**Well Name:** CARRACAS 21A

**Well Location:** T32N / R5W / SEC 21 / SWSE / 36.96042 / -107.36562

**County or Parish/State:** RIO ARRIBA / NM

**Well Number:** 1

**Type of Well:** OTHER

**Allottee or Tribe Name:**

**Lease Number:** NMNM30351

**Unit or CA Name:**

**Unit or CA Number:**

**US Well Number:** 300393016700S1

**Well Status:** Producing Gas Well

**Operator:** MORNINGSTAR PARTNERS LP

## Notice of Intent

**Sundry ID:** 2647213

**Type of Submission:** Notice of Intent

**Type of Action:** Other

**Date Sundry Submitted:** 12/06/2021

**Time Sundry Submitted:** 12:28

**Date proposed operation will begin:** 04/01/2022

**Procedure Description:** MorningStar requests approval to drill a horizontal sidetrack off of the Carracas 21A1. The proposed lateral will be within the current lease. Attached are the Proposed Procedure, OCD Form C-102 Plat, Current and Proposed WBDs, Well Path Plan, Directional Plan, and Anti-Collision Report.

## Surface Disturbance

**Is any additional surface disturbance proposed?:** No

## NOI Attachments

**Procedure Description**

Carracas_Unit_21A_1_1ST__Anti_Collision_Rpt_20211206122717.pdf

Carracas_Unit_21A_1_1ST_Directional_Plan_20211206122708.pdf

Carracas_Unit_21A_1_1ST_Well_Path_Plan_20211206122655.pdf

Carracas_21A_1ST_WBD_Proposed_20211206122638.pdf

Carracas_21A_1_WBD_current_06_10_2021_20211206122627.pdf

CARRACAS_21A1_1ST_C102_Plat_20211206122615.pdf

Carracas_21A1_1ST_Proposed_Procedure_20211206122552.pdf

**Well Name:** CARRACAS 21A

**Well Location:** T32N / R5W / SEC 21 / SWSE / 36.96042 / -107.36562

**County or Parish/State:** RIO ARRIBA / NM

**Well Number:** 1

**Type of Well:** OTHER

**Allottee or Tribe Name:**

**Lease Number:** NMNM30351

**Unit or CA Name:**

**Unit or CA Number:**

**US Well Number:** 300393016700S1

**Well Status:** Producing Gas Well

**Operator:** MORNINGSTAR PARTNERS LP

## 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:** CONNIE BLAYLOCK

**Signed on:** DEC 06, 2021 12:27 PM

**Name:** MORNINGSTAR PARTNERS LP

**Title:** Regulatory Technician

**Street Address:** 400 W 7th St.

**City:** Forth Worth **State:** TX

**Phone:** (817) 334-7882

**Email address:** CBLAYLOCK@MSPARTNERS.COM

## Field Representative

**Representative Name:** AMY BYARS

**Street Address:**

**City:** **State:** **Zip:**

**Phone:**

**Email address:** ABYARS@MSPARTNERS.COM

## BLM Point of Contact

**BLM POC Name:** DAVE J MANKIEWICZ

**BLM POC Title:** AFM-Minerals

**BLM POC Phone:** 5055647761

**BLM POC Email Address:** DMANKIEW@BLM.GOV

**Disposition:** Approved

**Disposition Date:** 12/21/2021

**Signature:** Dave Mankiewicz

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 |
|---|---|---|
| 30-039-30167 | 71629 | BASIN FRIUTLAND COAL |

| 4 Property Code | 5 Property Name | 6 Well Number |
|---|---|---|
| 329019 | CARRACAS 21A | 1-1ST |

| 7 OGRID No. | 8 Operator Name | 9 Elevation |
|---|---|---|
| 330132 | MORNINGSTAR OPERATING LLC | 7064' |

## 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 |
|---|---|---|---|---|---|---|---|---|---|
| O | 21 | 32N | 5W | | 698' | SOUTH | 2020' | EAST | RIO ARRIBA |

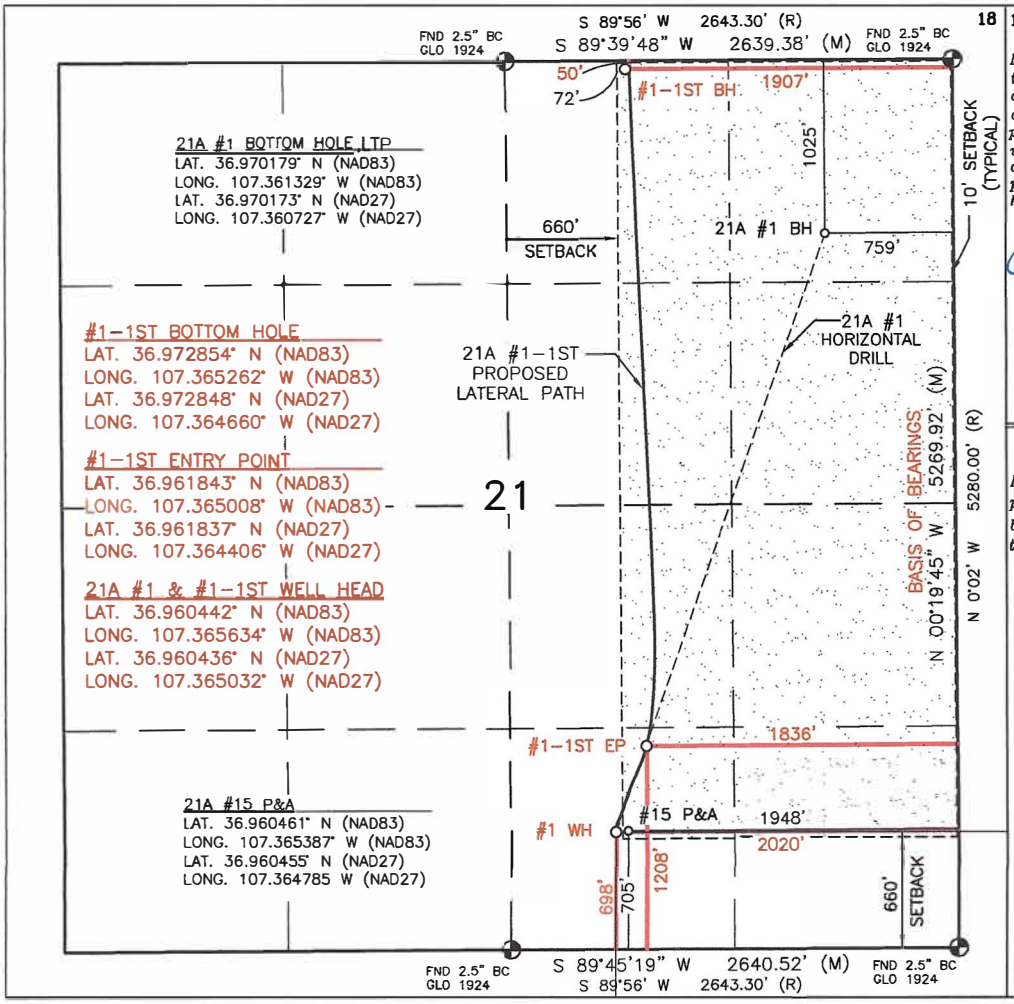
## 11 Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| B | 21 | 32N | 5W | | 50' | NORTH | 1907' | EAST | RIO ARRIBA |

| 12 Dedicated Acres | 13 Joint or Infill | 14 Consolidation Code | 15 Order No. |
|---|---|---|---|
| E/2 SEC. 21<br>320.00 ACRES | | | R-13119 |

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




18

## 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.*

Connie Blaylock 1/5/22
Signature Date

Connie Blaylock
Printed Name

cblaylock@mspartners.com
E-mail Address

## 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.*

NOVEMBER 5, 2021
Date of Survey

Signature and Seal of Professional Surveyor:


Certificate Number 11393

Carracas 21 A 1 sidetrack procedures

MorningStar Operating requests approval to perform the following Sidetrack Procedure:

1. Prepare existing well for drilling operations with a Pulling Unit
2. Pull tubing and rods
3. PU Mill and TIH to verify casing is clean
4. Set bottom Bridge Plug at approximately 3,900', above open Liner
5. Roll hole and pressure test casing
6. Set top Bridge Plug at approximately 3,823' below proposed window area
7. Release Pulling Unit
8. MIRU drilling rig
9. RU BOP and test
10. PU whipstock and casing mill assembly and set whipstock for casing exit at 3,803' MD
11. Release whip and mill window f/ 3,796' to 3,803'
12. TOOH for curve BHA and drill sidetrack
13. Planned exit at 3,803' MD / 3,627' TVD (directional pilot well)
14. Drill 6-1/4" curve and lateral from 3,803' MD / 3,627' TVD to 7,858' MD / 3,635' TVD at 91.4° Inc, 357.57° azimuth
15. TOOH and run 4-1/2" pre-perforated liner from approximately 3,810' MD to 7,848' MD
16. Rig down and release drilling rig
17. MIRU Pulling Unit
18. RIH and retrieve whipstock w/ work string and jars
19. Retrieve or drill out upper Bridge Plug at 3,823'
20. LD work string
21. Run production tubing and equipment to test lateral completion
22. Secure well, rig down and move off location

ATTACHED ARE WELLPATH RPT,PLAT(C-102), WBD.

MorningStar Operating, LLC

**Carracas 21 A 1**
**Rio Arriba County, NM**
**32N-5W Section 21**

**TD – 7,080' MD; 3,685' TVD**

**12 1/4" hole to 230'**
**Csg: 5 jts – 9 5/8" 32.3# H-40 ST&C**
**Setting Depth: 223'**

**Cement**
**125 sx Class G (148 ft$^3$)**
**Circ. 10 bbls cmt to surface**

**8 3/4" hole to 4,380'**
**Csg: 99 jts – 7" 23# J-55 LT&C**
**Setting Depth: 4,355'**

**Cement**
**Lead: 550 sx Halliburton Light**
**Tail: 125 sx Class G (1422 ft$^3$)**
**Circ. 20 bbls cmt to surface**

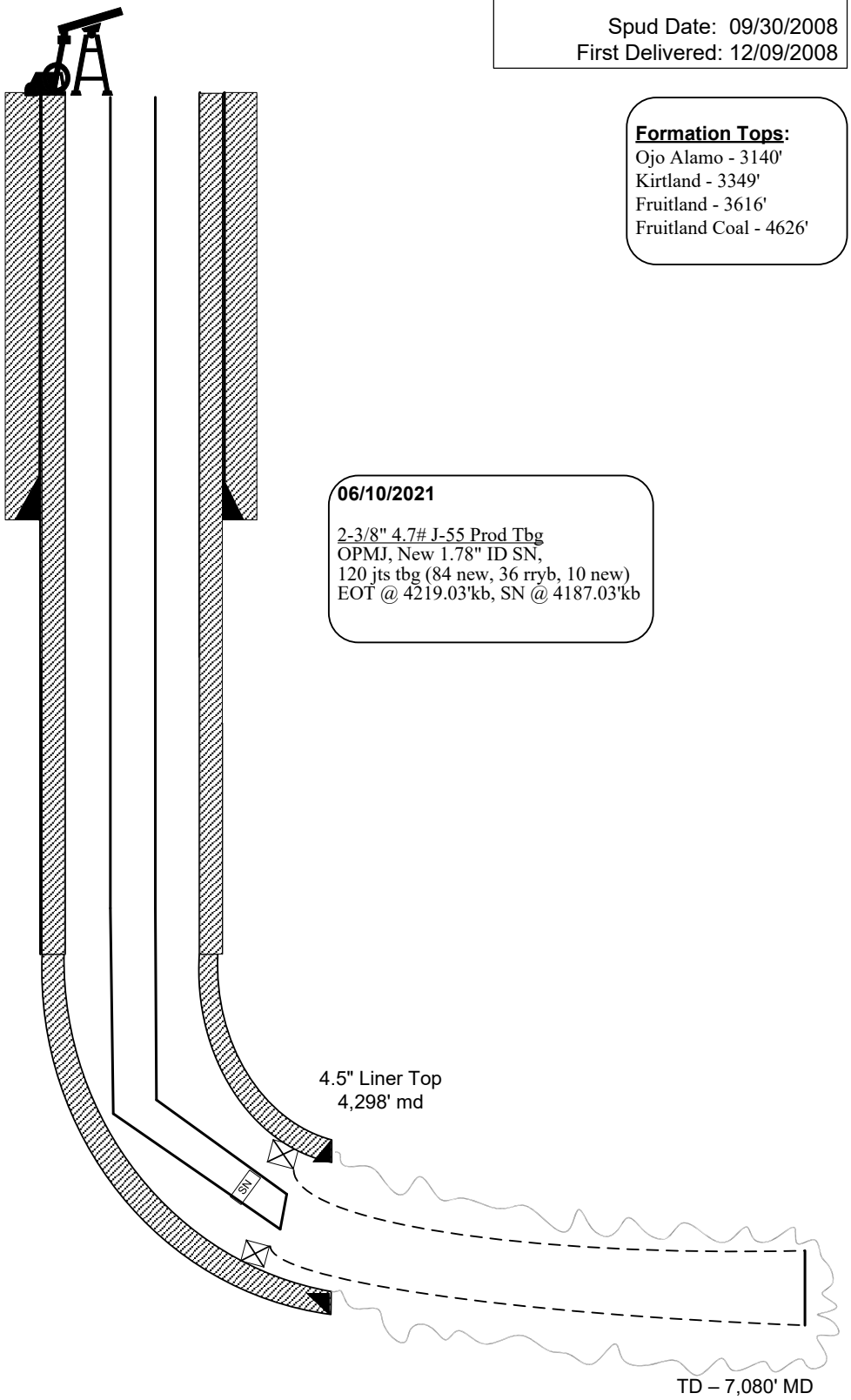
**6 1/4" hole to 7,080'**
**Liner: 66 jts- 4 1/2" 11.6# J-55 LT&C**
**Setting Depth: 7,080'**
**TOL: 4,298'**
**No cement**

Prepared by: CArnold
Date: 02/18/2019
Updated: B.Savage 06/14/2021

KB = 14'
GL = 7,065'
API# 30-039-30167

Spud Date: 09/30/2008
First Delivered: 12/09/2008

**Formation Tops:**
Ojo Alamo - 3140'
Kirtland - 3349'
Fruitland - 3616'
Fruitland Coal - 4626'




**06/10/2021**

2-3/8" 4.7# J-55 Prod Tbg
OPMJ, New 1.78" ID SN,
120 jts tbg (84 new, 36 rryb, 10 new)
EOT @ 4219.03'kb, SN @ 4187.03'kb

Perforations:
Pre-Perforated Liner
4349-7031'
16,092 holes @ 6 jspf

# MorningStar Operating, LLC

# Sidetrack Proposal

Prepared by: CArnold
Date: 02/18/2019
Updated: B.Savage 06/14/2021
Updated: J Marschall 11/09/2021
KB = 18'
GL = 7,064'
API# 30-039-30167

Spud Date: 09/30/2008
First Delivered: 12/09/2008

## Carracas 21 A 1
## Rio Arriba County, NM
## 32N-5W Section 21

**Sidetrack TD – 7,848' MD; 3,657' TVD**
**Lower TD – 7,080' MD; 3,685' TVD**

**12 1/4" hole to 230'**
**Csg: 5 jts – 9 5/8" 32.3# H-40 ST&C**
**Setting Depth: 223'**

**Cement**
**125 sx Class G (148 ft$^3$)**
**Circ. 10 bbls cmt to surface**

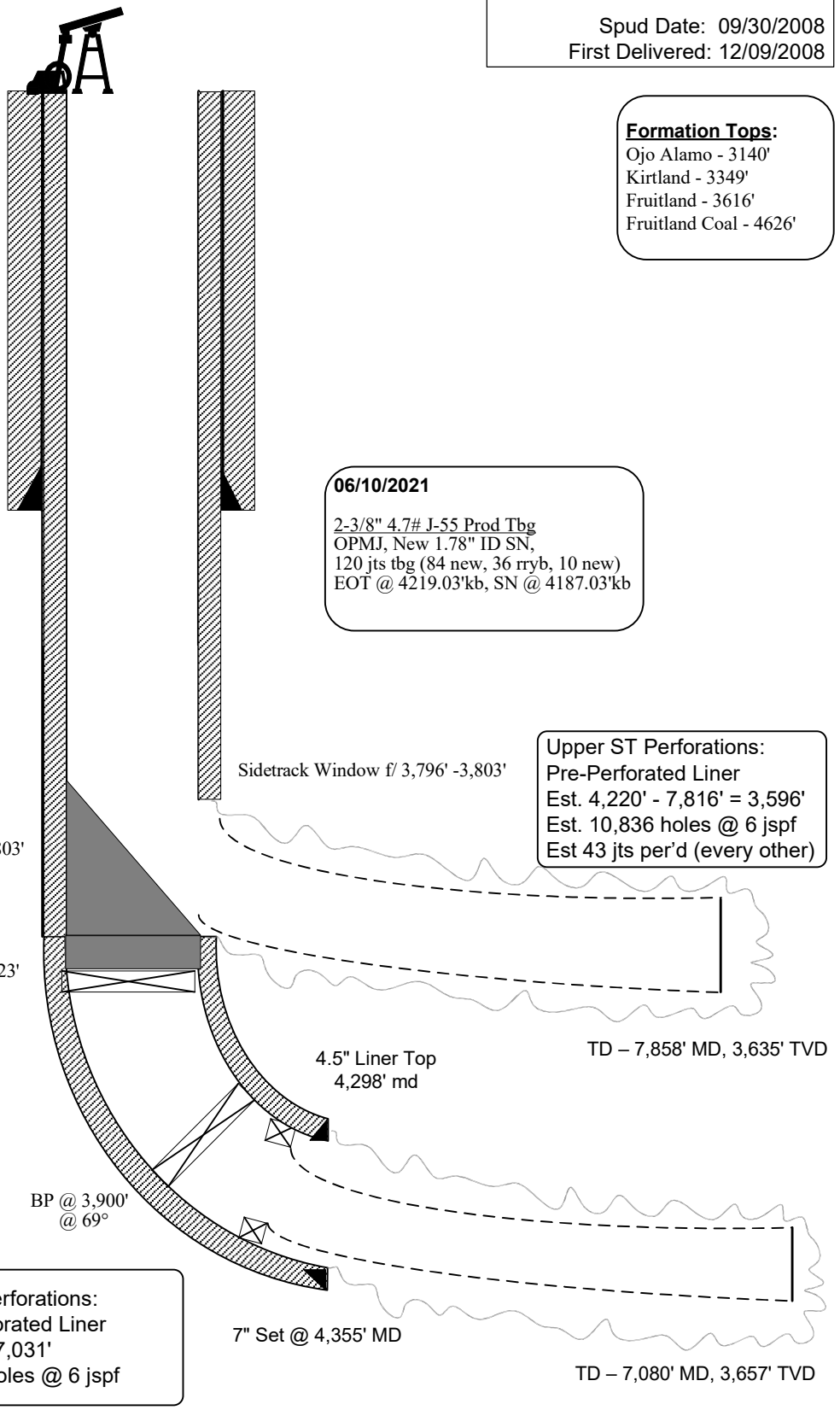
**8 3/4" hole to 4,380'**
**Csg: 99 jts – 7" 23# J-55 LT&C**
**Setting Depth: 4,355'**

**Cement**
**Lead: 550 sx Halliburton Light**
**Tail: 125 sx Class G (1422 ft$^3$)**
**Circ. 20 bbls cmt to surface**

**6 ¼" Upper sidetrack hole to 7,858**
**Liner: Est. 96 jts – 4 ½" 11.6# J-55 LT&C**
**Setting Depth 7,848'**
**TOL: 3,810'**
**No Cement**

**6 ¼" Lower lateral hole to 7,080'**
**Liner: 66 jts- 4 1/2" 11.6# J-55 LT&C**
**Setting Depth: 7,080'**
**TOL: 4,298'**
**No cement**

**Formation Tops:**
Ojo Alamo - 3140'
Kirtland - 3349'
Fruitland - 3616'
Fruitland Coal - 4626'



**Company:** MorningStar Partners
**Field:** Rio Arriba County, NM
**Location:** Carracas Unit 21A 1
**Well Location:** Carracas Unit 21A 1
**Wellbore:** ST01
**Plan:** Plan 3
**GL:** GL: 7064' + 18' KB @ 7082.00usft

Azimuths to True North
Magnetic North: 8.69°

Magnetic Field
Strength: 49729.4nT
Dip Angle: 63.43°
Date: 11/1/2021
Model: IGRF2020

To convert a Magnetic Direction to a True Direction, Add 8.69° East

PROJECT DETAILS: Rio Arriba County, NM

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico West 3003
System Datum: Mean Sea Level

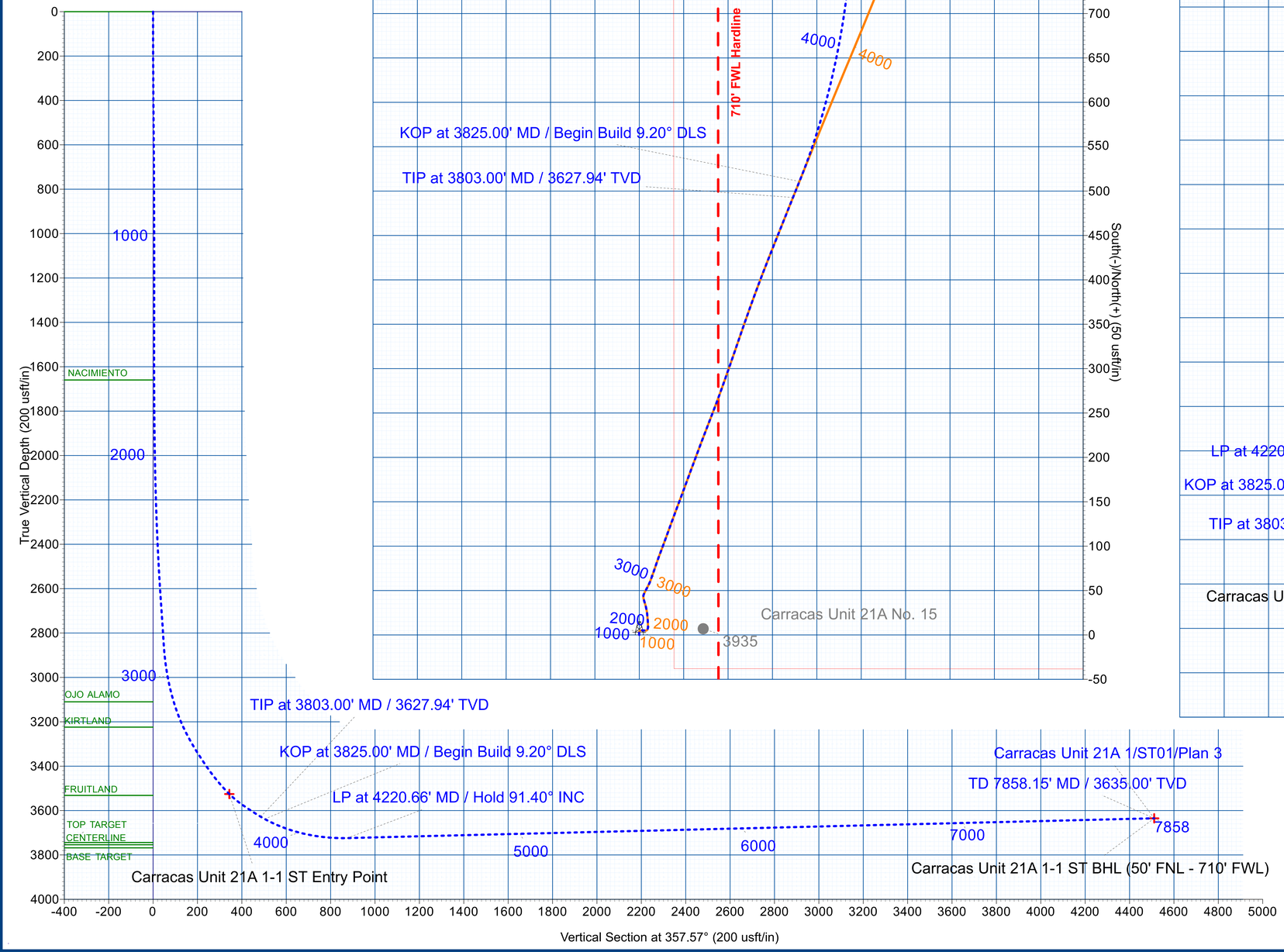
WELL DETAILS: Carracas Unit 21A 1

GL: 7064' + 18' KB @ 7082.00usft 7064.00

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 2169202.28 | 636822.39 | 36.960436 | -107.365032 |

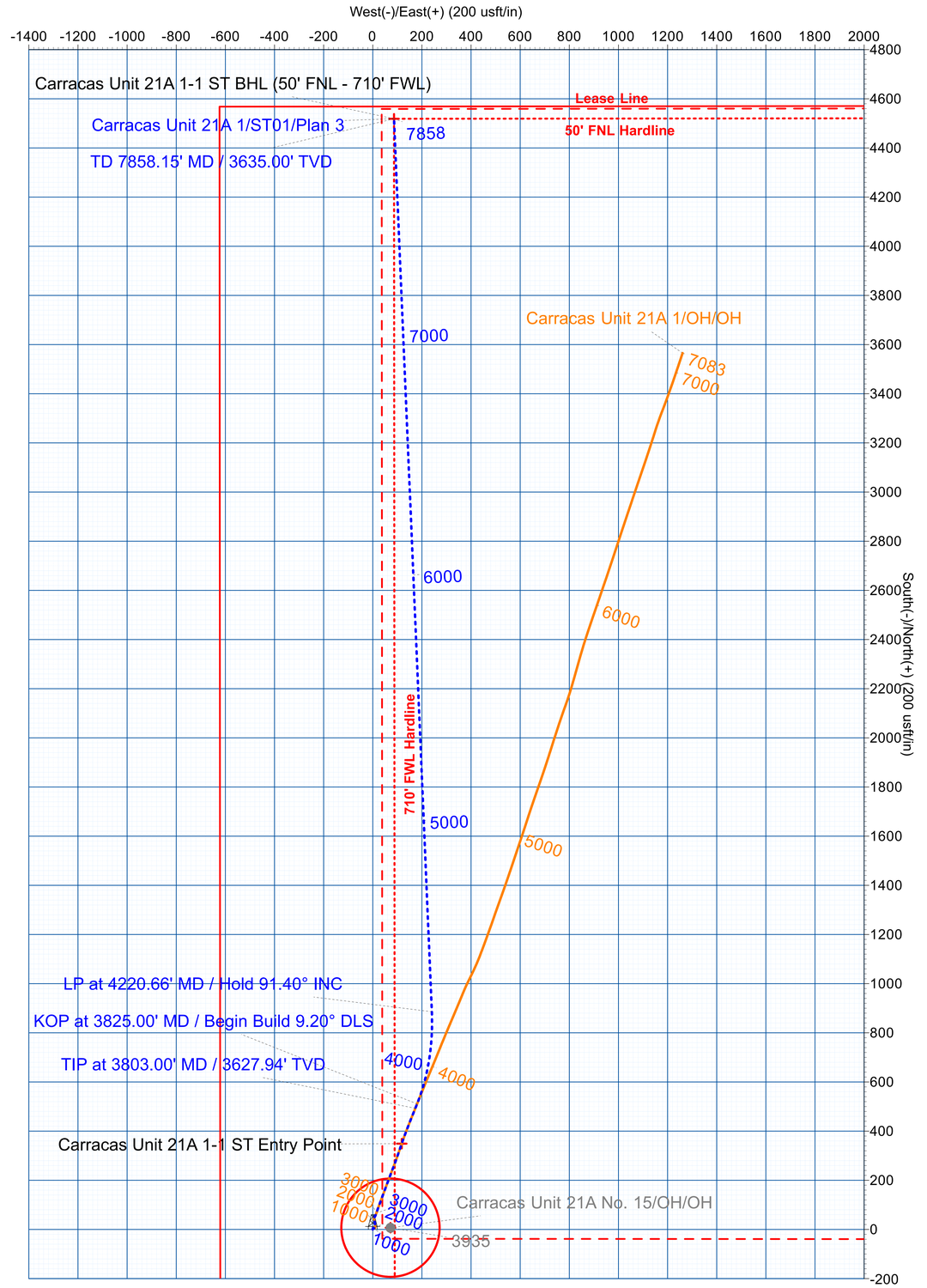
SECTION DETAILS

| MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation |
|---|---|---|---|---|---|---|---|---|---|
| 3803.00 | 61.58 | 21.90 | 3627.94 | 492.83 | 173.18 | 0.00 | 0.00 | 485.04 | TIP at 3803.00' MD / 3627.94' TVD |
| 3825.00 | 63.63 | 21.97 | 3638.06 | 510.95 | 180.48 | 9.32 | 1.75 | 502.84 | KOP at 3825.00' MD / Begin Build 9.20° DLS |
| 4220.66 | 91.40 | 357.57 | 3724.00 | 885.61 | 240.45 | 9.20 | -44.09 | 874.62 | LP at 4220.66' MD / Hold 91.40° INC |
| 7858.15 | 91.40 | 357.57 | 3635.00 | 4518.75 | 86.45 | 0.00 | 0.00 | 4511.02 | TD 7858.15' MD / 3635.00' TVD |










FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---|---|---|
| 1659.88 | 1659.94 | NACIMIENTO |
| 3107.74 | 3114.09 | OJO ALAMO |
| 3220.71 | 3236.14 | KIRTLAND |
| 3523.66 | 3614.62 | FRUITLAND |
| 3723.78 | 4174.09 | TOP TARGET |

Plan: Plan 3 (Carracas Unit 21A 1/ST01)
Created By: Katherine Edwards Date: 17:16, November 01 2021

# MorningStar Partners

**Rio Arriba County, NM**
**Carracas Unit 21A 1**
**Carracas Unit 21A 1**

**ST01**

**Plan: Plan 3**

# Standard Survey Report

**09 November, 2021**

LEGACY DIRECTIONAL

# Legacy Directional

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Well:** | Carracas Unit 21A 1 | **North Reference:** | True |
| **Wellbore:** | ST01 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan 3 | **Database:** | EDM 5000.14 Single User Db |

**Project** Rio Arriba County, NM

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico West 3003 | | |

**Site** Carracas Unit 21A 1

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 2,169,202.28 usft | **Latitude:** | 36.960436 |
| **From:** | Map | **Easting:** | 636,822.39 usft | **Longitude:** | -107.365032 |
| **Position Uncertainty:** | 0.00 usft | **Slot Radius:** | 13-3/16 " | | |

**Well** Carracas Unit 21A 1

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 usft | **Northing:** | 2,169,202.28 usft | **Latitude:** | 36.960436 |
| | **+E/-W** | 0.00 usft | **Easting:** | 636,822.39 usft | **Longitude:** | -107.365032 |
| **Position Uncertainty** | | 0.00 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 7,064.00 usft |
| **Grid Convergence:** | | 0.28 ° | | | | |

**Wellbore** ST01

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2020 | 11/1/2021 | 8.69 | 63.43 | 49,729.44396299 |

**Design** Plan 3

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 3,803.00 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 357.57 |

**Survey Tool Program** **Date** 11/1/2021

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 103.00 | 3,803.00 | Surveys (OH) | MWD+IGRF | OWSG MWD + IGRF or WMM |
| 3,803.00 | 7,858.15 | Plan 3 (ST01) | MWD+IGRF | OWSG MWD + IGRF or WMM |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 103.00 | 0.11 | 356.15 | 103.00 | 0.10 | -0.01 | 0.10 | 0.11 | 0.11 | 0.00 |
| 203.00 | 0.22 | 356.15 | 203.00 | 0.39 | -0.03 | 0.39 | 0.11 | 0.11 | 0.00 |
| 303.00 | 0.32 | 356.15 | 303.00 | 0.86 | -0.06 | 0.86 | 0.10 | 0.10 | 0.00 |
| 403.00 | 0.43 | 356.15 | 403.00 | 1.51 | -0.10 | 1.51 | 0.11 | 0.11 | 0.00 |
| 495.00 | 0.53 | 356.15 | 494.99 | 2.28 | -0.15 | 2.28 | 0.11 | 0.11 | 0.00 |
| 503.00 | 0.52 | 356.91 | 502.99 | 2.35 | -0.16 | 2.36 | 0.15 | -0.13 | 9.50 |
| 603.00 | 0.44 | 8.48 | 602.99 | 3.18 | -0.13 | 3.19 | 0.13 | -0.08 | 11.57 |
| 703.00 | 0.38 | 24.38 | 702.99 | 3.87 | 0.07 | 3.86 | 0.13 | -0.06 | 15.90 |

# Legacy Directional

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Well:** | Carracas Unit 21A 1 | **North Reference:** | True |
| **Wellbore:** | ST01 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan 3 | **Database:** | EDM 5000.14 Single User Db |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 803.00 | 0.36 | 43.80 | 802.98 | 4.39 | 0.42 | 4.37 | 0.13 | -0.02 | 19.42 |
| 903.00 | 0.39 | 63.03 | 902.98 | 4.78 | 0.94 | 4.73 | 0.13 | 0.03 | 19.23 |
| 995.00 | 0.44 | 77.50 | 994.98 | 4.99 | 1.57 | 4.92 | 0.13 | 0.05 | 15.73 |
| 1,003.00 | 0.44 | 78.02 | 1,002.98 | 5.01 | 1.63 | 4.93 | 0.05 | 0.00 | 6.50 |
| 1,103.00 | 0.49 | 83.83 | 1,102.98 | 5.13 | 2.43 | 5.03 | 0.07 | 0.05 | 5.81 |
| 1,203.00 | 0.54 | 88.60 | 1,202.97 | 5.19 | 3.32 | 5.04 | 0.07 | 0.05 | 4.77 |
| 1,303.00 | 0.59 | 92.54 | 1,302.97 | 5.18 | 4.31 | 4.99 | 0.06 | 0.05 | 3.94 |
| 1,403.00 | 0.65 | 95.82 | 1,402.96 | 5.10 | 5.39 | 4.87 | 0.07 | 0.06 | 3.28 |
| 1,493.00 | 0.70 | 98.32 | 1,492.96 | 4.97 | 6.44 | 4.69 | 0.06 | 0.06 | 2.78 |
| 1,503.00 | 0.69 | 96.84 | 1,502.95 | 4.95 | 6.56 | 4.67 | 0.21 | -0.10 | -14.80 |
| 1,603.00 | 0.57 | 78.25 | 1,602.95 | 4.98 | 7.64 | 4.65 | 0.24 | -0.12 | -18.59 |
| 1,703.00 | 0.53 | 54.07 | 1,702.94 | 5.35 | 8.51 | 4.99 | 0.23 | -0.04 | -24.18 |
| 1,803.00 | 0.60 | 31.07 | 1,802.94 | 6.07 | 9.15 | 5.68 | 0.24 | 0.07 | -23.00 |
| 1,903.00 | 0.73 | 14.51 | 1,902.93 | 7.14 | 9.58 | 6.73 | 0.23 | 0.13 | -16.56 |
| 1,989.00 | 0.88 | 4.96 | 1,988.92 | 8.33 | 9.78 | 7.91 | 0.23 | 0.17 | -11.10 |
| 2,003.00 | 0.94 | 3.97 | 2,002.92 | 8.55 | 9.79 | 8.13 | 0.44 | 0.43 | -7.07 |
| 2,103.00 | 1.36 | 359.38 | 2,102.90 | 10.55 | 9.84 | 10.13 | 0.43 | 0.42 | -4.59 |
| 2,203.00 | 1.79 | 356.99 | 2,202.86 | 13.30 | 9.74 | 12.88 | 0.43 | 0.43 | -2.39 |
| 2,303.00 | 2.23 | 355.52 | 2,302.80 | 16.80 | 9.51 | 16.38 | 0.44 | 0.44 | -1.47 |
| 2,403.00 | 2.66 | 354.53 | 2,402.71 | 21.05 | 9.13 | 20.64 | 0.43 | 0.43 | -0.99 |
| 2,479.00 | 2.99 | 353.97 | 2,478.62 | 24.78 | 8.76 | 24.38 | 0.44 | 0.43 | -0.74 |
| 2,503.00 | 3.13 | 352.04 | 2,502.58 | 26.05 | 8.60 | 25.66 | 0.72 | 0.58 | -8.04 |
| 2,603.00 | 3.74 | 345.59 | 2,602.40 | 31.91 | 7.41 | 31.57 | 0.72 | 0.61 | -6.45 |
| 2,663.00 | 4.13 | 342.66 | 2,662.26 | 35.87 | 6.28 | 35.57 | 0.73 | 0.65 | -4.88 |
| 2,693.00 | 3.93 | 343.80 | 2,692.19 | 37.89 | 5.67 | 37.61 | 0.72 | -0.67 | 3.80 |
| 2,703.00 | 4.02 | 344.08 | 2,702.17 | 38.55 | 5.48 | 38.29 | 0.92 | 0.90 | 2.80 |
| 2,724.00 | 4.22 | 344.64 | 2,723.11 | 40.00 | 5.07 | 39.75 | 0.97 | 0.95 | 2.67 |
| 2,754.00 | 3.96 | 353.34 | 2,753.03 | 42.10 | 4.66 | 41.86 | 2.24 | -0.87 | 29.00 |
| 2,785.00 | 3.52 | 8.11 | 2,783.97 | 44.10 | 4.67 | 43.87 | 3.40 | -1.42 | 47.65 |
| 2,803.00 | 3.74 | 17.33 | 2,801.93 | 45.21 | 4.92 | 44.96 | 3.46 | 1.22 | 51.22 |
| 2,816.00 | 3.96 | 23.24 | 2,814.90 | 46.03 | 5.23 | 45.77 | 3.49 | 1.69 | 45.46 |
| 2,847.00 | 4.13 | 26.00 | 2,845.83 | 48.02 | 6.14 | 47.71 | 0.83 | 0.55 | 8.90 |
| 2,877.00 | 5.19 | 28.60 | 2,875.73 | 50.18 | 7.26 | 49.82 | 3.60 | 3.53 | 8.67 |
| 2,908.00 | 6.95 | 27.67 | 2,906.55 | 53.07 | 8.80 | 52.65 | 5.69 | 5.68 | -3.00 |
| 2,940.00 | 8.71 | 26.44 | 2,938.25 | 56.95 | 10.78 | 56.45 | 5.52 | 5.50 | -3.84 |
| 2,972.00 | 9.94 | 19.91 | 2,969.83 | 61.72 | 12.80 | 61.12 | 5.06 | 3.84 | -20.41 |
| 3,003.00 | 11.34 | 19.82 | 3,000.30 | 67.10 | 14.75 | 66.42 | 4.52 | 4.52 | -0.29 |
| 3,035.00 | 13.28 | 18.89 | 3,031.56 | 73.54 | 17.00 | 72.75 | 6.09 | 6.06 | -2.91 |
| 3,066.00 | 15.04 | 18.84 | 3,061.62 | 80.72 | 19.46 | 79.82 | 5.68 | 5.68 | -0.16 |
| 3,098.00 | 16.80 | 20.54 | 3,092.39 | 88.98 | 22.42 | 87.95 | 5.69 | 5.50 | 5.31 |
| 3,103.00 | 17.16 | 20.57 | 3,097.17 | 90.35 | 22.93 | 89.29 | 7.20 | 7.20 | 0.60 |
| 3,130.00 | 19.08 | 20.72 | 3,122.83 | 98.20 | 25.89 | 97.02 | 7.11 | 7.11 | 0.56 |
| 3,153.00 | 20.65 | 20.20 | 3,144.46 | 105.53 | 28.62 | 104.22 | 6.87 | 6.83 | -2.26 |

# Legacy Directional

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Well:** | Carracas Unit 21A 1 | **North Reference:** | True |
| **Wellbore:** | ST01 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan 3 | **Database:** | EDM 5000.14 Single User Db |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 3,161.00 | 21.19 | 20.04 | 3,151.93 | 108.21 | 29.61 | 106.86 | 6.79 | 6.75 | -2.00 |
| 3,193.00 | 23.21 | 20.14 | 3,181.56 | 119.56 | 33.76 | 118.02 | 6.31 | 6.31 | 0.31 |
| 3,203.00 | 23.95 | 20.10 | 3,190.72 | 123.32 | 35.14 | 121.72 | 7.40 | 7.40 | -0.40 |
| 3,225.00 | 25.59 | 20.01 | 3,210.70 | 131.98 | 38.30 | 130.23 | 7.46 | 7.45 | -0.41 |
| 3,257.00 | 28.14 | 20.89 | 3,239.24 | 145.52 | 43.35 | 143.55 | 8.06 | 7.97 | 2.75 |
| 3,289.00 | 29.99 | 20.06 | 3,267.21 | 160.09 | 48.79 | 157.87 | 5.92 | 5.78 | -2.59 |
| 3,303.00 | 30.79 | 20.19 | 3,279.29 | 166.74 | 51.22 | 164.41 | 5.73 | 5.71 | 0.93 |
| 3,321.00 | 31.83 | 20.34 | 3,294.67 | 175.51 | 54.46 | 173.04 | 5.79 | 5.78 | 0.83 |
| 3,352.00 | 33.41 | 20.55 | 3,320.78 | 191.17 | 60.30 | 188.44 | 5.11 | 5.10 | 0.68 |
| 3,384.00 | 35.00 | 20.32 | 3,347.24 | 208.03 | 66.58 | 205.02 | 4.99 | 4.97 | -0.72 |
| 3,403.00 | 35.36 | 20.76 | 3,362.77 | 218.28 | 70.42 | 215.09 | 2.32 | 1.89 | 2.32 |
| 3,416.00 | 35.61 | 21.06 | 3,373.36 | 225.33 | 73.12 | 222.02 | 2.34 | 1.92 | 2.31 |
| 3,448.00 | 36.76 | 21.08 | 3,399.18 | 242.95 | 79.91 | 239.35 | 3.59 | 3.59 | 0.06 |
| 3,453.00 | 37.06 | 21.02 | 3,403.18 | 245.76 | 80.99 | 242.10 | 6.04 | 6.00 | -1.20 |
| 3,480.00 | 38.69 | 20.70 | 3,424.49 | 261.25 | 86.89 | 257.33 | 6.08 | 6.04 | -1.19 |
| 3,511.00 | 40.10 | 19.64 | 3,448.45 | 279.71 | 93.67 | 275.49 | 5.04 | 4.55 | -3.42 |
| 3,543.00 | 41.94 | 19.19 | 3,472.59 | 299.52 | 100.65 | 294.99 | 5.82 | 5.75 | -1.41 |
| 3,553.00 | 42.60 | 19.17 | 3,479.99 | 305.88 | 102.86 | 301.24 | 6.60 | 6.60 | -0.20 |
| 3,575.00 | 44.05 | 19.14 | 3,496.00 | 320.13 | 107.81 | 315.28 | 6.59 | 6.59 | -0.14 |
| 3,607.00 | 46.69 | 19.04 | 3,518.47 | 341.65 | 115.26 | 336.46 | 8.25 | 8.25 | -0.31 |
| 3,639.00 | 50.21 | 19.65 | 3,539.70 | 364.24 | 123.19 | 358.69 | 11.09 | 11.00 | 1.91 |
| 3,653.00 | 52.06 | 19.95 | 3,548.48 | 374.50 | 126.89 | 368.78 | 13.32 | 13.21 | 2.14 |
| 3,671.00 | 54.43 | 20.31 | 3,559.25 | 388.04 | 131.85 | 382.10 | 13.26 | 13.17 | 2.00 |
| 3,703.00 | 57.77 | 21.29 | 3,577.10 | 412.86 | 141.28 | 406.50 | 10.74 | 10.44 | 3.06 |
| 3,734.00 | 58.92 | 21.77 | 3,593.36 | 437.41 | 150.97 | 430.61 | 3.94 | 3.71 | 1.55 |
| 3,766.00 | 59.62 | 21.85 | 3,609.72 | 462.95 | 161.19 | 455.70 | 2.20 | 2.19 | 0.25 |
| 3,798.00 | 61.11 | 21.89 | 3,625.54 | 488.76 | 171.55 | 481.05 | 4.66 | 4.66 | 0.13 |
| 3,803.00 | 61.58 | 21.90 | 3,627.94 | 492.83 | 173.18 | 485.04 | 9.40 | 9.40 | 0.20 |
| **TIP at 3803.00' MD / 3627.94' TVD** | | | | | | | | | |
| 3,825.00 | 63.63 | 21.97 | 3,638.06 | 510.95 | 180.48 | 502.84 | 9.32 | 9.32 | 0.32 |
| **KOP at 3825.00' MD / Begin Build 9.20° DLS** | | | | | | | | | |
| 3,850.00 | 65.29 | 20.21 | 3,648.84 | 531.99 | 188.59 | 523.52 | 9.20 | 6.65 | -7.05 |
| 3,900.00 | 68.68 | 16.82 | 3,668.39 | 575.62 | 203.19 | 566.49 | 9.20 | 6.77 | -6.77 |
| 3,950.00 | 72.13 | 13.59 | 3,685.16 | 621.07 | 215.52 | 611.37 | 9.20 | 6.90 | -6.47 |
| 4,000.00 | 75.63 | 10.48 | 3,699.05 | 668.03 | 225.52 | 657.87 | 9.20 | 7.00 | -6.22 |
| 4,050.00 | 79.17 | 7.47 | 3,709.96 | 716.22 | 233.12 | 705.69 | 9.20 | 7.08 | -6.02 |
| 4,100.00 | 82.73 | 4.53 | 3,717.83 | 765.31 | 238.27 | 754.52 | 9.20 | 7.14 | -5.88 |
| 4,150.00 | 86.32 | 1.63 | 3,722.60 | 815.00 | 240.94 | 804.05 | 9.20 | 7.17 | -5.79 |
| 4,200.00 | 89.92 | 358.76 | 3,724.24 | 864.96 | 241.11 | 853.96 | 9.20 | 7.19 | -5.74 |
| 4,220.66 | 91.40 | 357.57 | 3,724.00 | 885.61 | 240.45 | 874.62 | 9.20 | 7.19 | -5.74 |
| **LP at 4220.66' MD / Hold 91.40° INC** | | | | | | | | | |
| 4,300.00 | 91.40 | 357.57 | 3,722.06 | 964.85 | 237.09 | 953.93 | 0.00 | 0.00 | 0.00 |
| 4,400.00 | 91.40 | 357.57 | 3,719.61 | 1,064.73 | 232.86 | 1,053.90 | 0.00 | 0.00 | 0.00 |
| 4,500.00 | 91.40 | 357.57 | 3,717.17 | 1,164.61 | 228.62 | 1,153.87 | 0.00 | 0.00 | 0.00 |

# Legacy Directional

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Well:** | Carracas Unit 21A 1 | **North Reference:** | True |
| **Wellbore:** | ST01 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan 3 | **Database:** | EDM 5000.14 Single User Db |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 4,600.00 | 91.40 | 357.57 | 3,714.72 | 1,264.49 | 224.39 | 1,253.84 | 0.00 | 0.00 | 0.00 |
| 4,700.00 | 91.40 | 357.57 | 3,712.27 | 1,364.37 | 220.15 | 1,353.81 | 0.00 | 0.00 | 0.00 |
| 4,800.00 | 91.40 | 357.57 | 3,709.83 | 1,464.25 | 215.92 | 1,453.78 | 0.00 | 0.00 | 0.00 |
| 4,900.00 | 91.40 | 357.57 | 3,707.38 | 1,564.13 | 211.69 | 1,553.75 | 0.00 | 0.00 | 0.00 |
| 5,000.00 | 91.40 | 357.57 | 3,704.93 | 1,664.01 | 207.45 | 1,653.72 | 0.00 | 0.00 | 0.00 |
| 5,100.00 | 91.40 | 357.57 | 3,702.49 | 1,763.89 | 203.22 | 1,753.69 | 0.00 | 0.00 | 0.00 |
| 5,200.00 | 91.40 | 357.57 | 3,700.04 | 1,863.77 | 198.99 | 1,853.66 | 0.00 | 0.00 | 0.00 |
| 5,300.00 | 91.40 | 357.57 | 3,697.59 | 1,963.65 | 194.75 | 1,953.63 | 0.00 | 0.00 | 0.00 |
| 5,400.00 | 91.40 | 357.57 | 3,695.15 | 2,063.53 | 190.52 | 2,053.60 | 0.00 | 0.00 | 0.00 |
| 5,500.00 | 91.40 | 357.57 | 3,692.70 | 2,163.41 | 186.28 | 2,153.57 | 0.00 | 0.00 | 0.00 |
| 5,600.00 | 91.40 | 357.57 | 3,690.25 | 2,263.29 | 182.05 | 2,253.54 | 0.00 | 0.00 | 0.00 |
| 5,700.00 | 91.40 | 357.57 | 3,687.81 | 2,363.17 | 177.82 | 2,353.51 | 0.00 | 0.00 | 0.00 |
| 5,800.00 | 91.40 | 357.57 | 3,685.36 | 2,463.06 | 173.58 | 2,453.48 | 0.00 | 0.00 | 0.00 |
| 5,900.00 | 91.40 | 357.57 | 3,682.91 | 2,562.94 | 169.35 | 2,553.45 | 0.00 | 0.00 | 0.00 |
| 6,000.00 | 91.40 | 357.57 | 3,680.46 | 2,662.82 | 165.12 | 2,653.42 | 0.00 | 0.00 | 0.00 |
| 6,100.00 | 91.40 | 357.57 | 3,678.02 | 2,762.70 | 160.88 | 2,753.39 | 0.00 | 0.00 | 0.00 |
| 6,200.00 | 91.40 | 357.57 | 3,675.57 | 2,862.58 | 156.65 | 2,853.36 | 0.00 | 0.00 | 0.00 |
| 6,300.00 | 91.40 | 357.57 | 3,673.12 | 2,962.46 | 152.41 | 2,953.33 | 0.00 | 0.00 | 0.00 |
| 6,400.00 | 91.40 | 357.57 | 3,670.68 | 3,062.34 | 148.18 | 3,053.30 | 0.00 | 0.00 | 0.00 |
| 6,500.00 | 91.40 | 357.57 | 3,668.23 | 3,162.22 | 143.95 | 3,153.27 | 0.00 | 0.00 | 0.00 |
| 6,600.00 | 91.40 | 357.57 | 3,665.78 | 3,262.10 | 139.71 | 3,253.24 | 0.00 | 0.00 | 0.00 |
| 6,700.00 | 91.40 | 357.57 | 3,663.34 | 3,361.98 | 135.48 | 3,353.21 | 0.00 | 0.00 | 0.00 |
| 6,800.00 | 91.40 | 357.57 | 3,660.89 | 3,461.86 | 131.25 | 3,453.18 | 0.00 | 0.00 | 0.00 |
| 6,900.00 | 91.40 | 357.57 | 3,658.44 | 3,561.74 | 127.01 | 3,553.15 | 0.00 | 0.00 | 0.00 |
| 7,000.00 | 91.40 | 357.57 | 3,656.00 | 3,661.62 | 122.78 | 3,653.12 | 0.00 | 0.00 | 0.00 |
| 7,100.00 | 91.40 | 357.57 | 3,653.55 | 3,761.50 | 118.54 | 3,753.09 | 0.00 | 0.00 | 0.00 |
| 7,200.00 | 91.40 | 357.57 | 3,651.10 | 3,861.38 | 114.31 | 3,853.06 | 0.00 | 0.00 | 0.00 |
| 7,300.00 | 91.40 | 357.57 | 3,648.66 | 3,961.26 | 110.08 | 3,953.03 | 0.00 | 0.00 | 0.00 |
| 7,400.00 | 91.40 | 357.57 | 3,646.21 | 4,061.14 | 105.84 | 4,053.00 | 0.00 | 0.00 | 0.00 |
| 7,500.00 | 91.40 | 357.57 | 3,643.76 | 4,161.02 | 101.61 | 4,152.97 | 0.00 | 0.00 | 0.00 |
| 7,600.00 | 91.40 | 357.57 | 3,641.32 | 4,260.90 | 97.38 | 4,252.94 | 0.00 | 0.00 | 0.00 |
| 7,700.00 | 91.40 | 357.57 | 3,638.87 | 4,360.78 | 93.14 | 4,352.91 | 0.00 | 0.00 | 0.00 |
| 7,800.00 | 91.40 | 357.57 | 3,636.42 | 4,460.66 | 88.91 | 4,452.88 | 0.00 | 0.00 | 0.00 |
| 7,858.15 | 91.40 | 357.57 | 3,635.00 | 4,518.75 | 86.45 | 4,511.02 | 0.00 | 0.00 | 0.00 |
| **TD 7858.15' MD / 3635.00' TVD** | | | | | | | | | |

# Legacy Directional

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Well:** | Carracas Unit 21A 1 | **North Reference:** | True |
| **Wellbore:** | ST01 | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Plan 3 | **Database:** | EDM 5000.14 Single User Db |

**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 |
|---|---|---|---|---|---|---|---|---|---|
| Carracas Unit 21A 1-1 S<br>- plan misses target center by 0.17usft at 3617.77usft MD (3525.78 TVD, 349.13 N, 117.85 E)<br>- Point | 0.00 | 0.00 | 3,525.75 | 349.10 | 118.02 | 2,169,551.95 | 636,938.69 | 36.961395 | -107.364628 |
| Carracas Unit 21A 1-1 S<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 3,635.00 | 4,518.75 | 86.45 | 2,173,721.40 | 636,886.63 | 36.972848 | -107.364736 |
| Carracas Unit 21A No. 1<br>- plan misses target center by 344.07usft at 3505.29usft MD (3444.07 TVD, 276.26 N, 92.43 E)<br>- Circle (radius 200.00) | 0.00 | 0.00 | 3,657.38 | 7.06 | 72.01 | 2,169,209.70 | 636,894.36 | 36.960456 | -107.364786 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 1,659.94 | 1,659.88 | NACIMIENTO | | -1.40 | 357.44 |
| 3,114.09 | 3,107.74 | OJO ALAMO | | -1.40 | 357.44 |
| 3,236.14 | 3,220.71 | KIRTLAND | | -1.40 | 357.44 |
| 3,614.62 | 3,523.66 | FRUITLAND | | -1.40 | 357.44 |
| 4,174.09 | 3,723.78 | TOP TARGET | | -1.40 | 357.44 |

**Plan Annotations**

| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates +N/-S (usft) | Local Coordinates +E/-W (usft) | Comment |
|---|---|---|---|---|
| 3803 | 3628 | 493 | 173 | TIP at 3803.00' MD / 3627.94' TVD |
| 3825 | 3638 | 511 | 180 | KOP at 3825.00' MD / Begin Build 9.20° DLS |
| 4221 | 3724 | 886 | 240 | LP at 4220.66' MD / Hold 91.40° INC |
| 7858 | 3635 | 4519 | 86 | TD 7858.15' MD / 3635.00' TVD |

Checked By: _____ Approved By: _____ Date: _____

# MorningStar Partners

**Rio Arriba County, NM**
**Carracas Unit 21A 1**
**Carracas Unit 21A 1**

**ST01**
**Plan 3**

# Anticollision Report

**01 November, 2021**

LEGACY DIRECTIONAL

# Legacy Directional

## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **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:** | MD Interval 100.00usft | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum centre distance of 15,000.00usft | **Error Surface:** | Pedal Curve |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 11/1/2021

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 103.00 | 3,803.00 | Surveys (OH) | MWD+IGRF | OWSG MWD + IGRF or WMM |
| 3,803.00 | 7,858.15 | Plan 3 (ST01) | MWD+IGRF | OWSG MWD + IGRF or WMM |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Carracas Unit 21A 1 | | | | | | |
| Carracas Unit 21A 1 - OH - OH | 4,200.00 | 4,189.40 | 79.33 | 68.34 | 7.217 | CC, ES, SF |
| Carracas Unit 21A No. 15 | | | | | | |
| Carracas Unit 21A No. 15 - OH - OH | 2,038.34 | 2,019.55 | 62.22 | 5.12 | 1.090 | Level 3, CC |
| Carracas Unit 21A No. 15 - OH - OH | 2,400.00 | 2,381.06 | 64.36 | 1.75 | 1.028 | Level 3, ES, SF |

**Offset Design:** Carracas Unit 21A 1 - Carracas Unit 21A 1 - OH - OH

**Offset Site Error:** 0.00 usft

**Survey Program:** 103-MWD+IGRF

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3,803.00 | 3,627.94 | 3,803.00 | 3,627.94 | 0.00 | 0.00 | 66.80 | 492.83 | 173.18 | 0.00 | 0.00 | 0.00 | N/A | |
| 3,900.00 | 3,668.39 | 3,899.85 | 3,667.39 | 1.05 | 1.42 | 73.89 | 574.73 | 206.35 | 3.43 | 1.09 | 2.34 | 1.467 | Level 3 |
| 4,000.00 | 3,699.05 | 3,998.57 | 3,698.83 | 2.38 | 2.94 | 92.32 | 661.19 | 242.10 | 17.94 | 12.68 | 5.26 | 3.410 | |
| 4,100.00 | 3,717.83 | 4,095.49 | 3,722.71 | 3.82 | 4.50 | 99.24 | 748.06 | 277.76 | 43.37 | 35.32 | 8.05 | 5.390 | |
| 4,200.00 | 3,724.24 | 4,189.40 | 3,733.21 | 5.31 | 6.06 | 97.16 | 834.05 | 313.62 | 79.33 | 68.34 | 10.99 | 7.217 | CC, ES, SF |
| 4,300.00 | 3,722.06 | 4,281.07 | 3,730.25 | 6.74 | 7.63 | 93.60 | 918.41 | 349.34 | 121.75 | 107.72 | 14.03 | 8.678 | |
| 4,400.00 | 3,719.61 | 4,365.18 | 3,724.66 | 8.24 | 9.09 | 91.26 | 995.64 | 382.14 | 164.57 | 147.62 | 16.95 | 9.710 | |
| 4,500.00 | 3,717.17 | 4,460.78 | 3,718.52 | 9.81 | 10.82 | 89.74 | 1,081.75 | 423.17 | 211.47 | 191.28 | 20.18 | 10.477 | |
| 4,600.00 | 3,714.72 | 4,563.80 | 3,715.13 | 11.43 | 12.64 | 89.52 | 1,177.81 | 460.16 | 251.20 | 227.64 | 23.56 | 10.660 | |
| 4,700.00 | 3,712.27 | 4,662.48 | 3,714.18 | 13.10 | 14.38 | 89.86 | 1,270.76 | 493.28 | 288.73 | 261.84 | 26.89 | 10.737 | |
| 4,800.00 | 3,709.83 | 4,748.83 | 3,712.10 | 14.81 | 15.92 | 89.85 | 1,352.08 | 522.23 | 326.21 | 296.17 | 30.04 | 10.858 | |
| 4,900.00 | 3,707.38 | 4,847.12 | 3,709.77 | 16.54 | 17.69 | 89.85 | 1,444.85 | 554.64 | 363.11 | 329.63 | 33.48 | 10.845 | |
| 5,000.00 | 3,704.93 | 4,941.57 | 3,708.39 | 18.31 | 19.40 | 89.98 | 1,534.34 | 584.81 | 399.03 | 362.16 | 36.87 | 10.822 | |
| 5,100.00 | 3,702.49 | 5,040.76 | 3,706.58 | 20.10 | 21.21 | 90.05 | 1,628.43 | 616.15 | 434.60 | 394.19 | 40.41 | 10.756 | |
| 5,200.00 | 3,700.04 | 5,131.00 | 3,705.81 | 21.90 | 22.86 | 90.22 | 1,714.11 | 644.45 | 469.97 | 426.21 | 43.77 | 10.738 | |
| 5,300.00 | 3,697.59 | 5,218.84 | 3,704.02 | 23.73 | 24.49 | 90.23 | 1,797.15 | 673.04 | 506.48 | 459.39 | 47.09 | 10.755 | |
| 5,400.00 | 3,695.15 | 5,322.36 | 3,701.27 | 25.57 | 26.41 | 90.17 | 1,895.15 | 706.25 | 542.56 | 491.73 | 50.83 | 10.674 | |
| 5,500.00 | 3,692.70 | 5,421.52 | 3,699.13 | 27.42 | 28.26 | 90.17 | 1,989.55 | 736.53 | 577.10 | 522.62 | 54.47 | 10.594 | |
| 5,600.00 | 3,690.25 | 5,503.00 | 3,697.16 | 29.29 | 29.79 | 90.15 | 2,066.98 | 761.82 | 612.14 | 554.45 | 57.69 | 10.611 | |
| 5,700.00 | 3,687.81 | 5,592.78 | 3,694.34 | 31.16 | 31.49 | 90.07 | 2,151.69 | 791.44 | 649.08 | 587.95 | 61.13 | 10.618 | |
| 5,800.00 | 3,685.36 | 5,725.59 | 3,689.50 | 33.05 | 33.98 | 89.91 | 2,278.77 | 829.62 | 681.44 | 615.77 | 65.68 | 10.376 | |

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

# Legacy Directional

## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **Reference Design:** | Plan 3 | **Offset TVD Reference:** | Offset Datum |

**Offset Design:** Carracas Unit 21A 1 - Carracas Unit 21A 1 - OH - OH

**Offset Site Error:** 0.00 usft

**Survey Program:** 103-MWD+IGRF

**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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,900.00 | 3,682.91 | 5,810.51 | 3,687.20 | 34.94 | 35.57 | 89.88 | 2,360.35 | 853.10 | 713.15 | 644.11 | 69.04 | 10.329 | |
| 6,000.00 | 3,680.46 | 5,879.00 | 3,685.16 | 36.84 | 36.87 | 89.85 | 2,425.63 | 873.69 | 747.23 | 675.29 | 71.95 | 10.386 | |
| 6,100.00 | 3,678.02 | 5,965.34 | 3,682.28 | 38.74 | 38.52 | 89.78 | 2,507.38 | 901.31 | 783.22 | 707.90 | 75.32 | 10.399 | |
| 6,200.00 | 3,675.57 | 6,059.20 | 3,679.87 | 40.65 | 40.31 | 89.77 | 2,596.14 | 931.74 | 819.62 | 740.69 | 78.93 | 10.385 | |
| 6,300.00 | 3,673.12 | 6,162.26 | 3,677.88 | 42.57 | 42.29 | 89.81 | 2,693.67 | 964.97 | 855.87 | 773.05 | 82.82 | 10.335 | |
| 6,400.00 | 3,670.68 | 6,253.66 | 3,676.30 | 44.49 | 44.05 | 89.85 | 2,780.43 | 993.69 | 891.29 | 804.93 | 86.36 | 10.320 | |
| 6,500.00 | 3,668.23 | 6,348.89 | 3,674.16 | 46.41 | 45.88 | 89.86 | 2,870.83 | 1,023.55 | 926.63 | 836.60 | 90.03 | 10.293 | |
| 6,600.00 | 3,665.78 | 6,436.77 | 3,671.81 | 48.34 | 47.57 | 89.84 | 2,954.11 | 1,051.51 | 962.43 | 868.95 | 93.48 | 10.296 | |
| 6,700.00 | 3,663.34 | 6,530.99 | 3,671.37 | 50.27 | 49.39 | 89.95 | 3,043.40 | 1,081.57 | 998.32 | 901.19 | 97.13 | 10.279 | |
| 6,800.00 | 3,660.89 | 6,622.73 | 3,670.69 | 52.21 | 51.16 | 90.04 | 3,130.27 | 1,111.05 | 1,034.43 | 933.73 | 100.70 | 10.272 | |
| 6,900.00 | 3,658.44 | 6,737.96 | 3,669.52 | 54.14 | 53.39 | 90.12 | 3,239.74 | 1,146.98 | 1,069.65 | 964.64 | 105.01 | 10.186 | |
| 7,000.00 | 3,656.00 | 6,792.84 | 3,669.07 | 56.08 | 54.45 | 90.16 | 3,291.84 | 1,164.21 | 1,105.21 | 997.79 | 107.42 | 10.289 | |
| 7,100.00 | 3,653.55 | 6,862.66 | 3,667.45 | 58.03 | 55.82 | 90.16 | 3,357.18 | 1,188.76 | 1,144.13 | 1,033.88 | 110.25 | 10.378 | |
| 7,200.00 | 3,651.10 | 7,001.57 | 3,663.05 | 59.97 | 58.53 | 90.09 | 3,488.04 | 1,235.14 | 1,181.44 | 1,065.99 | 115.45 | 10.233 | |
| 7,300.00 | 3,648.66 | 7,083.00 | 3,660.72 | 61.92 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,217.25 | 1,098.54 | 118.71 | 10.254 | |
| 7,400.00 | 3,646.21 | 7,083.00 | 3,660.72 | 63.87 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,257.23 | 1,138.32 | 118.91 | 10.573 | |
| 7,500.00 | 3,643.76 | 7,083.00 | 3,660.72 | 65.82 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,303.67 | 1,185.18 | 118.49 | 11.003 | |
| 7,600.00 | 3,641.32 | 7,083.00 | 3,660.72 | 67.77 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,355.90 | 1,238.32 | 117.58 | 11.532 | |
| 7,700.00 | 3,638.87 | 7,083.00 | 3,660.72 | 69.73 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,413.29 | 1,296.99 | 116.30 | 12.152 | |
| 7,800.00 | 3,636.42 | 7,083.00 | 3,660.72 | 71.68 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,475.23 | 1,360.48 | 114.75 | 12.856 | |
| 7,858.15 | 3,635.00 | 7,083.00 | 3,660.72 | 72.82 | 60.11 | 90.06 | 3,565.20 | 1,261.03 | 1,513.13 | 1,399.36 | 113.77 | 13.300 | |

# Legacy Directional

## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **Reference Design:** | Plan 3 | **Offset TVD Reference:** | Offset Datum |

**Offset Design:** Carracas Unit 21A No. 15 - Carracas Unit 21A No. 15 - OH - OH

**Offset Site Error:** 0.00 usft

**Survey Program:** 324-INC-ONLY

**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 | 84.40 | 7.06 | 72.01 | 74.80 | | | | |
| 100.00 | 100.00 | 81.00 | 81.00 | 0.33 | 1.41 | 88.32 | 7.06 | 72.01 | 72.35 | 70.87 | 1.48 | 48.900 | |
| 200.00 | 200.00 | 181.00 | 181.00 | 0.97 | 3.15 | 88.54 | 7.06 | 72.01 | 72.34 | 68.84 | 3.50 | 20.670 | |
| 300.00 | 300.00 | 281.00 | 281.00 | 1.47 | 4.89 | 88.91 | 7.06 | 72.01 | 72.33 | 66.91 | 5.42 | 13.342 | |
| 400.00 | 400.00 | 381.01 | 381.00 | 1.90 | 7.63 | 89.43 | 7.06 | 72.01 | 72.32 | 64.17 | 8.15 | 8.878 | |
| 500.00 | 499.99 | 481.01 | 480.99 | 2.28 | 11.13 | 89.62 | 7.06 | 72.01 | 72.32 | 60.87 | 11.45 | 6.315 | |
| 600.00 | 599.99 | 581.01 | 580.98 | 2.58 | 14.63 | 77.95 | 8.18 | 72.01 | 72.31 | 57.52 | 14.79 | 4.891 | |
| 700.00 | 699.99 | 681.03 | 681.00 | 2.97 | 18.13 | 62.86 | 8.00 | 72.01 | 72.07 | 53.96 | 18.10 | 3.981 | |
| 800.00 | 799.98 | 781.07 | 781.03 | 3.33 | 21.63 | 44.33 | 7.48 | 72.01 | 71.66 | 50.29 | 21.37 | 3.353 | |
| 900.00 | 899.98 | 881.08 | 880.98 | 3.66 | 24.81 | 25.64 | 7.06 | 72.01 | 71.12 | 46.69 | 24.42 | 2.912 | |
| 1,000.00 | 999.98 | 981.07 | 980.98 | 3.98 | 27.64 | 10.82 | 7.06 | 72.01 | 70.43 | 43.15 | 27.28 | 2.582 | |
| 1,100.00 | 1,099.98 | 1,081.07 | 1,080.97 | 4.28 | 30.47 | 3.85 | 8.14 | 72.01 | 69.67 | 39.40 | 30.27 | 2.302 | |
| 1,200.00 | 1,199.97 | 1,181.09 | 1,180.99 | 4.60 | 33.31 | -0.78 | 7.96 | 72.01 | 68.77 | 35.65 | 33.11 | 2.077 | |
| 1,300.00 | 1,299.97 | 1,281.12 | 1,281.01 | 4.92 | 36.14 | -4.33 | 7.42 | 72.01 | 67.76 | 31.86 | 35.90 | 1.888 | |
| 1,400.00 | 1,399.96 | 1,381.13 | 1,380.96 | 5.25 | 39.13 | -7.42 | 7.06 | 72.01 | 66.68 | 27.84 | 38.84 | 1.717 | |
| 1,500.00 | 1,499.96 | 1,481.12 | 1,480.96 | 5.58 | 42.24 | -9.13 | 7.06 | 72.01 | 65.52 | 23.58 | 41.94 | 1.562 | |
| 1,600.00 | 1,599.95 | 1,581.12 | 1,580.95 | 5.92 | 45.36 | 9.23 | 7.06 | 72.01 | 64.42 | 19.42 | 45.01 | 1.431 | Level 3 |
| 1,700.00 | 1,699.94 | 1,681.12 | 1,680.94 | 6.29 | 48.47 | 32.34 | 8.48 | 72.01 | 63.60 | 15.23 | 48.37 | 1.315 | Level 3 |
| 1,800.00 | 1,799.94 | 1,781.14 | 1,780.95 | 6.68 | 51.59 | 56.31 | 8.27 | 72.01 | 62.91 | 11.64 | 51.27 | 1.227 | Level 3 |
| 1,900.00 | 1,899.93 | 1,881.15 | 1,880.96 | 7.05 | 54.70 | 74.46 | 7.79 | 72.01 | 62.44 | 8.47 | 53.96 | 1.157 | Level 3 |
| 2,000.00 | 1,999.92 | 1,981.22 | 1,980.92 | 7.41 | 57.79 | 87.15 | 7.06 | 72.01 | 62.23 | 5.84 | 56.39 | 1.104 | Level 3 |
| 2,038.34 | 2,038.26 | 2,019.55 | 2,019.26 | 7.54 | 58.52 | 90.00 | 7.06 | 72.01 | 62.22 | 5.12 | 57.09 | 1.090 | Level 3, CC |
| 2,100.00 | 2,099.90 | 2,081.20 | 2,080.90 | 7.74 | 59.70 | 93.67 | 7.06 | 72.01 | 62.26 | 4.10 | 58.16 | 1.070 | Level 3 |
| 2,200.00 | 2,199.87 | 2,181.15 | 2,180.84 | 8.11 | 61.62 | 98.03 | 7.68 | 72.01 | 62.50 | 2.57 | 59.93 | 1.043 | Level 3 |
| 2,300.00 | 2,299.80 | 2,281.15 | 2,280.80 | 8.47 | 63.63 | 103.19 | 7.06 | 72.01 | 63.22 | 2.02 | 61.21 | 1.033 | Level 3 |
| 2,400.00 | 2,399.71 | 2,381.06 | 2,380.71 | 8.83 | 65.98 | 107.85 | 7.06 | 72.01 | 64.36 | 1.75 | 62.62 | 1.028 | Level 3, ES, SF |
| 2,500.00 | 2,499.59 | 2,480.94 | 2,480.59 | 9.18 | 68.34 | 114.24 | 7.06 | 72.01 | 66.12 | 2.21 | 63.91 | 1.035 | Level 3 |
| 2,600.00 | 2,599.41 | 2,580.76 | 2,580.41 | 9.53 | 70.69 | 125.10 | 7.06 | 72.01 | 69.09 | 3.90 | 65.19 | 1.060 | Level 3 |
| 2,700.00 | 2,699.17 | 2,680.47 | 2,680.10 | 9.88 | 73.04 | 130.16 | 8.44 | 72.01 | 72.89 | 6.06 | 66.83 | 1.091 | Level 3 |
| 2,800.00 | 2,798.94 | 2,780.15 | 2,779.78 | 10.23 | 75.39 | 102.90 | 8.10 | 72.01 | 76.62 | 8.34 | 68.28 | 1.122 | Level 3 |
| 2,900.00 | 2,898.61 | 2,879.69 | 2,879.32 | 10.59 | 77.74 | 97.18 | 7.50 | 72.01 | 77.79 | 8.10 | 69.69 | 1.116 | Level 3 |
| 3,000.00 | 2,997.35 | 2,978.81 | 2,978.35 | 10.98 | 80.07 | 115.73 | 7.06 | 72.01 | 82.71 | 11.23 | 71.48 | 1.157 | Level 3 |
| 3,100.00 | 3,094.30 | 3,075.75 | 3,075.30 | 11.38 | 82.33 | 127.30 | 7.06 | 72.01 | 96.11 | 20.89 | 75.23 | 1.278 | Level 3 |
| 3,200.00 | 3,187.98 | 3,169.43 | 3,168.98 | 11.78 | 84.53 | 139.46 | 7.06 | 72.01 | 121.00 | 40.17 | 80.83 | 1.497 | Level 3 |
| 3,300.00 | 3,276.71 | 3,257.73 | 3,257.27 | 12.25 | 86.59 | 148.37 | 8.02 | 72.01 | 158.71 | 72.22 | 86.50 | 1.835 | |
| 3,400.00 | 3,360.32 | 3,340.60 | 3,340.14 | 12.80 | 88.53 | 154.38 | 7.67 | 72.01 | 209.00 | 117.84 | 91.16 | 2.293 | |
| 3,500.00 | 3,440.00 | 3,419.24 | 3,418.76 | 13.46 | 90.37 | 159.62 | 7.10 | 72.01 | 266.69 | 171.80 | 94.88 | 2.811 | |
| 3,600.00 | 3,513.65 | 3,495.17 | 3,494.65 | 14.26 | 92.07 | 163.13 | 7.06 | 72.01 | 332.41 | 234.50 | 97.91 | 3.395 | |
| 3,700.00 | 3,575.49 | 3,557.01 | 3,556.49 | 15.21 | 93.45 | 159.14 | 7.06 | 72.01 | 409.19 | 308.82 | 100.36 | 4.077 | |
| 3,800.00 | 3,626.50 | 3,608.03 | 3,607.50 | 16.32 | 94.58 | 159.50 | 7.06 | 72.01 | 493.60 | 391.24 | 102.36 | 4.822 | |
| 3,900.00 | 3,668.39 | 3,649.91 | 3,649.39 | 17.39 | 95.52 | 169.57 | 7.06 | 72.01 | 583.49 | 478.88 | 104.61 | 5.578 | |
| 4,000.00 | 3,699.05 | 3,680.57 | 3,680.05 | 18.70 | 96.20 | -169.65 | 7.06 | 72.01 | 678.56 | 573.17 | 105.39 | 6.438 | |
| 4,100.00 | 3,717.83 | 3,699.35 | 3,698.83 | 20.11 | 96.62 | -132.56 | 7.06 | 72.01 | 776.26 | 670.61 | 105.65 | 7.347 | |
| 4,200.00 | 3,724.24 | 3,705.76 | 3,705.24 | 21.58 | 96.76 | -90.39 | 7.06 | 72.01 | 874.40 | 768.95 | 105.45 | 8.292 | |
| 4,300.00 | 3,722.06 | 3,703.58 | 3,703.06 | 23.01 | 96.72 | -83.55 | 7.06 | 72.01 | 971.91 | 866.92 | 104.99 | 9.258 | |
| 4,400.00 | 3,719.61 | 3,701.14 | 3,700.61 | 24.50 | 96.66 | -82.87 | 7.06 | 72.01 | 1,069.83 | 965.24 | 104.59 | 10.229 | |
| 4,500.00 | 3,717.17 | 3,698.69 | 3,698.17 | 26.06 | 96.61 | -82.20 | 7.06 | 72.01 | 1,168.09 | 1,063.84 | 104.25 | 11.204 | |
| 4,600.00 | 3,714.72 | 3,696.24 | 3,695.72 | 27.68 | 96.55 | -81.54 | 7.06 | 72.01 | 1,266.63 | 1,162.66 | 103.96 | 12.183 | |
| 4,700.00 | 3,712.27 | 3,693.80 | 3,693.27 | 29.34 | 96.50 | -80.87 | 7.06 | 72.01 | 1,365.37 | 1,261.66 | 103.71 | 13.165 | |
| 4,800.00 | 3,709.83 | 3,691.35 | 3,690.83 | 31.03 | 96.44 | -80.21 | 7.06 | 72.01 | 1,464.28 | 1,360.78 | 103.49 | 14.149 | |
| 4,900.00 | 3,707.38 | 3,688.90 | 3,688.38 | 32.76 | 96.39 | -79.55 | 7.06 | 72.01 | 1,563.32 | 1,460.02 | 103.30 | 15.134 | |
| 5,000.00 | 3,704.93 | 3,686.46 | 3,685.93 | 34.52 | 96.33 | -78.89 | 7.06 | 72.01 | 1,662.48 | 1,559.35 | 103.13 | 16.121 | |

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

# Legacy Directional

## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **Reference Design:** | Plan 3 | **Offset TVD Reference:** | Offset Datum |

**Offset Design:** Carracas Unit 21A No. 15 - Carracas Unit 21A No. 15 - OH - OH

**Offset Site Error:** 0.00 usft

**Survey Program:** 324-INC-ONLY

**Rule Assigned:**

**Offset Well Error:** 0.00 usft

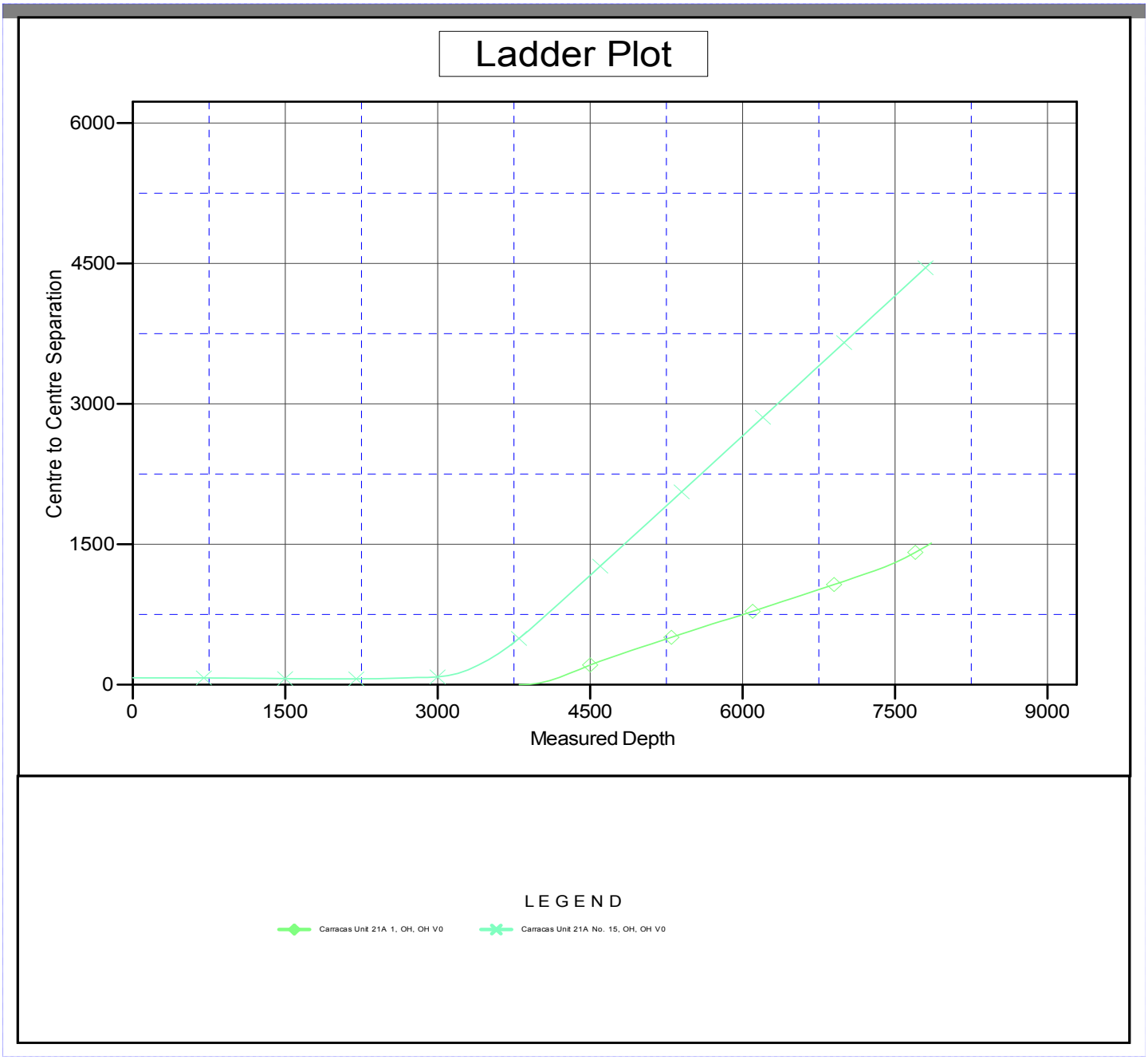
| Reference Measured Depth (usft) | Reference Vertical Depth (usft) | Offset Measured Depth (usft) | Offset Vertical Depth (usft) | Semi Major Axis Reference (usft) | Semi Major Axis Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Offset Wellbore Centre +E/-W (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5,100.00 | 3,702.49 | 3,684.01 | 3,683.49 | 36.30 | 96.28 | -78.23 | 7.06 | 72.01 | 1,761.72 | 1,658.75 | 102.97 | 17.108 | |
| 5,200.00 | 3,700.04 | 3,681.56 | 3,681.04 | 38.10 | 96.22 | -77.58 | 7.06 | 72.01 | 1,861.05 | 1,758.21 | 102.84 | 18.097 | |
| 5,300.00 | 3,697.59 | 3,679.12 | 3,678.59 | 39.92 | 96.17 | -76.93 | 7.06 | 72.01 | 1,960.44 | 1,857.72 | 102.71 | 19.087 | |
| 5,400.00 | 3,695.15 | 3,676.67 | 3,676.15 | 41.76 | 96.11 | -76.29 | 7.06 | 72.01 | 2,059.88 | 1,957.28 | 102.60 | 20.077 | |
| 5,500.00 | 3,692.70 | 3,674.22 | 3,673.70 | 43.60 | 96.06 | -75.64 | 7.06 | 72.01 | 2,159.38 | 2,056.88 | 102.49 | 21.068 | |
| 5,600.00 | 3,690.25 | 3,671.78 | 3,671.25 | 45.46 | 96.01 | -75.01 | 7.06 | 72.01 | 2,258.91 | 2,156.51 | 102.40 | 22.060 | |
| 5,700.00 | 3,687.81 | 3,669.33 | 3,668.81 | 47.33 | 95.95 | -74.37 | 7.06 | 72.01 | 2,358.49 | 2,256.17 | 102.31 | 23.051 | |
| 5,800.00 | 3,685.36 | 3,666.88 | 3,666.36 | 49.21 | 95.90 | -73.74 | 7.06 | 72.01 | 2,458.09 | 2,355.85 | 102.24 | 24.043 | |
| 5,900.00 | 3,682.91 | 3,664.44 | 3,663.91 | 51.10 | 95.84 | -73.11 | 7.06 | 72.01 | 2,557.72 | 2,455.56 | 102.16 | 25.036 | |
| 6,000.00 | 3,680.46 | 3,661.99 | 3,661.46 | 52.99 | 95.79 | -72.49 | 7.06 | 72.01 | 2,657.38 | 2,555.29 | 102.10 | 26.028 | |
| 6,100.00 | 3,678.02 | 3,659.54 | 3,659.02 | 54.90 | 95.73 | -71.87 | 7.06 | 72.01 | 2,757.07 | 2,655.03 | 102.04 | 27.021 | |
| 6,200.00 | 3,675.57 | 3,657.10 | 3,656.57 | 56.80 | 95.68 | -71.26 | 7.06 | 72.01 | 2,856.77 | 2,754.79 | 101.98 | 28.013 | |
| 6,300.00 | 3,673.12 | 3,654.65 | 3,654.12 | 58.72 | 95.62 | -70.65 | 7.06 | 72.01 | 2,956.49 | 2,854.56 | 101.93 | 29.006 | |
| 6,400.00 | 3,670.68 | 3,652.20 | 3,651.68 | 60.63 | 95.57 | -70.05 | 7.06 | 72.01 | 3,056.22 | 2,954.34 | 101.88 | 29.999 | |
| 6,500.00 | 3,668.23 | 3,649.76 | 3,649.23 | 62.56 | 95.51 | -69.45 | 7.06 | 72.01 | 3,155.97 | 3,054.14 | 101.83 | 30.991 | |
| 6,600.00 | 3,665.78 | 3,647.31 | 3,646.78 | 64.48 | 95.46 | -68.85 | 7.06 | 72.01 | 3,255.74 | 3,153.95 | 101.79 | 31.984 | |
| 6,700.00 | 3,663.34 | 3,644.86 | 3,644.34 | 66.41 | 95.41 | -68.26 | 7.06 | 72.01 | 3,355.51 | 3,253.76 | 101.76 | 32.976 | |
| 6,800.00 | 3,660.89 | 3,642.42 | 3,641.89 | 68.34 | 95.35 | -67.67 | 7.06 | 72.01 | 3,455.30 | 3,353.58 | 101.72 | 33.969 | |
| 6,900.00 | 3,658.44 | 3,639.97 | 3,639.44 | 70.28 | 95.30 | -67.09 | 7.06 | 72.01 | 3,555.10 | 3,453.41 | 101.69 | 34.961 | |
| 7,000.00 | 3,656.00 | 3,637.52 | 3,637.00 | 72.22 | 95.24 | -66.52 | 7.06 | 72.01 | 3,654.91 | 3,553.25 | 101.66 | 35.952 | |
| 7,100.00 | 3,653.55 | 3,635.08 | 3,634.55 | 74.16 | 95.19 | -65.95 | 7.06 | 72.01 | 3,754.72 | 3,653.09 | 101.63 | 36.944 | |
| 7,200.00 | 3,651.10 | 3,632.63 | 3,632.10 | 76.10 | 95.13 | -65.38 | 7.06 | 72.01 | 3,854.55 | 3,752.94 | 101.61 | 37.935 | |
| 7,300.00 | 3,648.66 | 3,630.18 | 3,629.66 | 78.05 | 95.08 | -64.82 | 7.06 | 72.01 | 3,954.38 | 3,852.79 | 101.59 | 38.926 | |
| 7,400.00 | 3,646.21 | 3,627.74 | 3,627.21 | 80.00 | 95.02 | -64.26 | 7.06 | 72.01 | 4,054.22 | 3,952.65 | 101.57 | 39.917 | |
| 7,500.00 | 3,643.76 | 3,625.29 | 3,624.76 | 81.95 | 94.97 | -63.71 | 7.06 | 72.01 | 4,154.06 | 4,052.52 | 101.55 | 40.907 | |
| 7,600.00 | 3,641.32 | 3,622.84 | 3,622.32 | 83.90 | 94.91 | -63.17 | 7.06 | 72.01 | 4,253.91 | 4,152.38 | 101.53 | 41.897 | |
| 7,700.00 | 3,638.87 | 3,620.40 | 3,619.87 | 85.85 | 94.86 | -62.63 | 7.06 | 72.01 | 4,353.77 | 4,252.25 | 101.52 | 42.887 | |
| 7,800.00 | 3,636.42 | 3,617.95 | 3,617.42 | 87.81 | 94.81 | -62.09 | 7.06 | 72.01 | 4,453.63 | 4,352.13 | 101.50 | 43.876 | |
| 7,858.15 | 3,635.00 | 3,616.53 | 3,616.00 | 88.94 | 94.77 | -61.78 | 7.06 | 72.01 | 4,511.71 | 4,410.21 | 101.50 | 44.451 | |

# Legacy Directional
## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **Reference Design:** | Plan 3 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to GL: 7064' + 18' KB @ 7082.00usft
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Carracas Unit 21A 1
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.28°

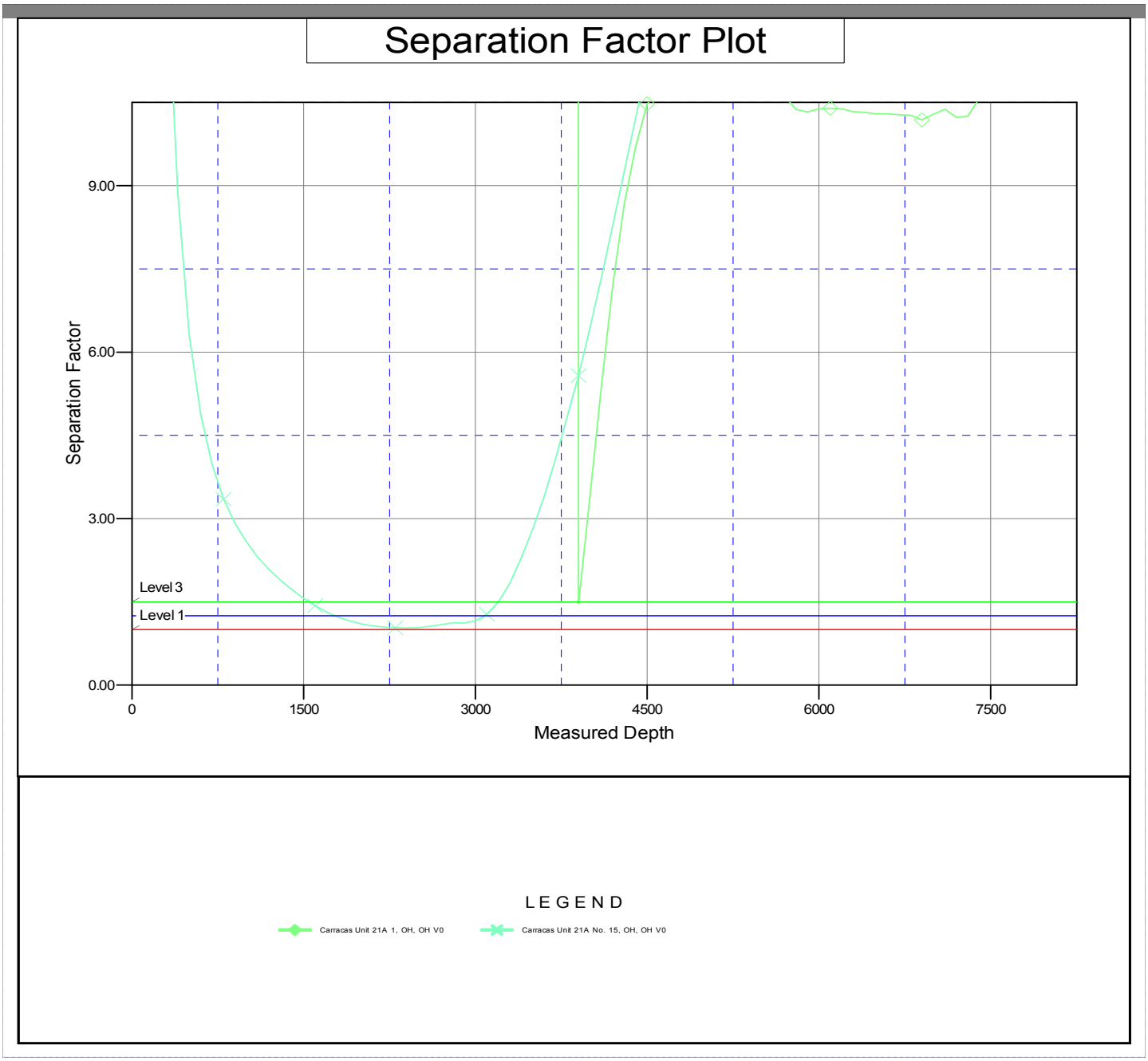


# Legacy Directional
## Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | MorningStar Partners | **Local Co-ordinate Reference:** | Well Carracas Unit 21A 1 |
| **Project:** | Rio Arriba County, NM | **TVD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Reference Site:** | Carracas Unit 21A 1 | **MD Reference:** | GL: 7064' + 18' KB @ 7082.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | Carracas Unit 21A 1 | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ST01 | **Database:** | EDM 5000.14 Single User Db |
| **Reference Design:** | Plan 3 | **Offset TVD Reference:** | Offset Datum |

Reference Depths are relative to GL: 7064' + 18' KB @ 7082.00usft
Offset Depths are relative to Offset Datum
Central Meridian is -107.833334

Coordinates are relative to: Carracas Unit 21A 1
Coordinate System is US State Plane 1927 (Exact solution), New Mexico West 30
Grid Convergence at Surface is: 0.28°



CARRACAS 21A 1-1ST

CARRACAS 23A 4-1ST

CARRACAS 25A 14-1ST

CARRACAS 32B 7-1ST

32N-5W

32N-4W

MorningStar Operating, LLC

Carracas Canyon Production Area

Order: R-13119

0 2,000 4,000 6,000

FEET

January 14, 2022

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:** MORNINGSTAR OPERATING LLC **OGRID:** 330132 **Date:** 01 / 21 /22

**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 |
|---|---|---|---|---|---|---|
| CARRACAS 21A1 | 30-039-30167 | O 21 32N 5W | 698 FSL 2020 FEL | 0 | 1500 | 40 |
| | | | | | | |

**IV. Central Delivery Point Name:** Carracas 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 |
|---|---|---|---|---|---|---|
| CARRACAS 21A1 | 30-039-30167 | 09/30/2008 | | 04/20/2022 | SWAB 4/20/22 | 04/21/2022 |
| | | | | | | |

**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 2 – Enhanced Plan

**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☐ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

| Well | API | Anticipated Average Natural Gas Rate MCF/D | Anticipated Volume of Natural Gas for the First Year MCF |
|---|---|---|---|
| | | | |
| | | | |

**X. Natural Gas Gathering System (NGGS):**

| Operator | System | ULSTR of Tie-in | Anticipated Gathering Start Date | Available Maximum Daily Capacity of System Segment Tie-in |
|---|---|---|---|---|
| | | | | |
| | | | | |

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

## 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: | Connie Blaylock |
| Printed Name: | CONNIE BLAYLOCK |
| Title: | REGULATORY ANALYST |
| E-mail Address: | cblaylock@mspartners.com |
| Date: | 01/21/2022 |
| Phone: | 817-334-7882 |

| **OIL CONSERVATION DIVISION**<br>**(Only applicable when submitted as a standalone form)** |
|---|
| Approved By: |
| Title: |
| Approval Date: |
| Conditions of Approval: |

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

Surface facilities for the well are located on site. Process equipment includes a 2ph separator and water tanks. Vessels are sized based on historical and predicted well performance and provide adequate time for separation. Natural gas will be sold to the sales pipeline and only vented during emergency/non-scheduled issues. Natural gas is the sole product; consequently, there will every effort to minimize waste.

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

- Drilling Operations: Any natural gas produced during drilling operations will be combusted with a flare line. A properly sized flare stack will be located a minimum of 100 feet from the nearest surface hole location. If flaring isn't possible or poses a risk, Operator will vent natural gas to avoid any safety or environmental risks and report natural gas.

- Completion Operations: There is no frac or flowback operations planned for this recompletion. All natural gas production of sufficient pressure will be turned to separation facilities and gathering pipeline for sales.

- Production Operations: Efforts will be made to minimize waste. Process equipment (separators and tanks) is designed for efficient separation and routing produced gas to the sales pipeline. Equipment will be properly maintained with routine inspections and preventative maintenance. Weekly AVOs will be performed at facilities.

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

- Best management practices are used to minimize venting and flaring during downhole operations.
- Flaring will be used in lieu of venting when feasible.
- Adequate well control during completion operations will be employed to minimize oil and gas production.
- Tanks and vessels are isolated from their respective facilities prior to inspection, maintenance, and repairs.
- The preventive maintenance program includes weekly AVO inspections, identification of failures or malfunctions, and repairs as needed.
- Coordinate with third-party gathering and sales operators to minimize downtime and the need for venting/flaring during downstream pipeline and gas plant events.

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

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

COMMENTS

Action 74789

## COMMENTS

| | |
|---|---|
| Operator:<br>MorningStar Operating LLC<br>400 W 7th St<br>Fort Worth, TX 76102 | OGRID:<br>330132 |
| | Action Number:<br>74789 |
| | Action Type:<br>[C-103] NOI Change of Plans (C-103A) |

**COMMENTS**

| Created By | Comment | Comment Date |
|---|---|---|
| kpickford | KP GEO review 1/27/2022 | 1/27/2022 |

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1625 N. French Dr., Hobbs, NM 88240
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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 74789

## CONDITIONS

| | |
|---|---|
| Operator:<br>MorningStar Operating LLC<br>400 W 7th St<br>Fort Worth, TX 76102 | OGRID:<br>330132 |
| | Action Number:<br>74789 |
| | Action Type:<br>[C-103] NOI Change of Plans (C-103A) |

**CONDITIONS**

| Created By | Condition | Condition Date |
|---|---|---|
| kpickford | Notify NMOCD 24 hours prior to beginning operations | 4/18/2022 |
| kpickford | Will require an As Drilled C-102 and directional survey to be submitted with the C-104 Packet. | 4/18/2022 |