-72.20	0.46	0.00	0.00	0.00
2,500.00	5.18	228.366	2,495.40	-70.18	-78.95	0.51	0.00	0.00	0.00
2,600.00	5.18	228.366	2,594.99	-76.17	-85.69	0.55	0.00	0.00	0.00
2,700.00	5.18	228.366	2,694.59	-82.16	-92.43	0.59	0.00	0.00	0.00
2,800.00	5.18	228.366	2,794.18	-88.16	-99.18	0.64	0.00	0.00	0.00
2,900.00	5.18	228.366	2,893.77	-94.15	-105.92	0.68	0.00	0.00	0.00
3,000.00	5.18	228.366	2,993.36	-100.15	-112.67	0.72	0.00	0.00	0.00
3,100.00	5.18	228.366	3,092.95	-106.14	-119.41	0.77	0.00	0.00	0.00
3,200.00	5.18	228.366	3,192.55	-112.14	-126.15	0.81	0.00	0.00	0.00
3,300.00	5.18	228.366	3,292.14	-118.13	-132.90	0.85	0.00	0.00	0.00
3,400.00	5.18	228.366	3,391.73	-124.13	-139.64	0.90	0.00	0.00	0.00
3,500.00	5.18	228.366	3,491.32	-130.12	-146.38	0.94	0.00	0.00	0.00
3,600.00	5.18	228.366	3,590.91	-136.11	-153.13	0.98	0.00	0.00	0.00
3,700.00	5.18	228.366	3,690.51	-142.11	-159.87	1.03	0.00	0.00	0.00
3,800.00	5.18	228.366	3,790.10	-148.10	-166.62	1.07	0.00	0.00	0.00
3,900.00	5.18	228.366	3,889.69	-154.10	-173.36	1.11	0.00	0.00	0.00
4,000.00	5.18	228.366	3,989.28	-160.09	-180.10	1.16	0.00	0.00	0.00
4,100.00	5.18	228.366	4,088.88	-166.09	-186.85	1.20	0.00	0.00	0.00
4,200.00	5.18	228.366	4,188.47	-172.08	-193.59	1.24	0.00	0.00	0.00
4,300.00	5.18	228.366	4,288.06	-178.08	-200.33	1.29	0.00	0.00	0.00
4,400.00	5.18	228.366	4,387.65	-184.07	-207.08	1.33	0.00	0.00	0.00
4,500.00	5.18	228.366	4,487.24	-190.06	-213.82	1.38	0.00	0.00	0.00
4,600.00	5.18	228.366	4,586.84	-196.06	-220.56	1.42	0.00	0.00	0.00
4,700.00	5.18	228.366	4,686.43	-202.05	-227.31	1.46	0.00	0.00	0.00
4,800.00	5.18	228.366	4,786.02	-208.05	-234.05	1.51	0.00	0.00	0.00
4,900.00	5.18	228.366	4,885.61	-214.04	-240.80	1.55	0.00	0.00	0.00
5,000.00	5.18	228.366	4,985.20	-220.04	-247.54	1.59	0.00	0.00	0.00
5,100.00	5.18	228.366	5,084.80	-226.03	-254.28	1.64	0.00	0.00	0.00
5,200.00	5.18	228.366	5,184.39	-232.03	-261.03	1.68	0.00	0.00	0.00

LOGOS RESOURCES II, LLC

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	5.18	228.366	5,283.98	-238.02	-267.77	1.72	0.00	0.00	0.00
5,400.00	5.18	228.366	5,383.57	-244.01	-274.51	1.77	0.00	0.00	0.00
5,433.11	5.18	228.366	5,416.55	-246.00	-276.75	1.78	0.00	0.00	0.00
5,500.00	7.37	274.994	5,483.07	-247.63	-283.28	4.93	8.00	3.28	69.71
5,600.00	14.21	298.491	5,581.29	-241.21	-300.49	21.20	8.00	6.84	23.50
5,700.00	21.85	306.390	5,676.32	-224.29	-326.29	51.03	8.00	7.63	7.90
5,800.00	29.67	310.299	5,766.32	-197.20	-360.20	93.84	8.00	7.82	3.91
5,900.00	37.56	312.684	5,849.54	-160.47	-401.55	148.80	8.00	7.89	2.38
6,000.00	45.48	314.339	5,924.35	-114.81	-449.53	214.82	8.00	7.92	1.66
6,100.00	53.43	315.595	5,989.31	-61.12	-503.22	290.64	8.00	7.94	1.26
6,200.00	61.38	316.616	6,043.13	-0.43	-561.56	374.77	8.00	7.95	1.02
6,300.00	69.34	317.491	6,084.79	66.06	-623.42	465.58	8.00	7.96	0.88
6,400.00	77.31	318.279	6,113.46	137.07	-687.60	561.29	8.00	7.96	0.79
6,500.00	85.27	319.019	6,128.60	211.22	-752.85	660.05	8.00	7.97	0.74
6,551.55	89.38	319.392	6,131.00	250.20	-786.48	711.53	8.00	7.97	0.72
6,600.00	89.38	319.392	6,131.52	286.98	-818.01	759.96	0.00	0.00	0.00
6,700.00	89.38	319.392	6,132.61	362.89	-883.10	859.93	0.00	0.00	0.00
6,800.00	89.38	319.392	6,133.69	438.80	-948.18	959.90	0.00	0.00	0.00
6,900.00	89.38	319.392	6,134.77	514.72	-1,013.27	1,059.87	0.00	0.00	0.00
7,000.00	89.38	319.392	6,135.85	590.63	-1,078.35	1,159.84	0.00	0.00	0.00
7,100.00	89.38	319.392	6,136.93	666.55	-1,143.43	1,259.80	0.00	0.00	0.00
7,200.00	89.38	319.392	6,138.02	742.46	-1,208.52	1,359.77	0.00	0.00	0.00
7,300.00	89.38	319.392	6,139.10	818.37	-1,273.60	1,459.74	0.00	0.00	0.00
7,400.00	89.38	319.392	6,140.18	894.29	-1,338.68	1,559.71	0.00	0.00	0.00
7,500.00	89.38	319.392	6,141.26	970.20	-1,403.77	1,659.68	0.00	0.00	0.00
7,600.00	89.38	319.392	6,142.34	1,046.12	-1,468.85	1,759.65	0.00	0.00	0.00
7,700.00	89.38	319.392	6,143.43	1,122.03	-1,533.93	1,859.61	0.00	0.00	0.00
7,800.00	89.38	319.392	6,144.51	1,197.95	-1,599.02	1,959.58	0.00	0.00	0.00
7,900.00	89.38	319.392	6,145.59	1,273.86	-1,664.10	2,059.55	0.00	0.00	0.00
8,000.00	89.38	319.392	6,146.67	1,349.77	-1,729.19	2,159.52	0.00	0.00	0.00
8,100.00	89.38	319.392	6,147.75	1,425.69	-1,794.27	2,259.49	0.00	0.00	0.00
8,200.00	89.38	319.392	6,148.84	1,501.60	-1,859.35	2,359.46	0.00	0.00	0.00
8,300.00	89.38	319.392	6,149.92	1,577.52	-1,924.44	2,459.42	0.00	0.00	0.00
8,307.51	89.38	319.392	6,150.00	1,583.22	-1,929.33	2,466.93	0.00	0.00	0.00
8,400.00	89.55	317.550	6,150.86	1,652.45	-1,990.64	2,559.41	2.00	0.18	-1.99
8,467.09	89.67	316.214	6,151.32	1,701.42	-2,036.49	2,626.49	2.00	0.18	-1.99
8,500.00	89.67	316.214	6,151.51	1,725.18	-2,059.27	2,659.38	0.00	0.00	0.00
8,600.00	89.67	316.214	6,152.08	1,797.37	-2,128.46	2,759.32	0.00	0.00	0.00
8,700.00	89.67	316.214	6,152.65	1,869.56	-2,197.66	2,859.27	0.00	0.00	0.00
8,800.00	89.67	316.214	6,153.22	1,941.76	-2,266.85	2,959.21	0.00	0.00	0.00
8,900.00	89.67	316.214	6,153.79	2,013.95	-2,336.05	3,059.15	0.00	0.00	0.00
9,000.00	89.67	316.214	6,154.36	2,086.14	-2,405.24	3,159.10	0.00	0.00	0.00
9,100.00	89.67	316.214	6,154.93	2,158.33	-2,474.44	3,259.04	0.00	0.00	0.00
9,200.00	89.67	316.214	6,155.50	2,230.52	-2,543.63	3,358.99	0.00	0.00	0.00
9,300.00	89.67	316.214	6,156.07	2,302.72	-2,612.83	3,458.93	0.00	0.00	0.00
9,400.00	89.67	316.214	6,156.64	2,374.91	-2,682.02	3,558.88	0.00	0.00	0.00
9,500.00	89.67	316.214	6,157.21	2,447.10	-2,751.22	3,658.82	0.00	0.00	0.00
9,600.00	89.67	316.214	6,157.78	2,519.29	-2,820.41	3,758.77	0.00	0.00	0.00
9,700.00	89.67	316.214	6,158.35	2,591.48	-2,889.61	3,858.71	0.00	0.00	0.00
9,800.00	89.67	316.214	6,158.92	2,663.68	-2,958.80	3,958.66	0.00	0.00	0.00
9,900.00	89.67	316.214	6,159.49	2,735.87	-3,028.00	4,058.60	0.00	0.00	0.00
10,000.00	89.67	316.214	6,160.06	2,808.06	-3,097.20	4,158.55	0.00	0.00	0.00
10,100.00	89.67	316.214	6,160.63	2,880.25	-3,166.39	4,258.49	0.00	0.00	0.00
10,165.70	89.67	316.214	6,161.00	2,927.68	-3,211.85	4,324.16	0.00	0.00	0.00

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385 00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,200.00	89.68	316.900	6,161.19	2,952.59	-3,235.44	4,358.44	2.00	0.01	2.00
10,300.00	89.68	318.900	6,161.75	3,026.78	-3,302.47	4,458.43	2.00	0.01	2.00
10,400.00	89.69	320.900	6,162.30	3,103.27	-3,366.88	4,558.38	2.00	0.01	2.00
10,500.00	89.70	322.900	6,162.83	3,181.95	-3,428.58	4,658.15	2.00	0.01	2.00
10,600.00	89.71	324.900	6,163.34	3,262.75	-3,487.50	4,757.63	2.00	0.01	2.00
10,661.13	89.72	326.123	6,163.65	3,313.14	-3,522.11	4,818.25	2.00	0.01	2.00
10,700.00	89.72	326.123	6,163.84	3,345.40	-3,543.78	4,856.74	0.00	0.00	0.00
10,800.00	89.72	326.123	6,164.34	3,428.43	-3,599.52	4,955.75	0.00	0.00	0.00
10,900.00	89.72	326.123	6,164.83	3,511.45	-3,655.26	5,054.77	0.00	0.00	0.00
11,000.00	89.72	326.123	6,165.33	3,594.47	-3,711.00	5,153.79	0.00	0.00	0.00
11,100.00	89.72	326.123	6,165.82	3,677.49	-3,766.74	5,252.81	0.00	0.00	0.00
11,200.00	89.72	326.123	6,166.32	3,760.52	-3,822.48	5,351.82	0.00	0.00	0.00
11,300.00	89.72	326.123	6,166.82	3,843.54	-3,878.22	5,450.84	0.00	0.00	0.00
11,400.00	89.72	326.123	6,167.31	3,926.56	-3,933.96	5,549.86	0.00	0.00	0.00
11,500.00	89.72	326.123	6,167.81	4,009.58	-3,989.70	5,648.88	0.00	0.00	0.00
11,538.70	89.72	326.123	6,168.00	4,041.71	-4,011.27	5,687.19	0.00	0.00	0.00
11,600.00	89.74	324.897	6,168.29	4,092.24	-4,045.99	5,747.98	2.00	0.04	-2.00
11,662.85	89.77	323.640	6,168.56	4,143.26	-4,082.69	5,810.47	2.00	0.04	-2.00
11,700.00	89.77	323.640	6,168.71	4,173.17	-4,104.71	5,847.44	0.00	0.00	0.00
11,800.00	89.77	323.640	6,169.12	4,253.70	-4,164.00	5,946.97	0.00	0.00	0.00
11,900.00	89.77	323.640	6,169.53	4,334.23	-4,223.28	6,046.50	0.00	0.00	0.00
12,000.00	89.77	323.640	6,169.94	4,414.76	-4,282.57	6,146.03	0.00	0.00	0.00
12,100.00	89.77	323.640	6,170.35	4,495.29	-4,341.85	6,245.56	0.00	0.00	0.00
12,200.00	89.77	323.640	6,170.76	4,575.82	-4,401.14	6,345.09	0.00	0.00	0.00
12,300.00	89.77	323.640	6,171.16	4,656.35	-4,460.42	6,444.63	0.00	0.00	0.00
12,400.00	89.77	323.640	6,171.57	4,736.88	-4,519.71	6,544.16	0.00	0.00	0.00
12,500.00	89.77	323.640	6,171.98	4,817.41	-4,578.99	6,643.69	0.00	0.00	0.00
12,600.00	89.77	323.640	6,172.39	4,897.94	-4,638.28	6,743.22	0.00	0.00	0.00
12,700.00	89.77	323.640	6,172.80	4,978.47	-4,697.56	6,842.75	0.00	0.00	0.00
12,800.00	89.77	323.640	6,173.21	5,059.00	-4,756.85	6,942.28	0.00	0.00	0.00
12,900.00	89.77	323.640	6,173.61	5,139.53	-4,816.13	7,041.81	0.00	0.00	0.00
13,000.00	89.77	323.640	6,174.02	5,220.06	-4,875.42	7,141.34	0.00	0.00	0.00
13,100.00	89.77	323.640	6,174.43	5,300.59	-4,934.70	7,240.87	0.00	0.00	0.00
13,200.00	89.77	323.640	6,174.84	5,381.13	-4,993.99	7,340.40	0.00	0.00	0.00
13,300.00	89.77	323.640	6,175.25	5,461.66	-5,053.27	7,439.93	0.00	0.00	0.00
13,400.00	89.77	323.640	6,175.66	5,542.19	-5,112.56	7,539.46	0.00	0.00	0.00
13,500.00	89.77	323.640	6,176.06	5,622.72	-5,171.84	7,638.99	0.00	0.00	0.00
13,600.00	89.77	323.640	6,176.47	5,703.25	-5,231.13	7,738.52	0.00	0.00	0.00
13,700.00	89.77	323.640	6,176.88	5,783.78	-5,290.41	7,838.05	0.00	0.00	0.00
13,800.00	89.77	323.640	6,177.29	5,864.31	-5,349.70	7,937.58	0.00	0.00	0.00
13,900.00	89.77	323.640	6,177.70	5,944.84	-5,408.98	8,037.11	0.00	0.00	0.00
14,000.00	89.77	323.640	6,178.11	6,025.37	-5,468.27	8,136.64	0.00	0.00	0.00
14,100.00	89.77	323.640	6,178.51	6,105.90	-5,527.55	8,236.17	0.00	0.00	0.00
14,200.00	89.77	323.640	6,178.92	6,186.43	-5,586.84	8,335.71	0.00	0.00	0.00
14,300.00	89.77	323.640	6,179.33	6,266.96	-5,646.12	8,435.24	0.00	0.00	0.00
14,400.00	89.77	323.640	6,179.74	6,347.49	-5,705.41	8,534.77	0.00	0.00	0.00
14,464.07	89.77	323.640	6,180.00	6,399.08	-5,743.39	8,598.53	0.00	0.00	0.00

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Nautilus 28M 2H POE R - plan hits target center - Point	0.00	0.000	6,131.00	250.20	-786.48	1,920,604.45	2,795,148.77	36.2780613	-107.5888614
Nautilus 28M 2H LPerf - plan misses target center by 4.23usft at 6732.31usft MD (6132.96 TVD, 387.42 N, -904.13 E) - Point	0.00	0.000	6,131.00	385.00	-906.99	1,920,738.94	2,795,027.91	36.2784315	-107.5892702
Nautilus 28M 2H M2B - plan hits target center - Point	0.00	0.000	6,150.00	1,583.22	-1,929.33	1,921,934.55	2,794,002.53	36.2817230	-107.5927390
Nautilus 28M 2H M2C - plan hits target center - Point	0.00	0.000	6,161.00	2,927.68	-3,211.85	1,923,275.74	2,792,716.57	36.2854160	-107.5970910
Nautilus 28M 2H M2D - plan hits target center - Point	0.00	0.000	6,168.00	4,041.71	-4,011.27	1,924,387.72	2,791,914.31	36.2884760	-107.5998040
Nautilus 28M 2H FPerf - plan misses target center by 0.41usft at 14364.16usft MD (6179.59 TVD, 6318.63 N, -5684.16 E) - Point	0.00	0.000	6,180.00	6,318.62	-5,684.17	1,926,660.35	2,790,235.60	36.2947300	-107.6054820
Nautilus 28M 2H BHL - plan hits target center - Point	0.00	0.000	6,180.00	6,399.08	-5,743.39	1,926,740.66	2,790,176.18	36.2949510	-107.6056830

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,848.94	1,847.00	Ojo Alamo		0.00	0.000
1,989.52	1,987.00	Kirtland		0.00	0.000
2,195.36	2,192.00	Fruitland		0.00	0.000
2,527.71	2,523.00	Pictured Cliffs		0.00	0.000
2,602.01	2,597.00	Lewis		0.00	0.000
3,393.24	3,385.00	Chacra		0.00	0.000
4,050.92	4,040.00	Cliff House		0.00	0.000
4,138.28	4,127.00	Menefee		0.00	0.000
4,840.14	4,826.00	Point Lookout		0.00	0.000
5,090.16	5,075.00	Mancos		0.00	0.000
5,932.70	5,875.00	Gallup		0.00	0.000

Database:		**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Company:	Logos Operating LLC	**TVD Reference:**	GL 7385' @ 7385.00usft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 7385' @ 7385.00usft
Site:	Nautilus 2407-28M	**North Reference:**	True
Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #3		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
1,200.00	1,200.00	0.00	0.00	Start Build 2.00
1,458.84	1,458.48	-7.76	-8.73	Start 3974.28 hold at 1458.84 MD
5,433.11	5,416.55	-246.00	-276.75	Start DLS 8.00 TFO 91.08
6,551.55	6,131.00	250.20	-786.48	36.2780613, -107.5888613
6,551.55	6,131.00	250.20	-786.48	POE @ 6551' MD
6,701.55	6,132.62	364.07	-884.11	Last Perf @ 6701' MD
6,701.55	6,132.62	364.07	-884.11	36.2783741, -107.5891926
8,307.51	6,150.00	1,583.22	-1,929.32	Start DLS 2.00 TFO -84.74
8,467.09	6,151.32	1,701.42	-2,036.49	Start 1698.61 hold at 8467.09 MD
10,165.70	6,161.00	2,927.68	-3,211.85	Start DLS 2.00 TFO 89.78
10,661.13	6,163.65	3,313.13	-3,522.11	Start 877.56 hold at 10661.13 MD
11,538.70	6,168.00	4,041.71	-4,011.27	Start DLS 2.00 TFO -88.85
11,662.85	6,168.56	4,143.25	-4,082.69	Start 2801.21 hold at 11662.85 MD
14,384.07	6,179.67	6,334.66	-5,695.96	First Perf @ 14,384' MD
14,384.07	6,179.67	6,334.66	-5,695.96	36.2947741, -107.6055220
14,464.07	6,180.00	6,399.08	-5,743.39	TD at 14464.07

Logos Operating LLC

Rio Arriba, NM NAD83
Nautilus 2407-28M
Nautilus 2407-28M 2H

OH
Plan #3

Anticollision Report

19 February, 2020

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

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

Survey Tool Program **Date** 2/19/2020

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	14,464.07	Plan #3 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Nautilus 2407-28M						
Nautilus 2407-28M 1H - OH - Plan #3	1,613.69	1,612.71	15.50	4.01	1.349	Level 3, CC, ES, SF
Nautilus 2407-28M 3H - OH - Plan #3	1,200.00	1,200.00	29.91	21.31	3.477	CC, ES
Nautilus 2407-28M 3H - OH - Plan #3	1,300.00	1,299.98	31.41	22.10	3.375	SF

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 1H - OH - Plan #3 — **Offset Site Error:** 0.00 usft

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-100.50	-5.46	-29.47	29.98				
100.00	100.00	100.00	100.00	0.36	0.36	-100.50	-5.46	-29.47	29.98	29.26	0.72	41.812	
200.00	200.00	200.00	200.00	0.72	0.72	-100.50	-5.46	-29.47	29.98	28.54	1.43	20.906	
300.00	300.00	300.00	300.00	1.08	1.08	-100.50	-5.46	-29.47	29.98	27.83	2.15	13.937	
400.00	400.00	400.00	400.00	1.43	1.43	-100.50	-5.46	-29.47	29.98	27.11	2.87	10.453	
500.00	500.00	500.00	500.00	1.79	1.79	-100.50	-5.46	-29.47	29.98	26.39	3.58	8.362	
600.00	600.00	600.00	600.00	2.15	2.15	-100.50	-5.46	-29.47	29.98	25.67	4.30	6.969	
700.00	700.00	700.00	700.00	2.51	2.51	-100.50	-5.46	-29.47	29.98	24.96	5.02	5.973	
800.00	800.00	800.00	800.00	2.87	2.87	-100.50	-5.46	-29.47	29.98	24.24	5.74	5.226	
900.00	900.00	900.00	900.00	3.23	3.23	-100.50	-5.46	-29.47	29.98	23.52	6.45	4.646	
1,000.00	1,000.00	1,000.00	1,000.00	3.58	3.58	-100.50	-5.46	-29.47	29.98	22.81	7.17	4.181	
1,100.00	1,100.00	1,100.00	1,100.00	3.94	3.94	-100.50	-5.46	-29.47	29.98	22.09	7.89	3.801	
1,200.00	1,200.00	1,200.00	1,200.00	4.30	4.30	-100.50	-5.46	-29.47	29.98	21.37	8.60	3.484	
1,300.00	1,299.98	1,299.98	1,299.98	4.65	4.66	32.97	-5.46	-29.47	28.50	19.19	9.31	3.063	
1,400.00	1,399.84	1,399.84	1,399.84	4.98	5.02	39.76	-5.46	-29.47	24.27	14.28	10.00	2.429	
1,458.84	1,458.48	1,458.48	1,458.48	5.18	5.23	48.09	-5.46	-29.47	20.87	10.47	10.40	2.006	
1,500.00	1,499.48	1,499.48	1,499.48	5.32	5.38	56.61	-5.46	-29.47	18.59	7.90	10.69	1.739	
1,600.00	1,599.07	1,599.07	1,599.07	5.66	5.73	85.46	-5.46	-29.47	15.55	4.16	11.39	1.365	Level 3
1,613.69	1,612.71	1,612.71	1,612.71	5.71	5.78	90.00	-5.46	-29.47	15.50	4.01	11.49	1.349	Level 3, CC, ES, SF
1,700.00	1,698.66	1,698.66	1,698.66	6.01	6.09	116.58	-5.46	-29.47	17.35	5.25	12.10	1.434	Level 3
1,800.00	1,798.26	1,798.26	1,798.26	6.36	6.45	137.20	-5.46	-29.47	22.87	10.07	12.80	1.787	
1,900.00	1,897.85	1,897.11	1,897.09	6.72	6.80	146.67	-4.02	-30.28	31.29	17.80	13.49	2.320	
2,000.00	1,997.44	1,995.59	1,995.44	7.07	7.15	148.52	0.37	-32.73	42.50	28.32	14.18	2.998	
2,100.00	2,097.03	2,093.47	2,092.96	7.44	7.50	147.06	7.65	-36.80	56.09	41.24	14.86	3.776	

LOGOS RESOURCES II, LLC

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 1H - OH - Plan #3

Offset Site Error: 0.00 usft

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

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,200.00	2,196.62	2,190.55	2,189.34	7.80	7.85	144.32	17.74	-42.44	72.17	56.65	15.52	4.649	
2,300.00	2,296.22	2,286.60	2,284.26	8.16	8.20	141.24	30.53	-49.58	90.92	74.74	16.18	5.620	
2,400.00	2,395.81	2,381.43	2,377.45	8.53	8.55	138.22	45.87	-58.15	112.46	95.65	16.81	6.690	
2,500.00	2,495.40	2,474.86	2,468.64	8.90	8.90	135.44	63.62	-68.06	136.88	119.46	17.42	7.857	
2,600.00	2,594.99	2,566.73	2,557.61	9.27	9.26	132.95	83.58	-79.21	164.20	146.19	18.01	9.117	
2,700.00	2,694.59	2,660.21	2,647.51	9.64	9.64	130.76	105.94	-91.70	193.91	175.25	18.66	10.393	
2,800.00	2,794.18	2,755.39	2,738.99	10.01	10.04	129.09	128.89	-104.52	224.01	204.66	19.36	11.572	
2,900.00	2,893.77	2,850.57	2,830.47	10.38	10.45	127.81	151.83	-117.33	254.25	234.19	20.06	12.672	
3,000.00	2,993.36	2,945.76	2,921.96	10.75	10.86	126.81	174.78	-130.15	284.58	263.81	20.78	13.698	
3,100.00	3,092.95	3,040.94	3,013.44	11.12	11.28	126.00	197.72	-142.97	314.98	293.49	21.49	14.656	
3,200.00	3,192.55	3,136.12	3,104.92	11.50	11.71	125.33	220.67	-155.78	345.42	323.21	22.21	15.552	
3,300.00	3,292.14	3,231.31	3,196.40	11.87	12.15	124.77	243.61	-168.60	375.90	352.96	22.93	16.391	
3,400.00	3,391.73	3,326.49	3,287.89	12.25	12.59	124.29	266.56	-181.42	406.40	382.74	23.66	17.177	
3,500.00	3,491.32	3,421.67	3,379.37	12.62	13.04	123.88	289.50	-194.23	436.93	412.54	24.39	17.916	
3,600.00	3,590.91	3,516.86	3,470.85	13.00	13.49	123.52	312.45	-207.05	467.47	442.35	25.12	18.610	
3,700.00	3,690.51	3,612.04	3,562.34	13.37	13.95	123.21	335.39	-219.87	498.03	472.18	25.85	19.265	
3,800.00	3,790.10	3,707.22	3,653.82	13.75	14.40	122.93	358.34	-232.68	528.60	502.02	26.59	19.882	
3,900.00	3,889.69	3,802.40	3,745.30	14.13	14.87	122.69	381.29	-245.50	559.18	531.86	27.32	20.465	
4,000.00	3,989.28	3,897.59	3,836.78	14.50	15.33	122.47	404.23	-258.32	589.77	561.71	28.06	21.017	
4,100.00	4,088.88	3,992.77	3,928.27	14.88	15.80	122.27	427.18	-271.13	620.37	591.57	28.80	21.539	
4,200.00	4,188.47	4,087.95	4,019.75	15.26	16.27	122.09	450.12	-283.95	650.97	621.43	29.54	22.035	
4,300.00	4,288.06	4,183.14	4,111.23	15.64	16.74	121.92	473.07	-296.76	681.58	651.30	30.29	22.505	
4,400.00	4,387.65	4,278.32	4,202.71	16.02	17.22	121.77	496.01	-309.58	712.19	681.17	31.03	22.952	
4,500.00	4,487.24	4,373.50	4,294.20	16.39	17.69	121.63	518.96	-322.40	742.81	711.04	31.77	23.378	
4,600.00	4,586.84	4,468.69	4,385.68	16.77	18.17	121.51	541.90	-335.21	773.43	740.91	32.52	23.783	
4,700.00	4,686.43	4,563.87	4,477.16	17.15	18.65	121.39	564.85	-348.03	804.06	770.79	33.27	24.170	
4,800.00	4,786.02	4,659.05	4,568.65	17.53	19.13	121.28	587.79	-360.85	834.68	800.67	34.01	24.539	
4,900.00	4,885.61	4,754.24	4,660.13	17.91	19.62	121.18	610.74	-373.66	865.31	830.55	34.76	24.891	
5,000.00	4,985.20	4,849.42	4,751.61	18.29	20.10	121.09	633.69	-386.48	895.94	860.43	35.51	25.229	
5,100.00	5,084.80	4,944.60	4,843.09	18.67	20.59	121.00	656.63	-399.30	926.57	890.31	36.26	25.552	
5,200.00	5,184.39	5,039.79	4,934.58	19.05	21.07	120.92	679.58	-412.11	957.21	920.20	37.01	25.861	
5,300.00	5,283.98	6,985.57	6,123.54	19.43	25.44	49.08	-258.59	-557.58	888.41	866.00	22.41	39.641	
5,400.00	5,383.57	6,989.67	6,123.47	19.81	25.46	48.09	-262.68	-557.50	792.39	769.19	23.20	34.159	
5,433.11	5,416.55	6,991.02	6,123.45	19.93	25.47	47.76	-264.03	-557.47	760.81	737.31	23.50	32.368	
5,450.00	5,433.37	6,991.56	6,123.44	20.00	25.47	29.97	-264.57	-557.46	744.72	721.05	23.67	31.463	
5,500.00	5,483.07	6,991.34	6,123.44	20.18	25.47	-12.21	-264.35	-557.47	696.80	672.64	24.16	28.846	
5,550.00	5,532.46	6,988.43	6,123.49	20.37	25.45	-39.38	-261.44	-557.52	648.63	623.99	24.63	26.333	
5,600.00	5,581.29	6,982.84	6,123.59	20.55	25.42	-59.71	-255.85	-557.63	600.36	575.27	25.09	23.929	
5,650.00	5,629.32	6,974.60	6,123.74	20.73	25.38	-76.35	-247.61	-557.79	552.16	526.64	25.52	21.635	
5,700.00	5,676.32	6,963.74	6,123.93	20.90	25.32	-90.12	-236.76	-558.00	504.18	478.26	25.92	19.454	
5,750.00	5,722.07	6,950.31	6,124.17	21.07	25.25	-101.43	-223.34	-558.27	456.59	430.32	26.26	17.385	
5,800.00	5,766.32	6,934.40	6,124.45	21.24	25.17	-110.74	-207.43	-558.58	409.53	382.99	26.54	15.429	
5,850.00	5,808.89	6,916.06	6,124.78	21.40	25.08	-118.59	-189.10	-558.93	363.17	336.44	26.73	13.588	
5,900.00	5,849.54	6,895.40	6,125.15	21.57	24.98	-125.45	-168.44	-559.34	317.68	290.89	26.78	11.861	
5,950.00	5,888.09	6,872.50	6,125.55	21.74	24.88	-131.82	-145.55	-559.78	273.24	246.59	26.66	10.250	
6,000.00	5,924.35	6,847.49	6,126.00	21.92	24.78	-138.17	-120.55	-560.27	230.12	203.88	26.24	8.770	
6,050.00	5,958.15	6,820.49	6,126.48	22.13	24.67	-145.10	-93.56	-560.79	188.66	163.29	25.37	7.435	
6,100.00	5,989.31	6,791.62	6,126.99	22.38	24.57	-153.38	-64.70	-561.36	149.50	125.67	23.82	6.275	
6,150.00	6,017.68	6,761.03	6,127.53	22.68	24.48	-164.10	-34.12	-561.95	113.92	92.41	21.51	5.296	
6,200.00	6,043.13	6,728.86	6,128.10	23.04	24.39	-178.63	-1.96	-562.58	84.99	64.30	20.69	4.108	
6,250.00	6,065.54	6,695.28	6,128.70	23.45	24.30	162.48	31.61	-563.23	69.46	40.03	29.42	2.361	
6,263.17	6,070.92	6,686.22	6,128.86	23.56	24.29	156.99	40.67	-563.41	68.69	35.64	33.05	2.078	

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	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 1H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,300.00	6,084.79	6,659.49	6,129.09	23.91	24.24	141.00	67.38	-563.90	74.21	32.74	41.48	1.789	
6,350.00	6,100.79	6,623.35	6,127.88	24.43	24.19	121.86	103.50	-564.35	94.93	48.71	46.21	2.054	
6,400.00	6,113.46	6,588.11	6,124.96	25.00	24.15	107.32	138.61	-564.55	123.59	76.59	47.01	2.629	
6,450.00	6,122.75	6,553.59	6,120.45	25.62	24.13	96.59	172.84	-564.52	155.67	108.80	46.87	3.321	
6,500.00	6,128.60	6,519.59	6,114.41	26.27	24.11	88.50	206.29	-564.27	189.17	142.51	46.66	4.054	
6,551.55	6,131.00	6,484.93	6,106.65	26.99	24.10	82.05	240.06	-563.80	224.24	177.68	46.56	4.816	
6,600.00	6,131.52	6,453.09	6,098.10	27.69	24.10	80.23	270.72	-563.16	257.55	211.03	46.52	5.536	
6,700.00	6,132.61	6,391.27	6,077.68	29.24	24.11	76.74	329.03	-561.38	328.12	281.69	46.44	7.066	
6,800.00	6,133.69	6,334.85	6,054.76	30.92	24.12	73.61	380.52	-559.15	401.22	354.88	46.34	8.658	
6,900.00	6,134.77	6,283.77	6,030.61	32.70	24.14	70.85	425.45	-556.63	476.79	430.54	46.25	10.310	
7,000.00	6,135.85	6,237.75	6,006.19	34.57	24.16	68.42	464.35	-553.98	554.72	508.56	46.16	12.016	
7,100.00	6,136.93	6,200.00	5,984.34	36.51	24.17	66.48	495.04	-551.54	634.85	588.78	46.08	13.778	
7,200.00	6,138.02	6,159.30	5,959.03	38.51	24.18	64.43	526.77	-548.64	716.93	670.89	46.04	15.571	
7,300.00	6,139.10	6,125.98	5,937.01	40.57	24.19	62.78	551.64	-546.08	800.80	754.79	46.00	17.407	
7,400.00	6,140.18	6,100.00	5,919.06	42.68	24.19	61.53	570.30	-543.96	886.26	840.29	45.96	19.282	
7,500.00	6,141.26	6,069.01	5,896.79	44.82	24.19	60.05	591.68	-541.30	973.09	927.13	45.96	21.172	
7,600.00	6,142.34	6,050.00	5,882.69	47.00	24.20	59.17	604.31	-539.60	1,061.19	1,015.25	45.94	23.101	
7,700.00	6,143.43	6,022.54	5,861.74	49.21	24.19	57.90	621.88	-537.05	1,150.34	1,104.39	45.95	25.035	
7,800.00	6,144.51	6,000.00	5,844.06	51.44	24.19	56.88	635.69	-534.89	1,240.48	1,194.52	45.96	26.991	
7,900.00	6,145.59	5,984.20	5,831.41	53.70	24.19	56.17	645.03	-533.33	1,331.46	1,285.50	45.96	28.970	
8,000.00	6,146.67	5,967.51	5,817.83	55.97	24.18	55.43	654.59	-531.65	1,423.21	1,377.23	45.97	30.959	
8,100.00	6,147.75	5,950.00	5,803.36	58.27	24.18	54.66	664.27	-529.85	1,515.63	1,469.64	45.99	32.956	
8,200.00	6,148.84	5,950.00	5,803.36	60.58	24.18	54.66	664.27	-529.85	1,608.75	1,562.77	45.97	34.992	
8,307.51	6,150.00	5,924.28	5,781.68	63.07	24.16	53.55	677.84	-527.13	1,709.24	1,663.22	46.02	37.143	
8,400.00	6,150.86	5,900.00	5,760.78	65.25	24.15	48.92	689.93	-524.50	1,796.71	1,750.64	46.07	38.997	
8,467.09	6,151.32	5,900.00	5,760.78	66.86	24.15	45.83	689.93	-524.50	1,860.58	1,814.48	46.10	40.363	
8,500.00	6,151.51	5,900.00	5,760.78	67.66	24.15	45.83	689.93	-524.50	1,892.06	1,845.95	46.11	41.034	
8,600.00	6,152.08	5,900.00	5,760.78	70.09	24.15	45.83	689.93	-524.50	1,988.02	1,941.87	46.15	43.079	
8,700.00	6,152.65	5,900.00	5,760.78	72.52	24.15	45.83	689.93	-524.50	2,084.36	2,038.17	46.18	45.132	
8,800.00	6,153.22	5,875.75	5,739.53	74.97	24.13	44.98	701.28	-521.81	2,180.62	2,134.35	46.27	47.130	
8,900.00	6,153.79	5,867.83	5,732.50	77.42	24.12	44.70	704.82	-520.92	2,277.27	2,230.95	46.32	49.164	
9,000.00	6,154.36	5,850.00	5,716.55	79.88	24.11	44.08	712.53	-518.88	2,374.20	2,327.81	46.39	51.180	
9,100.00	6,154.93	5,850.00	5,716.55	82.35	24.11	44.08	712.53	-518.88	2,471.18	2,424.75	46.42	53.230	
9,200.00	6,155.50	5,850.00	5,716.55	84.82	24.11	44.08	712.53	-518.88	2,568.39	2,521.93	46.46	55.283	
9,300.00	6,156.07	5,850.00	5,716.55	87.30	24.11	44.08	712.53	-518.88	2,665.80	2,619.31	46.49	57.338	
9,400.00	6,156.64	5,850.00	5,716.55	89.78	24.11	44.08	712.53	-518.88	2,763.40	2,716.87	46.53	59.394	
9,500.00	6,157.21	5,829.23	5,697.74	92.27	24.09	43.37	720.99	-516.47	2,860.88	2,814.28	46.60	61.390	
9,600.00	6,157.78	5,823.98	5,692.94	94.76	24.08	43.18	723.05	-515.85	2,958.64	2,912.00	46.65	63.427	
9,700.00	6,158.35	5,818.99	5,688.38	97.25	24.08	43.01	724.96	-515.27	3,056.51	3,009.82	46.69	65.463	
9,800.00	6,158.92	5,800.00	5,670.87	99.75	24.06	42.36	731.96	-513.01	3,154.62	3,107.86	46.76	67.463	
9,900.00	6,159.49	5,800.00	5,670.87	102.25	24.06	42.36	731.96	-513.01	3,252.62	3,205.83	46.80	69.505	
10,000.00	6,160.06	5,800.00	5,670.87	104.75	24.06	42.36	731.96	-513.01	3,350.75	3,303.91	46.83	71.546	
10,100.00	6,160.63	5,800.00	5,670.87	107.26	24.06	42.36	731.96	-513.01	3,448.98	3,402.11	46.87	73.586	
10,165.70	6,161.00	5,800.00	5,670.87	108.91	24.06	42.36	731.96	-513.01	3,513.57	3,466.68	46.89	74.925	
10,200.00	6,161.19	5,800.00	5,670.87	109.76	24.06	44.99	731.96	-513.01	3,547.28	3,500.37	46.91	75.625	
10,300.00	6,161.75	5,800.00	5,670.87	112.24	24.06	51.55	731.96	-513.01	3,645.31	3,598.38	46.93	77.672	
10,400.00	6,162.30	5,800.00	5,670.87	114.66	24.06	56.73	731.96	-513.01	3,742.88	3,695.94	46.94	79.729	
10,500.00	6,162.83	5,800.00	5,670.87	117.03	24.06	60.86	731.96	-513.01	3,839.93	3,792.98	46.94	81.798	
10,600.00	6,163.34	5,800.00	5,670.87	119.34	24.06	64.18	731.96	-513.01	3,936.37	3,889.44	46.93	83.878	
10,661.13	6,163.65	5,778.90	5,651.21	120.73	24.03	65.15	739.19	-510.46	3,994.72	3,947.78	46.95	85.090	
10,700.00	6,163.84	5,777.32	5,649.73	121.60	24.02	65.09	739.71	-510.27	4,031.89	3,984.95	46.94	85.898	
10,800.00	6,164.34	5,773.37	5,646.03	123.85	24.02	64.95	740.99	-509.79	4,127.64	4,080.72	46.92	87.975	

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

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 1H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 usft

Rule Assigned:

Warning

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
10,900.00	6,164.83	5,750.00	5,623.96	126.10	23.99	64.12	748.14	-506.91	4,223.80	4,176.87	46.93	90.008
11,000.00	6,165.33	5,750.00	5,623.96	128.35	23.99	64.12	748.14	-506.91	4,319.82	4,272.91	46.91	92.087
11,100.00	6,165.82	5,750.00	5,623.96	130.60	23.99	64.12	748.14	-506.91	4,416.02	4,369.12	46.90	94.164
11,200.00	6,166.32	5,750.00	5,623.96	132.86	23.99	64.12	748.14	-506.91	4,512.38	4,465.49	46.89	96.238
11,300.00	6,166.82	5,750.00	5,623.96	135.12	23.99	64.12	748.14	-506.91	4,608.89	4,562.01	46.88	98.308
11,400.00	6,167.31	5,750.00	5,623.96	137.38	23.99	64.12	748.14	-506.91	4,705.56	4,658.68	46.88	100.374
11,500.00	6,167.81	5,750.00	5,623.96	139.64	23.99	64.12	748.14	-506.91	4,802.35	4,755.47	46.88	102.437
11,538.70	6,168.00	5,750.00	5,623.96	140.52	23.99	64.12	748.14	-506.91	4,839.85	4,792.96	46.88	103.234
11,600.00	6,168.29	5,750.00	5,623.96	141.92	23.99	61.74	748.14	-506.91	4,899.42	4,852.53	46.89	104.491
11,662.85	6,168.56	5,750.00	5,623.96	143.38	23.99	58.81	748.14	-506.91	4,960.81	4,913.90	46.90	105.771
11,700.00	6,168.71	5,750.00	5,623.96	144.25	23.99	58.81	748.14	-506.91	4,997.17	4,950.26	46.91	106.525
11,800.00	6,169.12	5,750.00	5,623.96	146.59	23.99	58.81	748.14	-506.91	5,095.14	5,048.20	46.94	108.554
11,900.00	6,169.53	5,750.00	5,623.96	148.94	23.99	58.81	748.14	-506.91	5,193.18	5,146.21	46.96	110.578
12,000.00	6,169.94	5,750.00	5,623.96	151.29	23.99	58.81	748.14	-506.91	5,291.29	5,244.30	46.99	112.598
12,100.00	6,170.35	5,750.00	5,623.96	153.63	23.99	58.81	748.14	-506.91	5,389.48	5,342.45	47.02	114.612
12,200.00	6,170.76	5,750.00	5,623.96	155.98	23.99	58.81	748.14	-506.91	5,487.72	5,440.67	47.06	116.621
12,300.00	6,171.16	5,750.00	5,623.96	158.33	23.99	58.81	748.14	-506.91	5,586.04	5,538.95	47.09	118.624
12,400.00	6,171.57	5,750.00	5,623.96	160.68	23.99	58.81	748.14	-506.91	5,684.41	5,637.28	47.13	120.622
12,500.00	6,171.98	5,727.48	5,602.50	163.03	23.95	57.96	754.34	-504.10	5,782.53	5,735.35	47.18	122.568
12,600.00	6,172.39	5,725.63	5,600.72	165.39	23.94	57.89	754.82	-503.87	5,880.95	5,833.73	47.22	124.550
12,700.00	6,172.80	5,723.84	5,599.01	167.74	23.94	57.82	755.28	-503.65	5,979.43	5,932.17	47.26	126.527
12,800.00	6,173.21	5,722.10	5,597.34	170.10	23.94	57.75	755.72	-503.43	6,077.95	6,030.65	47.30	128.498
12,900.00	6,173.61	5,700.00	5,576.06	172.45	23.90	56.93	760.98	-500.63	6,176.76	6,129.41	47.35	130.443
13,000.00	6,174.02	5,700.00	5,576.06	174.81	23.90	56.93	760.98	-500.63	6,275.33	6,227.94	47.40	132.404
13,100.00	6,174.43	5,700.00	5,576.06	177.16	23.90	56.93	760.98	-500.63	6,373.95	6,326.51	47.44	134.358
13,200.00	6,174.84	5,700.00	5,576.06	179.52	23.90	56.93	760.98	-500.63	6,472.60	6,425.12	47.49	136.306
13,300.00	6,175.25	5,700.00	5,576.06	181.88	23.90	56.93	760.98	-500.63	6,571.30	6,523.77	47.53	138.248
13,400.00	6,175.66	5,700.00	5,576.06	184.24	23.90	56.93	760.98	-500.63	6,670.04	6,622.46	47.58	140.184
13,500.00	6,176.06	5,700.00	5,576.06	186.60	23.90	56.93	760.98	-500.63	6,768.81	6,721.18	47.63	142.113
13,600.00	6,176.47	5,700.00	5,576.06	188.96	23.90	56.93	760.98	-500.63	6,867.62	6,819.94	47.68	144.035
13,700.00	6,176.88	5,700.00	5,576.06	191.32	23.90	56.93	760.98	-500.63	6,966.46	6,918.73	47.73	145.951
13,800.00	6,177.29	5,700.00	5,576.06	193.68	23.90	56.93	760.98	-500.63	7,065.33	7,017.55	47.78	147.860
13,900.00	6,177.70	5,700.00	5,576.06	196.04	23.90	56.93	760.98	-500.63	7,164.24	7,116.40	47.84	149.763
14,000.00	6,178.11	5,700.00	5,576.06	198.40	23.90	56.93	760.98	-500.63	7,263.18	7,215.28	47.89	151.658
14,100.00	6,178.51	5,700.00	5,576.06	200.76	23.90	56.93	760.98	-500.63	7,362.14	7,314.19	47.95	153.547
14,200.00	6,178.92	5,700.00	5,576.06	203.13	23.90	56.93	760.98	-500.63	7,461.13	7,413.13	48.00	155.429
14,300.00	6,179.33	5,700.00	5,576.06	205.49	23.90	56.93	760.98	-500.63	7,560.15	7,512.09	48.06	157.304
14,400.00	6,179.74	5,700.00	5,576.06	207.85	23.90	56.93	760.98	-500.63	7,659.20	7,611.08	48.12	159.172
14,464.07	6,180.00	5,700.00	5,576.06	209.37	23.90	56.93	760.98	-500.63	7,722.66	7,674.51	48.16	160.364

LOGOS RESOURCES II, LLC

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 3H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	80.19	5.10	29.47	29.91				
100.00	100.00	100.00	100.00	0.36	0.36	80.19	5.10	29.47	29.91	29.20	0.72	41.722	
200.00	200.00	200.00	200.00	0.72	0.72	80.19	5.10	29.47	29.91	28.48	1.43	20.861	
300.00	300.00	300.00	300.00	1.08	1.08	80.19	5.10	29.47	29.91	27.76	2.15	13.907	
400.00	400.00	400.00	400.00	1.43	1.43	80.19	5.10	29.47	29.91	27.04	2.87	10.431	
500.00	500.00	500.00	500.00	1.79	1.79	80.19	5.10	29.47	29.91	26.33	3.58	8.344	
600.00	600.00	600.00	600.00	2.15	2.15	80.19	5.10	29.47	29.91	25.61	4.30	6.954	
700.00	700.00	700.00	700.00	2.51	2.51	80.19	5.10	29.47	29.91	24.89	5.02	5.960	
800.00	800.00	800.00	800.00	2.87	2.87	80.19	5.10	29.47	29.91	24.18	5.74	5.215	
900.00	900.00	900.00	900.00	3.23	3.23	80.19	5.10	29.47	29.91	23.46	6.45	4.636	
1,000.00	1,000.00	1,000.00	1,000.00	3.58	3.58	80.19	5.10	29.47	29.91	22.74	7.17	4.172	
1,100.00	1,100.00	1,100.00	1,100.00	3.94	3.94	80.19	5.10	29.47	29.91	22.03	7.89	3.793	
1,200.00	1,200.00	1,200.00	1,200.00	4.30	4.30	80.19	5.10	29.47	29.91	21.31	8.60	3.477	CC, ES
1,300.00	1,299.98	1,299.98	1,299.98	4.65	4.66	-149.84	5.10	29.47	31.41	22.10	9.31	3.375	SF
1,400.00	1,399.84	1,399.84	1,399.84	4.98	5.02	-153.98	5.10	29.47	36.03	26.03	10.00	3.605	
1,458.84	1,458.48	1,458.48	1,458.48	5.18	5.23	-156.88	5.10	29.47	40.31	29.91	10.40	3.875	
1,500.00	1,499.48	1,499.48	1,499.48	5.32	5.38	-158.79	5.10	29.47	43.76	33.07	10.69	4.094	
1,600.00	1,599.07	1,597.52	1,597.50	5.66	5.73	-163.27	6.47	30.40	53.71	42.34	11.37	4.723	
1,700.00	1,698.66	1,694.75	1,694.60	6.01	6.07	-167.66	10.58	33.18	66.91	54.87	12.04	5.556	
1,800.00	1,798.26	1,790.95	1,790.45	6.36	6.42	-171.50	17.33	37.74	83.44	70.74	12.70	6.572	
1,900.00	1,897.85	1,885.93	1,884.76	6.72	6.76	-174.68	26.60	44.01	103.32	89.98	13.33	7.748	
2,000.00	1,997.44	1,979.50	1,977.27	7.07	7.10	-177.25	38.27	51.89	126.48	112.53	13.95	9.066	
2,100.00	2,097.03	2,071.52	2,067.73	7.44	7.44	-179.33	52.17	61.29	152.85	138.30	14.55	10.506	
2,200.00	2,196.62	2,161.81	2,155.94	7.80	7.78	178.99	68.15	72.09	182.34	167.21	15.13	12.055	
2,300.00	2,296.22	2,254.55	2,246.02	8.16	8.14	177.60	86.41	84.42	214.22	198.46	15.76	13.592	
2,400.00	2,395.81	2,349.16	2,337.88	8.53	8.52	176.54	105.16	97.10	246.36	229.92	16.44	14.986	
2,500.00	2,495.40	2,443.76	2,429.74	8.90	8.91	175.72	123.91	109.77	278.56	261.44	17.12	16.270	
2,600.00	2,594.99	2,538.37	2,521.60	9.27	9.30	175.07	142.67	122.44	310.80	292.99	17.81	17.454	
2,700.00	2,694.59	2,632.98	2,613.47	9.64	9.70	174.54	161.42	135.12	343.06	324.57	18.50	18.549	
2,800.00	2,794.18	2,727.59	2,705.33	10.01	10.10	174.11	180.17	147.79	375.35	356.17	19.19	19.563	
2,900.00	2,893.77	2,822.20	2,797.19	10.38	10.51	173.74	198.92	160.46	407.66	387.78	19.88	20.505	
3,000.00	2,993.36	2,916.81	2,889.05	10.75	10.93	173.43	217.68	173.14	439.97	419.40	20.58	21.382	
3,100.00	3,092.95	3,011.41	2,980.91	11.12	11.34	173.16	236.43	185.81	472.30	451.03	21.27	22.201	
3,200.00	3,192.55	3,106.02	3,072.77	11.50	11.76	172.92	255.18	198.48	504.64	482.66	21.97	22.965	
3,300.00	3,292.14	3,200.63	3,164.63	11.87	12.19	172.71	273.94	211.16	536.98	514.31	22.68	23.682	
3,400.00	3,391.73	3,295.24	3,256.49	12.25	12.61	172.53	292.69	223.83	569.33	545.95	23.38	24.353	
3,500.00	3,491.32	3,389.85	3,348.35	12.62	13.04	172.36	311.44	236.51	601.68	577.60	24.08	24.985	
3,600.00	3,590.91	3,484.46	3,440.22	13.00	13.47	172.22	330.20	249.18	634.04	609.25	24.79	25.579	
3,700.00	3,690.51	3,579.07	3,532.08	13.37	13.90	172.08	348.95	261.85	666.40	640.91	25.49	26.140	
3,800.00	3,790.10	3,673.67	3,623.94	13.75	14.34	171.96	367.70	274.53	698.76	672.56	26.20	26.670	
3,900.00	3,889.69	3,768.28	3,715.80	14.13	14.77	171.85	386.46	287.20	731.13	704.22	26.91	27.170	
4,000.00	3,989.28	3,862.89	3,807.66	14.50	15.21	171.75	405.21	299.87	763.50	735.88	27.62	27.645	
4,100.00	4,088.88	3,957.50	3,899.52	14.88	15.65	171.66	423.96	312.55	795.87	767.54	28.33	28.094	
4,200.00	4,188.47	4,052.11	3,991.38	15.26	16.09	171.57	442.72	325.22	828.24	799.20	29.04	28.521	
4,300.00	4,288.06	4,146.72	4,083.24	15.64	16.53	171.50	461.47	337.89	860.61	830.86	29.75	28.927	
4,400.00	4,387.65	4,241.32	4,175.10	16.02	16.97	171.42	480.22	350.57	892.99	862.52	30.46	29.314	
4,500.00	4,487.24	4,335.93	4,266.97	16.39	17.42	171.35	498.98	363.24	925.36	894.19	31.18	29.682	
4,600.00	4,586.84	4,430.54	4,358.83	16.77	17.86	171.29	517.73	375.91	957.74	925.85	31.89	30.033	
4,700.00	4,686.43	4,525.15	4,450.69	17.15	18.30	171.23	536.48	388.59	990.12	957.51	32.60	30.369	
4,800.00	4,786.02	4,619.76	4,542.55	17.53	18.75	171.18	555.23	401.26	1,022.50	989.18	33.32	30.689	
4,900.00	4,885.61	4,714.37	4,634.41	17.91	19.20	171.12	573.99	413.93	1,054.88	1,020.84	34.03	30.996	
5,000.00	4,985.20	4,808.98	4,726.27	18.29	19.64	171.07	592.74	426.61	1,087.26	1,052.51	34.75	31.289	

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	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 3H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.00	5,084.80	4,903.58	4,818.13	18.67	20.09	171.03	611.49	439.28	1,119.64	1,084.17	35.46	31.570	
5,200.00	5,184.39	4,998.19	4,909.99	19.05	20.54	170.98	630.25	451.95	1,152.02	1,115.84	36.18	31.840	
5,300.00	5,283.98	5,092.80	5,001.85	19.43	20.99	170.94	649.00	464.63	1,184.40	1,147.50	36.90	32.099	
5,400.00	5,383.57	5,187.41	5,093.72	19.81	21.44	170.90	667.75	477.30	1,216.78	1,179.17	37.62	32.348	
5,433.11	5,416.55	5,218.74	5,124.13	19.93	21.59	170.89	673.96	481.50	1,227.51	1,189.65	37.85	32.428	
5,450.00	5,433.37	5,234.73	5,139.66	20.00	21.66	155.79	677.13	483.64	1,232.94	1,194.97	37.97	32.467	
5,500.00	5,483.07	6,815.10	6,137.39	20.18	24.86	168.88	-121.30	757.80	1,236.10	1,198.27	37.84	32.670	
5,550.00	5,532.46	6,811.32	6,137.46	20.37	24.83	154.76	-117.55	757.31	1,216.94	1,178.23	38.71	31.440	
5,600.00	5,581.29	6,804.64	6,137.58	20.55	24.79	147.65	-110.93	756.42	1,201.45	1,161.90	39.55	30.376	
5,650.00	5,629.32	6,795.08	6,137.76	20.73	24.73	143.39	-101.46	755.16	1,189.81	1,149.45	40.36	29.478	
5,700.00	5,676.32	6,782.70	6,137.99	20.90	24.65	140.35	-89.19	753.53	1,182.12	1,141.00	41.12	28.746	
5,750.00	5,722.07	6,767.55	6,138.27	21.07	24.56	137.84	-74.17	751.53	1,178.40	1,136.58	41.82	28.178	
5,772.29	5,741.99	6,759.92	6,138.41	21.15	24.51	136.80	-66.61	750.52	1,178.01	1,135.91	42.11	27.977	
5,800.00	5,766.32	6,749.70	6,138.60	21.24	24.45	135.53	-56.49	749.18	1,178.61	1,136.16	42.44	27.770	
5,850.00	5,808.89	6,729.26	6,138.98	21.40	24.34	133.24	-36.22	746.48	1,182.61	1,139.63	42.99	27.512	
5,900.00	5,849.54	6,706.30	6,139.41	21.57	24.21	130.86	-13.47	743.45	1,190.23	1,146.78	43.45	27.392	
5,950.00	5,888.09	6,680.95	6,139.88	21.74	24.07	128.34	11.65	740.11	1,201.22	1,157.37	43.85	27.392	
6,000.00	5,924.35	6,625.75	6,139.28	21.92	23.78	124.52	66.32	732.56	1,215.05	1,170.95	44.10	27.551	
6,050.00	5,958.15	6,567.66	6,134.15	22.13	23.55	120.47	123.51	723.92	1,230.95	1,186.61	44.34	27.759	
6,100.00	5,989.31	6,514.96	6,125.51	22.38	23.62	116.53	174.81	715.50	1,248.79	1,204.21	44.58	28.014	
6,150.00	6,017.68	6,466.14	6,114.16	22.68	23.68	112.63	221.56	707.25	1,268.39	1,223.58	44.82	28.302	
6,200.00	6,043.13	6,420.16	6,100.59	23.04	23.74	108.75	264.72	699.12	1,289.54	1,244.48	45.06	28.620	
6,250.00	6,065.54	6,376.30	6,085.07	23.45	23.78	104.87	304.94	691.07	1,312.01	1,266.70	45.30	28.960	
6,300.00	6,084.79	6,334.01	6,067.80	23.91	23.82	101.00	342.69	683.06	1,335.55	1,289.99	45.56	29.314	
6,350.00	6,100.79	6,292.92	6,048.89	24.43	23.86	97.16	378.29	675.08	1,359.94	1,314.11	45.83	29.672	
6,400.00	6,113.46	6,252.72	6,028.44	25.00	23.89	93.36	411.95	667.10	1,384.92	1,338.80	46.12	30.029	
6,450.00	6,122.75	6,213.21	6,006.52	25.62	23.91	89.64	443.83	659.12	1,410.26	1,363.84	46.43	30.376	
6,500.00	6,128.60	6,174.24	5,983.17	26.27	23.93	86.04	474.00	651.14	1,435.75	1,389.00	46.75	30.710	
6,551.55	6,131.00	6,134.48	5,957.69	26.99	23.94	82.47	503.38	642.92	1,461.96	1,414.86	47.10	31.039	
6,600.00	6,131.52	6,098.71	5,933.38	27.69	23.95	81.43	528.52	635.46	1,486.67	1,439.23	47.44	31.336	
6,700.00	6,132.61	6,033.35	5,885.78	29.24	23.94	79.45	571.14	621.77	1,539.12	1,490.94	48.18	31.945	
6,800.00	6,133.69	5,978.05	5,842.54	30.92	23.92	77.69	603.60	610.18	1,593.86	1,544.93	48.93	32.573	
6,900.00	6,134.77	5,931.16	5,803.97	32.70	23.89	76.15	628.37	600.41	1,651.15	1,601.47	49.68	33.239	
7,000.00	6,135.85	5,891.24	5,769.87	34.57	23.85	74.80	647.41	592.16	1,711.07	1,660.67	50.40	33.951	
7,100.00	6,136.93	5,857.03	5,739.81	36.51	23.81	73.62	662.16	585.17	1,773.64	1,722.55	51.09	34.716	
7,200.00	6,138.02	5,827.53	5,713.32	38.51	23.77	72.59	673.71	579.20	1,838.76	1,787.02	51.74	35.536	
7,300.00	6,139.10	5,800.00	5,688.18	40.57	23.73	71.62	683.47	573.71	1,906.32	1,853.97	52.35	36.414	
7,400.00	6,140.18	5,779.47	5,669.18	42.68	23.69	70.89	690.11	569.65	1,976.18	1,923.25	52.93	37.335	
7,500.00	6,141.26	5,750.00	5,641.57	44.82	23.64	69.84	698.67	563.91	2,048.21	1,994.79	53.42	38.344	
7,600.00	6,142.34	5,750.00	5,641.57	47.00	23.64	69.84	698.67	563.91	2,122.17	2,068.18	53.99	39.308	
7,700.00	6,143.43	5,726.66	5,619.46	49.21	23.58	69.00	704.63	559.43	2,197.94	2,143.54	54.40	40.402	
7,800.00	6,144.51	5,700.00	5,593.96	51.44	23.53	68.04	710.54	554.40	2,275.49	2,220.74	54.75	41.559	
7,900.00	6,145.59	5,700.00	5,593.96	53.70	23.53	68.04	710.54	554.40	2,354.44	2,299.24	55.20	42.653	
8,000.00	6,146.67	5,700.00	5,593.96	55.97	23.53	68.04	710.54	554.40	2,434.93	2,379.32	55.61	43.788	
8,100.00	6,147.75	5,678.44	5,573.16	58.27	23.47	67.26	714.62	550.40	2,516.59	2,460.72	55.87	45.044	
8,200.00	6,148.84	5,669.02	5,564.04	60.58	23.45	66.91	716.21	548.67	2,599.50	2,543.33	56.16	46.283	
8,307.51	6,150.00	5,650.00	5,545.56	63.07	23.40	66.22	719.03	545.22	2,689.89	2,633.49	56.40	47.690	
8,400.00	6,150.86	5,650.00	5,545.56	65.25	23.40	64.71	719.03	545.22	2,769.16	2,712.48	56.68	48.857	
8,467.09	6,151.32	5,650.00	5,545.56	66.86	23.40	63.45	719.03	545.22	2,827.95	2,771.08	56.87	49.727	
8,500.00	6,151.51	5,650.00	5,545.56	67.66	23.40	63.45	719.03	545.22	2,857.07	2,800.11	56.96	50.160	
8,600.00	6,152.08	5,650.00	5,545.56	70.09	23.40	63.45	719.03	545.22	2,946.06	2,888.84	57.22	51.488	
8,700.00	6,152.65	5,631.34	5,527.34	72.52	23.35	62.74	721.32	541.89	3,035.55	2,978.19	57.36	52.924	

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	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 3H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.00 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
8,800.00	6,153.22	5,625.27	5,521.40	74.97	23.33	62.50	721.97	540.81	3,125.71	3,068.16	57.55	54.315	
8,900.00	6,153.79	5,619.60	5,515.84	77.42	23.31	62.28	722.52	539.82	3,216.42	3,158.69	57.73	55.718	
9,000.00	6,154.36	5,600.00	5,496.61	79.88	23.25	61.53	724.10	536.41	3,307.74	3,249.93	57.81	57.215	
9,100.00	6,154.93	5,600.00	5,496.61	82.35	23.25	61.53	724.10	536.41	3,399.36	3,341.36	58.00	58.612	
9,200.00	6,155.50	5,600.00	5,496.61	84.82	23.25	61.53	724.10	536.41	3,491.44	3,433.27	58.17	60.020	
9,300.00	6,156.07	5,600.00	5,496.61	87.30	23.25	61.53	724.10	536.41	3,583.94	3,525.61	58.33	61.437	
9,400.00	6,156.64	5,600.00	5,496.61	89.78	23.25	61.53	724.10	536.41	3,676.84	3,618.35	58.49	62.865	
9,500.00	6,157.21	5,600.00	5,496.61	92.27	23.25	61.53	724.10	536.41	3,770.10	3,711.47	58.63	64.300	
9,600.00	6,157.78	5,600.00	5,496.61	94.76	23.25	61.53	724.10	536.41	3,863.70	3,804.93	58.77	65.743	
9,700.00	6,158.35	5,600.00	5,496.61	97.25	23.25	61.53	724.10	536.41	3,957.61	3,898.71	58.90	67.193	
9,800.00	6,158.92	5,600.00	5,496.61	99.75	23.25	61.53	724.10	536.41	4,051.81	3,992.79	59.02	68.648	
9,900.00	6,159.49	5,578.43	5,475.39	102.25	23.18	60.70	725.22	532.74	4,146.03	4,087.02	59.02	70.251	
10,000.00	6,160.06	5,575.42	5,472.42	104.75	23.17	60.59	725.32	532.24	4,240.69	4,181.57	59.11	71.738	
10,100.00	6,160.63	5,572.56	5,469.60	107.26	23.16	60.48	725.41	531.76	4,335.57	4,276.36	59.20	73.230	
10,165.70	6,161.00	5,570.75	5,467.81	108.91	23.15	60.41	725.46	531.45	4,398.03	4,338.77	59.26	74.212	
10,200.00	6,161.19	5,569.83	5,466.91	109.76	23.15	61.38	725.48	531.30	4,430.61	4,371.32	59.29	74.725	
10,300.00	6,161.75	5,550.00	5,447.35	112.24	23.08	63.30	725.71	528.03	4,525.27	4,466.00	59.27	76.355	
10,400.00	6,162.30	5,550.00	5,447.35	114.66	23.08	65.57	725.71	528.03	4,618.90	4,559.55	59.35	77.826	
10,500.00	6,162.83	5,550.00	5,447.35	117.03	23.08	67.52	725.71	528.03	4,711.67	4,652.25	59.42	79.299	
10,600.00	6,163.34	5,550.00	5,447.35	119.34	23.08	69.20	725.71	528.03	4,803.50	4,744.04	59.47	80.776	
10,661.13	6,163.65	5,550.00	5,447.35	120.73	23.08	70.12	725.71	528.03	4,859.17	4,799.68	59.49	81.684	
10,700.00	6,163.84	5,550.00	5,447.35	121.60	23.08	70.12	725.71	528.03	4,894.46	4,834.96	59.50	82.262	
10,800.00	6,164.34	5,550.00	5,447.35	123.85	23.08	70.12	725.71	528.03	4,985.52	4,925.99	59.53	83.752	
10,900.00	6,164.83	5,550.00	5,447.35	126.10	23.08	70.12	725.71	528.03	5,076.91	5,017.35	59.55	85.248	
11,000.00	6,165.33	5,550.00	5,447.35	128.35	23.08	70.12	725.71	528.03	5,168.62	5,109.04	59.58	86.749	
11,100.00	6,165.82	5,550.00	5,447.35	130.60	23.08	70.12	725.71	528.03	5,260.63	5,201.03	59.61	88.255	
11,200.00	6,166.32	5,550.00	5,447.35	132.86	23.08	70.12	725.71	528.03	5,352.93	5,293.30	59.63	89.766	
11,300.00	6,166.82	5,550.00	5,447.35	135.12	23.08	70.12	725.71	528.03	5,445.50	5,385.85	59.66	91.280	
11,400.00	6,167.31	5,550.00	5,447.35	137.38	23.08	70.12	725.71	528.03	5,538.33	5,478.65	59.68	92.799	
11,500.00	6,167.81	5,550.00	5,447.35	139.64	23.08	70.12	725.71	528.03	5,631.41	5,571.70	59.71	94.320	
11,538.70	6,168.00	5,550.00	5,447.35	140.52	23.08	70.12	725.71	528.03	5,667.49	5,607.77	59.71	94.910	
11,600.00	6,168.29	5,550.00	5,447.35	141.92	23.08	68.91	725.71	528.03	5,724.93	5,665.20	59.73	95.843	
11,662.85	6,168.56	5,550.00	5,447.35	143.38	23.08	67.50	725.71	528.03	5,784.33	5,724.58	59.76	96.797	
11,700.00	6,168.71	5,550.00	5,447.35	144.25	23.08	67.50	725.71	528.03	5,819.59	5,759.82	59.77	97.361	
11,800.00	6,169.12	5,550.00	5,447.35	146.59	23.08	67.50	725.71	528.03	5,914.62	5,854.81	59.82	98.881	
11,900.00	6,169.53	5,550.00	5,447.35	148.94	23.08	67.50	725.71	528.03	6,009.82	5,949.96	59.86	100.402	
12,000.00	6,169.94	5,550.00	5,447.35	151.29	23.08	67.50	725.71	528.03	6,105.17	6,045.27	59.90	101.925	
12,100.00	6,170.35	5,550.00	5,447.35	153.63	23.08	67.50	725.71	528.03	6,200.66	6,140.72	59.94	103.448	
12,200.00	6,170.76	5,550.00	5,447.35	155.98	23.08	67.50	725.71	528.03	6,296.30	6,236.32	59.98	104.972	
12,300.00	6,171.16	5,550.00	5,447.35	158.33	23.08	67.50	725.71	528.03	6,392.06	6,332.04	60.02	106.497	
12,400.00	6,171.57	5,550.00	5,447.35	160.68	23.08	67.50	725.71	528.03	6,487.96	6,427.90	60.06	108.021	
12,500.00	6,171.98	5,550.00	5,447.35	163.03	23.08	67.50	725.71	528.03	6,583.98	6,523.88	60.10	109.546	
12,600.00	6,172.39	5,550.00	5,447.35	165.39	23.08	67.50	725.71	528.03	6,680.11	6,619.97	60.14	111.070	
12,700.00	6,172.80	5,550.00	5,447.35	167.74	23.08	67.50	725.71	528.03	6,776.36	6,716.18	60.18	112.595	
12,800.00	6,173.21	5,550.00	5,447.35	170.10	23.08	67.50	725.71	528.03	6,872.71	6,812.49	60.22	114.119	
12,900.00	6,173.61	5,550.00	5,447.35	172.45	23.08	67.50	725.71	528.03	6,969.17	6,908.91	60.27	115.642	
13,000.00	6,174.02	5,550.00	5,447.35	174.81	23.08	67.50	725.71	528.03	7,065.73	7,005.42	60.31	117.164	
13,100.00	6,174.43	5,550.00	5,447.35	177.16	23.08	67.50	725.71	528.03	7,162.38	7,102.03	60.35	118.686	
13,200.00	6,174.84	5,550.00	5,447.35	179.52	23.08	67.50	725.71	528.03	7,259.12	7,198.73	60.39	120.207	
13,300.00	6,175.25	5,550.00	5,447.35	181.88	23.08	67.50	725.71	528.03	7,355.94	7,295.51	60.43	121.726	
13,400.00	6,175.66	5,550.00	5,447.35	184.24	23.08	67.50	725.71	528.03	7,452.86	7,392.38	60.47	123.244	
13,500.00	6,176.06	5,527.38	5,425.03	186.60	23.00	66.82	725.30	524.38	7,549.55	7,489.17	60.38	125.038	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design: Nautilus 2407-28M - Nautilus 2407-28M 3H - OH - Plan #3

Offset Site Error: 0.00 usft

Survey Program: 0-MWD+HDGM

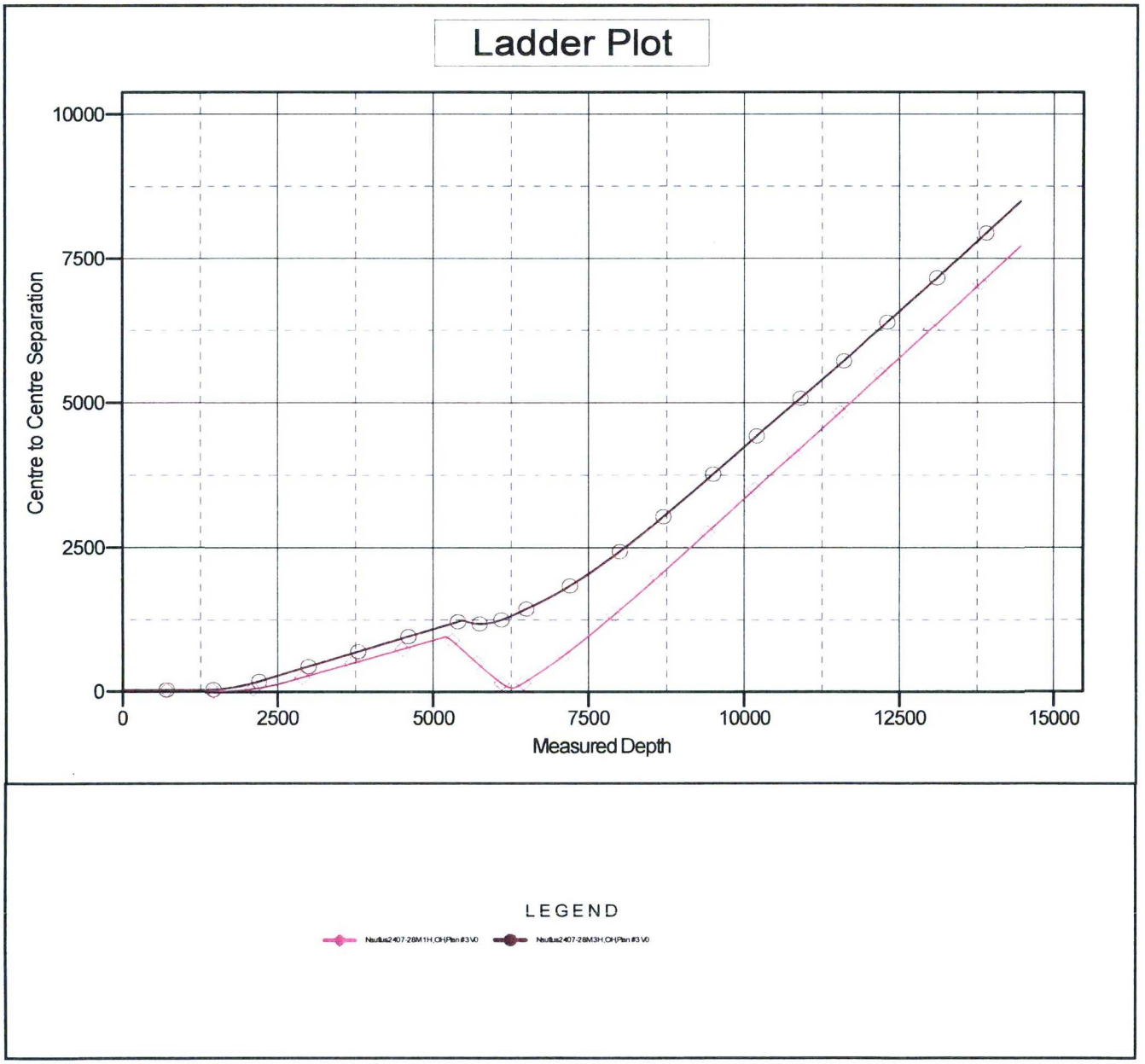
Rule Assigned:

Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,600.00	6,176.47	5,526.67	5,424.34	188.96	23.00	66.79	725.28	524.27	7,646.60	7,586.18	60.42	126.565	
13,700.00	6,176.88	5,525.99	5,423.66	191.32	22.99	66.77	725.26	524.16	7,743.72	7,683.27	60.46	128.090	
13,800.00	6,177.29	5,525.32	5,423.00	193.68	22.99	66.75	725.23	524.06	7,840.92	7,780.43	60.49	129.614	
13,900.00	6,177.70	5,524.67	5,422.36	196.04	22.99	66.73	725.21	523.95	7,938.19	7,877.65	60.53	131.136	
14,000.00	6,178.11	5,524.04	5,421.74	198.40	22.99	66.71	725.18	523.85	8,035.52	7,974.94	60.57	132.655	
14,100.00	6,178.51	5,523.42	5,421.13	200.76	22.98	66.70	725.16	523.76	8,132.91	8,072.30	60.62	134.173	
14,200.00	6,178.92	5,522.82	5,420.54	203.13	22.98	66.68	725.14	523.66	8,230.37	8,169.72	60.66	135.688	
14,300.00	6,179.33	5,500.00	5,398.03	205.49	22.89	65.99	723.87	520.10	8,328.18	8,267.63	60.56	137.526	
14,400.00	6,179.74	5,500.00	5,398.03	207.85	22.89	65.99	723.87	520.10	8,425.74	8,365.14	60.60	139.032	
14,464.07	6,180.00	5,500.00	5,398.03	209.37	22.89	65.99	723.87	520.10	8,488.28	8,427.65	60.63	139.995	

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

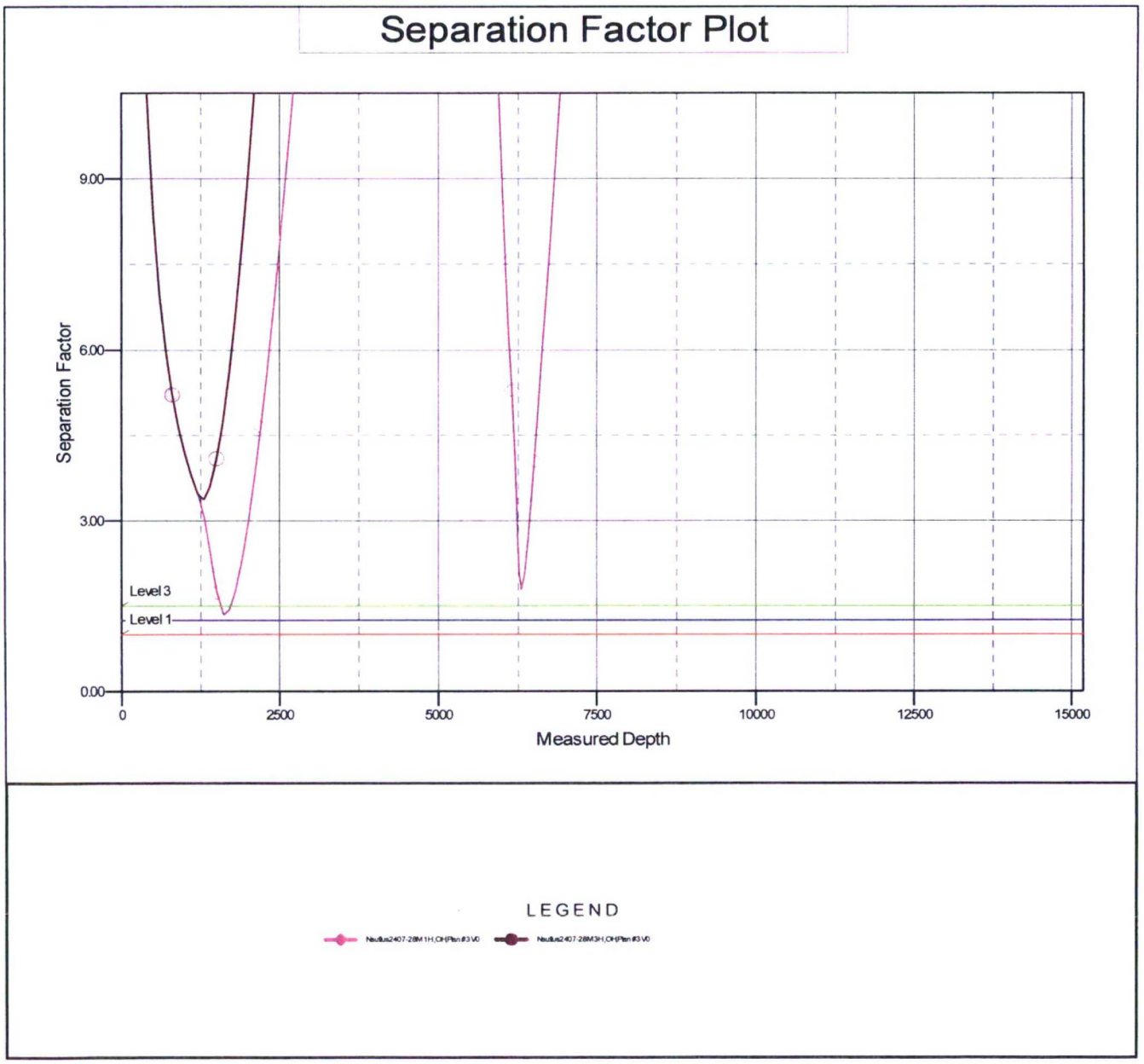
Reference Depths are relative to GL 7385' @ 7385.00usft	Coordinates are relative to: Nautilus 2407-28M 2H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Western Zone
Central Meridian is -107.8333334	Grid Convergence at Surface is: 0.15°



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

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Nautilus 2407-28M 2H
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 7385' @ 7385.00usft
Reference Site:	Nautilus 2407-28M	**MD Reference:**	GL 7385' @ 7385.00usft
Site Error:	0.00 usft	**North Reference:**	True
Reference Well:	Nautilus 2407-28M 2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to GL 7385' @ 7385.00usft	Coordinates are relative to: Nautilus 2407-28M 2H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Western Zone
Central Meridian is -107.8333334	Grid Convergence at Surface is: 0.15°



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

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1
Typical BOP setup

Location: San Juan Basin, New Mexcio