Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

Form C-101
August 1, 2011

Permit 380849

## APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

| 1. Operator Name and Address | 2. OGRID Number |
|---|---|
| EOG RESOURCES INC<br>5509 Champions Drive<br>Midland, TX 79706 | 7377 |
| | 3. API Number<br>30-015-56017 |

| 4. Property Code | 5. Property Name | 6. Well No. |
|---|---|---|
| 336863 | PADRON 3 STATE WC UNIT | 713H |

**7. Surface Location**

| UL - Lot | Section | Township | Range | Lot Idn | Feet From | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| D | 3 | 25S | 27E | 4 | 666 | N | 376 | W | Eddy |

**8. Proposed Bottom Hole Location**

| UL - Lot | Section | Township | Range | Lot Idn | Feet From | N/S Line | Feet From | E/W Line | County |
|---|---|---|---|---|---|---|---|---|---|
| A | 1 | 25S | 27E | 1 | 1100 | N | 230 | E | Eddy |

**9. Pool Information**

| | |
|---|---|
| PURPLE SAGE;WOLFCAMP (GAS) | 98220 |

**Additional Well Information**

| 11. Work Type | 12. Well Type | 13. Cable/Rotary | 14. Lease Type | 15. Ground Level Elevation |
|---|---|---|---|---|
| New Well | GAS | | State | 3245 |
| **16. Multiple** | **17. Proposed Depth** | **18. Formation** | **19. Contractor** | **20. Spud Date** |
| N | 24502 | Wolfcamp | | 1/10/2025 |
| Depth to Ground water | | Distance from nearest fresh water well | | Distance to nearest surface water |

☒ **We will be using a closed-loop system in lieu of lined pits**

**21. Proposed Casing and Cement Program**

| Type | Hole Size | Casing Size | Casing Weight/ft | Setting Depth | Sacks of Cement | Estimated TOC |
|---|---|---|---|---|---|---|
| Surf | 12.25 | 9.625 | 36 | 2320 | 660 | 0 |
| Int1 | 8.75 | 7.625 | 29.7 | 8596 | 1450 | 0 |
| Prod | 6.75 | 5.5 | 17 | 24502 | 1440 | 7280 |

**Casing/Cement Program: Additional Comments**

EOG respectfully requests the option to use the casing and cement program described in Design B of the drill plan. The NMOCD will be notified of EOG's election at spud.

**22. Proposed Blowout Prevention Program**

| Type | Working Pressure | Test Pressure | Manufacturer |
|---|---|---|---|
| Double Ram | 5000 | 3000 | |

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
**I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.**

Signature:

| | | | |
|---|---|---|---|
| Printed Name: | Electronically filed by Patricia Donald | Approved By: | Matthew Gomez |
| Title: | Regulatory Specialist | Title: | |
| Email Address: | Patricia_Donald@eogresources.com | Approved Date: 1/17/2025 | Expiration Date: 1/17/2027 |
| Date: 1/10/2025 | Phone: 432-488-7684 | Conditions of Approval Attached | |

**OIL CONSERVATION DIVISION**

C-102

Submit Electronically
Via OCD Permitting

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION

Revised July 9, 2024

Submittal Type: ☒ Initial Submittal ☐ Amended Report ☐ As Drilled

Property Name and Well Number

**PADRON 3 STATE WC UNIT 713H**

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| 30-015- 56017 | 98220 | PURPLE SAGE;WOLFCAMP (GAS) |

| Property Code | Property Name | Well Number |
|---|---|---|
| 336863 | **PADRON 3 STATE WC UNIT** | **713H** |

| OGRID No. | Operator Name | Ground Level Elevation |
|---|---|---|
| 7377 | EOG RESOURCES, INC. | 3245' |

Surface Owner: ☒ State ☐ Fee ☐ Tribal ☐ Federal
Mineral Owner: ☒ State ☐ Fee ☐ Tribal ☐ Federal

## Surface Location

| UL or Lot No. | Section | Township | Range | Lot | Feet from the N/S | Feet from the E/W | Latitude | Longitude | County |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 3 | 25 S | 27 E | | 666 FNL | 376 FWL | N 32.164589° | W 104.185737° | EDDY |

## Bottom Hole Location If Different From Surface

| UL or Lot No. | Section | Township | Range | Lot | Feet from the N/S | Feet from the E/W | Latitude | Longitude | County |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 25 S | 27 E | | 1100 FNL | 230 FEL | N 32.163535° | W 104.136260° | EDDY |

| Dedicated Acres | Infill or Defining Well | Defining Well API | Overlapping Spacing Unit (Y/N) | Consolidated Code |
|---|---|---|---|---|
| 1913.92 | INFILL | 30-015-54760 | Y | U |

Order Numbers 300406 — Well Setbacks are under Common Ownership: ☐ Yes ☐ No

## Kick Off Point (KOP)

| UL or lot no. | Section | Township | Range | Lot | Feet from the N/S | Feet from the E/W | Latitude | Longitude | County |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 3 | 25 S | 27 E | | 1100 FNL | 50 FWL | N 32.163391° | W 104.186784° | EDDY |

## First Take Point (FTP)

| UL or lot no. | Section | Township | Range | Lot | Feet from the N/S | Feet from the E/W | Latitude | Longitude | County |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 3 | 25 S | 27 E | | 1100 FNL | 330 FWL | N 32.163394° | W 104.185879° | EDDY |

## Last Take Point (LTP)

| UL or lot no. | Section | Township | Range | Lot | Feet from the N/S | Feet from the E/W | Latitude | Longitude | County |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 25 S | 27 E | | 1100 FNL | 330 FEL | N 32.163534° | W 104.136584° | EDDY |

| Unitized Area or Area of Uniform Interest | Spacing Unity Type | Ground Floor Elevation |
|---|---|---|
| UNIT | ☒ Horizontal ☐ Vertical | 3270' |

## OPERATOR CERTIFICATION

*I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief; and, if the well is a vertical or directional well, 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 a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.*

*If this well is a horizontal well, I further certify that this organization has received The consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.*

Kayla McConnell — 01/02/2025
Signature — Date

KAYLA MCCONNELL
Print Name

KAYLA_MCCONNELL@EOGRESOURCES.COM
E-mail Address

## SURVEYORS CERTIFICATION

MITCHELL L. McDONALD — NEW MEXICO — 29821 — 12/09/2024 — PROFESSIONAL SURVEYOR

Signature and Seal of Professional Surveyor — Date

*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.*

MITCHELL L. MCDONALD, N.M. P.L.S.

| Certificate Number | Date of Survey |
|---|---|
| 29821 | DECEMBER 5, 2024 |

P:\EOG_R\40043\PRODC\102_Package\C102_WLE\0_Padron_3_State_WC_B\S_Unit_C102_WLE_713H.dwg RHOMESLEY 12/9/2024 9:00 AM

Note: 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.

C-102

Submit Electronically
Via OCD Permitting

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION

Revised July 9, 2024

Submittal Type:
- [x] Initial Submittal
- [ ] Amended Report
- [ ] As Drilled

Property Name and Well Number

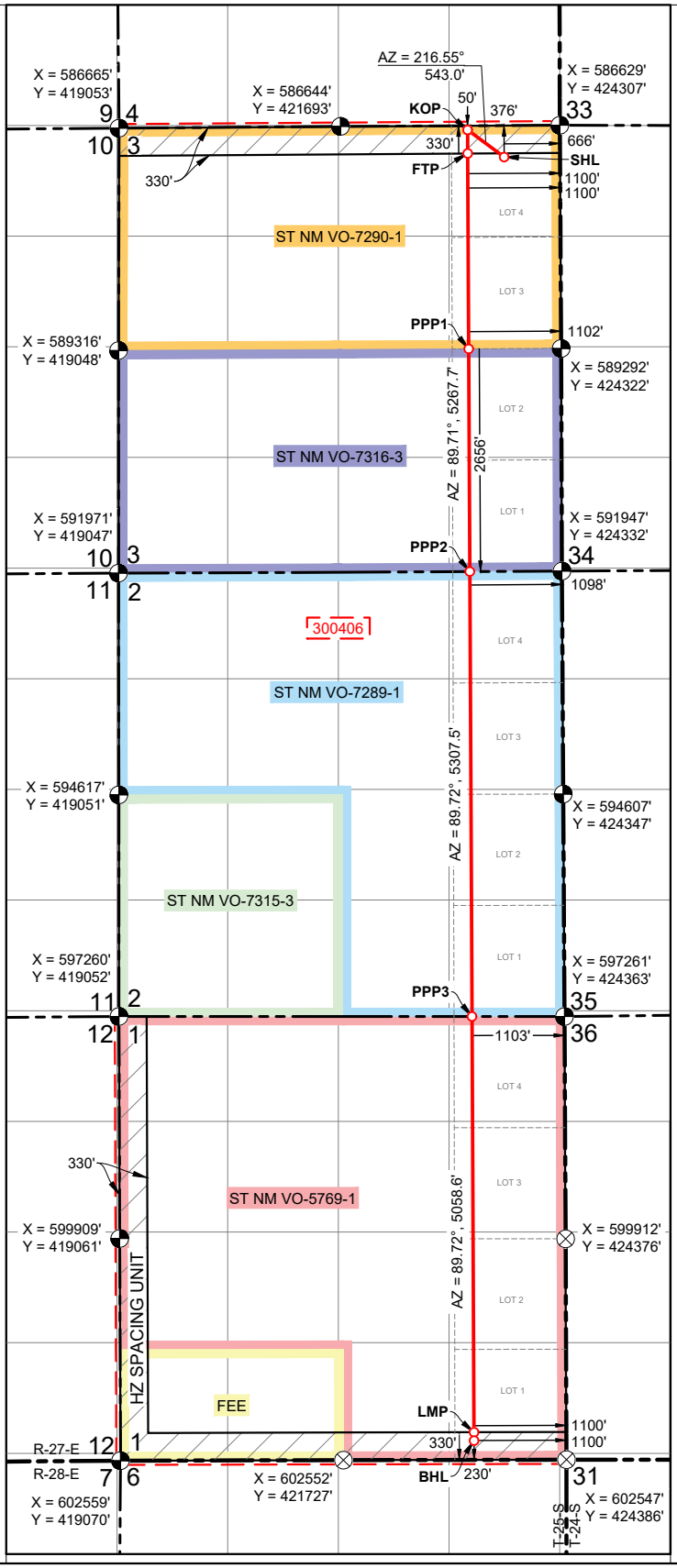
**PADRON 3 STATE WC UNIT 713H**

**SURFACE LOCATION**
NEW MEXICO EAST
NAD 1983
X=587009' Y=423644'
LAT=N32.164589°
LONG=W104.185737°
NAD 1927
X=545826' Y=423586'
LAT=N32.164468°
LONG=W104.185241°
666' FNL 376' FWL

**KOP LOCATION**
NEW MEXICO EAST
NAD 1983
X=586685' Y=423208'
LAT=N32.163391°
LONG=W104.186784°
NAD 1927
X=545502' Y=423150'
LAT=N32.163270°
LONG=W104.186288°
1100' FNL 50' FWL

**FIRST TAKE POINT**
NEW MEXICO EAST
NAD 1983
X=586965' Y=423209'
LAT=N32.163394°
LONG=W104.185879°
NAD 1927
X=545782' Y=423151'
LAT=N32.163273°
LONG=W104.185383°
1100' FNL 330' FWL

**PROPOSED PENETRATION POINT 1**
NEW MEXICO EAST
NAD 1983
X=589297' Y=423221'
LAT=N32.163417°
LONG=W104.178344°
NAD 1927
X=548114' Y=423163'
LAT=N32.163296°
LONG=W104.177849°
1102' FNL 2656' FEL




**PROPOSED PENETRATION POINT 2**
NEW MEXICO EAST
NAD 1983
X=591953' Y=423234'
LAT=N32.163442°
LONG=W104.169760°
NAD 1927
X=550770' Y=423176'
LAT=N32.163321°
LONG=W104.169266°
1098' FNL 0' FEL

**PROPOSED PENETRATION POINT 3**
NEW MEXICO EAST
NAD 1983
X=597261' Y=423260'
LAT=N32.163491°
LONG=W104.152608°
NAD 1927
X=556077' Y=423202'
LAT=N32.163369°
LONG=W104.152114°
1103' FNL 0' FEL

**LOWER MOST PERF.**
NEW MEXICO EAST
NAD 1983
X=602219' Y=423284'
LAT=N32.163534°
LONG=W104.136584°
NAD 1927
X=561036' Y=423226'
LAT=N32.163413°
LONG=W104.136090°
1100' FNL 330' FEL

**BOTTOM HOLE LOCATION**
NEW MEXICO EAST
NAD 1983
X=602319' Y=423285'
LAT=N32.163535°
LONG=W104.136260°
NAD 1927
X=561136' Y=423227'
LAT=N32.163413°
LONG=W104.135767°
1100' FNL 230' FEL

Note: Bearings, coordinates, and distances shown hereon are based on the New Mexico State Plane Coordinate System, East Zone, NAD 83-2011 (EPOCH 2010) framework, as derived by OPUS Solution. The elevations shown hereon are based on NAVD 88.

Sante Fe Main Office
Phone: (505) 476-3441

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

Form APD Comments

Permit 380849

## PERMIT COMMENTS

| Operator Name and Address: | API Number: |
|---|---|
| EOG RESOURCES INC [7377]<br>5509 Champions Drive<br>Midland, TX 79706 | 30-015-56017 |
| | Well:<br>PADRON 3 STATE WC UNIT #713H |

| Created By | Comment | Comment Date |
|---|---|---|
| kayla_mcconnell | Per NMAC 19.15.15 12 (B)(1) requirement, written waivers from all parties required are attached to application. 3 mile well, dedicated acreage includes Sec 2 , T25S, R27E Eddy County | 1/8/2025 |
| matthew.gomez | Rejected per operator request. | 1/8/2025 |

Sante Fe Main Office
Phone: (505) 476-3441

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Phone: (505) 629-6116

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

Form APD Conditions

Permit 380849

## PERMIT CONDITIONS OF APPROVAL

| Operator Name and Address: | API Number: |
|---|---|
| EOG RESOURCES INC [7377]<br>5509 Champions Drive<br>Midland, TX 79706 | 30-015-56017 |
| | Well:<br>PADRON 3 STATE WC UNIT #713H |

| OCD Reviewer | Condition |
|---|---|
| matthew.gomez | A [C-103] Sub. Drilling (C-103N) is required within (10) days of spud. |
| matthew.gomez | Notify the OCD 24 hours prior to casing & cement. |
| matthew.gomez | Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string. |
| matthew.gomez | Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system. |
| matthew.gomez | Cement is required to circulate on both surface and intermediate1 strings of casing. |
| matthew.gomez | If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing. |
| matthew.gomez | File As Drilled C-102 and a directional Survey with C-104 completion packet. |
| matthew.gomez | Operator is only approved for Design A. If Design B is needed or any other change, please submit form C-103A to make the changes. |

eog resources

# EOG Batch Casing

**Pad Name:** Padron 3 State Unit DEEP

SHL: Section 3, Township 25-S, Range 27-E, EDDY County, NM

| Well Name | API # | Surface | | Intermediate | | Production | |
|---|---|---|---|---|---|---|---|
| | | MD | TVD | MD | TVD | MD | TVD |
| Padron 3 State BS Unit #601H | 30-025-***** | 733 | 733 | 7,880 | 7,773 | 24,399 | 8,740 |
| Padron 3 State WC Unit #701H | 30-025-***** | 733 | 733 | 8,004 | 7,773 | 24,615 | 8,988 |
| Padron 3 State WC Unit #702H | 30-025-***** | 733 | 733 | 7,823 | 7,773 | 24,456 | 8,988 |
| Padron 3 State WC Unit #703H | 30-025-***** | 733 | 733 | 7,786 | 7,773 | 24,433 | 8,988 |
| Padron 3 State WC Unit #711H | 30-025-***** | 733 | 733 | 7,871 | 7,773 | 24,563 | 9,053 |
| Padron 3 State WC Unit #712H | 30-025-***** | 733 | 733 | 8,041 | 7,773 | 24,725 | 9,053 |
| Padron 3 State WC Unit #713H | 30-025-***** | 733 | 733 | 7,793 | 7,773 | 24,502 | 9,053 |

# EOG Batch Casing

## Variances

EOG requests the additional variance(s) in the attached document(s):

- EOG BLM Variance 2a - Intermediate Bradenhead Cement
- EOG BLM Variance 3d - Production Offline Cement
- EOG BLM Variance 2b - Wolfcamp Intermediate Casing Setpoint
- EOG BLM Variance 3a_b - BOP Break-test and Offline Intermediate Cement

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**EOG Batch Casing**

**GEOLOGIC NAME OF SURFACE FORMATION**:

Permian

**ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:**

| | |
|---|---|
| Castile | 708' |
| Top of Salt | 1,306' |
| Base of Salt | 2,058' |
| Lamar | 2,258' |
| Bell Canyon | 2,285' |
| Cherry Canyon | 3,140' |
| Brushy Canyon | 4,141' |
| Bone Spring Lime | 5,753' |
| Leonard (Avalon) Shale | 5,908' |
| 1st Bone Spring Sand | 6,733' |
| 2nd Bone Spring Shale | 6,928' |
| 2nd Bone Spring Sand | 7,278' |
| 3rd Bone Spring Carb | 7,673' |
| 3rd Bone Spring Sand | 8,563' |
| Wolfcamp | 8,903' |

**ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:**

| | | |
|---|---|---|
| Upper Permian Sands | 0- 400’ | Fresh Water |
| Bell Canyon | 2,285' | Oil |
| Cherry Canyon | 3,140' | Oil |
| Brushy Canyon | 4,141' | Oil |
| Leonard (Avalon) Shale | 5,908' | Oil |
| 1st Bone Spring Sand | 6,733' | Oil |
| 2nd Bone Spring Shale | 6,928' | Oil |
| 2nd Bone Spring Sand | 7,278' | Oil |

No other Formations are expected to give up oil, gas or fresh water in measurable quantities. Surface fresh water sands will be protected by setting surface casing at 740' and circulating cement back to surface.

eog resources

5509 Champions Drive, Midland, Texas 79706
Phone: (432) 686-3661 Fax: (432) 686-6961

January 6, 2025

ATTN: Corey Mitchell
Mewbourne Oil Company
500 West Texas, Suite 1020
Midland, TX 79701

Re: Multiple Operators within a Spacing Unit Waiver
Mewbourne Devon 12-1 W2PI Fee Com 1H
EOG Padron State BS-WC Unit

Dear Mr. Mitchell,

This letter agreement (this "**Agreement**") shall constitute the mutual agreement and waiver of concern by and among Mewbourne Oil Company ("**Mewbourne**") and EOG Resources, Inc. ("**EOG**") regarding that certain Devon 12-1 W2PI Fee Com 1H (API No.: 30-015-43880) operated by Mewbourne (the "**Well**") and that certain Padron State BS-WC Unit dated October 1, 2023 (the "**Unit**"). Mewbourne and EOG are sometimes hereinafter referred to individually as a "Party" or, collectively, as the "Parties."

The Well has a SHL location in the NENE of Section 13, Township 25 South, Range 27E and a bottom hole location in the E2SE of Section 1, Township 25 South, Range 27 East and produces from the Wolfcamp formation. The 480-acre spacing unit includes the E2 of Section 12, Township 25 South, Range 27 East and the SE of Section 1, Township 25 South, Range 27 East.

Pursuant to that certain letter submitted to the New Mexico State Land Office on February 28, 2024, by EOG, it is the intention to exclude the Well from the Unit.

A portion of the spacing unit associated with the Well overlaps the Unit in the SE4 of Section 1, Township 25 South, Range 27 East (Unit Tract #17). Per NMSLO Rule 19.15.15.12 Special Rules for Multiple Operators within a Spacing Unit – written waivers from all persons required to be notified shall be submitted with the APD.

The Parties agree to waive concern and exclude the Well given that it was not recently drilled, develops acreage outside the Unit boundary lines, and is operated by Mewbourne.

If the terms of this Agreement are acceptable to you, please indicate your approval below. The Agreement is effective as of December 1, 2024.

Agreed to and accepted this 10th day of January, 2025.

**EOG RESOURCES, INC.**

Matthew W. Smith
Land Manager

**MEWBOURNE OIL COMPANY**

Name: Corey Mitchell
Title: Attorney-in-Fact

# Midland

**Eddy County, NM (NAD 83 NME)**
**Padron 3 State WC Unit**
**#713H**

**OH**

**Plan: Plan #0.1 RT**

# Standard Planning Report

**17 December, 2024**

eog resources

# Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**Project** Eddy County, NM (NAD 83 NME)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1983 | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | North American Datum 1983 | | |
| **Map Zone:** | New Mexico Eastern Zone | | |

**Site** Padron 3 State WC Unit

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 423,677.00 usft | **Latitude:** | 32° 9' 52.848 N |
| **From:** | Map | **Easting:** | 587,009.00 usft | **Longitude:** | 104° 11' 8.649 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | | |

**Well** #713H

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 423,644.00 usft | **Latitude:** | 32° 9' 52.522 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 587,009.00 usft | **Longitude:** | 104° 11' 8.650 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | usft | **Ground Level:** | 3,245.0 usft |
| **Grid Convergence:** | | 0.08 ° | | | | |

**Wellbore** OH

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2020 | 12/16/2024 | 6.41 | 59.64 | 47,033.51322962 |

**Design** Plan #0.1 RT

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | | **Phase:** | PLAN | **Tie On Depth:** | 0.0 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 91.34 |

**Plan Survey Tool Program** **Date** 12/16/2024

| | Depth From (usft) | Depth To (usft) | Survey (Wellbore) | Tool Name | Remarks |
|---|---|---|---|---|---|
| 1 | 0.0 | 24,501.8 | Plan #0.1 RT (OH) | EOG MWD+IFR1 | |
| | | | | MWD + IFR1 | |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1,007.0 | 4.14 | 216.62 | 1,006.9 | -6.0 | -4.5 | 2.00 | 2.00 | 0.00 | 216.62 | |
| 8,322.4 | 4.14 | 216.62 | 8,303.1 | -430.0 | -319.5 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 8,529.5 | 0.00 | 0.00 | 8,510.0 | -436.0 | -324.0 | 2.00 | -2.00 | 0.00 | 180.00 | |
| 8,595.0 | 0.00 | 0.00 | 8,575.5 | -436.0 | -324.0 | 0.00 | 0.00 | 0.00 | 0.00 | KOP(Padron 3 State \ |
| 9,141.4 | 65.56 | 89.80 | 9,010.3 | -435.0 | -44.0 | 12.00 | 12.00 | 16.43 | 89.80 | FTP(Padron 3 State V |
| 9,345.1 | 90.00 | 89.72 | 9,053.1 | -434.2 | 153.5 | 12.00 | 12.00 | -0.04 | -0.19 | |
| 24,401.7 | 90.00 | 89.72 | 9,053.0 | -360.0 | 15,210.0 | 0.00 | 0.00 | 0.00 | 0.00 | LTP(Padron 3 State V |
| 24,501.8 | 90.00 | 89.14 | 9,053.0 | -359.0 | 15,310.0 | 0.58 | 0.00 | -0.58 | -90.06 | PBHL(Padron 3 State |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 900.0 | 2.00 | 216.62 | 900.0 | -1.4 | -1.0 | -1.0 | 2.00 | 2.00 | 0.00 |
| 1,007.0 | 4.14 | 216.62 | 1,006.9 | -6.0 | -4.5 | -4.3 | 2.00 | 2.00 | 0.00 |
| 1,100.0 | 4.14 | 216.62 | 1,099.6 | -11.4 | -8.5 | -8.2 | 0.00 | 0.00 | 0.00 |
| 1,200.0 | 4.14 | 216.62 | 1,199.3 | -17.2 | -12.8 | -12.4 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 4.14 | 216.62 | 1,299.1 | -23.0 | -17.1 | -16.5 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 4.14 | 216.62 | 1,398.8 | -28.8 | -21.4 | -20.7 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 4.14 | 216.62 | 1,498.5 | -34.6 | -25.7 | -24.9 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 4.14 | 216.62 | 1,598.3 | -40.4 | -30.0 | -29.0 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 4.14 | 216.62 | 1,698.0 | -46.2 | -34.3 | -33.2 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 4.14 | 216.62 | 1,797.7 | -52.0 | -38.6 | -37.4 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 4.14 | 216.62 | 1,897.5 | -57.8 | -42.9 | -41.6 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 4.14 | 216.62 | 1,997.2 | -63.6 | -47.2 | -45.7 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 4.14 | 216.62 | 2,097.0 | -69.3 | -51.5 | -49.9 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 4.14 | 216.62 | 2,196.7 | -75.1 | -55.8 | -54.1 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 4.14 | 216.62 | 2,296.4 | -80.9 | -60.1 | -58.2 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 4.14 | 216.62 | 2,396.2 | -86.7 | -64.5 | -62.4 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 4.14 | 216.62 | 2,495.9 | -92.5 | -68.8 | -66.6 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 4.14 | 216.62 | 2,595.7 | -98.3 | -73.1 | -70.7 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 4.14 | 216.62 | 2,695.4 | -104.1 | -77.4 | -74.9 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 4.14 | 216.62 | 2,795.1 | -109.9 | -81.7 | -79.1 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 4.14 | 216.62 | 2,894.9 | -115.7 | -86.0 | -83.3 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 4.14 | 216.62 | 2,994.6 | -121.5 | -90.3 | -87.4 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 4.14 | 216.62 | 3,094.4 | -127.3 | -94.6 | -91.6 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 4.14 | 216.62 | 3,194.1 | -133.1 | -98.9 | -95.8 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 4.14 | 216.62 | 3,293.8 | -138.9 | -103.2 | -99.9 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 4.14 | 216.62 | 3,393.6 | -144.7 | -107.5 | -104.1 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 4.14 | 216.62 | 3,493.3 | -150.5 | -111.8 | -108.3 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 4.14 | 216.62 | 3,593.1 | -156.3 | -116.1 | -112.4 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 4.14 | 216.62 | 3,692.8 | -162.1 | -120.4 | -116.6 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 4.14 | 216.62 | 3,792.5 | -167.9 | -124.8 | -120.8 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 4.14 | 216.62 | 3,892.3 | -173.7 | -129.1 | -125.0 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 4.14 | 216.62 | 3,992.0 | -179.5 | -133.4 | -129.1 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 4.14 | 216.62 | 4,091.7 | -185.3 | -137.7 | -133.3 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 4.14 | 216.62 | 4,191.5 | -191.1 | -142.0 | -137.5 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 4.14 | 216.62 | 4,291.2 | -196.9 | -146.3 | -141.6 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 4.14 | 216.62 | 4,391.0 | -202.7 | -150.6 | -145.8 | 0.00 | 0.00 | 0.00 |
| 4,500.0 | 4.14 | 216.62 | 4,490.7 | -208.5 | -154.9 | -150.0 | 0.00 | 0.00 | 0.00 |
| 4,600.0 | 4.14 | 216.62 | 4,590.4 | -214.2 | -159.2 | -154.1 | 0.00 | 0.00 | 0.00 |
| 4,700.0 | 4.14 | 216.62 | 4,690.2 | -220.0 | -163.5 | -158.3 | 0.00 | 0.00 | 0.00 |
| 4,800.0 | 4.14 | 216.62 | 4,789.9 | -225.8 | -167.8 | -162.5 | 0.00 | 0.00 | 0.00 |
| 4,900.0 | 4.14 | 216.62 | 4,889.7 | -231.6 | -172.1 | -166.7 | 0.00 | 0.00 | 0.00 |
| 5,000.0 | 4.14 | 216.62 | 4,989.4 | -237.4 | -176.4 | -170.8 | 0.00 | 0.00 | 0.00 |
| 5,100.0 | 4.14 | 216.62 | 5,089.1 | -243.2 | -180.7 | -175.0 | 0.00 | 0.00 | 0.00 |
| 5,200.0 | 4.14 | 216.62 | 5,188.9 | -249.0 | -185.1 | -179.2 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 4.14 | 216.62 | 5,288.6 | -254.8 | -189.4 | -183.3 | 0.00 | 0.00 | 0.00 |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 5,400.0 | 4.14 | 216.62 | 5,388.4 | -260.6 | -193.7 | -187.5 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | 4.14 | 216.62 | 5,488.1 | -266.4 | -198.0 | -191.7 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | 4.14 | 216.62 | 5,587.8 | -272.2 | -202.3 | -195.8 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | 4.14 | 216.62 | 5,687.6 | -278.0 | -206.6 | -200.0 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 4.14 | 216.62 | 5,787.3 | -283.8 | -210.9 | -204.2 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 4.14 | 216.62 | 5,887.0 | -289.6 | -215.2 | -208.4 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 4.14 | 216.62 | 5,986.8 | -295.4 | -219.5 | -212.5 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 4.14 | 216.62 | 6,086.5 | -301.2 | -223.8 | -216.7 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 4.14 | 216.62 | 6,186.3 | -307.0 | -228.1 | -220.9 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | 4.14 | 216.62 | 6,286.0 | -312.8 | -232.4 | -225.0 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | 4.14 | 216.62 | 6,385.7 | -318.6 | -236.7 | -229.2 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | 4.14 | 216.62 | 6,485.5 | -324.4 | -241.0 | -233.4 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 4.14 | 216.62 | 6,585.2 | -330.2 | -245.4 | -237.5 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | 4.14 | 216.62 | 6,685.0 | -336.0 | -249.7 | -241.7 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 4.14 | 216.62 | 6,784.7 | -341.8 | -254.0 | -245.9 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 4.14 | 216.62 | 6,884.4 | -347.6 | -258.3 | -250.1 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 4.14 | 216.62 | 6,984.2 | -353.4 | -262.6 | -254.2 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 4.14 | 216.62 | 7,083.9 | -359.1 | -266.9 | -258.4 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 4.14 | 216.62 | 7,183.7 | -364.9 | -271.2 | -262.6 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 4.14 | 216.62 | 7,283.4 | -370.7 | -275.5 | -266.7 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 4.14 | 216.62 | 7,383.1 | -376.5 | -279.8 | -270.9 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 4.14 | 216.62 | 7,482.9 | -382.3 | -284.1 | -275.1 | 0.00 | 0.00 | 0.00 |
| 7,600.0 | 4.14 | 216.62 | 7,582.6 | -388.1 | -288.4 | -279.2 | 0.00 | 0.00 | 0.00 |
| 7,700.0 | 4.14 | 216.62 | 7,682.3 | -393.9 | -292.7 | -283.4 | 0.00 | 0.00 | 0.00 |
| 7,800.0 | 4.14 | 216.62 | 7,782.1 | -399.7 | -297.0 | -287.6 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | 4.14 | 216.62 | 7,881.8 | -405.5 | -301.3 | -291.8 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | 4.14 | 216.62 | 7,981.6 | -411.3 | -305.7 | -295.9 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | 4.14 | 216.62 | 8,081.3 | -417.1 | -310.0 | -300.1 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | 4.14 | 216.62 | 8,181.0 | -422.9 | -314.3 | -304.3 | 0.00 | 0.00 | 0.00 |
| 8,300.0 | 4.14 | 216.62 | 8,280.8 | -428.7 | -318.6 | -308.4 | 0.00 | 0.00 | 0.00 |
| 8,322.4 | 4.14 | 216.62 | 8,303.1 | -430.0 | -319.5 | -309.4 | 0.00 | 0.00 | 0.00 |
| 8,400.0 | 2.59 | 216.62 | 8,380.6 | -433.7 | -322.3 | -312.0 | 2.00 | -2.00 | 0.00 |
| 8,500.0 | 0.59 | 216.62 | 8,480.5 | -435.9 | -323.9 | -313.6 | 2.00 | -2.00 | 0.00 |
| 8,529.5 | 0.00 | 0.00 | 8,510.0 | -436.0 | -324.0 | -313.7 | 2.00 | -2.00 | 0.00 |
| 8,595.0 | 0.00 | 0.00 | 8,575.5 | -436.0 | -324.0 | -313.7 | 0.00 | 0.00 | 0.00 |
| 8,600.0 | 0.60 | 89.80 | 8,580.5 | -436.0 | -324.0 | -313.7 | 12.00 | 12.00 | 0.00 |
| 8,625.0 | 3.60 | 89.80 | 8,605.5 | -436.0 | -323.1 | -312.7 | 12.00 | 12.00 | 0.00 |
| 8,650.0 | 6.60 | 89.80 | 8,630.4 | -436.0 | -320.8 | -310.5 | 12.00 | 12.00 | 0.00 |
| 8,675.0 | 9.60 | 89.80 | 8,655.2 | -436.0 | -317.3 | -307.0 | 12.00 | 12.00 | 0.00 |
| 8,700.0 | 12.60 | 89.80 | 8,679.7 | -436.0 | -312.5 | -302.2 | 12.00 | 12.00 | 0.00 |
| 8,725.0 | 15.60 | 89.80 | 8,703.9 | -435.9 | -306.4 | -296.1 | 12.00 | 12.00 | 0.00 |
| 8,750.0 | 18.60 | 89.80 | 8,727.8 | -435.9 | -299.1 | -288.8 | 12.00 | 12.00 | 0.00 |
| 8,775.0 | 21.60 | 89.80 | 8,751.3 | -435.9 | -290.5 | -280.2 | 12.00 | 12.00 | 0.00 |
| 8,800.0 | 24.60 | 89.80 | 8,774.3 | -435.8 | -280.7 | -270.4 | 12.00 | 12.00 | 0.00 |
| 8,825.0 | 27.60 | 89.80 | 8,796.7 | -435.8 | -269.7 | -259.4 | 12.00 | 12.00 | 0.00 |
| 8,850.0 | 30.60 | 89.80 | 8,818.6 | -435.8 | -257.5 | -247.2 | 12.00 | 12.00 | 0.00 |
| 8,875.0 | 33.60 | 89.80 | 8,839.8 | -435.7 | -244.2 | -233.9 | 12.00 | 12.00 | 0.00 |
| 8,900.0 | 36.60 | 89.80 | 8,860.2 | -435.7 | -229.9 | -219.6 | 12.00 | 12.00 | 0.00 |
| 8,925.0 | 39.59 | 89.80 | 8,879.9 | -435.6 | -214.4 | -204.2 | 12.00 | 12.00 | 0.00 |
| 8,950.0 | 42.59 | 89.80 | 8,898.7 | -435.5 | -198.0 | -187.7 | 12.00 | 12.00 | 0.00 |
| 8,975.0 | 45.59 | 89.80 | 8,916.7 | -435.5 | -180.6 | -170.3 | 12.00 | 12.00 | 0.00 |
| 9,000.0 | 48.59 | 89.80 | 8,933.7 | -435.4 | -162.3 | -152.0 | 12.00 | 12.00 | 0.00 |
| 9,025.0 | 51.59 | 89.80 | 8,949.7 | -435.4 | -143.1 | -132.9 | 12.00 | 12.00 | 0.00 |
| 9,050.0 | 54.59 | 89.80 | 8,964.8 | -435.3 | -123.1 | -112.9 | 12.00 | 12.00 | 0.00 |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 9,075.0 | 57.59 | 89.80 | 8,978.7 | -435.2 | -102.4 | -92.2 | 12.00 | 12.00 | 0.00 |
| 9,100.0 | 60.59 | 89.80 | 8,991.5 | -435.1 | -80.9 | -70.7 | 12.00 | 12.00 | 0.00 |
| 9,125.0 | 63.59 | 89.80 | 9,003.2 | -435.1 | -58.9 | -48.6 | 12.00 | 12.00 | 0.00 |
| 9,141.4 | 65.56 | 89.80 | 9,010.3 | -435.0 | -44.0 | -33.8 | 12.00 | 12.00 | 0.00 |
| 9,150.0 | 66.59 | 89.79 | 9,013.8 | -435.0 | -36.2 | -26.0 | 12.00 | 12.00 | -0.04 |
| 9,175.0 | 69.59 | 89.78 | 9,023.1 | -434.9 | -13.0 | -2.8 | 12.00 | 12.00 | -0.04 |
| 9,200.0 | 72.59 | 89.77 | 9,031.2 | -434.8 | 10.7 | 20.8 | 12.00 | 12.00 | -0.04 |
| 9,225.0 | 75.59 | 89.76 | 9,038.1 | -434.7 | 34.7 | 44.9 | 12.00 | 12.00 | -0.04 |
| 9,250.0 | 78.59 | 89.75 | 9,043.6 | -434.6 | 59.1 | 69.2 | 12.00 | 12.00 | -0.04 |
| 9,275.0 | 81.59 | 89.74 | 9,047.9 | -434.5 | 83.7 | 93.8 | 12.00 | 12.00 | -0.04 |
| 9,300.0 | 84.59 | 89.73 | 9,051.0 | -434.4 | 108.5 | 118.7 | 12.00 | 12.00 | -0.04 |
| 9,325.0 | 87.59 | 89.73 | 9,052.7 | -434.3 | 133.4 | 143.6 | 12.00 | 12.00 | -0.04 |
| 9,345.1 | 90.00 | 89.72 | 9,053.1 | -434.2 | 153.5 | 163.7 | 12.00 | 12.00 | -0.04 |
| 9,400.0 | 90.00 | 89.72 | 9,053.1 | -433.9 | 208.4 | 218.5 | 0.00 | 0.00 | 0.00 |
| 9,500.0 | 90.00 | 89.72 | 9,053.1 | -433.4 | 308.4 | 318.5 | 0.00 | 0.00 | 0.00 |
| 9,600.0 | 90.00 | 89.72 | 9,053.1 | -432.9 | 408.4 | 418.5 | 0.00 | 0.00 | 0.00 |
| 9,700.0 | 90.00 | 89.72 | 9,053.1 | -432.4 | 508.4 | 518.4 | 0.00 | 0.00 | 0.00 |
| 9,800.0 | 90.00 | 89.72 | 9,053.1 | -431.9 | 608.4 | 618.4 | 0.00 | 0.00 | 0.00 |
| 9,900.0 | 90.00 | 89.72 | 9,053.1 | -431.4 | 708.4 | 718.3 | 0.00 | 0.00 | 0.00 |
| 10,000.0 | 90.00 | 89.72 | 9,053.1 | -430.9 | 808.4 | 818.3 | 0.00 | 0.00 | 0.00 |
| 10,100.0 | 90.00 | 89.72 | 9,053.1 | -430.4 | 908.4 | 918.3 | 0.00 | 0.00 | 0.00 |
| 10,200.0 | 90.00 | 89.72 | 9,053.1 | -429.9 | 1,008.4 | 1,018.2 | 0.00 | 0.00 | 0.00 |
| 10,300.0 | 90.00 | 89.72 | 9,053.1 | -429.5 | 1,108.4 | 1,118.2 | 0.00 | 0.00 | 0.00 |
| 10,400.0 | 90.00 | 89.72 | 9,053.1 | -429.0 | 1,208.4 | 1,218.1 | 0.00 | 0.00 | 0.00 |
| 10,500.0 | 90.00 | 89.72 | 9,053.1 | -428.5 | 1,308.4 | 1,318.1 | 0.00 | 0.00 | 0.00 |
| 10,600.0 | 90.00 | 89.72 | 9,053.1 | -428.0 | 1,408.4 | 1,418.1 | 0.00 | 0.00 | 0.00 |
| 10,700.0 | 90.00 | 89.72 | 9,053.1 | -427.5 | 1,508.4 | 1,518.0 | 0.00 | 0.00 | 0.00 |
| 10,800.0 | 90.00 | 89.72 | 9,053.1 | -427.0 | 1,608.4 | 1,618.0 | 0.00 | 0.00 | 0.00 |
| 10,900.0 | 90.00 | 89.72 | 9,053.1 | -426.5 | 1,708.4 | 1,717.9 | 0.00 | 0.00 | 0.00 |
| 11,000.0 | 90.00 | 89.72 | 9,053.1 | -426.0 | 1,808.4 | 1,817.9 | 0.00 | 0.00 | 0.00 |
| 11,100.0 | 90.00 | 89.72 | 9,053.1 | -425.5 | 1,908.4 | 1,917.9 | 0.00 | 0.00 | 0.00 |
| 11,200.0 | 90.00 | 89.72 | 9,053.1 | -425.0 | 2,008.4 | 2,017.8 | 0.00 | 0.00 | 0.00 |
| 11,300.0 | 90.00 | 89.72 | 9,053.1 | -424.5 | 2,108.4 | 2,117.8 | 0.00 | 0.00 | 0.00 |
| 11,400.0 | 90.00 | 89.72 | 9,053.1 | -424.0 | 2,208.4 | 2,217.7 | 0.00 | 0.00 | 0.00 |
| 11,500.0 | 90.00 | 89.72 | 9,053.1 | -423.5 | 2,308.4 | 2,317.7 | 0.00 | 0.00 | 0.00 |
| 11,600.0 | 90.00 | 89.72 | 9,053.1 | -423.0 | 2,408.4 | 2,417.7 | 0.00 | 0.00 | 0.00 |
| 11,700.0 | 90.00 | 89.72 | 9,053.1 | -422.6 | 2,508.4 | 2,517.6 | 0.00 | 0.00 | 0.00 |
| 11,800.0 | 90.00 | 89.72 | 9,053.1 | -422.1 | 2,608.4 | 2,617.6 | 0.00 | 0.00 | 0.00 |
| 11,900.0 | 90.00 | 89.72 | 9,053.1 | -421.6 | 2,708.4 | 2,717.5 | 0.00 | 0.00 | 0.00 |
| 12,000.0 | 90.00 | 89.72 | 9,053.1 | -421.1 | 2,808.4 | 2,817.5 | 0.00 | 0.00 | 0.00 |
| 12,100.0 | 90.00 | 89.72 | 9,053.1 | -420.6 | 2,908.4 | 2,917.5 | 0.00 | 0.00 | 0.00 |
| 12,200.0 | 90.00 | 89.72 | 9,053.1 | -420.1 | 3,008.4 | 3,017.4 | 0.00 | 0.00 | 0.00 |
| 12,300.0 | 90.00 | 89.72 | 9,053.1 | -419.6 | 3,108.4 | 3,117.4 | 0.00 | 0.00 | 0.00 |
| 12,400.0 | 90.00 | 89.72 | 9,053.1 | -419.1 | 3,208.4 | 3,217.3 | 0.00 | 0.00 | 0.00 |
| 12,500.0 | 90.00 | 89.72 | 9,053.1 | -418.6 | 3,308.4 | 3,317.3 | 0.00 | 0.00 | 0.00 |
| 12,600.0 | 90.00 | 89.72 | 9,053.1 | -418.1 | 3,408.4 | 3,417.3 | 0.00 | 0.00 | 0.00 |
| 12,700.0 | 90.00 | 89.72 | 9,053.1 | -417.6 | 3,508.4 | 3,517.2 | 0.00 | 0.00 | 0.00 |
| 12,800.0 | 90.00 | 89.72 | 9,053.1 | -417.1 | 3,608.4 | 3,617.2 | 0.00 | 0.00 | 0.00 |
| 12,900.0 | 90.00 | 89.72 | 9,053.1 | -416.6 | 3,708.4 | 3,717.1 | 0.00 | 0.00 | 0.00 |
| 13,000.0 | 90.00 | 89.72 | 9,053.1 | -416.2 | 3,808.4 | 3,817.1 | 0.00 | 0.00 | 0.00 |
| 13,100.0 | 90.00 | 89.72 | 9,053.1 | -415.7 | 3,908.4 | 3,917.1 | 0.00 | 0.00 | 0.00 |
| 13,200.0 | 90.00 | 89.72 | 9,053.1 | -415.2 | 4,008.4 | 4,017.0 | 0.00 | 0.00 | 0.00 |
| 13,300.0 | 90.00 | 89.72 | 9,053.1 | -414.7 | 4,108.4 | 4,117.0 | 0.00 | 0.00 | 0.00 |
| 13,400.0 | 90.00 | 89.72 | 9,053.1 | -414.2 | 4,208.4 | 4,216.9 | 0.00 | 0.00 | 0.00 |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 13,500.0 | 90.00 | 89.72 | 9,053.1 | -413.7 | 4,308.4 | 4,316.9 | 0.00 | 0.00 | 0.00 |
| 13,600.0 | 90.00 | 89.72 | 9,053.1 | -413.2 | 4,408.4 | 4,416.9 | 0.00 | 0.00 | 0.00 |
| 13,700.0 | 90.00 | 89.72 | 9,053.1 | -412.7 | 4,508.4 | 4,516.8 | 0.00 | 0.00 | 0.00 |
| 13,800.0 | 90.00 | 89.72 | 9,053.1 | -412.2 | 4,608.4 | 4,616.8 | 0.00 | 0.00 | 0.00 |
| 13,900.0 | 90.00 | 89.72 | 9,053.1 | -411.7 | 4,708.4 | 4,716.7 | 0.00 | 0.00 | 0.00 |
| 14,000.0 | 90.00 | 89.72 | 9,053.1 | -411.2 | 4,808.4 | 4,816.7 | 0.00 | 0.00 | 0.00 |
| 14,100.0 | 90.00 | 89.72 | 9,053.1 | -410.7 | 4,908.4 | 4,916.7 | 0.00 | 0.00 | 0.00 |
| 14,200.0 | 90.00 | 89.72 | 9,053.1 | -410.2 | 5,008.4 | 5,016.6 | 0.00 | 0.00 | 0.00 |
| 14,300.0 | 90.00 | 89.72 | 9,053.1 | -409.8 | 5,108.4 | 5,116.6 | 0.00 | 0.00 | 0.00 |
| 14,400.0 | 90.00 | 89.72 | 9,053.1 | -409.3 | 5,208.4 | 5,216.5 | 0.00 | 0.00 | 0.00 |
| 14,500.0 | 90.00 | 89.72 | 9,053.1 | -408.8 | 5,308.4 | 5,316.5 | 0.00 | 0.00 | 0.00 |
| 14,600.0 | 90.00 | 89.72 | 9,053.1 | -408.3 | 5,408.4 | 5,416.5 | 0.00 | 0.00 | 0.00 |
| 14,700.0 | 90.00 | 89.72 | 9,053.1 | -407.8 | 5,508.4 | 5,516.4 | 0.00 | 0.00 | 0.00 |
| 14,800.0 | 90.00 | 89.72 | 9,053.1 | -407.3 | 5,608.4 | 5,616.4 | 0.00 | 0.00 | 0.00 |
| 14,900.0 | 90.00 | 89.72 | 9,053.0 | -406.8 | 5,708.4 | 5,716.3 | 0.00 | 0.00 | 0.00 |
| 15,000.0 | 90.00 | 89.72 | 9,053.0 | -406.3 | 5,808.4 | 5,816.3 | 0.00 | 0.00 | 0.00 |
| 15,100.0 | 90.00 | 89.72 | 9,053.0 | -405.8 | 5,908.4 | 5,916.3 | 0.00 | 0.00 | 0.00 |
| 15,200.0 | 90.00 | 89.72 | 9,053.0 | -405.3 | 6,008.4 | 6,016.2 | 0.00 | 0.00 | 0.00 |
| 15,300.0 | 90.00 | 89.72 | 9,053.0 | -404.8 | 6,108.4 | 6,116.2 | 0.00 | 0.00 | 0.00 |
| 15,400.0 | 90.00 | 89.72 | 9,053.0 | -404.3 | 6,208.4 | 6,216.1 | 0.00 | 0.00 | 0.00 |
| 15,500.0 | 90.00 | 89.72 | 9,053.0 | -403.8 | 6,308.4 | 6,316.1 | 0.00 | 0.00 | 0.00 |
| 15,600.0 | 90.00 | 89.72 | 9,053.0 | -403.3 | 6,408.4 | 6,416.1 | 0.00 | 0.00 | 0.00 |
| 15,700.0 | 90.00 | 89.72 | 9,053.0 | -402.9 | 6,508.4 | 6,516.0 | 0.00 | 0.00 | 0.00 |
| 15,800.0 | 90.00 | 89.72 | 9,053.0 | -402.4 | 6,608.4 | 6,616.0 | 0.00 | 0.00 | 0.00 |
| 15,900.0 | 90.00 | 89.72 | 9,053.0 | -401.9 | 6,708.4 | 6,715.9 | 0.00 | 0.00 | 0.00 |
| 16,000.0 | 90.00 | 89.72 | 9,053.0 | -401.4 | 6,808.4 | 6,815.9 | 0.00 | 0.00 | 0.00 |
| 16,100.0 | 90.00 | 89.72 | 9,053.0 | -400.9 | 6,908.4 | 6,915.9 | 0.00 | 0.00 | 0.00 |
| 16,200.0 | 90.00 | 89.72 | 9,053.0 | -400.4 | 7,008.4 | 7,015.8 | 0.00 | 0.00 | 0.00 |
| 16,300.0 | 90.00 | 89.72 | 9,053.0 | -399.9 | 7,108.3 | 7,115.8 | 0.00 | 0.00 | 0.00 |
| 16,400.0 | 90.00 | 89.72 | 9,053.0 | -399.4 | 7,208.3 | 7,215.7 | 0.00 | 0.00 | 0.00 |
| 16,500.0 | 90.00 | 89.72 | 9,053.0 | -398.9 | 7,308.3 | 7,315.7 | 0.00 | 0.00 | 0.00 |
| 16,600.0 | 90.00 | 89.72 | 9,053.0 | -398.4 | 7,408.3 | 7,415.6 | 0.00 | 0.00 | 0.00 |
| 16,700.0 | 90.00 | 89.72 | 9,053.0 | -397.9 | 7,508.3 | 7,515.6 | 0.00 | 0.00 | 0.00 |
| 16,800.0 | 90.00 | 89.72 | 9,053.0 | -397.4 | 7,608.3 | 7,615.6 | 0.00 | 0.00 | 0.00 |
| 16,900.0 | 90.00 | 89.72 | 9,053.0 | -396.9 | 7,708.3 | 7,715.5 | 0.00 | 0.00 | 0.00 |
| 17,000.0 | 90.00 | 89.72 | 9,053.0 | -396.5 | 7,808.3 | 7,815.5 | 0.00 | 0.00 | 0.00 |
| 17,100.0 | 90.00 | 89.72 | 9,053.0 | -396.0 | 7,908.3 | 7,915.4 | 0.00 | 0.00 | 0.00 |
| 17,200.0 | 90.00 | 89.72 | 9,053.0 | -395.5 | 8,008.3 | 8,015.4 | 0.00 | 0.00 | 0.00 |
| 17,300.0 | 90.00 | 89.72 | 9,053.0 | -395.0 | 8,108.3 | 8,115.4 | 0.00 | 0.00 | 0.00 |
| 17,400.0 | 90.00 | 89.72 | 9,053.0 | -394.5 | 8,208.3 | 8,215.3 | 0.00 | 0.00 | 0.00 |
| 17,500.0 | 90.00 | 89.72 | 9,053.0 | -394.0 | 8,308.3 | 8,315.3 | 0.00 | 0.00 | 0.00 |
| 17,600.0 | 90.00 | 89.72 | 9,053.0 | -393.5 | 8,408.3 | 8,415.2 | 0.00 | 0.00 | 0.00 |
| 17,700.0 | 90.00 | 89.72 | 9,053.0 | -393.0 | 8,508.3 | 8,515.2 | 0.00 | 0.00 | 0.00 |
| 17,800.0 | 90.00 | 89.72 | 9,053.0 | -392.5 | 8,608.3 | 8,615.2 | 0.00 | 0.00 | 0.00 |
| 17,900.0 | 90.00 | 89.72 | 9,053.0 | -392.0 | 8,708.3 | 8,715.1 | 0.00 | 0.00 | 0.00 |
| 18,000.0 | 90.00 | 89.72 | 9,053.0 | -391.5 | 8,808.3 | 8,815.1 | 0.00 | 0.00 | 0.00 |
| 18,100.0 | 90.00 | 89.72 | 9,053.0 | -391.0 | 8,908.3 | 8,915.0 | 0.00 | 0.00 | 0.00 |
| 18,200.0 | 90.00 | 89.72 | 9,053.0 | -390.5 | 9,008.3 | 9,015.0 | 0.00 | 0.00 | 0.00 |
| 18,300.0 | 90.00 | 89.72 | 9,053.0 | -390.1 | 9,108.3 | 9,115.0 | 0.00 | 0.00 | 0.00 |
| 18,400.0 | 90.00 | 89.72 | 9,053.0 | -389.6 | 9,208.3 | 9,214.9 | 0.00 | 0.00 | 0.00 |
| 18,500.0 | 90.00 | 89.72 | 9,053.0 | -389.1 | 9,308.3 | 9,314.9 | 0.00 | 0.00 | 0.00 |
| 18,600.0 | 90.00 | 89.72 | 9,053.0 | -388.6 | 9,408.3 | 9,414.8 | 0.00 | 0.00 | 0.00 |
| 18,700.0 | 90.00 | 89.72 | 9,053.0 | -388.1 | 9,508.3 | 9,514.8 | 0.00 | 0.00 | 0.00 |
| 18,800.0 | 90.00 | 89.72 | 9,053.0 | -387.6 | 9,608.3 | 9,614.8 | 0.00 | 0.00 | 0.00 |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 18,900.0 | 90.00 | 89.72 | 9,053.0 | -387.1 | 9,708.3 | 9,714.7 | 0.00 | 0.00 | 0.00 |
| 19,000.0 | 90.00 | 89.72 | 9,053.0 | -386.6 | 9,808.3 | 9,814.7 | 0.00 | 0.00 | 0.00 |
| 19,100.0 | 90.00 | 89.72 | 9,053.0 | -386.1 | 9,908.3 | 9,914.6 | 0.00 | 0.00 | 0.00 |
| 19,200.0 | 90.00 | 89.72 | 9,053.0 | -385.6 | 10,008.3 | 10,014.6 | 0.00 | 0.00 | 0.00 |
| 19,300.0 | 90.00 | 89.72 | 9,053.0 | -385.1 | 10,108.3 | 10,114.6 | 0.00 | 0.00 | 0.00 |
| 19,400.0 | 90.00 | 89.72 | 9,053.0 | -384.6 | 10,208.3 | 10,214.5 | 0.00 | 0.00 | 0.00 |
| 19,500.0 | 90.00 | 89.72 | 9,053.0 | -384.1 | 10,308.3 | 10,314.5 | 0.00 | 0.00 | 0.00 |
| 19,600.0 | 90.00 | 89.72 | 9,053.0 | -383.6 | 10,408.3 | 10,414.4 | 0.00 | 0.00 | 0.00 |
| 19,700.0 | 90.00 | 89.72 | 9,053.0 | -383.2 | 10,508.3 | 10,514.4 | 0.00 | 0.00 | 0.00 |
| 19,800.0 | 90.00 | 89.72 | 9,053.0 | -382.7 | 10,608.3 | 10,614.4 | 0.00 | 0.00 | 0.00 |
| 19,900.0 | 90.00 | 89.72 | 9,053.0 | -382.2 | 10,708.3 | 10,714.3 | 0.00 | 0.00 | 0.00 |
| 20,000.0 | 90.00 | 89.72 | 9,053.0 | -381.7 | 10,808.3 | 10,814.3 | 0.00 | 0.00 | 0.00 |
| 20,100.0 | 90.00 | 89.72 | 9,053.0 | -381.2 | 10,908.3 | 10,914.2 | 0.00 | 0.00 | 0.00 |
| 20,200.0 | 90.00 | 89.72 | 9,053.0 | -380.7 | 11,008.3 | 11,014.2 | 0.00 | 0.00 | 0.00 |
| 20,300.0 | 90.00 | 89.72 | 9,053.0 | -380.2 | 11,108.3 | 11,114.2 | 0.00 | 0.00 | 0.00 |
| 20,400.0 | 90.00 | 89.72 | 9,053.0 | -379.7 | 11,208.3 | 11,214.1 | 0.00 | 0.00 | 0.00 |
| 20,500.0 | 90.00 | 89.72 | 9,053.0 | -379.2 | 11,308.3 | 11,314.1 | 0.00 | 0.00 | 0.00 |
| 20,600.0 | 90.00 | 89.72 | 9,053.0 | -378.7 | 11,408.3 | 11,414.0 | 0.00 | 0.00 | 0.00 |
| 20,700.0 | 90.00 | 89.72 | 9,053.0 | -378.2 | 11,508.3 | 11,514.0 | 0.00 | 0.00 | 0.00 |
| 20,800.0 | 90.00 | 89.72 | 9,053.0 | -377.7 | 11,608.3 | 11,614.0 | 0.00 | 0.00 | 0.00 |
| 20,900.0 | 90.00 | 89.72 | 9,053.0 | -377.2 | 11,708.3 | 11,713.9 | 0.00 | 0.00 | 0.00 |
| 21,000.0 | 90.00 | 89.72 | 9,053.0 | -376.8 | 11,808.3 | 11,813.9 | 0.00 | 0.00 | 0.00 |
| 21,100.0 | 90.00 | 89.72 | 9,053.0 | -376.3 | 11,908.3 | 11,913.8 | 0.00 | 0.00 | 0.00 |
| 21,200.0 | 90.00 | 89.72 | 9,053.0 | -375.8 | 12,008.3 | 12,013.8 | 0.00 | 0.00 | 0.00 |
| 21,300.0 | 90.00 | 89.72 | 9,053.0 | -375.3 | 12,108.3 | 12,113.8 | 0.00 | 0.00 | 0.00 |
| 21,400.0 | 90.00 | 89.72 | 9,053.0 | -374.8 | 12,208.3 | 12,213.7 | 0.00 | 0.00 | 0.00 |
| 21,500.0 | 90.00 | 89.72 | 9,053.0 | -374.3 | 12,308.3 | 12,313.7 | 0.00 | 0.00 | 0.00 |
| 21,600.0 | 90.00 | 89.72 | 9,053.0 | -373.8 | 12,408.3 | 12,413.6 | 0.00 | 0.00 | 0.00 |
| 21,700.0 | 90.00 | 89.72 | 9,053.0 | -373.3 | 12,508.3 | 12,513.6 | 0.00 | 0.00 | 0.00 |
| 21,800.0 | 90.00 | 89.72 | 9,053.0 | -372.8 | 12,608.3 | 12,613.6 | 0.00 | 0.00 | 0.00 |
| 21,900.0 | 90.00 | 89.72 | 9,053.0 | -372.3 | 12,708.3 | 12,713.5 | 0.00 | 0.00 | 0.00 |
| 22,000.0 | 90.00 | 89.72 | 9,053.0 | -371.8 | 12,808.3 | 12,813.5 | 0.00 | 0.00 | 0.00 |
| 22,100.0 | 90.00 | 89.72 | 9,053.0 | -371.3 | 12,908.3 | 12,913.4 | 0.00 | 0.00 | 0.00 |
| 22,200.0 | 90.00 | 89.72 | 9,053.0 | -370.8 | 13,008.3 | 13,013.4 | 0.00 | 0.00 | 0.00 |
| 22,300.0 | 90.00 | 89.72 | 9,053.0 | -370.4 | 13,108.3 | 13,113.4 | 0.00 | 0.00 | 0.00 |
| 22,400.0 | 90.00 | 89.72 | 9,053.0 | -369.9 | 13,208.3 | 13,213.3 | 0.00 | 0.00 | 0.00 |
| 22,500.0 | 90.00 | 89.72 | 9,053.0 | -369.4 | 13,308.3 | 13,313.3 | 0.00 | 0.00 | 0.00 |
| 22,600.0 | 90.00 | 89.72 | 9,053.0 | -368.9 | 13,408.3 | 13,413.2 | 0.00 | 0.00 | 0.00 |
| 22,700.0 | 90.00 | 89.72 | 9,053.0 | -368.4 | 13,508.3 | 13,513.2 | 0.00 | 0.00 | 0.00 |
| 22,800.0 | 90.00 | 89.72 | 9,053.0 | -367.9 | 13,608.3 | 13,613.2 | 0.00 | 0.00 | 0.00 |
| 22,900.0 | 90.00 | 89.72 | 9,053.0 | -367.4 | 13,708.3 | 13,713.1 | 0.00 | 0.00 | 0.00 |
| 23,000.0 | 90.00 | 89.72 | 9,053.0 | -366.9 | 13,808.3 | 13,813.1 | 0.00 | 0.00 | 0.00 |
| 23,100.0 | 90.00 | 89.72 | 9,053.0 | -366.4 | 13,908.3 | 13,913.0 | 0.00 | 0.00 | 0.00 |
| 23,200.0 | 90.00 | 89.72 | 9,053.0 | -365.9 | 14,008.3 | 14,013.0 | 0.00 | 0.00 | 0.00 |
| 23,300.0 | 90.00 | 89.72 | 9,053.0 | -365.4 | 14,108.3 | 14,113.0 | 0.00 | 0.00 | 0.00 |
| 23,400.0 | 90.00 | 89.72 | 9,053.0 | -364.9 | 14,208.3 | 14,212.9 | 0.00 | 0.00 | 0.00 |
| 23,500.0 | 90.00 | 89.72 | 9,053.0 | -364.4 | 14,308.3 | 14,312.9 | 0.00 | 0.00 | 0.00 |
| 23,600.0 | 90.00 | 89.72 | 9,053.0 | -363.9 | 14,408.3 | 14,412.8 | 0.00 | 0.00 | 0.00 |
| 23,700.0 | 90.00 | 89.72 | 9,053.0 | -363.5 | 14,508.3 | 14,512.8 | 0.00 | 0.00 | 0.00 |
| 23,800.0 | 90.00 | 89.72 | 9,053.0 | -363.0 | 14,608.3 | 14,612.8 | 0.00 | 0.00 | 0.00 |
| 23,900.0 | 90.00 | 89.72 | 9,053.0 | -362.5 | 14,708.3 | 14,712.7 | 0.00 | 0.00 | 0.00 |
| 24,000.0 | 90.00 | 89.72 | 9,053.0 | -362.0 | 14,808.3 | 14,812.7 | 0.00 | 0.00 | 0.00 |
| 24,100.0 | 90.00 | 89.72 | 9,053.0 | -361.5 | 14,908.3 | 14,912.6 | 0.00 | 0.00 | 0.00 |
| 24,200.0 | 90.00 | 89.72 | 9,053.0 | -361.0 | 15,008.3 | 15,012.6 | 0.00 | 0.00 | 0.00 |

eog resources

Planning Report

| | | | |
|---|---|---|---|
| **Database:** | PEDMB | **Local Co-ordinate Reference:** | Well #713H |
| **Company:** | Midland | **TVD Reference:** | kb = 26' @ 3271.0usft |
| **Project:** | Eddy County, NM (NAD 83 NME) | **MD Reference:** | kb = 26' @ 3271.0usft |
| **Site:** | Padron 3 State WC Unit | **North Reference:** | Grid |
| **Well:** | #713H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.1 RT | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 24,300.0 | 90.00 | 89.72 | 9,053.0 | -360.5 | 15,108.3 | 15,112.6 | 0.00 | 0.00 | 0.00 |
| 24,401.7 | 90.00 | 89.72 | 9,053.0 | -360.0 | 15,210.0 | 15,214.3 | 0.00 | 0.00 | 0.00 |
| 24,501.8 | 90.00 | 89.14 | 9,053.0 | -359.0 | 15,310.0 | 15,314.2 | 0.58 | 0.00 | -0.58 |

**Design Targets**

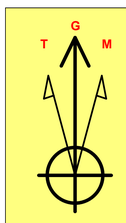
| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| KOP(Padron 3 State WC - plan hits target center - Point | 0.00 | 0.00 | 8,575.5 | -436.0 | -324.0 | 423,208.00 | 586,685.00 | 32° 9' 48.212 N | 104° 11' 12.426 W |
| FTP(Padron 3 State WC - plan hits target center - Point | 0.00 | 0.00 | 9,010.3 | -435.0 | -44.0 | 423,209.00 | 586,965.00 | 32° 9' 48.218 N | 104° 11' 9.169 W |
| LTP(Padron 3 State WC - plan hits target center - Point | 0.00 | 0.00 | 9,053.0 | -360.0 | 15,210.0 | 423,284.00 | 602,219.00 | 32° 9' 48.719 N | 104° 8' 11.702 W |
| PBHL(Padron 3 State W - plan hits target center - Point | 0.00 | 0.00 | 9,053.0 | -359.0 | 15,310.0 | 423,285.00 | 602,319.00 | 32° 9' 48.727 N | 104° 8' 10.539 W |

# eog resources

## Eddy County, NM (NAD 83 NME)

## Padron 3 State WC Unit #713H

## Plan #0.1 RT




Azimuths to Grid North
True North: -0.08°
Magnetic North: 6.33°

Magnetic Field
Strength: 47033.5nT
Dip Angle: 59.64°
Date: 12/16/2024
Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 6.33°
To convert a Magnetic Direction to a True Direction, Add 6.41° East
To convert a True Direction to a Grid Direction, Subtract 0.08°

**PROJECT DETAILS: Eddy County, NM (NAD 83 NME)**

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

**WELL DETAILS: #713H**

3245.0
kb = 26' @ 3271.0usft

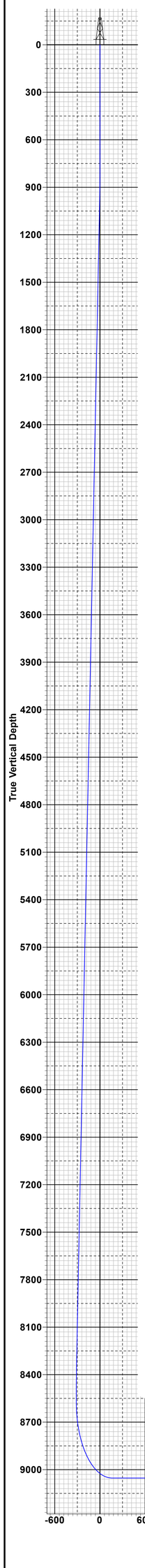
| Northing | Easting | Latittude | Longitude |
|---|---|---|---|
| 423644.00 | 587009.00 | 32° 9' 52.522 N | 104° 11' 8.650 W |

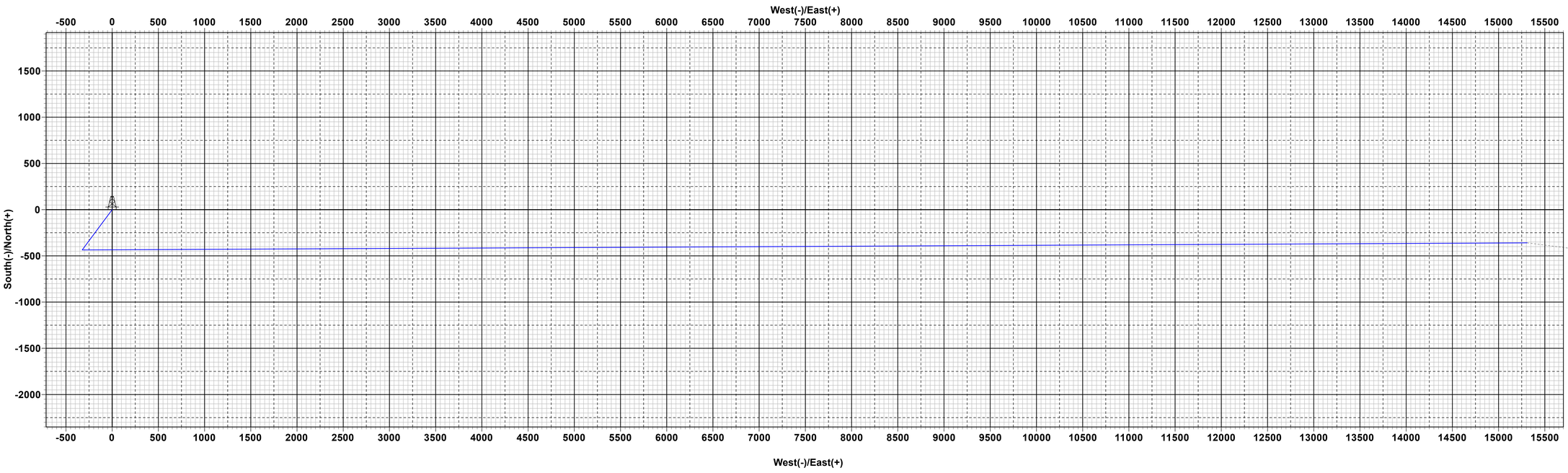
**SECTION DETAILS**

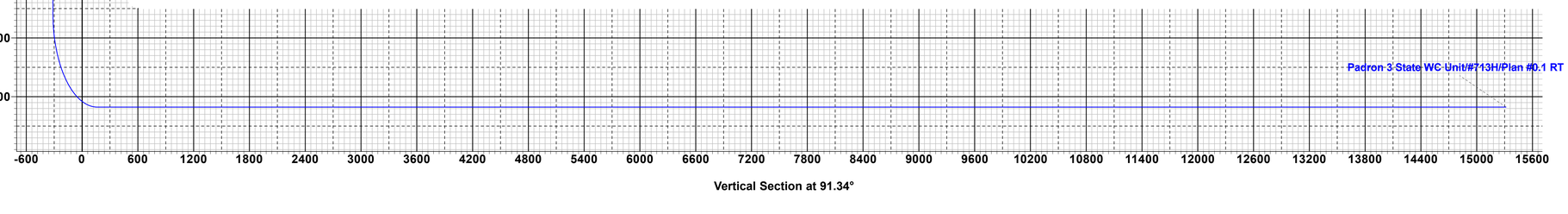
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 1007.0 | 4.14 | 216.62 | 1006.9 | -6.0 | -4.5 | 2.00 | 216.62 | -4.3 | |
| 4 | 8322.4 | 4.14 | 216.62 | 8303.1 | -430.0 | -319.5 | 0.00 | 0.00 | -309.4 | |
| 5 | 8529.5 | 0.00 | 0.00 | 8510.0 | -436.0 | -324.0 | 2.00 | 180.00 | -313.7 | |
| 6 | 8595.0 | 0.00 | 0.00 | 8575.5 | -436.0 | -324.0 | 0.00 | 0.00 | -313.7 | KOP(Padron 3 State WC Unit #713H) |
| 7 | 9141.4 | 65.56 | 89.80 | 9010.3 | -435.0 | -44.0 | 12.00 | 89.80 | -33.8 | FTP(Padron 3 State WC Unit #713H) |
| 8 | 9345.1 | 90.00 | 89.72 | 9053.1 | -434.2 | 153.5 | 12.00 | -0.19 | 163.7 | |
| 9 | 24401.7 | 90.00 | 89.72 | 9053.0 | -360.0 | 15210.0 | 0.00 | 0.00 | 15214.3 | LTP(Padron 3 State WC Unit #713H) |
| 10 | 24501.8 | 90.00 | 89.14 | 9053.0 | -359.0 | 15310.0 | 0.58 | -90.06 | 15314.2 | PBHL(Padron 3 State WC Unit #713H) |

**WELLBORE TARGET DETAILS (MAP CO-ORDINATES)**

| Name | TVD | +N/-S | +E/-W | Northing | Easting |
|---|---|---|---|---|---|
| KOP(Padron 3 State WC Unit #713H) | 8575.5 | -436.0 | -324.0 | 423208.00 | 586685.00 |
| FTP(Padron 3 State WC Unit #713H) | 9010.3 | -435.0 | -44.0 | 423209.00 | 586965.00 |
| LTP(Padron 3 State WC Unit #713H) | 9053.0 | -360.0 | 15210.0 | 423284.00 | 602219.00 |
| PBHL(Padron 3 State WC Unit #713H) | 9053.0 | -359.0 | 15310.0 | 423285.00 | 602319.00 |




Eddy County, NM (NAD 83 NME)
Padron 3 State WC Unit
#713H
OH
Plan #0.1 RT
8:31, December 17 2024

**Padron 3 State WC Unit 713H API #: 30-025-***** Variances**

EOG respectfully requests the below variances to be applied to the above well:

- Variance is requested to waive the centralizer requirements for the intermediate casing in the intermediate hole. An expansion additive will be utilized, in the cement slurry, for the entire length of the intermediate interval to maximize cement bond and zonal isolation.
- Variance is also requested to waive the centralizer requirements for the production casing in the production hole. An expansion additive will be utilized, in the cement slurry, for the entire length of the production interval to maximize cement bond and zonal isolation.
- EOG requests a variance to set the intermediate casing shoe in the Bone Spring formation or the Wolfcamp formation, depending on depletion in the area and well conditions. EOG will monitor the well and ensure the well is static before casing operations begin.

- Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line).
- Variance is requested to use a 5,000 psi annular BOP with the 10,000 psi BOP stack.
- EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and Cement on the subject well. After WOC 8 hours or 500 psi compressive strength (whichever is greater), the Surface Rig will move off so the wellhead can be installed. A welder will cut the casing to the proper height and weld on the wellhead (both "A" and "B" sections). The weld will be tested to 1,500 psi. All valves will be closed and a wellhead cap will be installed (diagram attached). If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

EOG requests the additional variance(s) in the attached document(s):

- EOG BLM Variance 2a - Intermediate Bradenhead Cement
- EOG BLM Variance 2b - Bonespring/Wolfcamp Intermediate Casing Setpoint
- EOG BLM Variance 3a_b - BOP Break-test and Offline Intermediate Cement
- EOG BLM Variance 3d - Production Offline Cement

**Intermediate Bradenhead Cement:**
EOG requests variance from minimum standards to pump a two stage cement job on the intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon and the second stage performed as 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (2.30 yld, 12.91 ppg) will be executed as a contingency. Top of cement will be verified by Echo-meter.

EOG will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

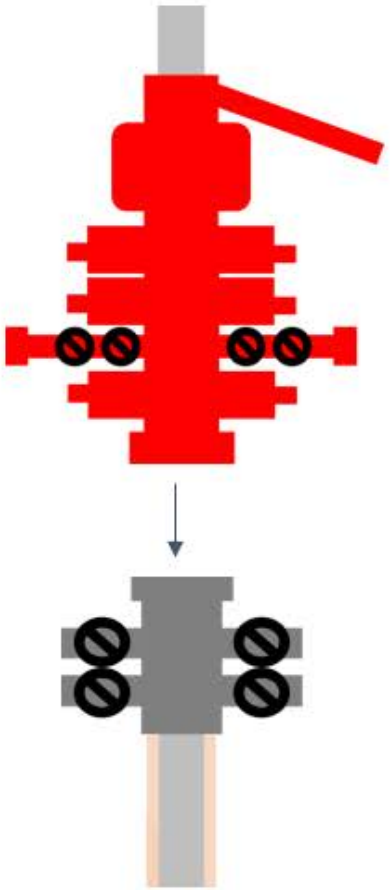
EOG will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

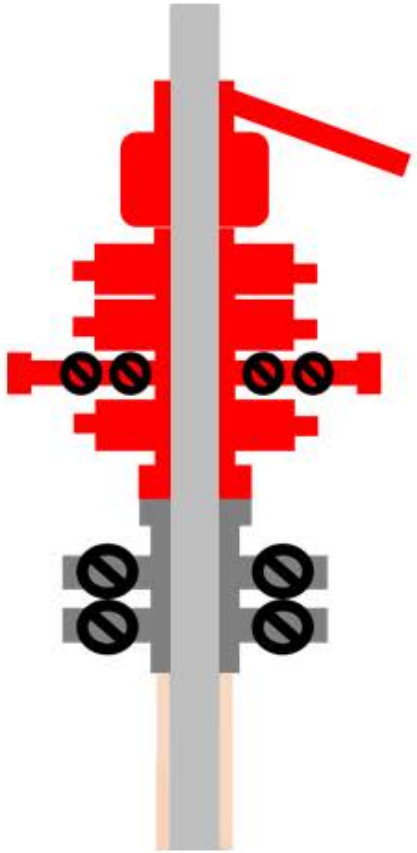
**Break-test BOP & Offline Cementing:**

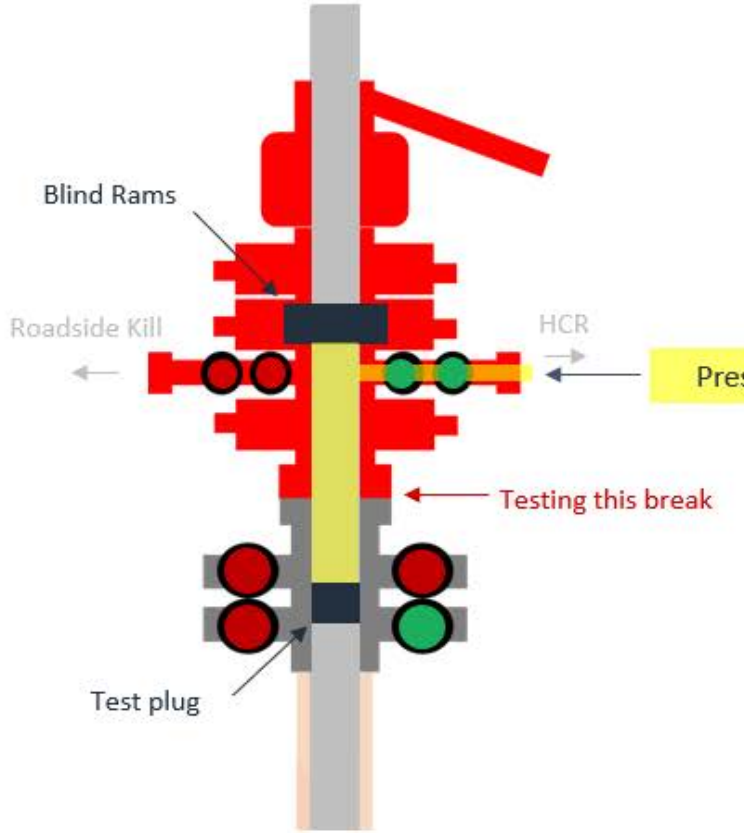
EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of ECFR Title 43 Part 3172.6(b)(9)(iv) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

- Full BOPE test at first installation on the pad.
- Full BOPE test every 21 days.
- This test will be conducted for 5M rated hole intervals only.
- Each rig requesting the break-test variance is capable of picking up the BOP without damaging components using winches, following API Standard 53, Well Control Equipment Systems for Drilling Wells (Fifth edition, December 2018, Annex C. Table C.4) which recognizes break testing as an acceptable practice.
- Function tests will be performed on the following BOP elements:
    - Annular à during each full BOPE test
    - Upper Pipe Rams à On trip ins where FIT required
    - Blind Rams à Every trip
    - Lower Pipe Rams à during each full BOPE test
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.

# Break Test Diagram (HCR valve)



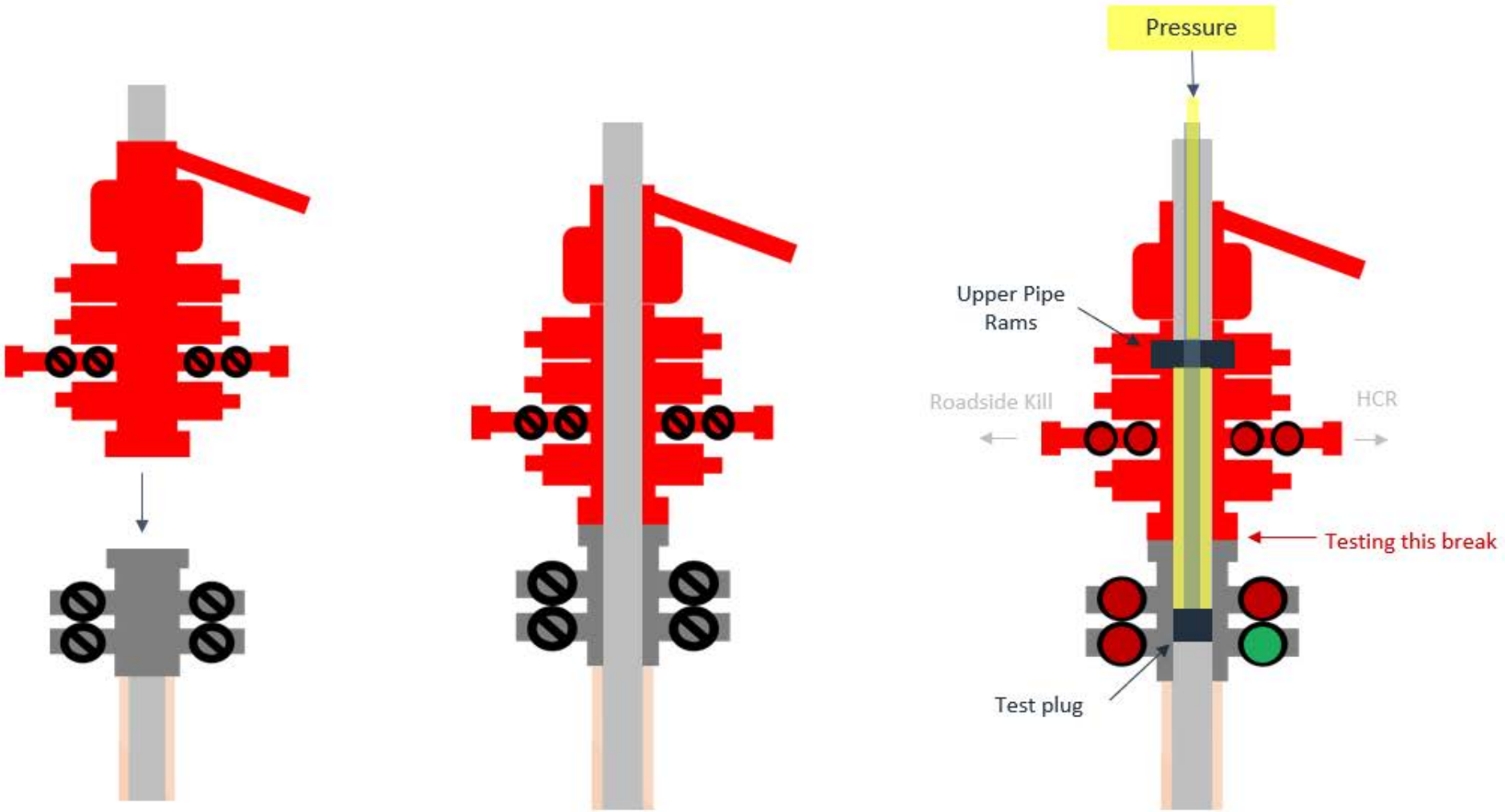





**Steps**

1. Set plug in wellhead (lower barrier)
2. Close Blind Rams (upper barrier)
3. Close roadside kill
4. Open HCR (pressure application)
5. Open wellhead valves below test plug to ensure if leak past test plug, pressure won't be applied to wellbore
6. Tie BOP testers high pressure line to main choke manifold crown valve
7. Pressure up to test break
8. Bleed test pressure from BOP testing unit

# Break Test Diagram (Test Joint)




**Steps**

1. Set plug in with test joint wellhead (lower barrier)
2. Close Upper Pipe Rams (upper barrier)
3. Close roadside kill
4. Close HCR
5. Open wellhead valves below test plug to ensure if leak past test plug, pressure won't be applied to wellbore
6. Tie BOP testers high pressure line to top of test joint
7. Pressure up to test break
8. Bleed test pressure from BOP testing unit

eog resources

Offline Intermediate Cementing Procedure 2/24/2022

## Cement Program

1. No changes to the cement program will take place for offline cementing.

## Summarized Operational Procedure for Intermediate Casing

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment back pressure valves.
    a. Float equipment is equipped with two back pressure valves rated to a minimum of 5,000 psi.
2. Land production casing on mandrel hanger through BOP.
    a. If casing is unable to be landed with a mandrel hanger, then the **casing will be cemented online**.
3. Break circulation and confirm no restrictions.
    a. Ensure no blockage of float equipment and appropriate annular returns.
    b. Perform flow check to confirm well is static.
4. Set pack-off
    a. If utilizing a fluted/ported mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid, remove landing joint, and set annular packoff through BOP. Pressure test to 5,000 psi for 10 min.
    b. If utilizing a solid mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid. Pressure test seals to 5,000 psi for 10 min. Remove landing joint through BOP.
5. After confirmation of both annular barriers and the two casing barriers, install TA plug and pressure test to 5,000 psi for 10 min. Notify the BLM with intent to proceed with nipple down and offline cementing.
    a. Minimum 4 hrs notice.
6. With the well secured and BLM notified, nipple down BOP and secure on hydraulic carrier or cradle.
    a. **Note, if any of the barriers fail to test, the BOP stack will not be nippled down until after the cement job has concluded and both lead and tail slurry have reached 500 psi.**
7. Skid/Walk rig off current well.
8. Confirm well is static before removing TA Plug.
    a. Cementing operations will not proceed until well is under control. (If well is not static, notify BLM and proceed to kill)
    b. Casing outlet valves will provide access to both the casing ID and annulus. Rig or third party pump truck will kill well prior to cementing.
    c. Well control plan can be seen in Section B, Well Control Procedures.
    d. If need be, rig can be moved back over well and BOP nippled back up for any further remediation.

e. Diagram for rig positioning relative to offline cementing can be seen in Figure 4.

9. Rig up return lines to take returns from wellhead to pits and rig choke.
    a. Test all connections and lines from wellhead to choke manifold to 5,000 psi high for 10 min.
    b. If either test fails, perform corrections and retest before proceeding.
    c. Return line schematics can be seen in Figure 3.
10. Remove TA Plug from the casing.
11. Install offline cement tool.
    a. Current offline cement tool schematics can be seen in Figure 1 (Cameron) and Figure 2 (Cactus).
12. Rig up cement head and cementing lines.
    a. Pressure test cement lines against cement head to 80% of casing burst for 10 min.
13. Break circulation on well to confirm no restrictions.
    a. If gas is present on circulation, well will be shut in and returns rerouted through gas buster.
    b. Max anticipated time before circulating with cement truck is 6 hrs.
14. Pump cement job as per plan.
    a. At plug bump, test casing to 0.22 psi/ft or 1500 psi, whichever is greater.
    b. If plug does not bump on calculated, shut down and wait 8 hrs or 500 psi compressive strength, whichever is greater before testing casing.
15. Confirm well is static and floats are holding after cement job.
    a. With floats holding and backside static:
        i. Remove cement head.
    b. If floats are leaking:
        i. Shut-in well and WOC (Wait on Cement) until tail slurry reaches 500 psi compressive strength and the casing is static prior to removing cement head.
    c. If there is flow on the backside:
        i. Shut in well and WOC until tail slurry reaches 500 psi compressive strength. Ensure that the casing is static prior to removing cement head.
16. Remove offline cement tool.
17. Install night cap with pressure gauge for monitoring.
18. Test night cap to 5,000 psi for 10 min.

**Example Well Control Plan Content**

## A. Well Control Component Table

The table below, which covers the cementing of the **5M MASP (Maximum Allowable Surface Pressure) portion of the well**, outlines the well control component rating in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the BOP nippled up to the wellhead.

Intermediate hole section, 5M requirement

| Component | RWP |
|---|---|
| Pack-off | 10M |
| Casing Wellhead Valves | 10M |
| Annular Wellhead Valves | 5M |
| TA Plug | 10M |
| Float Valves | 5M |
| 2” 1502 Lo-Torque Valves | 15M |

## B. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while circulating and cementing through the Offline Cement Adapter.

General Procedure While Circulating

1. Sound alarm (alert crew).
2. Shut down pumps.
3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
4. Confirm shut-in.
5. Notify tool pusher/company representative.

6. Read and record the following:
    a. SICP (Shut in Casing Pressure) and AP (Annular Pressure)
    b. Pit gain
    c. Time
    d. Regroup and identify forward plan to continue circulating out kick via rig choke and mud/gas separator. Circulate and adjust mud density as needed to control well.

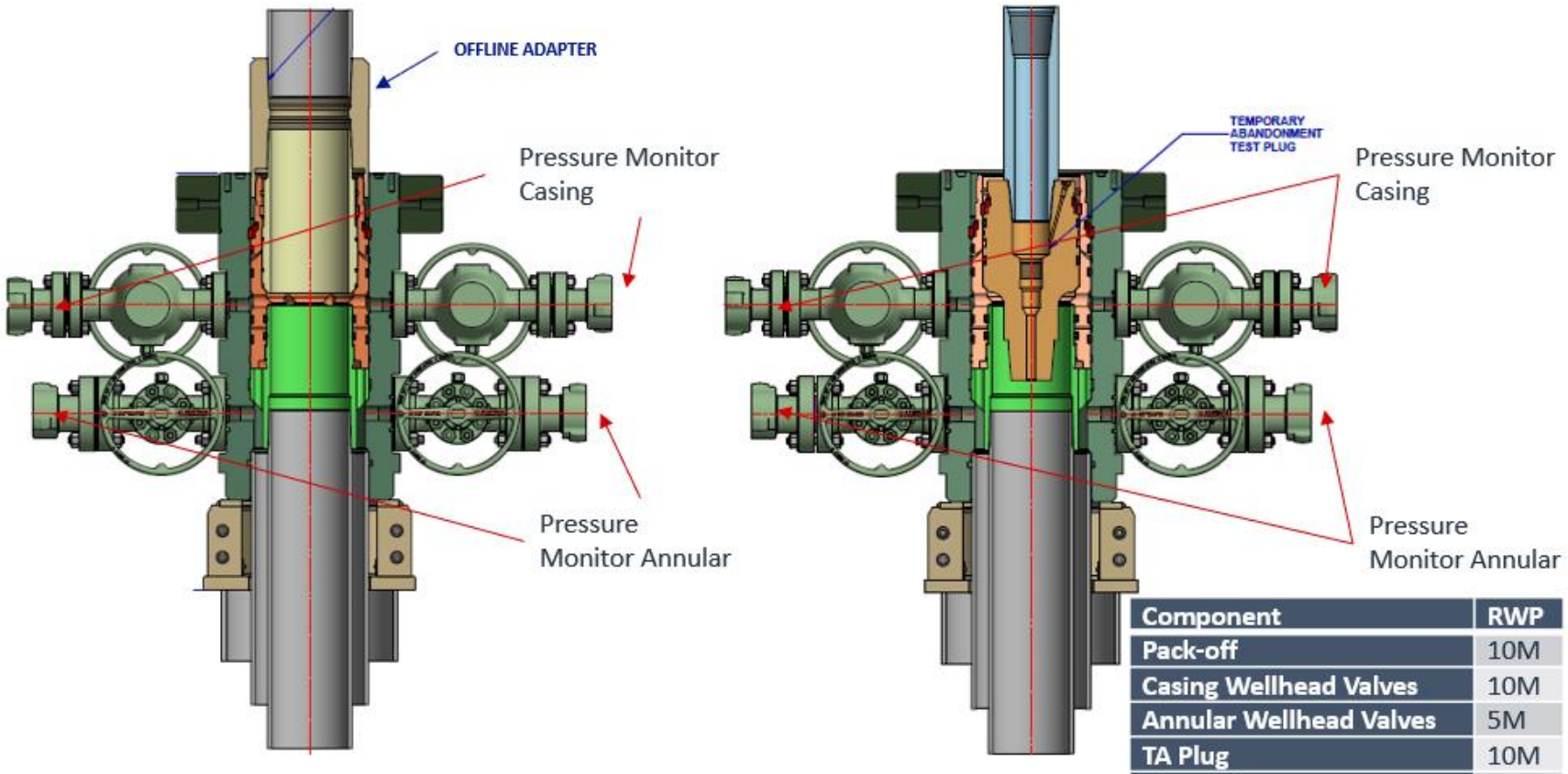
## General Procedure While Cementing

1. Sound alarm (alert crew).
2. Shut down pumps.
3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
4. Confirm shut-in.
5. Notify tool pusher/company representative.
6. Open rig choke and begin pumping again taking returns through choke manifold and mud/gas separator.
7. Continue to place cement until plug bumps.
8. At plug bump close rig choke and cement head.
9. Read and record the following
    a. SICP and AP
    b. Pit gain
    c. Time
    d. Shut-in annulus valves on wellhead

## General Procedure After Cementing

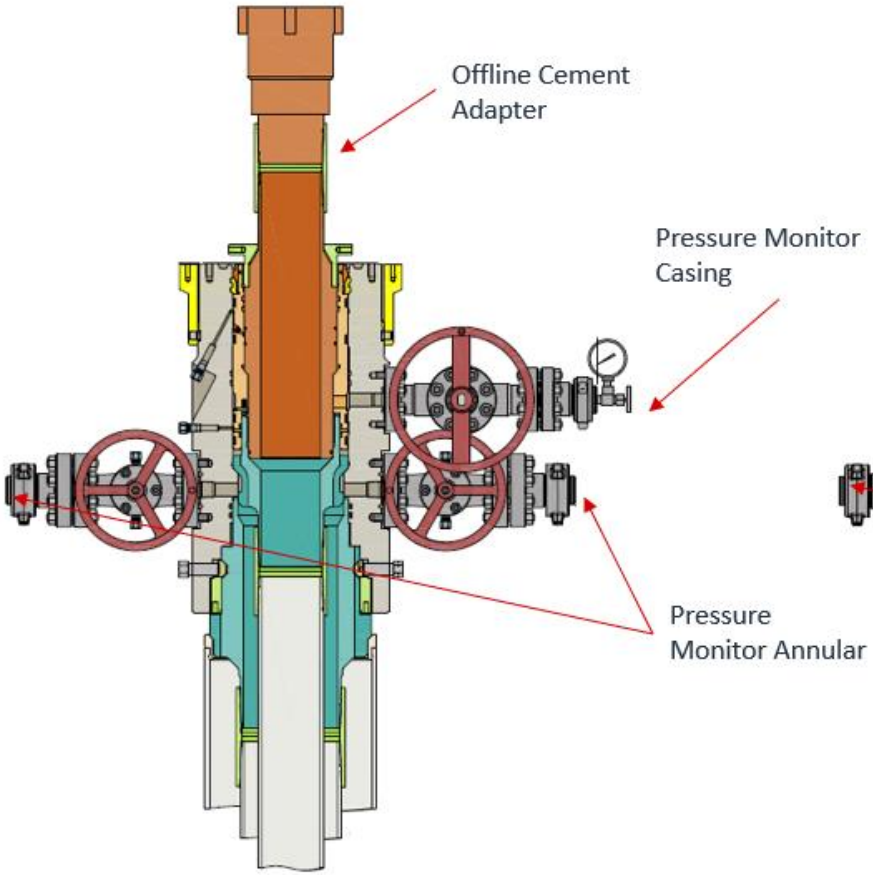
1. Sound alarm (alert crew).
2. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
3. Confirm shut-in.
4. Notify tool pusher/company representative.
5. Read and record the following:
    a. SICP and AP
    b. Pit gain
    c. Time
    d. Shut-in annulus valves on wellhead

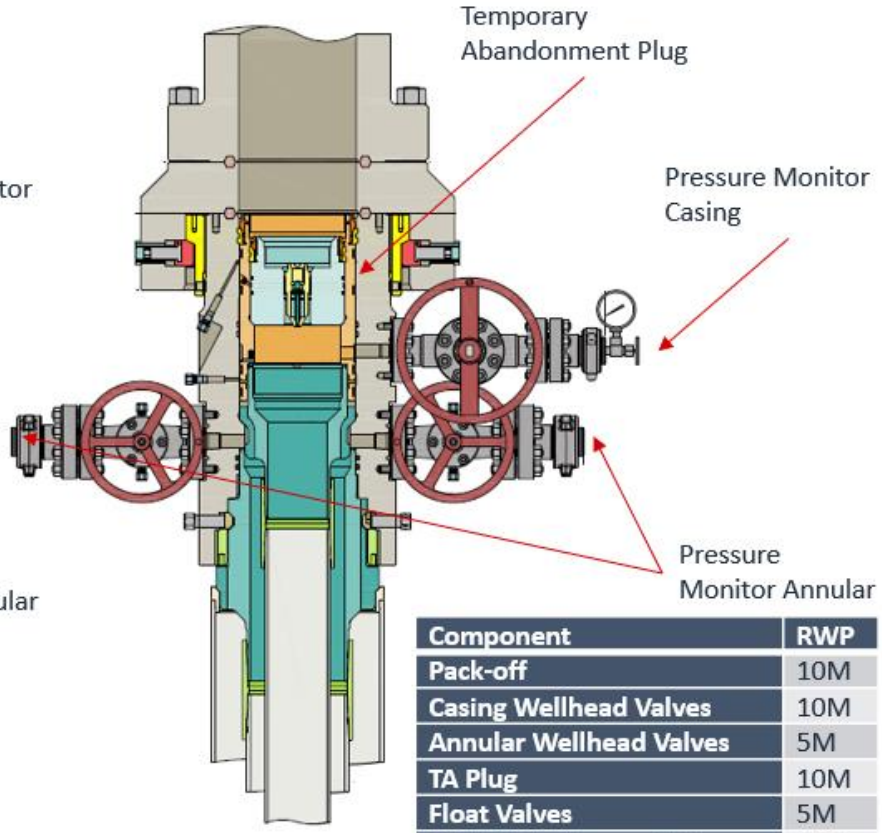
**Figure 1: Cameron TA Plug and Offline Adapter Schematic**




| Component | RWP |
|---|---|
| Pack-off | 10M |
| Casing Wellhead Valves | 10M |
| Annular Wellhead Valves | 5M |
| TA Plug | 10M |
| Float Valves | 5M |
| 2" 1502 Lo-Torque Valves | 15M |

**Figure 2: Cactus TA Plug and Offline Adapter Schematic**




| Component | RWP |
|---|---|
| Pack-off | 10M |
| Casing Wellhead Valves | 10M |
| Annular Wellhead Valves | 5M |
| TA Plug | 10M |
| Float Valves | 5M |
| 2" 1502 Lo-Torque Valves | 15M |

**Figure 3: Back Yard Rig Up**

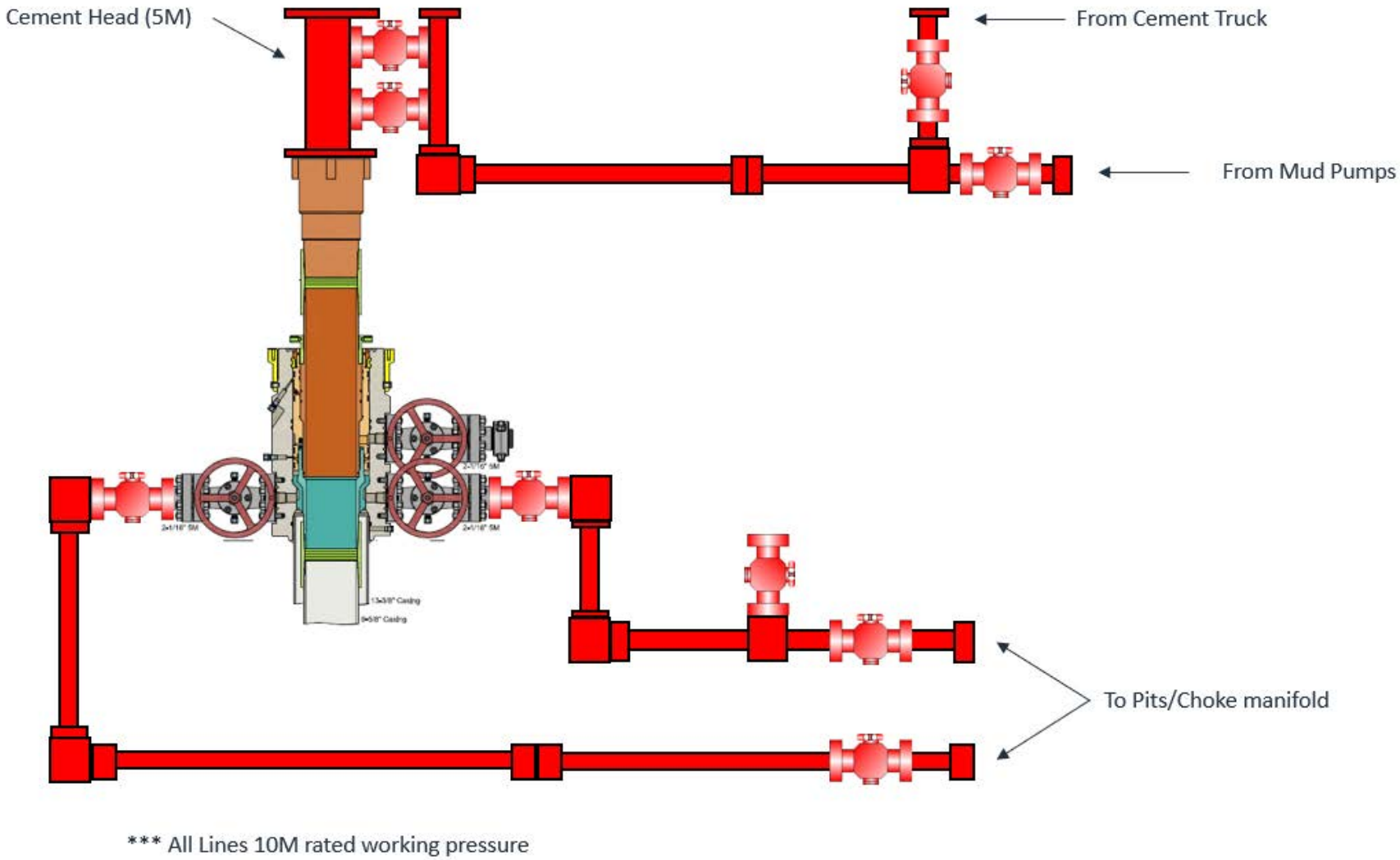
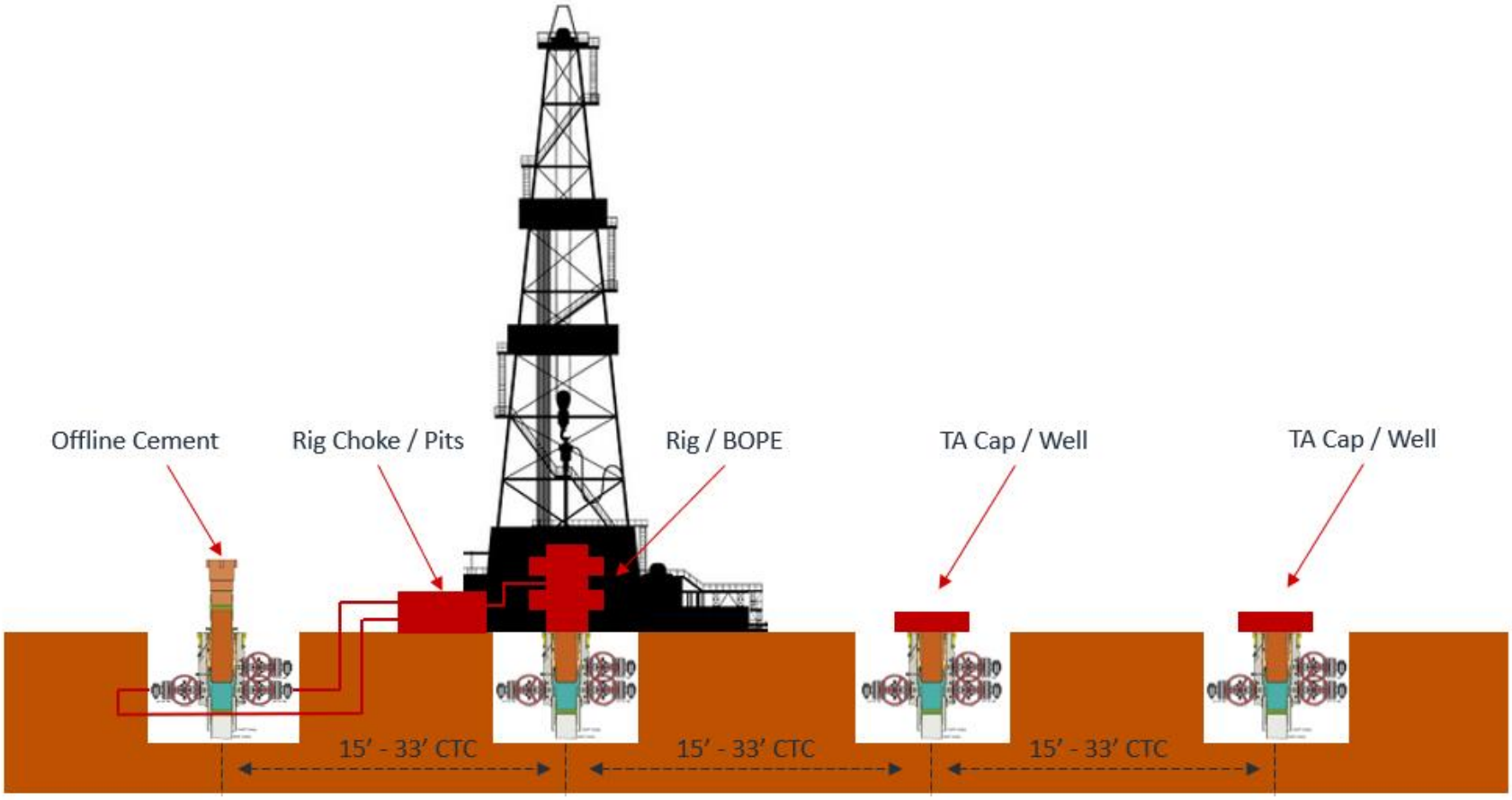


**Figure 4: Rig Placement Diagram**



**Shallow Target Offline Bradenhead:**
EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards to allow for offline bradenhead cementing of the production string after primary cementing operations have been completed. The primary cement job will be pumped conventionally (online) to top of the Brushy Canyon and will cover the target production intervals, and after production pack-off is set and tested, bradenhead will be pumped through casing valves between the production and intermediate casings (offline). For the bradenhead stage of production cementing, the barriers remain the same for offline cementing compared to performing it online.

The bradenhead will be the primary option for production cementing. EOG also requests to have the conventional option in place to accommodate for logistical or wellbore conditions. The tie back requirements will be met if the cement is pumped conventionally, and cement volumes will be adjusted accordingly. TOC will be verified by CBL.

# Offline Production Cement Variance

# EOG Offline Production Checklist

**Offline Checklist**

All items below must be met. If not, the production cement will be done online.

1. Offline production cement jobs must be above the Atoka formation.
2. Nothing out of the ordinary observed during drilling, tripping or casing running operations in the Production Hole Section.
3. Casing must be landed with Hanger.
4. EOG Company Man and Superintendent with Well Control certification must be present to monitor returns.
5. EOG Cement Advisor must be present to oversee the Cement Job.
6. Rig Manager is responsible for walking the rig to the next well.
7. The BOP will ***NOT*** be nippled down if:
    1. **ANY** barrier fails to test.
    2. **ANY** offset frac operations are observed within 1 mile and within the same producing horizon.
8. After all barriers test and the BLM has been notified, the BOP may be nippled down to proceed with offline operations.
9. EOG will not Drill out of the next well until Cement Operations have concluded on the offline well.

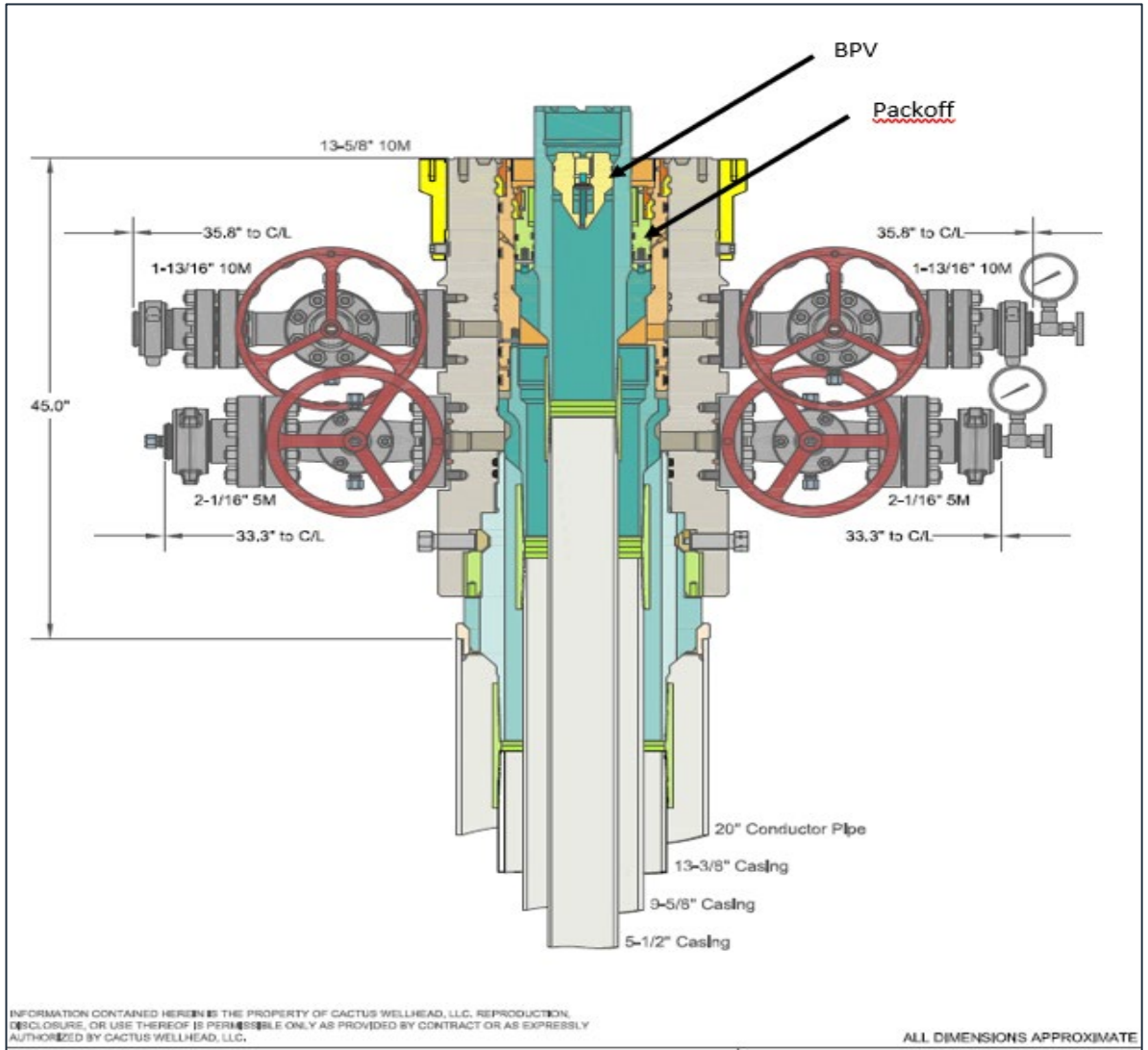
# Offline Procedure

1. Run casing as per normal operations. Review EOG Offline Requirements Checklist, if the well is a candidate for Offline Cement on the Production continue following this procedure. Conduct negative pressure test while running casing and confirm integrity of the float equipment back pressure valves.
   a. Float equipment is equipped with two back pressure valves rated to 15,000 psi.
2. Land production casing on mandrel hanger.
   a. If casing is unable to be landed with a mandrel hanger, then the casing will be cemented online.
   b. If utilizing a fluted/ported mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid, remove landing joint, and set annular packoff rated to 10,000 psi. Pressure test same to 10,000 psi.
   c. If utilizing a solid mandrel hanger, ensure well is static on the annulus and inside the casing by filling the pipe with kill weight fluid. Pressure test seals to 10,000 psi. Remove landing joint.
3. Install back pressure valve in the casing for a 3rd casing barrier.
   a. Back pressure valve rated to a minimum of 10,000 psi.
4. With the well Secured and BLM notified; Nipple down BOP and secure on hydraulic carrier or cradle and Skid/Walk rig to next well on pad.
   a. Note, if any of the barriers fail to test, the BOP stack will not be nippled down until after the cement job has concluded.
   b. Note, EOG Company Man and Cement Advisor will oversee Cementing Operations while Rig Manager walks the rig and nipples up the BOP.
   c. Note, EOG will not drill out of the subsequent well until after plug bump.
5. Install 10M Gate Valve, with Wellhead Adapter.
   a. This creates an additional barrier on the annulus and inside the casing.
   b. Gate valve rated to a minimum of 10,000 psi.
6. Test connection between Wellhead Adapter seals against hanger neck and ring gasket to 10,000 psi.
7. Remove backpressure valve from the casing.
8. Rig up cement head and cementing lines.
9. After rig up of cement head and cement lines, and confirmation of the annular barriers and casing barriers, notify the BLM with intent to proceed offline cementing.
10. Perform cement job.
11. *Note* – Procedure continued on the next page.

# Offline Procedure

12. If an influx is noted during the Cement Job:
    a. It is the Company Man and Superintendent's responsibility to maintain well control.
    b. The aux manifold will be redirected to the rig's chokes.
    c. Backpressure will be held on the well with the chokes to ensure well control is maintained through the remainder of the cement job while circulating out the influx.
    d. If annular surface pressure approaches 90% tested pressure of the manifold or if circulating the influx out with the cementing pumps is not feasible, the well can be secured by closing the casing valves (10M).
    e. Once cement is in place, we will close the casing valves and confirm the well is static and floats are holding.
    f. If the floats fail, the gate valve (10M) or cement head (10M) can be closed to secure the well.
13. Confirm well is static and floats are holding after cement job.
14. Remove cement head.
15. Install back pressure valve.
16. Remove 10M Gate Valve and Wellhead Adapter.
17. Install night cap with pressure gauge for monitoring.
18. Test night cap to 5,000 psi.

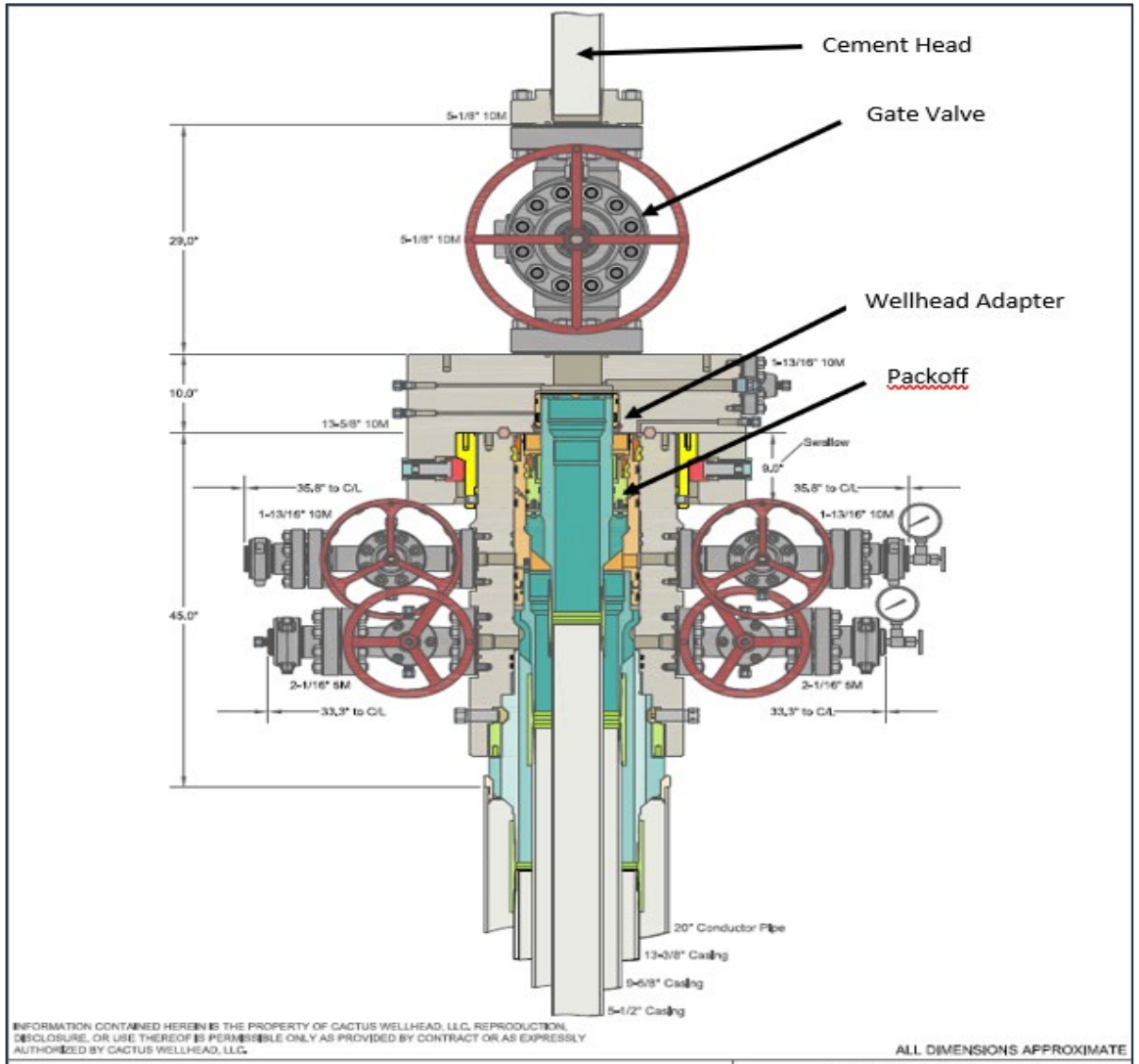
# Offline Barrier Overview




| Barriers in Place during removal of BOP | | |
|---|---|---|
| **Operation** | Casing | Annulus |
| **Nippling Down BOP** | 1. BPV<br>2. Hydrostatic Barrier<br>3. Float Valves | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |

| Barriers in Place during Offline Cementing of Production Casing | | |
|---|---|---|
| **Operation** | Casing | Annulus |
| **Pull BPV** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical Packoff<br>3. 10M Wellhead Adapter |
| **Install Cement Head** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Cement Job** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve<br>4. Cement Head | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Remove Cement Head** | 1. Float Valves<br>2. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Install BPV** | 1. Float Valves<br>2. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Remove 10M Gate Valve** | 1. Float Valves<br>2. BPV | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |
| **Nipple Up TA Cap** | 1. Float Valves<br>2. BPV | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |

# Offline Barrier Overview




| Barriers in Place during removal of BOP | | |
|---|---|---|
| **Operation** | Casing | Annulus |
| **Nippling Down BOP** | 1. BPV<br>2. Hydrostatic Barrier<br>3. Float Valves | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |

| Barriers in Place during Offline Cementing of Production Casing | | |
|---|---|---|
| **Operation** | Casing | Annulus |
| **Pull BPV** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical Packoff<br>3. 10M Wellhead Adapter |
| **Install Cement Head** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Cement Job** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve<br>4. Cement Head | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Remove Cement Head** | 1. Float Valves<br>2. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Install BPV** | 1. Float Valves<br>2. 10M Gate Valve | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff<br>3. 10M Wellhead Adapter |
| **Remove 10M Gate Valve** | 1. Float Valves<br>2. BPV | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |
| **Nipple Up TA Cap** | 1. Float Valves<br>2. BPV | 1. Hydrostatic Barrier<br>2. Mechanical 10M Packoff |

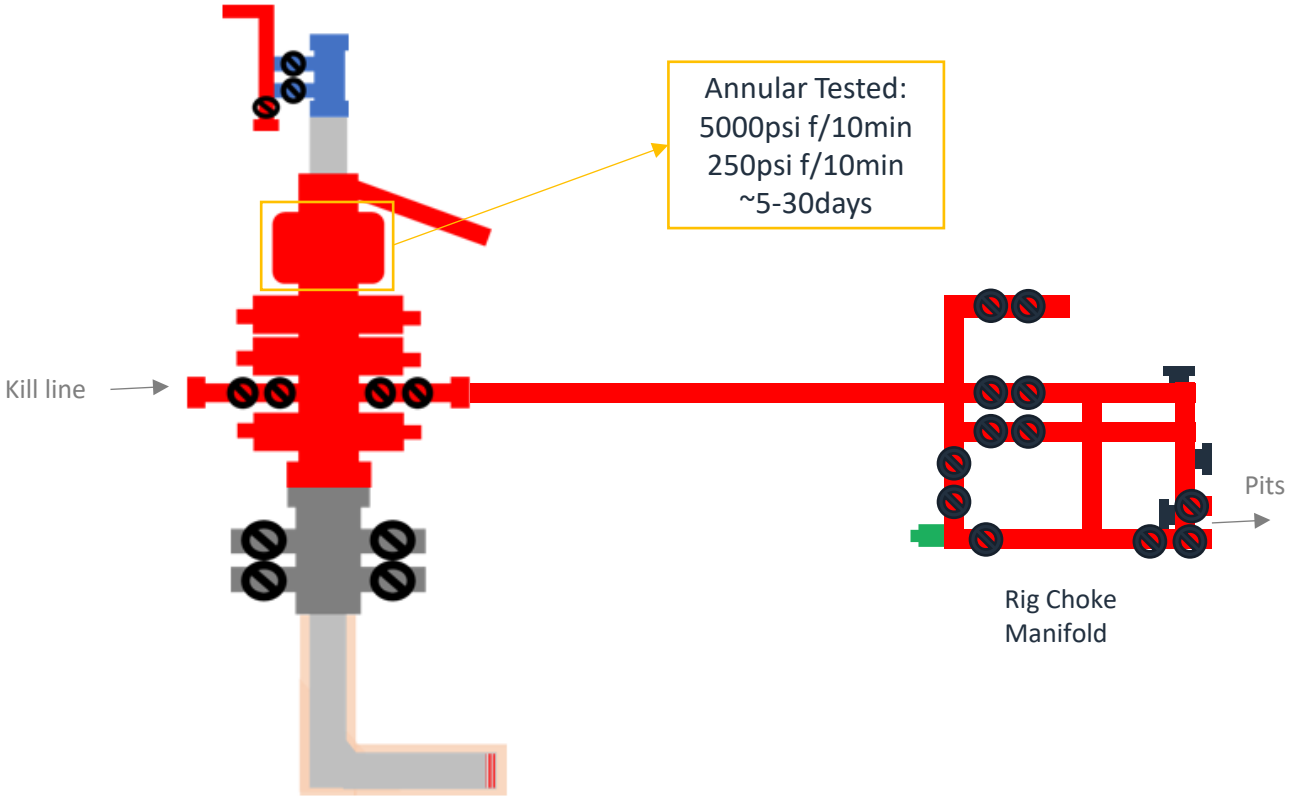
# More Control: Meeting/Exceeding Barrier Requirements

| Casing Barriers – Online vs Offline | | |
|---|---|---|
| **Operation** | Online | Offline |
| **Install Cement Head** | 1. Hydrostatic Barrier<br>2. Float Valves | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve ✓ |
| **Cement Job** | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. Cement Head | 1. Hydrostatic Barrier<br>2. Float Valves<br>3. 10M Gate Valve<br>4. Cement Head ✓ |
| **Remove Cement Head** | 1. Float Valves | 1. Float Valves<br>2. 10M Gate Valve ✓ |
| **Install BPV & Nipple Down BOP / Offline Adapter** | 1. Float Valves | 1. Float Valves<br>2. BPV ✓ |
| **Nipple Up TA Cap** | 1. Float Valves | 1. Float Valves<br>2. BPV ✓ |

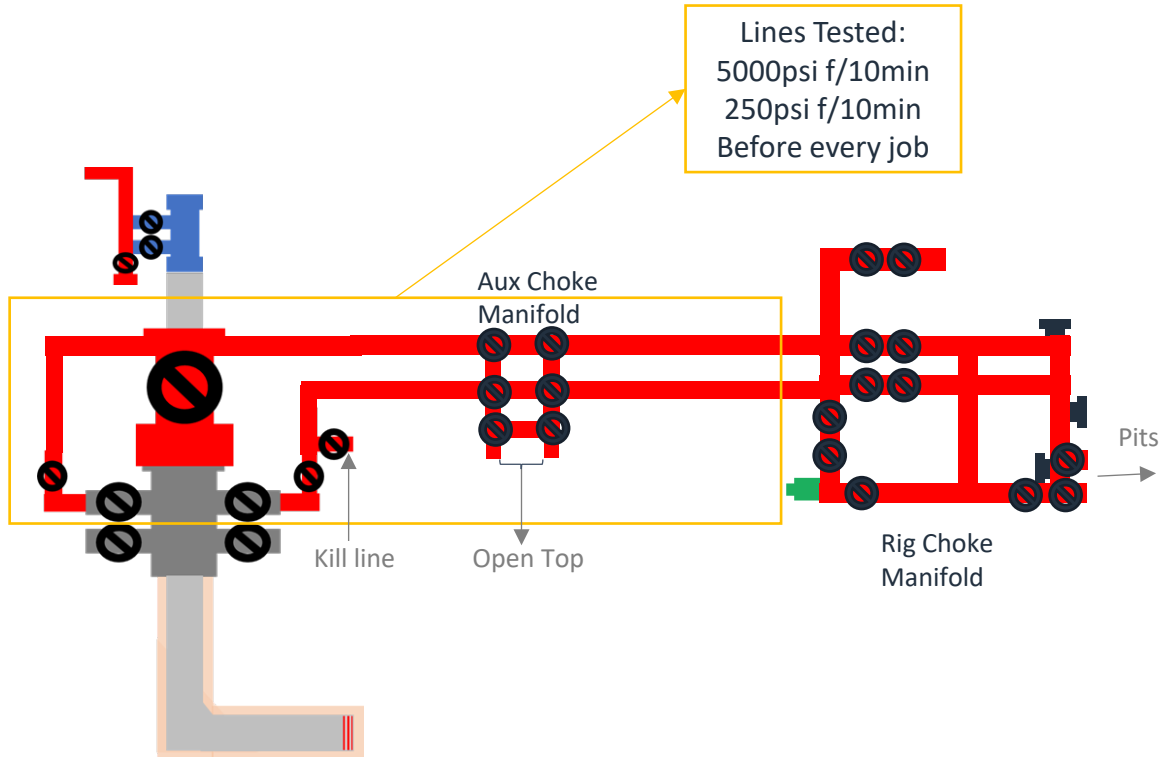
| Annulus Barriers – Online vs Offline | | |
|---|---|---|
| **Operation** | Online | Offline |
| **Install Cement Head** | 1. Hydrostatic Barrier<br>2. Annular<br>3. VBR | 1. Hydrostatic Barrier<br>2. Mechanical Pack-off<br>3. 10M Wellhead Adapter ✓ |
| **Cement Job** | 1. Hydrostatic Barrier<br>2. Annular<br>3. VBR | 1. Hydrostatic Barrier<br>2. Mechanical Pack-off<br>3. 10M Wellhead Adapter ✓ |
| **Remove Cement Head** | 1. Hydrostatic Barrier<br>2. Annular<br>3. VBR | 1. Hydrostatic Barrier<br>2. Mechanical Pack-off<br>3. 10M Wellhead Adapter ✓ |
| **Install BPV & Nipple Down BOP / Offline Adapter** | 1. Hydrostatic barrier<br>2. Mechanical Pack-off | 1. Hydrostatic Barrier<br>2. Mechanical Pack-off ✓ |
| **Nipple Up TA Cap** | 1. Hydrostatic barrier<br>2. Mechanical Pack-off | 1. Hydrostatic Barrier<br>2. Mechanical Pack-off ✓ |

# Return Rig Up Diagram

## Online




## Offline




Note:

1) Have the Rig's same Well Control Capabilities as Online
2) Have more flexibility with Gate Valve than with a Landing Joint through BOP
3) Never had to circulate out a kick during Offline

# Salt Section Annular Clearance Variance Request

Daniel Moose

# Current Design (Salt Strings)

## 0.422” Annular clearance requirement

- Casing collars shall have a minimum clearance of 0.422 inches on all sides in the hole/casing annulus, with recognition that variances can be granted for justified exceptions.

- 12.25” Hole x 9.625”40# J55/HCK55 LTC Casing
  - 1.3125” Clearance to casing OD
  - 0.8125” Clearance to coupling OD
- 9.875” Hole x 8.75” 38.5# P110 Sprint-SF Casing
  - 0.5625” Clearance to casing OD
  - 0.433” Clearance to coupling OD

# Annular Clearance Variance Request

**EOG request permission to allow deviation from the 0.422” annulus clearance requirement for the intermediate (salt) section from Onshore Order #2 under the following conditions:**

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues

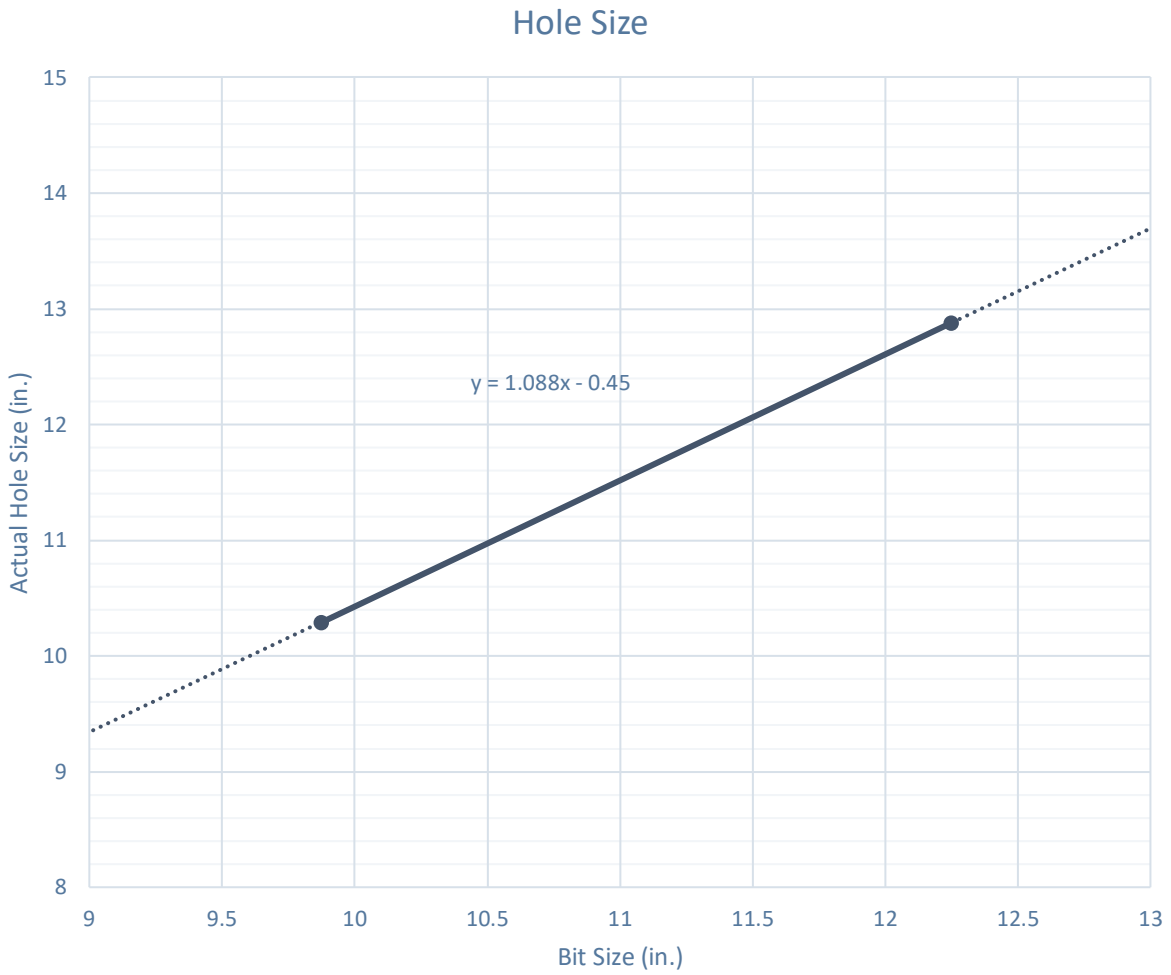
# Volumetric Hole Size Calculation

## Hole Size Calculations Off Cement Volumes

- Known volume of cement pumped
- Known volume of cement returned to surface
- Must not have had any losses
- Must have bumped plug

## Average Hole Size

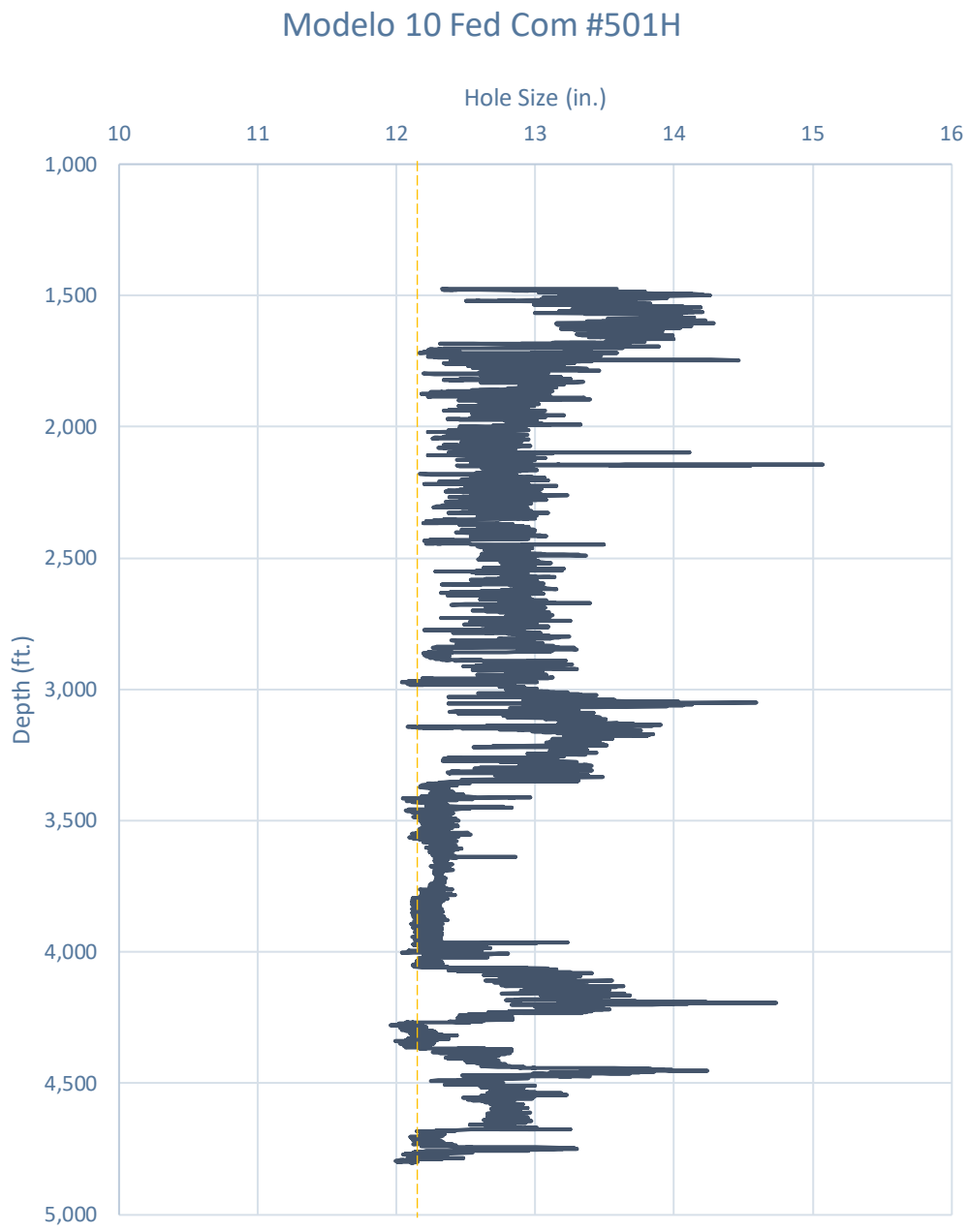
- 12.25” Hole
  - 12.88” Hole
    - 5.13% diameter increase
    - 10.52% area increase
  - 0.63” Average enlargement
  - 0.58” Median enlargement
  - 179 Well Count
- 9.875” Hole
  - 10.30” Hole
    - 4.24% diameter increase
    - 9.64% area increase
  - 0.42” Average enlargement
  - 0.46” Median enlargement
  - 11 Well Count



# Caliper Hole Size (12.25”)

## Average Hole Size

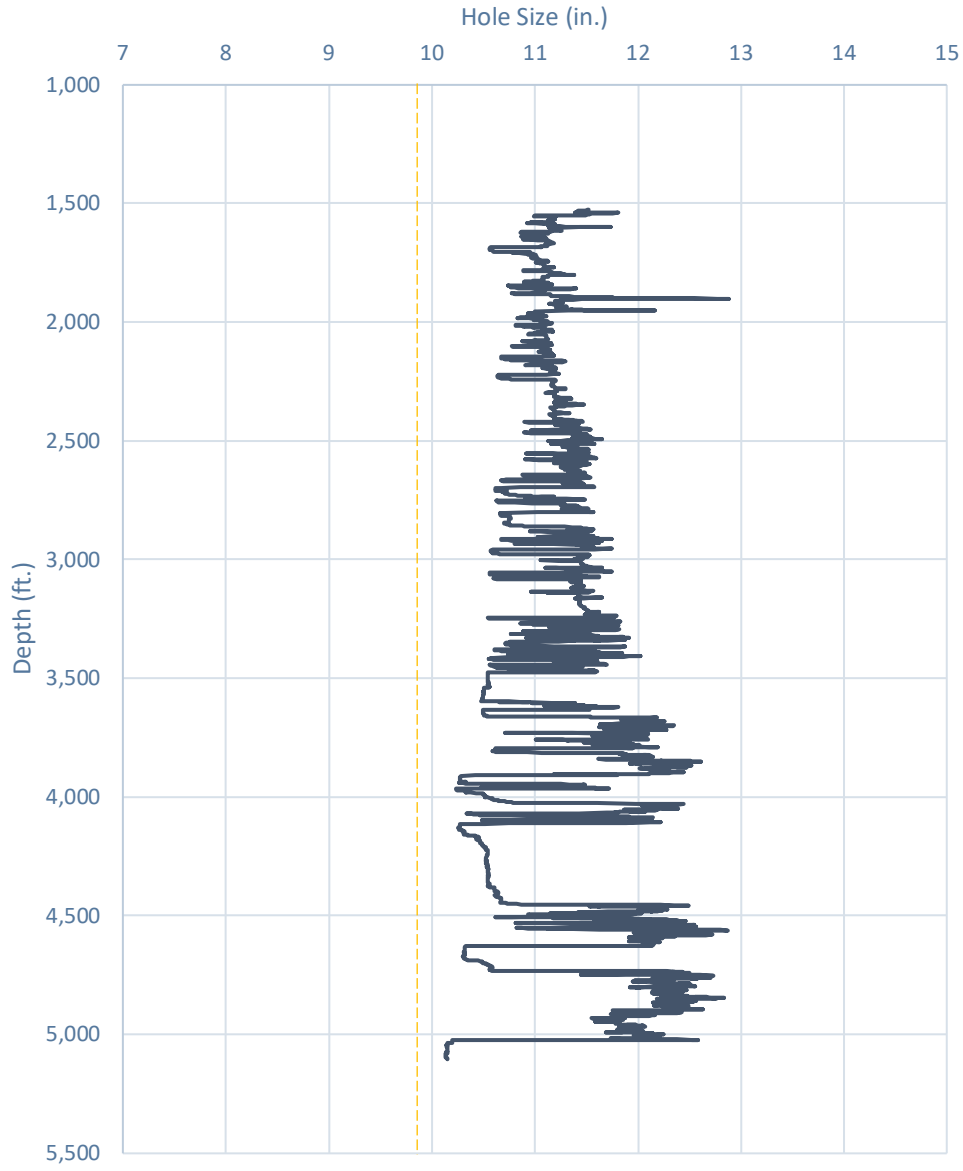
- 12.25” Bit
  - 12.76” Hole
    - 4.14% diameter increase
    - 8.44% area increase
  - 0.51” Average enlargement
  - 0.52” Median enlargement
  - Brine



# Caliper Hole Size (9.875”)

## Average Hole Size

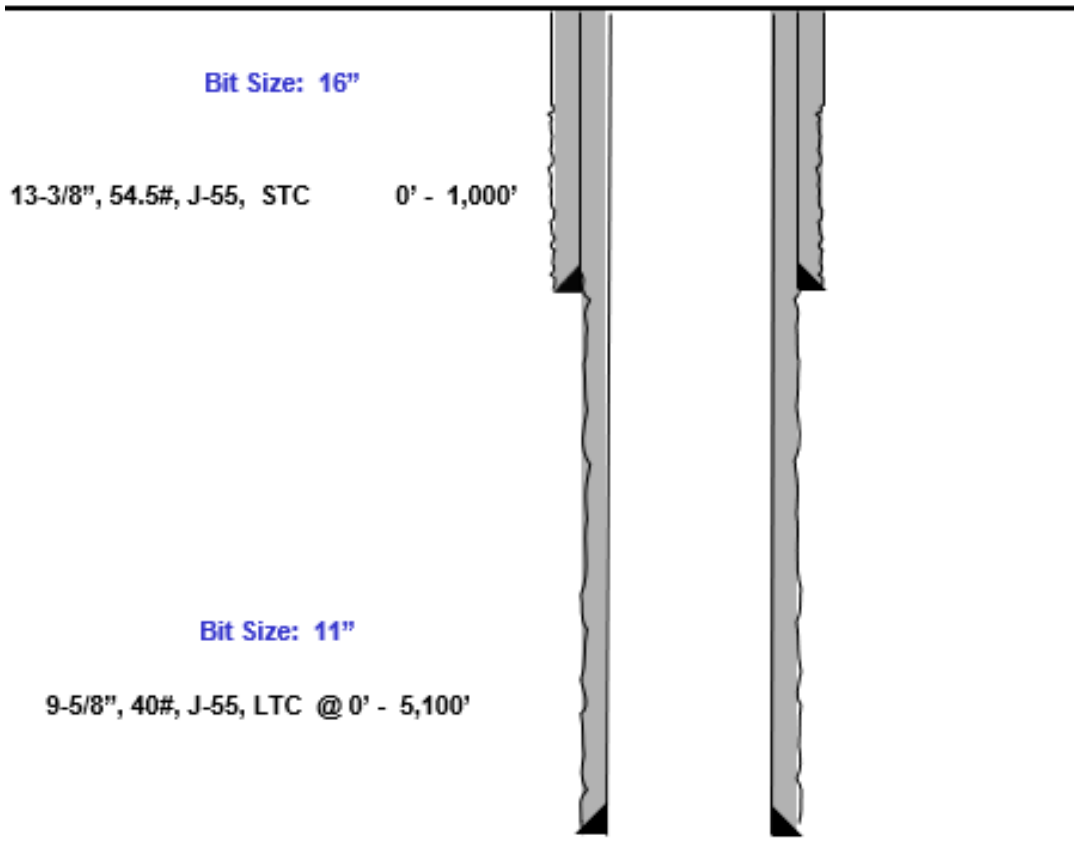
- 9.875” Hole
  - 11.21” Hole
    - 13.54% diameter increase
    - 28.92% area increase
  - 1.33” Average enlargement
  - 1.30” Median enlargement
  - EnerLite



# Design A

## Proposed 11” Hole with 9.625” 40# J55/HCK55 LTC Casing

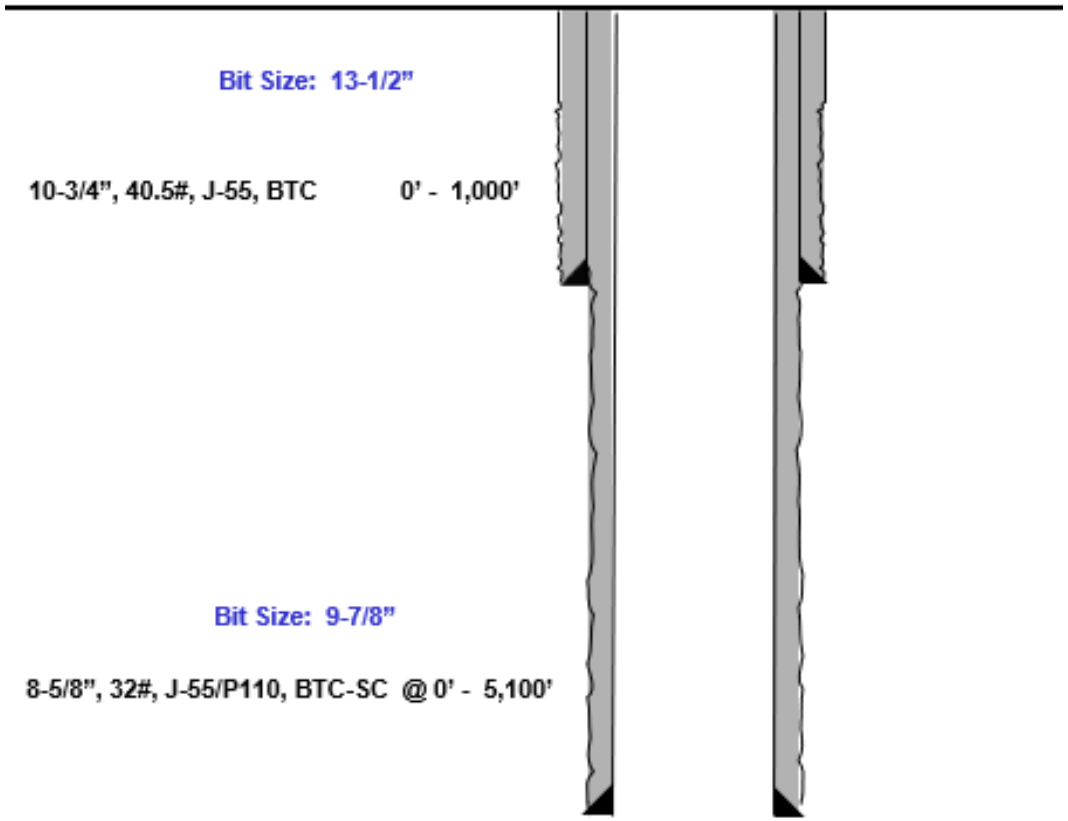
- 11” Bit + 0.52” Average hole enlargement = 11.52” Hole Size
  - 0.9475” Clearance to casing OD
    $$= \frac{11.52 - 9.625}{2}$$
  - 0.4475” Clearance to coupling OD
    $$= \frac{11.52 - 10.625}{2}$$
- Previous Shoe – 13.375” 54.5# J55 STC
  - 0.995” Clearance to coupling OD (~1,200’ overlap)
    $$= \frac{12.615 - 10.625}{2}$$



# Design B

## Proposed 9.875” Hole with 8.625” 32# J55/P110 BTC-SC Casing

- 9.875” Bit + 0.42” Average hole enlargement = 10.295” Hole Size
  - 0.835” Clearance to casing OD
    $$= \frac{10.295 - 8.625}{2}$$
  - 0.585” Clearance to coupling OD
    $$= \frac{10.295 - 9.125}{2}$$
- Previous Shoe – 10.75” 40.5# J55 STC
  - 0.4625” Clearance to coupling OD (~1,200’ overlap)
    $$= \frac{10.05 - 9.125}{2}$$



# Index

# Casing Spec Sheets

## PERFORMANCE DATA

**API LTC** 9.625 in 40.00 lbs/ft K55 HC

**Technical Data Sheet**

### Tubular Parameters

| | | | | | |
|---|---|---|---|---|---|
| Size | 9.625 | in | Minimum Yield | 55 | ksi |
| Nominal Weight | 40.00 | lbs/ft | Minimum Tensile | 95 | ksi |
| Grade | K55 HC | | Yield Load | 629 | kips |
| PE Weight | 38.94 | lbs/ft | Tensile Load | 1088 | kips |
| Wall Thickness | 0.395 | in | Min. Internal Yield Pressure | 3,950 | psi |
| Nominal ID | 8.835 | in | Collapse Pressure | 3600 | psi |
| Drift Diameter | 8.750 | in | | | |
| Nom. Pipe Body Area | 11.454 | in² | | | |

### Connection Parameters

| | | |
|---|---|---|
| Connection OD | 10.625 | in |
| Coupling Length | 10.500 | in |
| Threads Per Inch | 8 | tpi |
| Standoff Thread Turns | 3.50 | turns |
| Make-Up Loss | 4.750 | in |
| Min. Internal Yield Pressure | 3,950 | psi |

## Pipe Body and API Connections Performance Data

13.375 54.50/0.380 J55 PDF

New Search »

« Back to Previous List

USC Metric

6/8/2015 10:04:37 AM

| Mechanical Properties | Pipe | BTC | LTC | STC | |
|---|---|---|---|---|---|
| Minimum Yield Strength | 55,000 | -- | -- | -- | psi |
| Maximum Yield Strength | 80,000 | -- | -- | -- | psi |
| Minimum Tensile Strength | 75,000 | -- | -- | -- | psi |
| **Dimensions** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Outside Diameter | 13.375 | 14.375 | -- | 14.375 | in. |
| Wall Thickness | 0.380 | -- | -- | -- | in. |
| Inside Diameter | 12.615 | 12.615 | -- | 12.615 | in. |
| Standard Drift | 12.459 | 12.459 | -- | 12.459 | in. |
| Alternate Drift | -- | -- | -- | -- | in. |
| Nominal Linear Weight, T&C | 54.50 | -- | -- | -- | lbs/ft |
| Plain End Weight | 52.79 | -- | -- | -- | lbs/ft |
| **Performance** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Minimum Collapse Pressure | 1,130 | 1,130 | -- | 1,130 | psi |
| Minimum Internal Yield Pressure | 2,740 | 2,740 | -- | 2,740 | psi |
| Minimum Pipe Body Yield Strength | 853.00 | -- | -- | -- | 1000 lbs |
| Joint Strength | -- | 909 | -- | 514 | 1000 lbs |
| Reference Length | -- | 11,125 | -- | 6,290 | ft |
| **Make-Up Data** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Make-Up Loss | -- | 4.81 | -- | 3.50 | in. |
| Minimum Make-Up Torque | -- | -- | -- | 3,860 | ft-lbs |
| Maximum Make-Up Torque | -- | -- | -- | 6,430 | ft-lbs |

# Casing Spec Sheets

## Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55 PDF

New Search »

« Back to Previous List

USC Metric

6/8/2015 10:14:05 AM

| Mechanical Properties | Pipe | BTC | LTC | STC | |
|---|---|---|---|---|---|
| Minimum Yield Strength | 55,000 | -- | -- | -- | psi |
| Maximum Yield Strength | 80,000 | -- | -- | -- | psi |
| Minimum Tensile Strength | 75,000 | -- | -- | -- | psi |
| **Dimensions** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Outside Diameter | 10.750 | 11.750 | -- | 11.750 | in. |
| Wall Thickness | 0.350 | -- | -- | -- | in. |
| Inside Diameter | 10.050 | 10.050 | -- | 10.050 | in. |
| Standard Drift | 9.894 | 9.894 | -- | 9.894 | in. |
| Alternate Drift | -- | -- | -- | -- | in. |
| Nominal Linear Weight, T&C | 40.50 | -- | -- | -- | lbs/ft |
| Plain End Weight | 38.91 | -- | -- | -- | lbs/ft |
| **Performance** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Minimum Collapse Pressure | 1,580 | 1,580 | -- | 1,580 | psi |
| Minimum Internal Yield Pressure | 3,130 | 3,130 | -- | 3,130 | psi |
| Minimum Pipe Body Yield Strength | 629.00 | -- | -- | -- | 1000 lbs |
| Joint Strength | -- | 700 | -- | 420 | 1000 lbs |
| Reference Length | -- | 11,522 | -- | 6,915 | ft |
| **Make-Up Data** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Make-Up Loss | -- | 4.81 | -- | 3.50 | in. |
| Minimum Make-Up Torque | -- | -- | -- | 3,150 | ft-lbs |
| Maximum Make-Up Torque | -- | -- | -- | 5,250 | ft-lbs |

VALLOUREC STAR 8.625 32# J55 S S2L2 DA 7.875 W/O# SLN # PO# MADE IN USA FT LB

vallourec

API 5CT, 10th Ed. Connection Data Sheet

| O.D. (in) | WEIGHT (lb/ft) | WALL (in) | GRADE | *API DRIFT (in) | RBW % |
|---|---|---|---|---|---|
| 8.625 | Nominal: 32.00<br>Plain End: 31.13 | 0.352 | J55 | 7.796 | 87.5 |

| Material Properties (PE) | |
|---|---|
| **Pipe** | |
| Minimum Yield Strength: | 55 ksi |
| Maximum Yield Strength: | 80 ksi |
| Minimum Tensile Strength: | 75 ksi |
| **Coupling** | |
| Minimum Yield Strength: | 55 ksi |
| Maximum Yield Strength: | 80 ksi |
| Minimum Tensile Strength: | 75 ksi |

| Pipe Body Data (PE) | |
|---|---|
| **Geometry** | |
| Nominal ID: | 7.92 inch |
| Nominal Area: | 9.149 $in^2$ |
| *Special/Alt. Drift: | 7.875 inch |
| **Performance** | |
| Pipe Body Yield Strength: | 503 kips |
| Collapse Resistance: | 2,530 psi |
| Internal Yield Pressure: (API Historical) | 3,930 psi |

| API Connection Data<br>Coupling OD: 9.625" | |
|---|---|
| **STC Performance** | |
| STC Internal Pressure: | 3,930 psi |
| STC Joint Strength: | 372 kips |
| **LTC Performance** | |
| LTC Internal Pressure: | 3,930 psi |
| LTC Joint Strength: | 417 kips |
| **SC-BTC Performance - Cplg OD = 9.125"** | |
| BTC Internal Pressure: | 3,930 psi |
| BTC Joint Strength: | 503 kips |

| API Connection Torque | | | | | |
|---|---|---|---|---|---|
| **STC Torque (ft-lbs)** | | | | | |
| Min: | 2,793 | Opti: | 3,724 | Max: | 4,655 |
| **LTC Torque (ft-lbs)** | | | | | |
| Min: | 3,130 | Opti: | 4,174 | Max: | 5,217 |
| **BTC Torque (ft-lbs)** | | | | | |
| *follow API guidelines regarding positional make up* | | | | | |

*Alt. Drift will be used unless API Drift is specified on order.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.



Rev 3, 7/30/2021 10/21/2022 15:24

eog resources

## EOG BLANKET CASING DESIGN VARIANCE

EOG respectfully requests the drill plans in the attached document 'EOG Alternate Casing Designs – BLM APPROVED' be added to the COA's for this well. These designs have been approved by the BLM down to the TVDs listed below and will allow EOG to run alternate casing designs for this well if necessary.

The designs and associated details listed are the "worst case scenario" boundaries for design safety factors. Location and lithology have NOT been accounted for in these designs. The specific well details will be based on the APD/Sundry package and the information listed in the COA.

The mud program will not change from the original design for this well. Summary of the mud programs for both shallow and deep targets are listed at the end of this document. If the target is changing, a sundry will be filed to update the casing design and mud/cement programs.

Cement volumes listed in this document are for reference only. The cement volumes for the specific well will be adjusted to ensure cement tops meet BLM requirements as listed in the COA and to allow bradenhead cementing when applicable.

This blanket document only applies to wells with three string designs outside of Potash and Capitan Reef boundaries.

| Shallow Design Boundary Conditions | | | | |
|---|---|---|---|---|
| | Deepest MD (ft) | Deepest TVD (ft) | Max Inc (deg) | Max DLS (°/100usft) |
| Surface | 2030 | 2030 | 0 | 0 |
| Intermediate | 7793 | 5650 | 40 | 8 |
| Production | 28578 | 12000 | 90 | 25 |

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**Shallow Design A**

## 4. CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 16" | 0 | 2,161 | 0 | 2,030 | 13-3/8" | 54.5# | J-55 | STC |
| 11" | 0 | 7,951 | 0 | 5,650 | 9-5/8" | 40# | J-55 | LTC |
| 6-3/4" | 0 | 29,353 | 0 | 12,000 | 5-1/2" | 20# | P110-EC | DWC/C IS MS |

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

Variance is requested to waive the centralizer requirements for the 9-5/8" casing in the 11" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 11" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 6-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 6-3/4" hole interval to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422'' annulus clearance requirement for the intermediate (salt) section from Title 43 CFR Part 3170 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

## 5. CEMENTING PROGRAM:

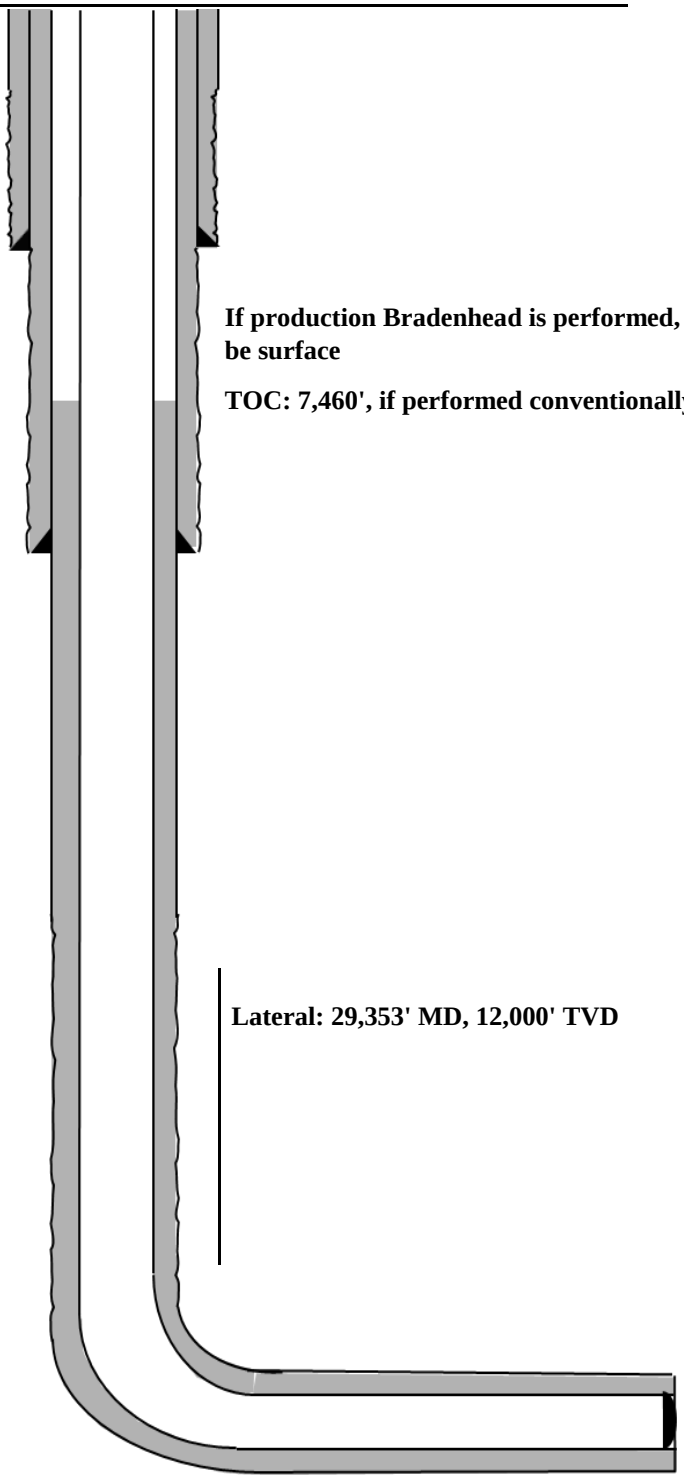
| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,030' 13-3/8'' | 570 | 13.5 | 1.73 | Lead: Class C/H + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 160 | 14.8 | 1.34 | Tail: Class C/H + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830') |
| 8,050' 9-5/8'' | 760 | 12.7 | 2.22 | Lead: Class C/H + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 250 | 14.8 | 1.32 | Tail: Class C/H + 10% NaCL + 3% MagOx (TOC @ 6360') |
| 29,353' 5-1/2'' | 1000 | 14.8 | 1.32 | Bradenhead squeeze: Class C/H + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface) |
| | 1480 | 13.2 | 1.52 | Tail: Class C/H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ Top of Brushy) |

eog resources

**Shallow Design A**

**Proposed Wellbore**

**KB: 3558'**
**GL: 3533'**



**Bit Size: 16''**
**13-3/8'', 54.5#, J-55, STC**
**@ 0' - 2,030'**

**If production Bradenhead is performed, TOC will be surface**

**TOC: 7,460', if performed conventionally.**

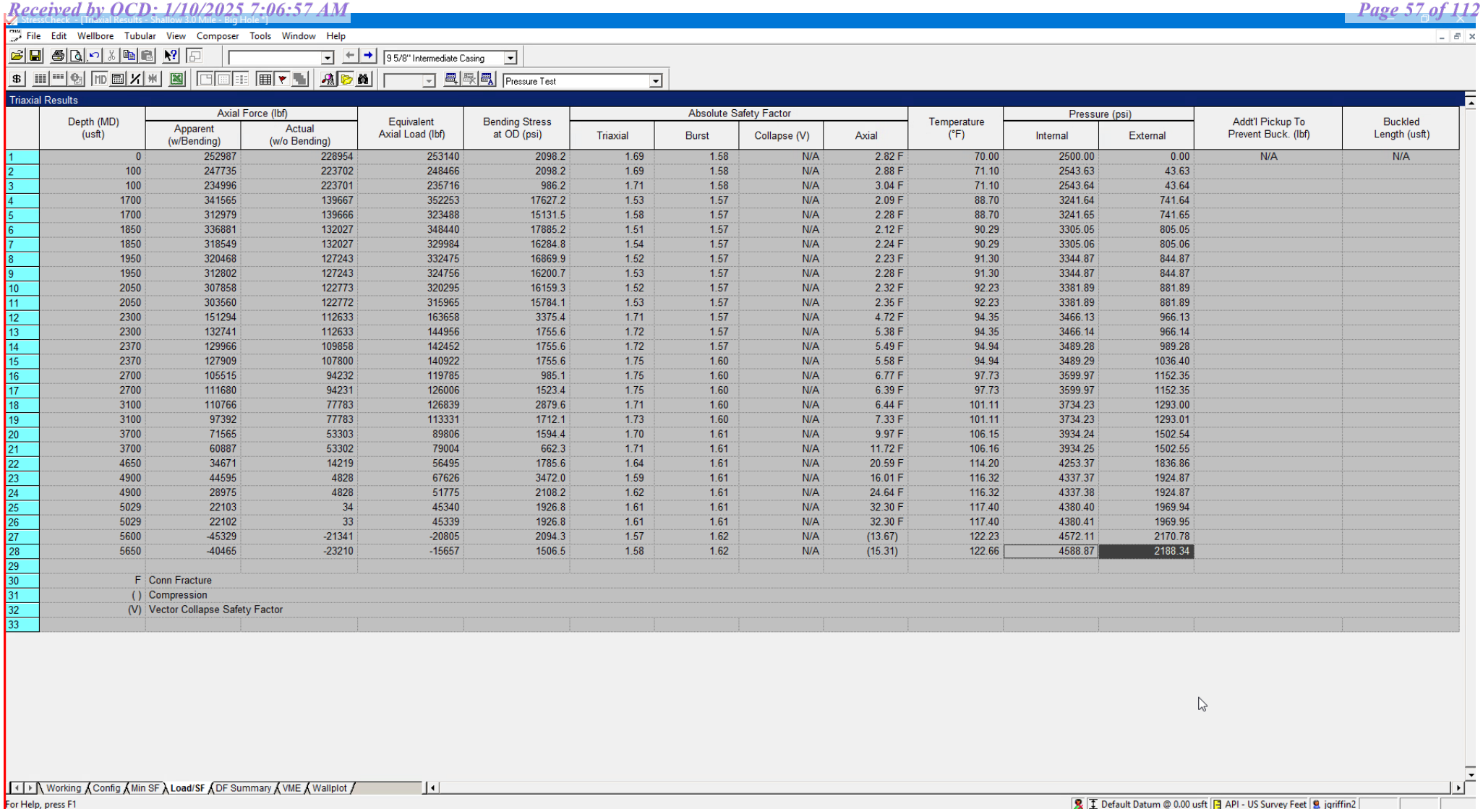
**Bit Size: 11''**
**9-5/8'', 40.#, J-55, LTC**
**@ 0' - 7,960'**

**Lateral: 29,353' MD, 12,000' TVD**

**Bit Size: 6-3/4''**
**5-1/2'', 20.#, P110-EC, DWC/C IS MS**
**@ 0' - 29,353'**

**KOP: 13,378' MD, 11,771' TVD**
**EOC: 13,738' MD, 12,000' TVD**

**Bit Size: 6-3/4''**



StressCheck - [Triaxial Results - Shallow 3.0 Mile - Big Hole*]

File Edit Wellbore Tubular View Composer Tools Window Help

9 5/8" Intermediate Casing

Pressure Test

Triaxial Results

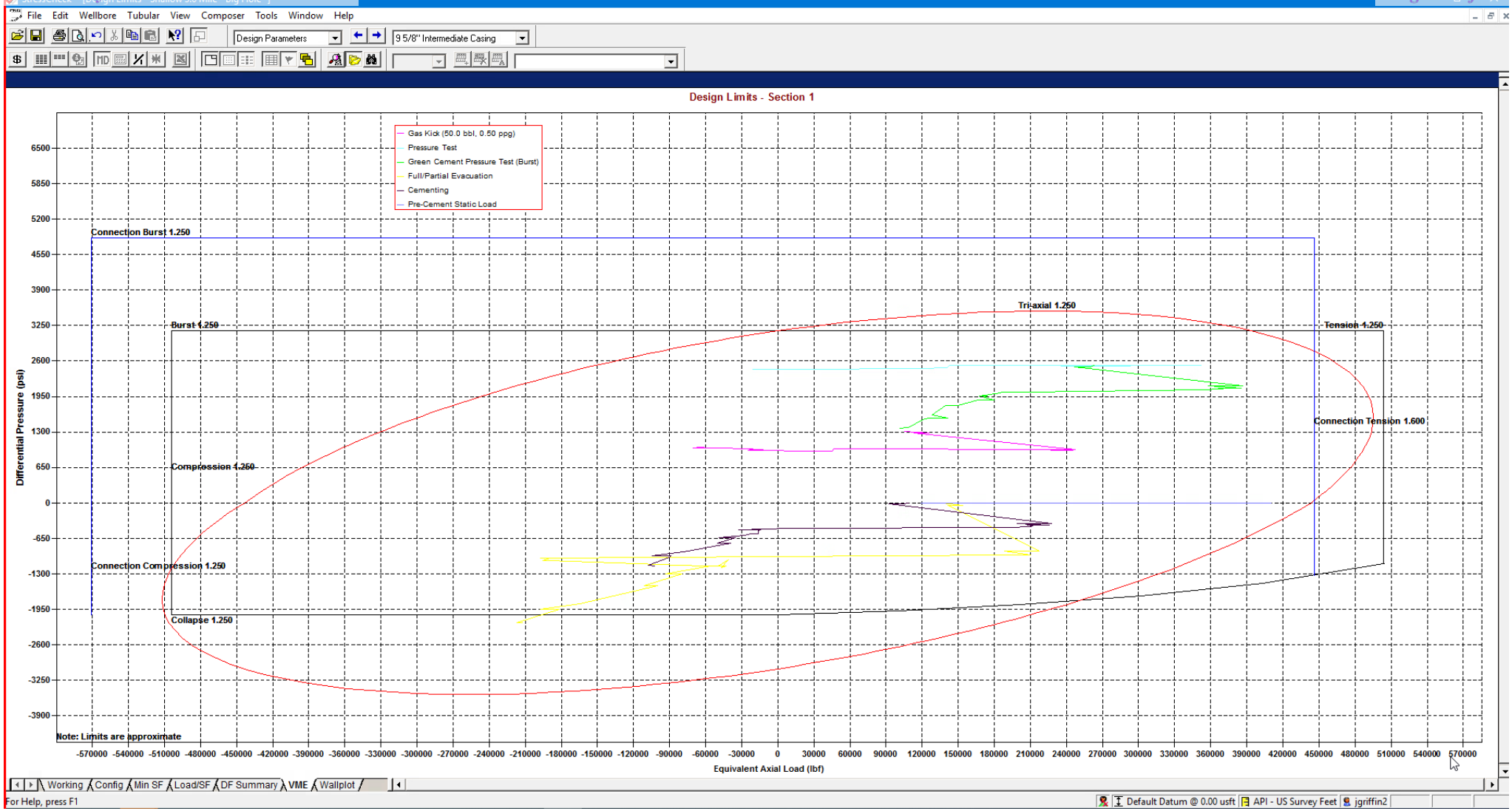
| | Depth (MD) (usft) | Axial Force (lbf) | | Equivalent Axial Load (lbf) | Bending Stress at OD (psi) | Absolute Safety Factor | | | | Temperature (°F) | Pressure (psi) | | Addt'l Pickup To Prevent Buck. (lbf) | Buckled Length (usft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apparent (w/Bending) | Actual (w/o Bending) | | | Triaxial | Burst | Collapse (V) | Axial | | Internal | External | | |
| 1 | 0 | 252987 | 228954 | 253140 | 2098.2 | 1.69 | 1.58 | N/A | 2.82 F | 70.00 | 2500.00 | 0.00 | N/A | N/A |
| 2 | 100 | 247735 | 223702 | 248466 | 2098.2 | 1.69 | 1.58 | N/A | 2.88 F | 71.10 | 2543.63 | 43.63 | | |
| 3 | 100 | 234996 | 223701 | 235716 | 986.2 | 1.71 | 1.58 | N/A | 3.04 F | 71.10 | 2543.64 | 43.64 | | |
| 4 | 1700 | 341565 | 139667 | 352253 | 17627.2 | 1.53 | 1.57 | N/A | 2.09 F | 88.70 | 3241.64 | 741.64 | | |
| 5 | 1700 | 312979 | 139666 | 323488 | 15131.5 | 1.58 | 1.57 | N/A | 2.28 F | 88.70 | 3241.65 | 741.65 | | |
| 6 | 1850 | 336881 | 132027 | 348440 | 17885.2 | 1.51 | 1.57 | N/A | 2.12 F | 90.29 | 3305.05 | 805.05 | | |
| 7 | 1850 | 318549 | 132027 | 329984 | 16284.8 | 1.54 | 1.57 | N/A | 2.24 F | 90.29 | 3305.06 | 805.06 | | |
| 8 | 1950 | 320468 | 127243 | 332475 | 16869.9 | 1.52 | 1.57 | N/A | 2.23 F | 91.30 | 3344.87 | 844.87 | | |
| 9 | 1950 | 312802 | 127243 | 324756 | 16200.7 | 1.53 | 1.57 | N/A | 2.28 F | 91.30 | 3344.87 | 844.87 | | |
| 10 | 2050 | 307858 | 122773 | 320295 | 16159.3 | 1.52 | 1.57 | N/A | 2.32 F | 92.23 | 3381.89 | 881.89 | | |
| 11 | 2050 | 303560 | 122772 | 315965 | 15784.1 | 1.53 | 1.57 | N/A | 2.35 F | 92.23 | 3381.89 | 881.89 | | |
| 12 | 2300 | 151294 | 112633 | 163658 | 3375.4 | 1.71 | 1.57 | N/A | 4.72 F | 94.35 | 3466.13 | 966.13 | | |
| 13 | 2300 | 132741 | 112633 | 144956 | 1755.6 | 1.72 | 1.57 | N/A | 5.38 F | 94.35 | 3466.14 | 966.14 | | |
| 14 | 2370 | 129966 | 109858 | 142452 | 1755.6 | 1.72 | 1.57 | N/A | 5.49 F | 94.94 | 3489.28 | 989.28 | | |
| 15 | 2370 | 127909 | 107800 | 140922 | 1755.6 | 1.75 | 1.60 | N/A | 5.58 F | 94.94 | 3489.29 | 1036.40 | | |
| 16 | 2700 | 105515 | 94232 | 119785 | 985.1 | 1.75 | 1.60 | N/A | 6.77 F | 97.73 | 3599.97 | 1152.35 | | |
| 17 | 2700 | 111680 | 94231 | 126006 | 1523.4 | 1.75 | 1.60 | N/A | 6.39 F | 97.73 | 3599.97 | 1152.35 | | |
| 18 | 3100 | 110766 | 77783 | 126839 | 2879.6 | 1.71 | 1.60 | N/A | 6.44 F | 101.11 | 3734.23 | 1293.00 | | |
| 19 | 3100 | 97392 | 77783 | 113331 | 1712.1 | 1.73 | 1.60 | N/A | 7.33 F | 101.11 | 3734.23 | 1293.01 | | |
| 20 | 3700 | 71565 | 53303 | 89806 | 1594.4 | 1.70 | 1.61 | N/A | 9.97 F | 106.15 | 3934.24 | 1502.54 | | |
| 21 | 3700 | 60887 | 53302 | 79004 | 662.3 | 1.71 | 1.61 | N/A | 11.72 F | 106.16 | 3934.25 | 1502.55 | | |
| 22 | 4650 | 34671 | 14219 | 56495 | 1785.6 | 1.64 | 1.61 | N/A | 20.59 F | 114.20 | 4253.37 | 1836.86 | | |
| 23 | 4900 | 44595 | 4828 | 67626 | 3472.0 | 1.59 | 1.61 | N/A | 16.01 F | 116.32 | 4337.37 | 1924.87 | | |
| 24 | 4900 | 28975 | 4828 | 51775 | 2108.2 | 1.62 | 1.61 | N/A | 24.64 F | 116.32 | 4337.38 | 1924.87 | | |
| 25 | 5029 | 22103 | 34 | 45340 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.40 | 1969.94 | | |
| 26 | 5029 | 22102 | 33 | 45339 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.41 | 1969.95 | | |
| 27 | 5600 | -45329 | -21341 | -20805 | 2094.3 | 1.57 | 1.62 | N/A | (13.67) | 122.23 | 4572.11 | 2170.78 | | |
| 28 | 5650 | -40465 | -23210 | -15657 | 1506.5 | 1.58 | 1.62 | N/A | (15.31) | 122.66 | 4588.87 | 2188.34 | | |
| 29 | | | | | | | | | | | | | | |
| 30 | F | Conn Fracture | | | | | | | | | | | | |
| 31 | ( ) | Compression | | | | | | | | | | | | |
| 32 | (V) | Vector Collapse Safety Factor | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

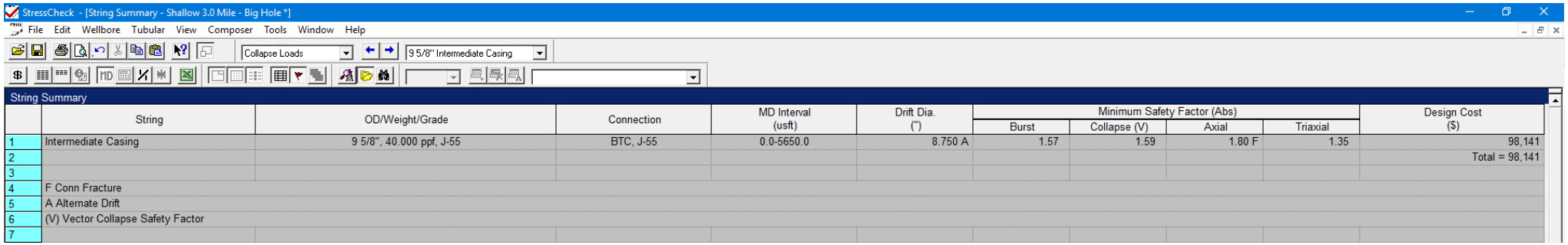
Working Config Min SF Load/SF DF Summary VME Wallplot

For Help, press F1

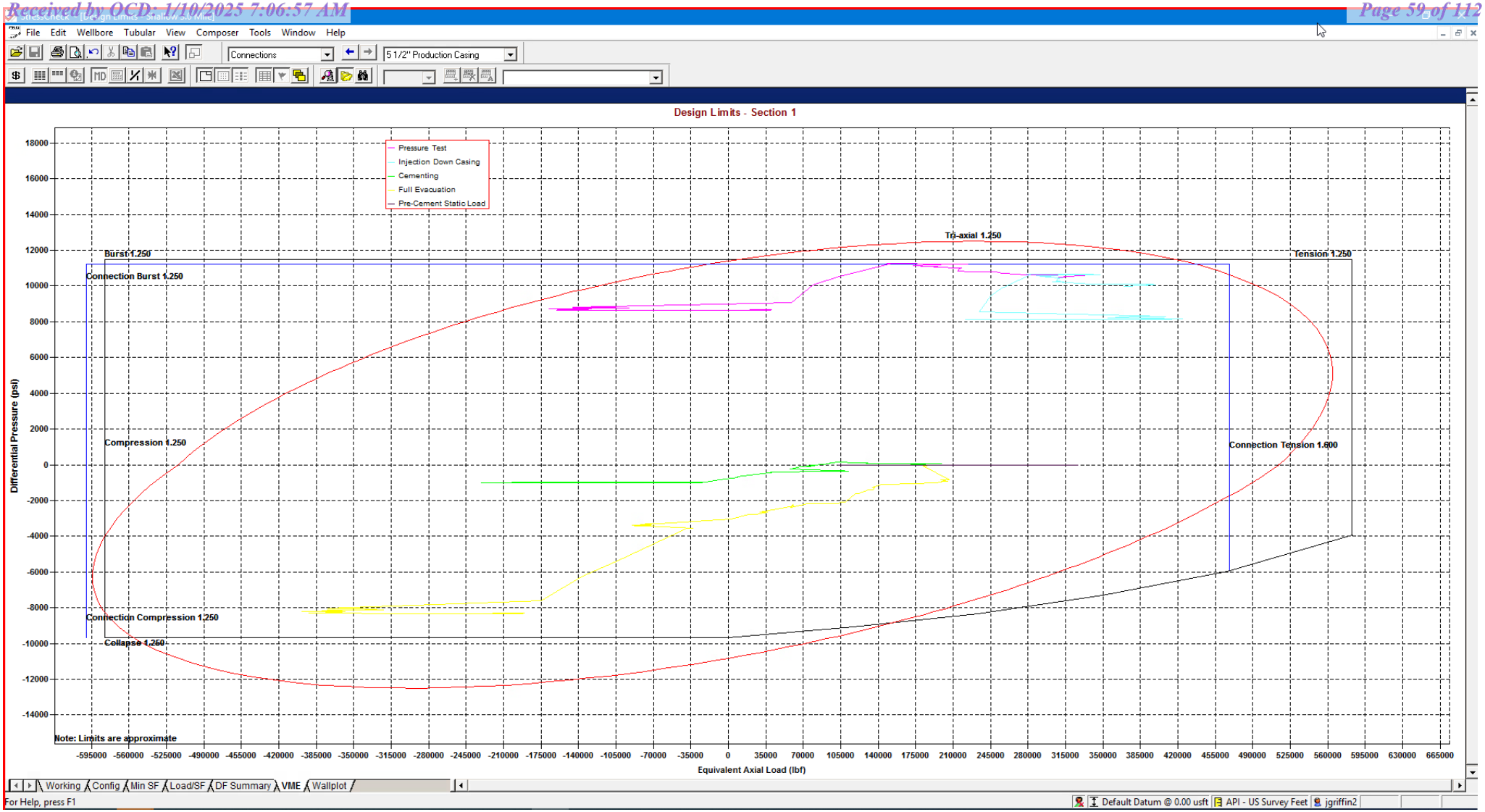
Default Datum @ 0.00 usft API - US Survey Feet jqriffin2

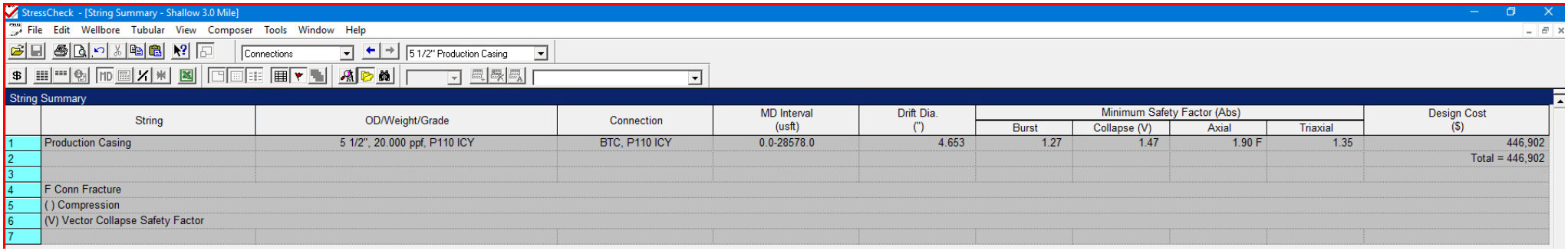
9-5/8” Intermediate Casing Pressure Test:
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi
External Profile based off Pore Pressure: 2188 psi




*Modelling done with 9-5/8” 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 5 1/2", 20.000 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 4.653 | 1.27 | 1.47 | 1.90 F | 1.35 | 446,902 |
| 2 | | | | | | | | | | Total = 446,902 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | ( ) Compression | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 5-1/2” 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

eog resources

**Shallow Design B**

## 4. CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 13-1/2" | 0 | 2,161 | 0 | 2,030 | 10-3/4" | 40.5# | J-55 | STC |
| 9-7/8" | 0 | 7,951 | 0 | 5,650 | 8-5/8" | 32# | J-55 | BTC-SC |
| 6-3/4" | 0 | 29,353 | 0 | 12,000 | 5-1/2" | 20# | P110-EC | DWC/C IS MS |

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

Variance is requested to waive the centralizer requirements for the 8-5/8" casing in the 9-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 9-7/8" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 5-1/2" casing in the 6-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 6-3/4" hole interval to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422'' annulus clearance requirement for the intermediate (salt) section from Title 43 CFR Part 3170 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

## 5. CEMENTING PROGRAM:

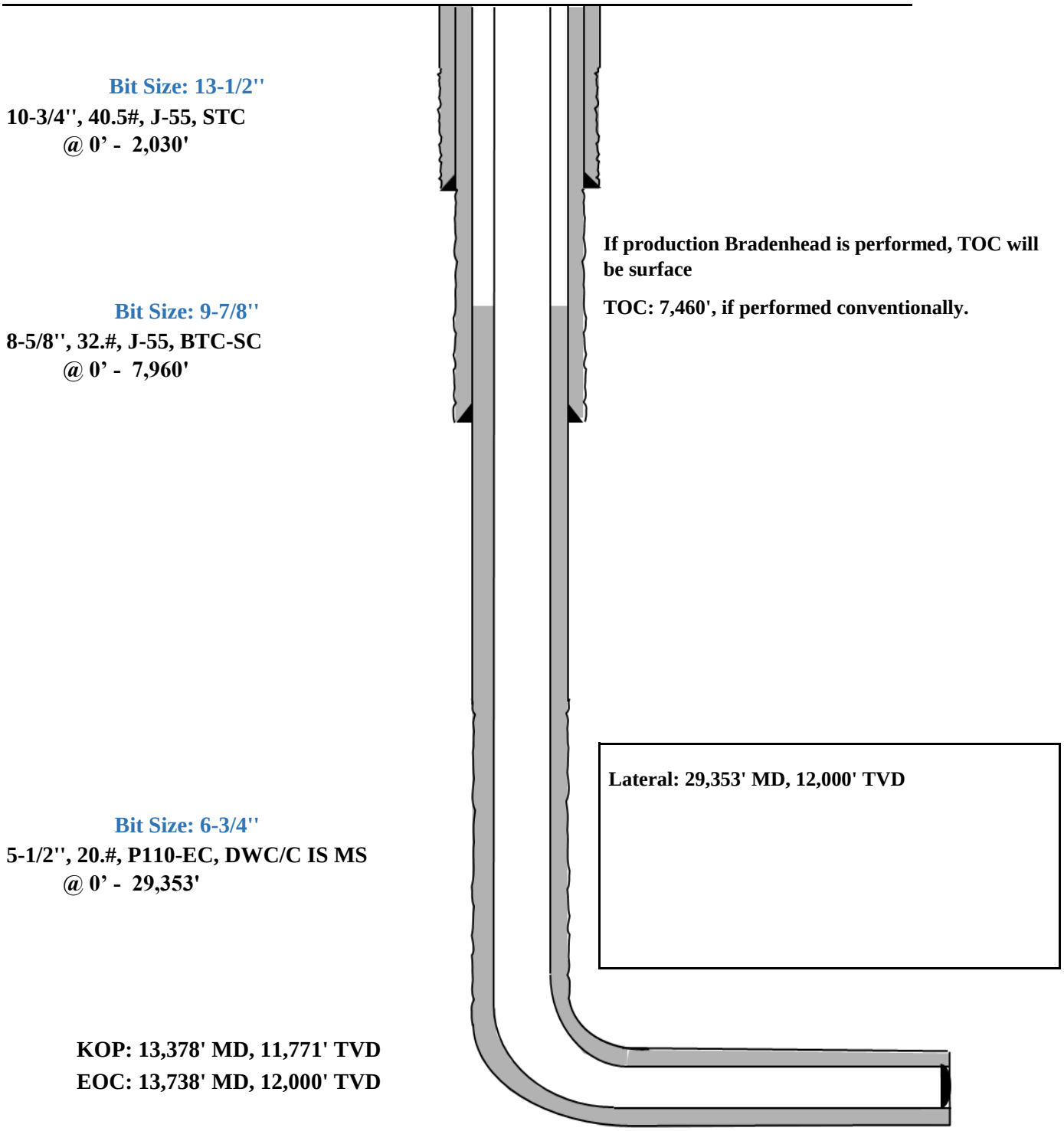
| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,030' 10-3/4'' | 530 | 13.5 | 1.73 | Lead: Class C/H + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 140 | 14.8 | 1.34 | Tail: Class C/H + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830') |
| 8,050' 8-5/8'' | 470 | 12.7 | 2.22 | Lead: Class C/H + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 210 | 14.8 | 1.32 | Tail: Class C/H + 10% NaCL + 3% MagOx (TOC @ 6360') |
| 29,353' 5-1/2'' | 1000 | 14.8 | 1.32 | Bradenhead squeeze: Class C/H + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface) |
| | 1480 | 13.2 | 1.52 | Tail: Class C/H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ Top of Brushy) |

eog resources

## Shallow Casing Design B

**Proposed Wellbore**

**KB: 3558'**
**GL: 3533'**



StressCheck - [Triaxial Results - Shallow 3.0 Mile *]

File Edit Wellbore Tubular View Composer Tools Window Help

Burst Design | 8 5/8" Intermediate Casing | Pressure Test

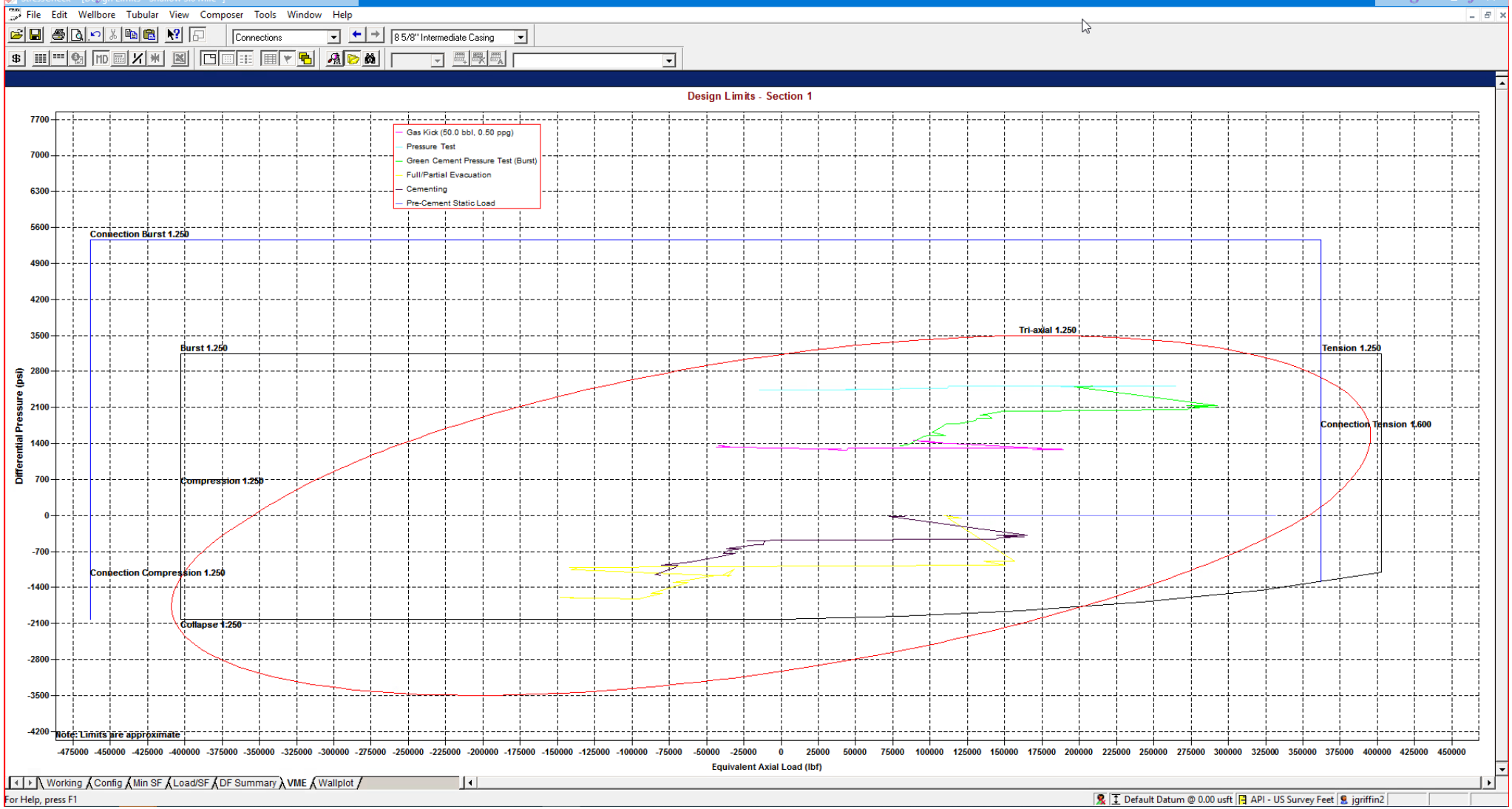
Triaxial Results

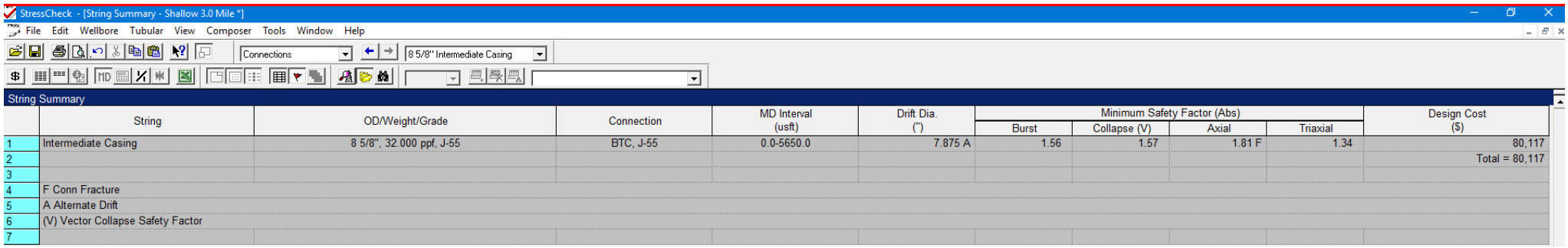
| | Depth (MD) (usft) | Axial Force (lbf) | | Equivalent Axial Load (lbf) | Bending Stress at OD (psi) | Absolute Safety Factor | | | | Temperature (°F) | Pressure (psi) | | Addt'l Pickup To Prevent Buck. (lbf) | Buckled Length (usft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apparent (w/Bending) | Actual (w/o Bending) | | | Triaxial | Burst | Collapse (V) | Axial | | Internal | External | | |
| 1 | 0 | 200426 | 183224 | 200546 | 1880.2 | 1.68 | 1.57 | N/A | 2.89 F | 70.00 | 2500.00 | 0.00 | N/A | N/A |
| 2 | 100 | 196229 | 179028 | 196812 | 1880.2 | 1.69 | 1.57 | N/A | 2.95 F | 71.10 | 2543.63 | 43.63 | | |
| 3 | 100 | 187111 | 179027 | 187686 | 883.7 | 1.70 | 1.57 | N/A | 3.10 F | 71.10 | 2543.64 | 43.64 | | |
| 4 | 1700 | 256401 | 111891 | 264835 | 15795.8 | 1.56 | 1.56 | N/A | 2.26 F | 88.70 | 3241.64 | 741.64 | | |
| 5 | 1700 | 235940 | 111891 | 244247 | 13559.4 | 1.60 | 1.56 | N/A | 2.45 F | 88.70 | 3241.65 | 741.65 | | |
| 6 | 1850 | 252413 | 105788 | 261533 | 16027.0 | 1.54 | 1.56 | N/A | 2.29 F | 90.29 | 3305.05 | 805.05 | | |
| 7 | 1850 | 239292 | 105787 | 248323 | 14592.9 | 1.56 | 1.56 | N/A | 2.42 F | 90.29 | 3305.06 | 805.06 | | |
| 8 | 1950 | 240267 | 101966 | 249748 | 15117.2 | 1.54 | 1.56 | N/A | 2.41 F | 91.30 | 3344.87 | 844.87 | | |
| 9 | 1950 | 234781 | 101965 | 244223 | 14517.5 | 1.56 | 1.56 | N/A | 2.47 F | 91.30 | 3344.87 | 844.87 | | |
| 10 | 2050 | 230871 | 98395 | 240694 | 14480.4 | 1.55 | 1.56 | N/A | 2.51 F | 92.23 | 3381.89 | 881.89 | | |
| 11 | 2050 | 227794 | 98394 | 237594 | 14144.2 | 1.55 | 1.56 | N/A | 2.54 F | 92.23 | 3381.89 | 881.89 | | |
| 12 | 2300 | 117966 | 90294 | 127818 | 3024.7 | 1.70 | 1.56 | N/A | 4.91 F | 94.35 | 3466.13 | 966.13 | | |
| 13 | 2300 | 104686 | 90293 | 114432 | 1573.2 | 1.71 | 1.56 | N/A | 5.53 F | 94.35 | 3466.14 | 966.14 | | |
| 14 | 2370 | 102469 | 88077 | 112431 | 1573.2 | 1.71 | 1.56 | N/A | 5.65 F | 94.94 | 3489.28 | 989.28 | | |
| 15 | 2370 | 100817 | 86424 | 111200 | 1573.2 | 1.75 | 1.59 | N/A | 5.75 F | 94.94 | 3489.29 | 1036.40 | | |
| 16 | 2700 | 83660 | 75583 | 95052 | 882.8 | 1.74 | 1.59 | N/A | 6.92 F | 97.73 | 3599.97 | 1152.35 | | |
| 17 | 2700 | 88072 | 75583 | 99504 | 1365.1 | 1.74 | 1.59 | N/A | 6.58 F | 97.73 | 3599.97 | 1152.35 | | |
| 18 | 3100 | 86049 | 62442 | 98863 | 2580.4 | 1.71 | 1.59 | N/A | 6.73 F | 101.11 | 3734.23 | 1293.00 | | |
| 19 | 3100 | 76477 | 62441 | 89195 | 1534.2 | 1.72 | 1.59 | N/A | 7.57 F | 101.11 | 3734.23 | 1293.01 | | |
| 20 | 3700 | 55953 | 42882 | 70509 | 1428.8 | 1.69 | 1.60 | N/A | 10.35 F | 106.15 | 3934.24 | 1502.54 | | |
| 21 | 3700 | 48311 | 42881 | 62778 | 593.5 | 1.71 | 1.60 | N/A | 11.99 F | 106.16 | 3934.25 | 1502.55 | | |
| 22 | 4000 | 41458 | 33043 | 56865 | 919.9 | 1.69 | 1.60 | N/A | 13.97 F | 108.69 | 4034.82 | 1607.91 | | |
| 23 | 4650 | 26293 | 11655 | 43706 | 1600.1 | 1.63 | 1.60 | N/A | 22.03 F | 114.20 | 4253.37 | 1836.86 | | |
| 24 | 4900 | 32619 | 4156 | 50970 | 3111.2 | 1.59 | 1.60 | N/A | 17.76 F | 116.32 | 4337.37 | 1924.87 | | |
| 25 | 4900 | 21439 | 4155 | 39625 | 1889.2 | 1.61 | 1.60 | N/A | 27.02 F | 116.32 | 4337.38 | 1924.87 | | |
| 26 | 5039 | 15822 | 26 | 34389 | 1726.6 | 1.61 | 1.61 | N/A | 36.61 F | 117.49 | 4383.77 | 1973.48 | | |
| 27 | 5039 | 15822 | 26 | 34388 | 1726.6 | 1.61 | 1.61 | N/A | 36.61 F | 117.49 | 4383.78 | 1973.49 | | |
| 28 | 5600 | -33912 | -16743 | -14286 | 1876.7 | 1.57 | 1.61 | N/A | (14.60) | 122.23 | 4572.11 | 2170.78 | | |
| 29 | 5650 | -30585 | -18235 | -10742 | 1350.0 | 1.58 | 1.61 | N/A | (16.18) | 122.66 | 4588.87 | 2188.34 | | |
| 30 | | | | | | | | | | | | | | |
| 31 | F | Conn Fracture | | | | | | | | | | | | |
| 32 | ( ) | Compression | | | | | | | | | | | | |
| 33 | (V) | Vector Collapse Safety Factor | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |

Working | Config | Min SF | Load/SF | DF Summary | VME | Wallplot

For Help, press F1 | Default Datum @ 0.00 usft | API - US Survey Feet | jgriffin2

8-5/8" Intermediate Casing Pressure Test:
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi
External Profile based off Pore Pressure: 2188 psi

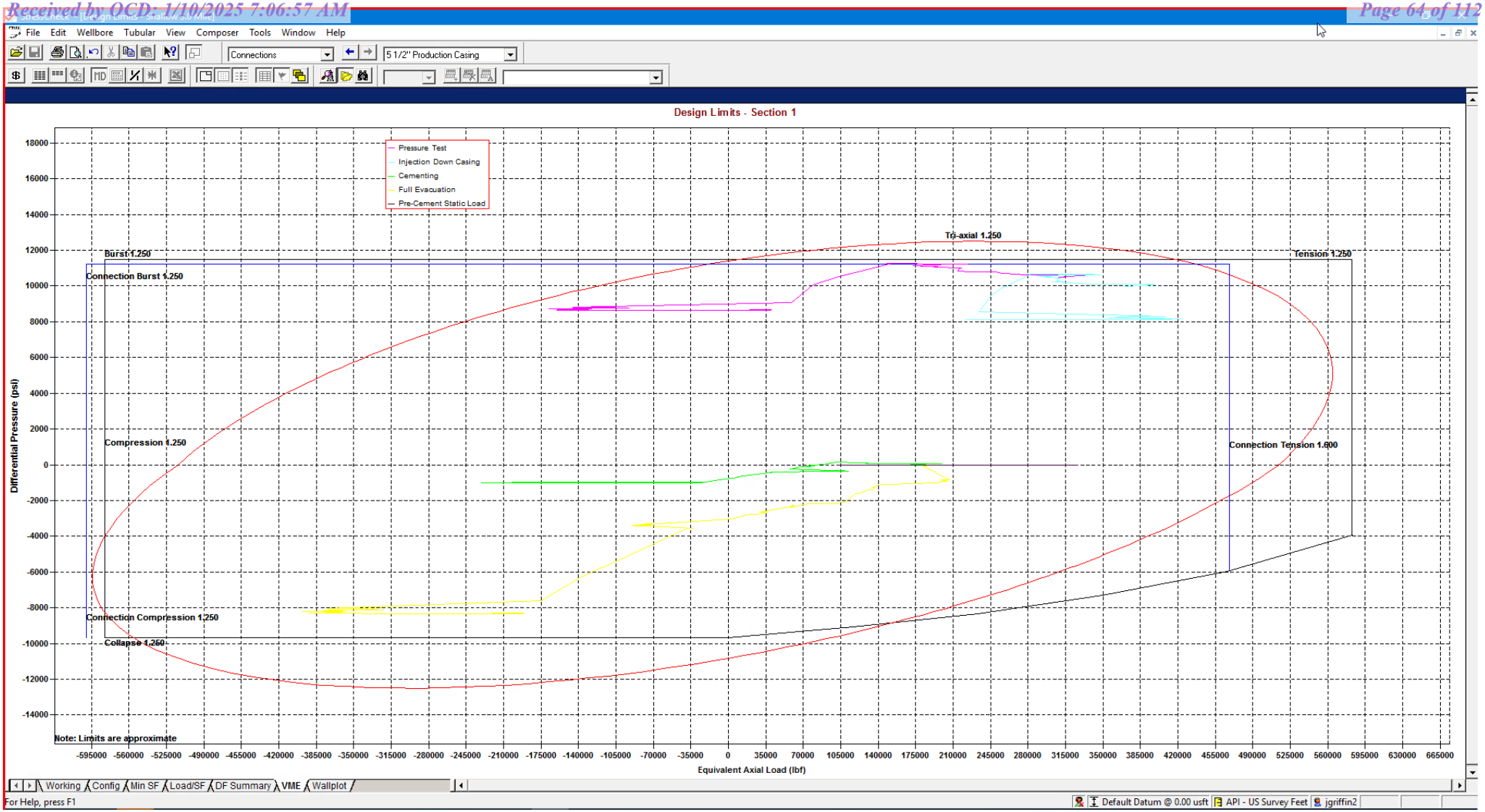


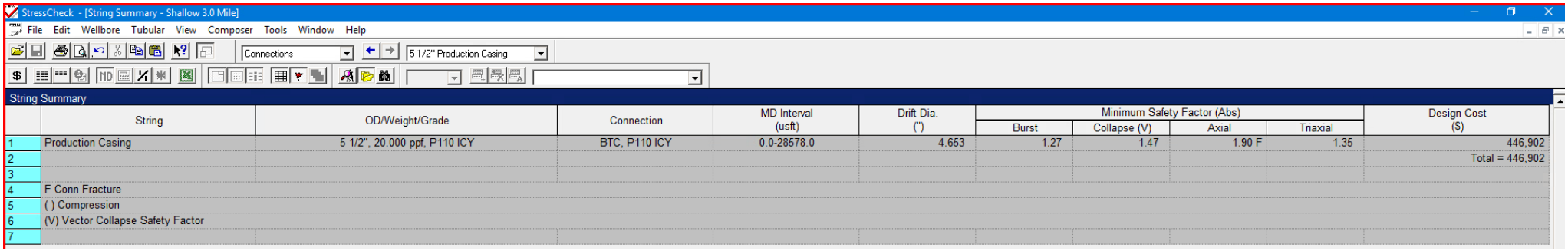




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) | | | | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Burst | Collapse (V) | Axial | Triaxial | |
| 1 | Intermediate Casing | 8 5/8", 32.000 ppf, J-55 | BTC, J-55 | 0.0-5650.0 | 7.875 A | 1.56 | 1.57 | 1.81 F | 1.34 | 80,117 |
| 2 | | | | | | | | | | Total = 80,117 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | A Alternate Drift | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 8-5/8" 32# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 5 1/2", 20.000 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 4.653 | 1.27 | 1.47 | 1.90 F | 1.35 | 446,902 |
| 2 | | | | | | | | | | Total = 446,902 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | ( ) Compression | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 5-1/2” 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

eog resources

**Shallow Design C**

## 4. CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 16" | 0 | 2,161 | 0 | 2,030 | 13-3/8" | 54.5# | J-55 | STC |
| 11" | 0 | 7,951 | 0 | 5,650 | 9-5/8" | 40# | J-55 | LTC |
| 7-7/8" | 0 | 29,353 | 0 | 12,000 | 6" | 24.5# | P110-EC | VAM Sprint-SF |

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

Variance is requested to waive the centralizer requirements for the 9-5/8" casing in the 11" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 11" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 6" casing in the 7-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 7-7/8" hole interval to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422'' annulus clearance requirement for the intermediate (salt) section from Title 43 CFR Part 3170 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

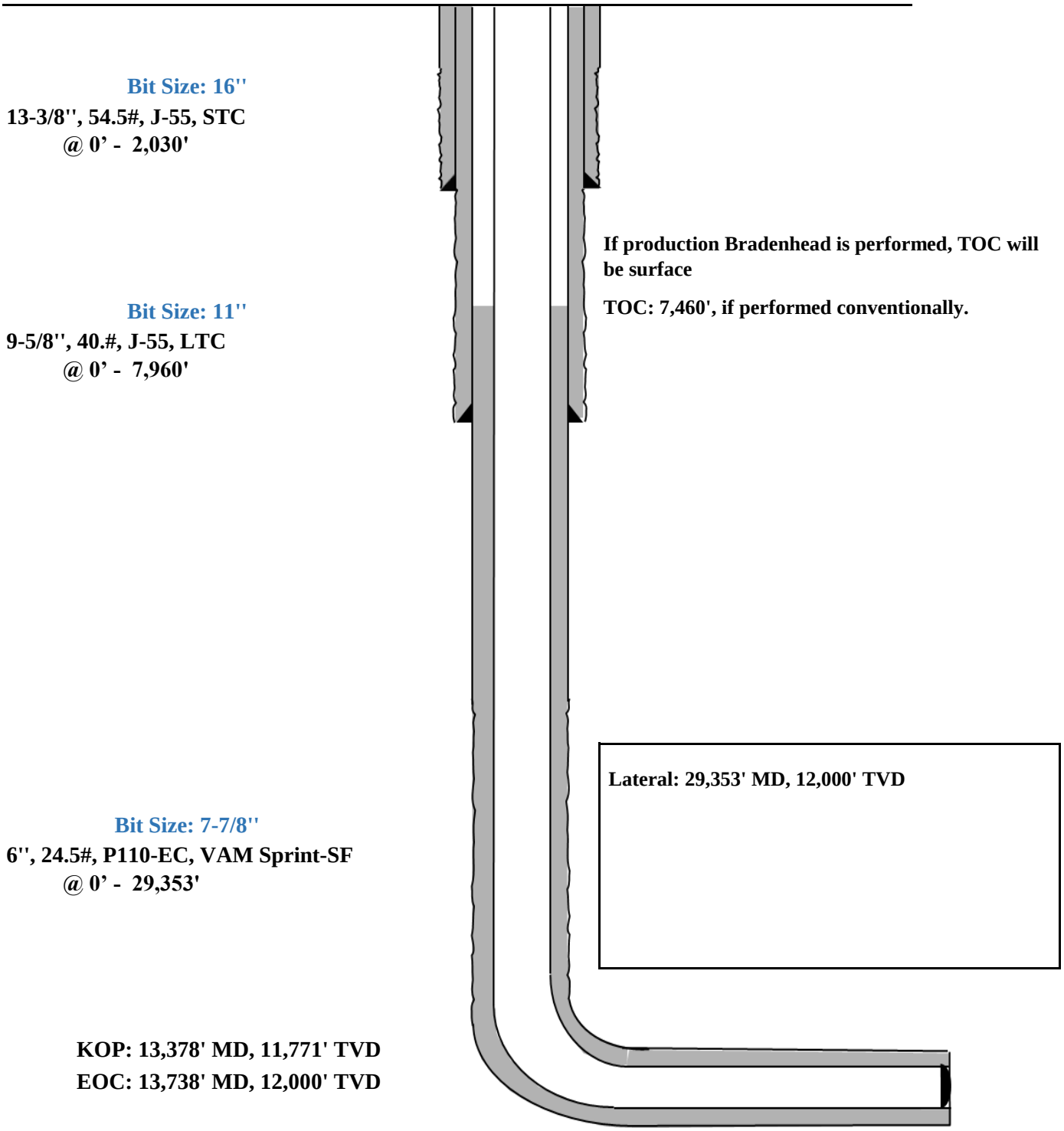
## 5. CEMENTING PROGRAM:

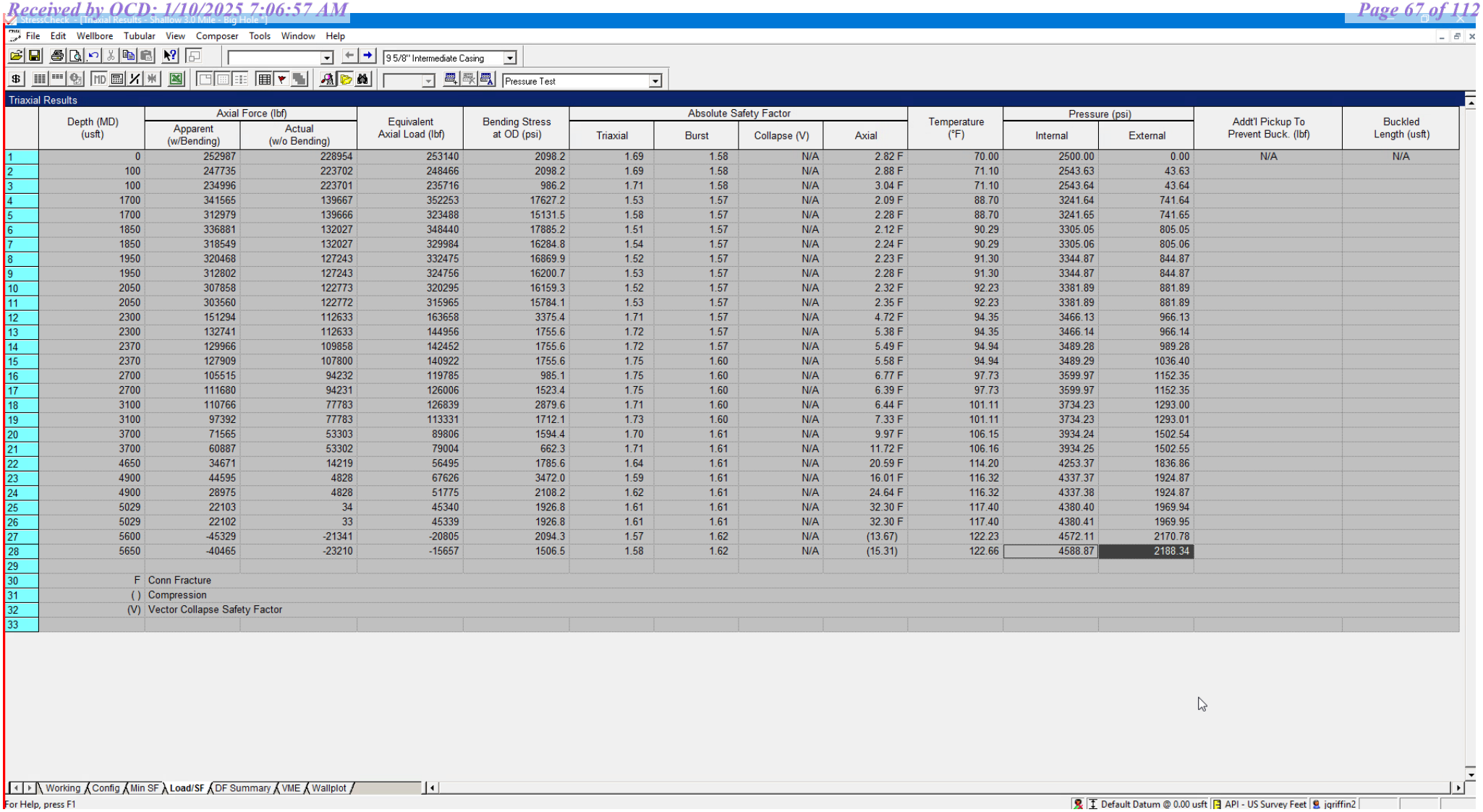
| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,030' 13-3/8'' | 570 | 13.5 | 1.73 | Lead: Class C/H + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 160 | 14.8 | 1.34 | Tail: Class C/H + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830') |
| 8,050' 9-5/8'' | 760 | 12.7 | 2.22 | Lead: Class C/H + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 250 | 14.8 | 1.32 | Tail: Class C/H + 10% NaCL + 3% MagOx (TOC @ 6360') |
| 29,353' 6'' | 1000 | 14.8 | 1.32 | Bradenhead squeeze: Class C/H + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface) |
| | 2500 | 13.2 | 1.52 | Tail: Class C/H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ Top of Brushy) |

**Shallow Design C**

**Proposed Wellbore**

**KB: 3558'**
**GL: 3533'**





StressCheck - [Triaxial Results - Shallow 3.0 Mile - Big Hole*]

File Edit Wellbore Tubular View Composer Tools Window Help

9 5/8" Intermediate Casing

Pressure Test

Triaxial Results

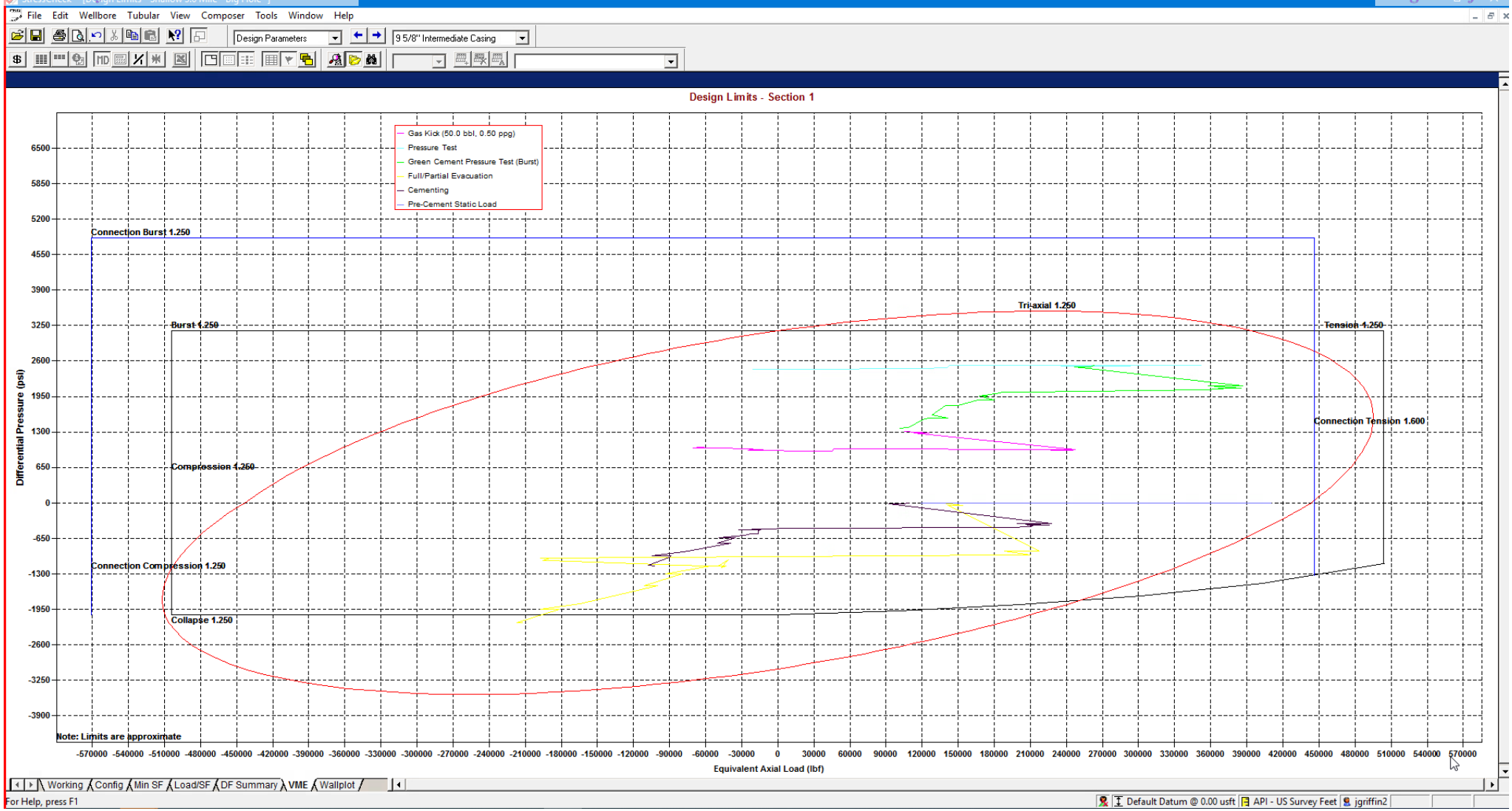
| | Depth (MD) (usft) | Axial Force (lbf) | | Equivalent Axial Load (lbf) | Bending Stress at OD (psi) | Absolute Safety Factor | | | | Temperature (°F) | Pressure (psi) | | Addt'l Pickup To Prevent Buck. (lbf) | Buckled Length (usft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apparent (w/Bending) | Actual (w/o Bending) | | | Triaxial | Burst | Collapse (V) | Axial | | Internal | External | | |
| 1 | 0 | 252987 | 228954 | 253140 | 2098.2 | 1.69 | 1.58 | N/A | 2.82 F | 70.00 | 2500.00 | 0.00 | N/A | N/A |
| 2 | 100 | 247735 | 223702 | 248466 | 2098.2 | 1.69 | 1.58 | N/A | 2.88 F | 71.10 | 2543.63 | 43.63 | | |
| 3 | 100 | 234996 | 223701 | 235716 | 986.2 | 1.71 | 1.58 | N/A | 3.04 F | 71.10 | 2543.64 | 43.64 | | |
| 4 | 1700 | 341565 | 139667 | 352253 | 17627.2 | 1.53 | 1.57 | N/A | 2.09 F | 88.70 | 3241.64 | 741.64 | | |
| 5 | 1700 | 312979 | 139666 | 323488 | 15131.5 | 1.58 | 1.57 | N/A | 2.28 F | 88.70 | 3241.65 | 741.65 | | |
| 6 | 1850 | 336881 | 132027 | 348440 | 17885.2 | 1.51 | 1.57 | N/A | 2.12 F | 90.29 | 3305.05 | 805.05 | | |
| 7 | 1850 | 318549 | 132027 | 329984 | 16284.8 | 1.54 | 1.57 | N/A | 2.24 F | 90.29 | 3305.06 | 805.06 | | |
| 8 | 1950 | 320468 | 127243 | 332475 | 16869.9 | 1.52 | 1.57 | N/A | 2.23 F | 91.30 | 3344.87 | 844.87 | | |
| 9 | 1950 | 312802 | 127243 | 324756 | 16200.7 | 1.53 | 1.57 | N/A | 2.28 F | 91.30 | 3344.87 | 844.87 | | |
| 10 | 2050 | 307858 | 122773 | 320295 | 16159.3 | 1.52 | 1.57 | N/A | 2.32 F | 92.23 | 3381.89 | 881.89 | | |
| 11 | 2050 | 303560 | 122772 | 315965 | 15784.1 | 1.53 | 1.57 | N/A | 2.35 F | 92.23 | 3381.89 | 881.89 | | |
| 12 | 2300 | 151294 | 112633 | 163658 | 3375.4 | 1.71 | 1.57 | N/A | 4.72 F | 94.35 | 3466.13 | 966.13 | | |
| 13 | 2300 | 132741 | 112633 | 144956 | 1755.6 | 1.72 | 1.57 | N/A | 5.38 F | 94.35 | 3466.14 | 966.14 | | |
| 14 | 2370 | 129966 | 109858 | 142452 | 1755.6 | 1.72 | 1.57 | N/A | 5.49 F | 94.94 | 3489.28 | 989.28 | | |
| 15 | 2370 | 127909 | 107800 | 140922 | 1755.6 | 1.75 | 1.60 | N/A | 5.58 F | 94.94 | 3489.29 | 1036.40 | | |
| 16 | 2700 | 105515 | 94232 | 119785 | 985.1 | 1.75 | 1.60 | N/A | 6.77 F | 97.73 | 3599.97 | 1152.35 | | |
| 17 | 2700 | 111680 | 94231 | 126006 | 1523.4 | 1.75 | 1.60 | N/A | 6.39 F | 97.73 | 3599.97 | 1152.35 | | |
| 18 | 3100 | 110766 | 77783 | 126839 | 2879.6 | 1.71 | 1.60 | N/A | 6.44 F | 101.11 | 3734.23 | 1293.00 | | |
| 19 | 3100 | 97392 | 77783 | 113331 | 1712.1 | 1.73 | 1.60 | N/A | 7.33 F | 101.11 | 3734.23 | 1293.01 | | |
| 20 | 3700 | 71565 | 53303 | 89806 | 1594.4 | 1.70 | 1.61 | N/A | 9.97 F | 106.15 | 3934.24 | 1502.54 | | |
| 21 | 3700 | 60887 | 53302 | 79004 | 662.3 | 1.71 | 1.61 | N/A | 11.72 F | 106.16 | 3934.25 | 1502.55 | | |
| 22 | 4650 | 34671 | 14219 | 56495 | 1785.6 | 1.64 | 1.61 | N/A | 20.59 F | 114.20 | 4253.37 | 1836.86 | | |
| 23 | 4900 | 44595 | 4828 | 67626 | 3472.0 | 1.59 | 1.61 | N/A | 16.01 F | 116.32 | 4337.37 | 1924.87 | | |
| 24 | 4900 | 28975 | 4828 | 51775 | 2108.2 | 1.62 | 1.61 | N/A | 24.64 F | 116.32 | 4337.38 | 1924.87 | | |
| 25 | 5029 | 22103 | 34 | 45340 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.40 | 1969.94 | | |
| 26 | 5029 | 22102 | 33 | 45339 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.41 | 1969.95 | | |
| 27 | 5600 | -45329 | -21341 | -20805 | 2094.3 | 1.57 | 1.62 | N/A | (13.67) | 122.23 | 4572.11 | 2170.78 | | |
| 28 | 5650 | -40465 | -23210 | -15657 | 1506.5 | 1.58 | 1.62 | N/A | (15.31) | 122.66 | 4588.87 | 2188.34 | | |
| 29 | | | | | | | | | | | | | | |
| 30 | F | Conn Fracture | | | | | | | | | | | | |
| 31 | ( ) | Compression | | | | | | | | | | | | |
| 32 | (V) | Vector Collapse Safety Factor | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

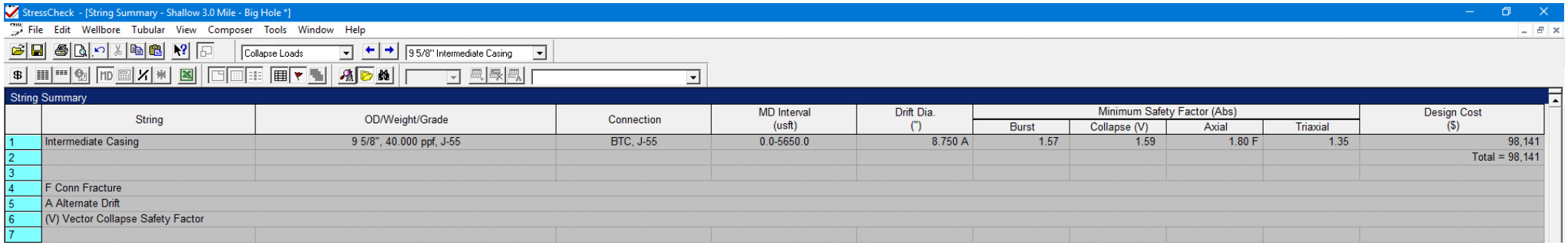
Working Config Min SF Load/SF DF Summary VME Wallplot

For Help, press F1

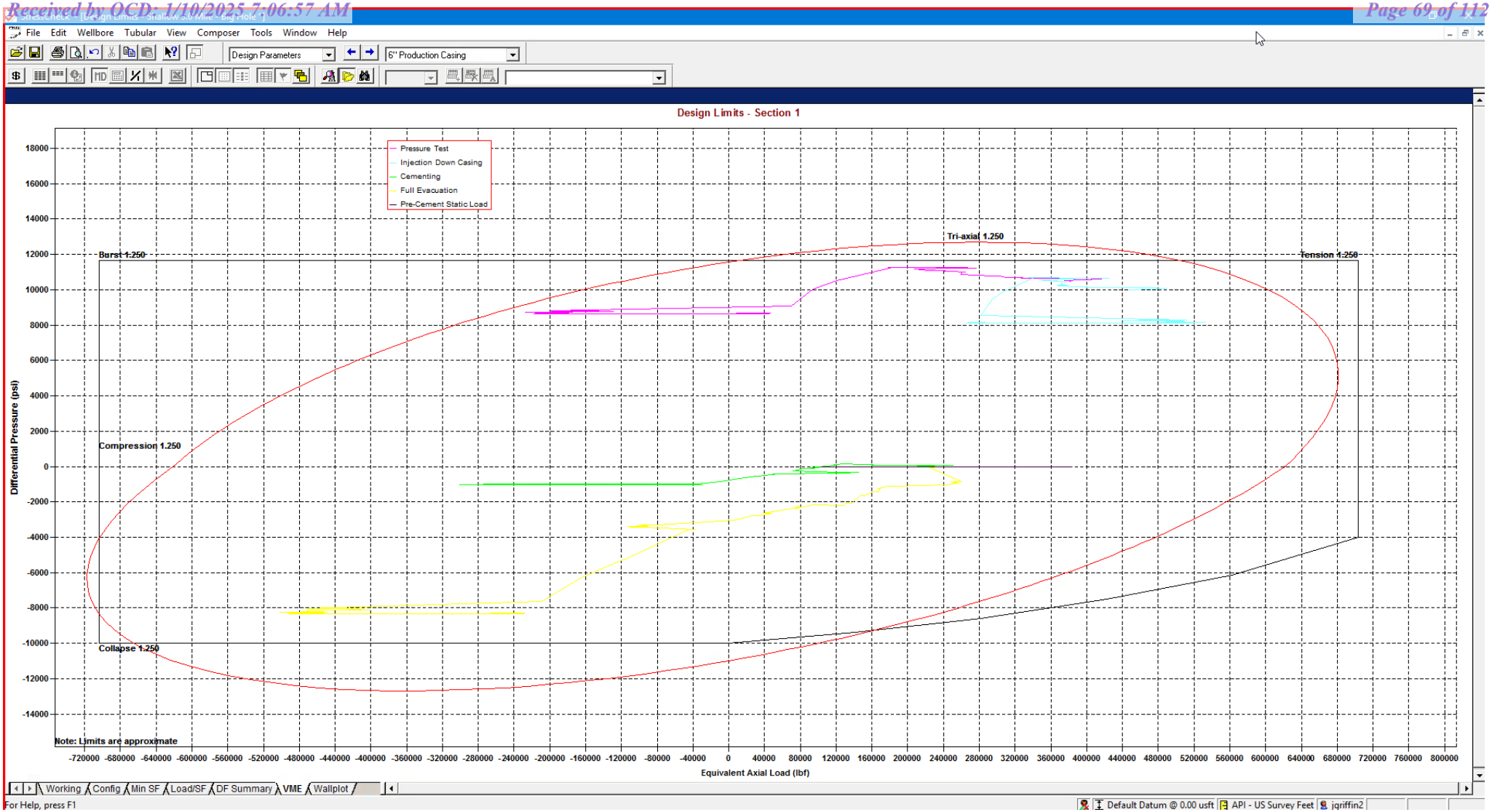
Default Datum @ 0.00 usft API - US Survey Feet jgriffin2

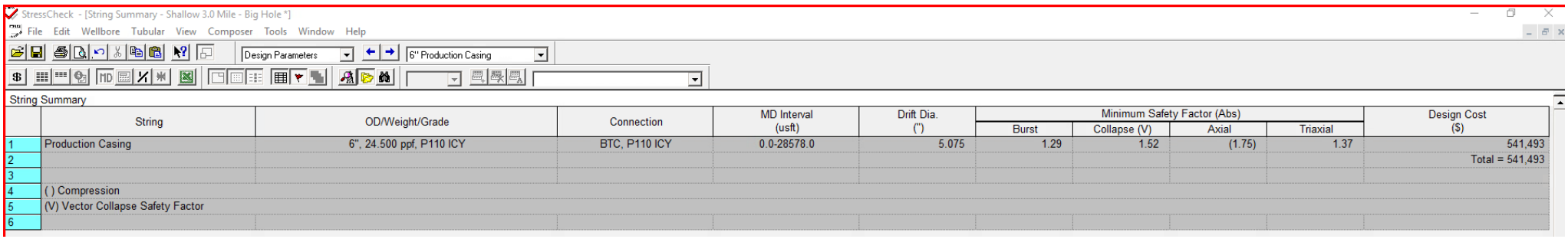
9-5/8” Intermediate Casing Pressure Test:
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi
External Profile based off Pore Pressure: 2188 psi




*Modelling done with 9-5/8” 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 6", 24.500 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 5.075 | 1.29 | 1.52 | (1.75) | 1.37 | 541,493 |
| 2 | | | | | | | | | | Total = 541,493 |
| 3 | | | | | | | | | | |
| 4 | ( ) Compression | | | | | | | | | |
| 5 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 6 | | | | | | | | | | |

*Modelling done with 6” Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

eog resources

**Shallow Design D**

## 4. CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 16" | 0 | 2,161 | 0 | 2,030 | 13-3/8" | 54.5# | J-55 | STC |
| 11" | 0 | 7,951 | 0 | 5,650 | 9-5/8" | 40# | J-55 | LTC |
| 7-7/8" | 0 | 13,278 | 0 | 11,671 | 6" | 22.3# | P110-EC | DWC/C IS |
| 6-3/4" | 13,278 | 29,353 | 11,671 | 12,000 | 5-1/2" | 20# | P110-EC | DWC/C IS MS |

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

Variance is requested to waive the centralizer requirements for the 9-5/8" casing in the 11" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 11" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 6" and 5-1/2" casings in the 7-7/8" and 6-3/4" hole sizes. An expansion additive will be utilized in the cement slurry for the entire length of the 7-7/8" and 6-3/4" hole intervals to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422'' annulus clearance requirement for the intermediate (salt) section from Title 43 CFR Part 3170 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

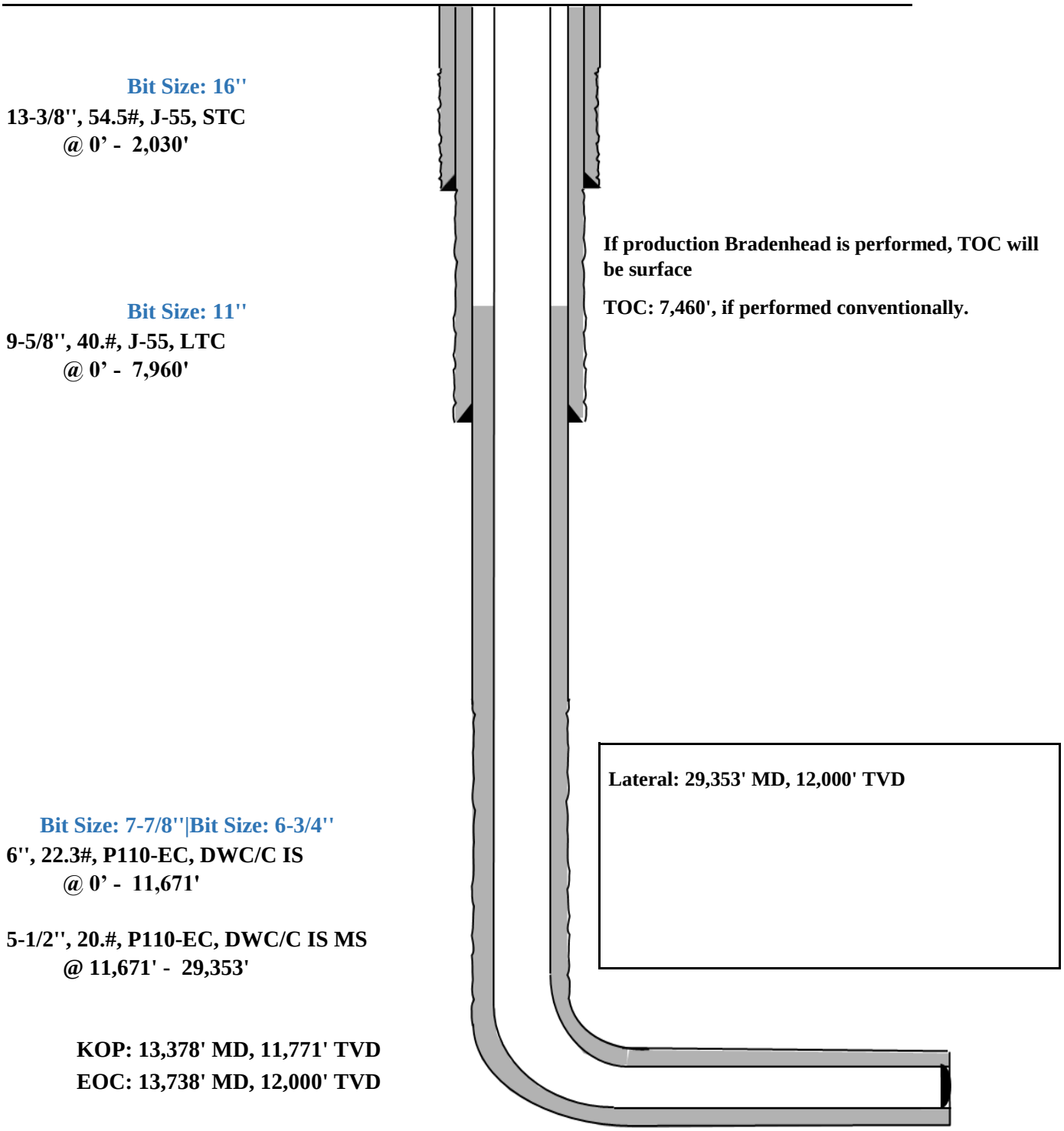
## 5. CEMENTING PROGRAM:

| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,030' 13-3/8'' | 570 | 13.5 | 1.73 | Lead: Class C/H + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 160 | 14.8 | 1.34 | Tail: Class C/H + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830') |
| 8,050' 9-5/8'' | 760 | 12.7 | 2.22 | Lead: Class C/H + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 250 | 14.8 | 1.32 | Tail: Class C/H + 10% NaCL + 3% MagOx (TOC @ 6360') |
| 29,353' 6'' | 1000 | 14.8 | 1.32 | Bradenhead squeeze: Class C/H + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface) |
| | 2500 | 13.2 | 1.52 | Tail: Class C/H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ Top of Brushy) |

**Shallow Design D**

**Proposed Wellbore**

**KB: 3558'**
**GL: 3533'**



**Bit Size: 16''**
**13-3/8'', 54.5#, J-55, STC**
**@ 0' - 2,030'**

**If production Bradenhead is performed, TOC will be surface**

**TOC: 7,460', if performed conventionally.**

**Bit Size: 11''**
**9-5/8'', 40.#, J-55, LTC**
**@ 0' - 7,960'**

**Lateral: 29,353' MD, 12,000' TVD**

**Bit Size: 7-7/8''|Bit Size: 6-3/4''**
**6'', 22.3#, P110-EC, DWC/C IS**
**@ 0' - 11,671'**

**5-1/2'', 20.#, P110-EC, DWC/C IS MS**
**@ 11,671' - 29,353'**

**KOP: 13,378' MD, 11,771' TVD**
**EOC: 13,738' MD, 12,000' TVD**

File Edit Wellbore Tubular View Composer Tools Window Help

9 5/8" Intermediate Casing

Pressure Test

Triaxial Results

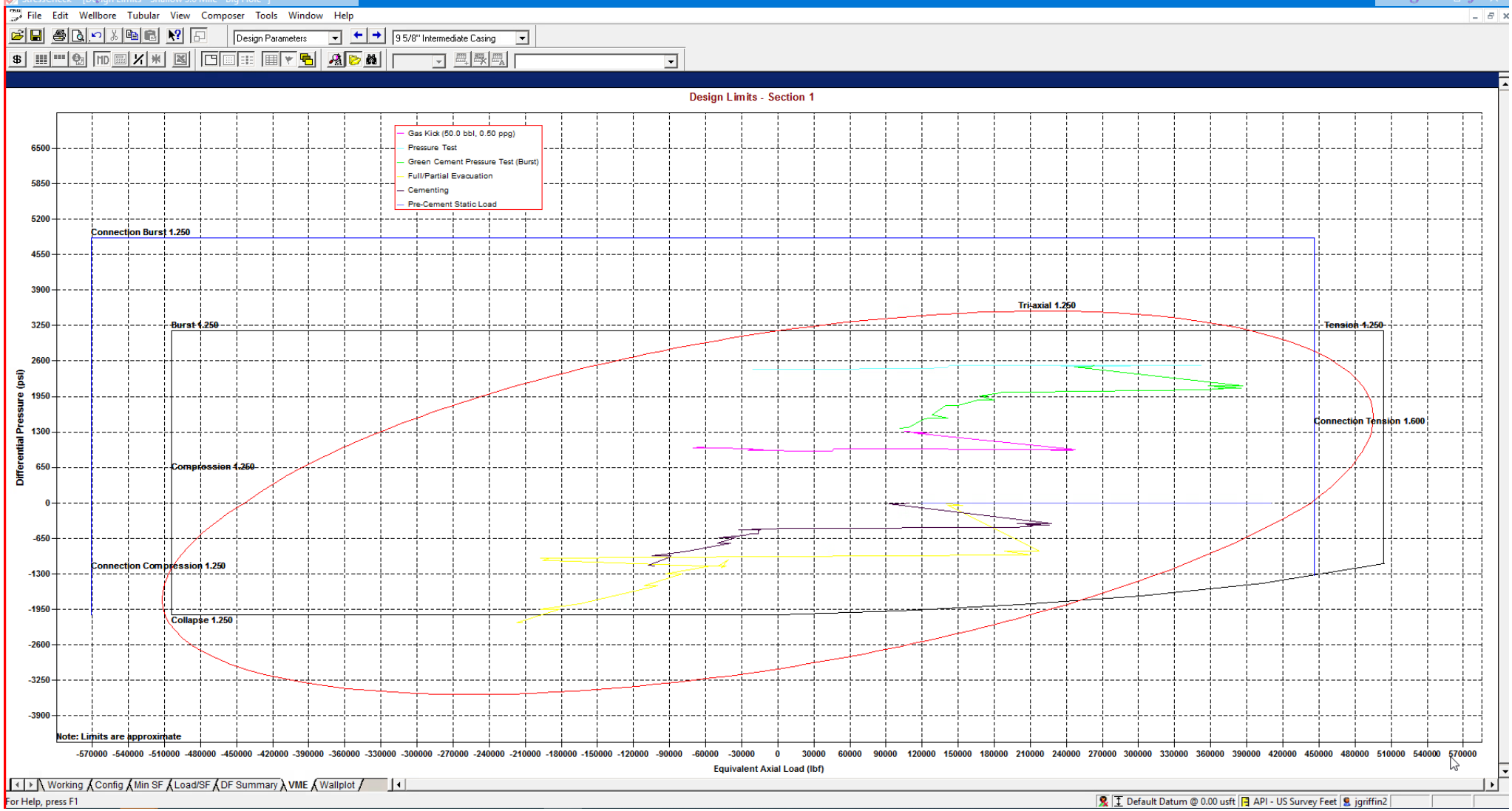
| | Depth (MD) (usft) | Axial Force (lbf) | | Equivalent Axial Load (lbf) | Bending Stress at OD (psi) | Absolute Safety Factor | | | | Temperature (°F) | Pressure (psi) | | Addt'l Pickup To Prevent Buck. (lbf) | Buckled Length (usft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apparent (w/Bending) | Actual (w/o Bending) | | | Triaxial | Burst | Collapse (V) | Axial | | Internal | External | | |
| 1 | 0 | 252987 | 228954 | 253140 | 2098.2 | 1.69 | 1.58 | N/A | 2.82 F | 70.00 | 2500.00 | 0.00 | N/A | N/A |
| 2 | 100 | 247735 | 223702 | 248466 | 2098.2 | 1.69 | 1.58 | N/A | 2.88 F | 71.10 | 2543.63 | 43.63 | | |
| 3 | 100 | 234996 | 223701 | 235716 | 986.2 | 1.71 | 1.58 | N/A | 3.04 F | 71.10 | 2543.64 | 43.64 | | |
| 4 | 1700 | 341565 | 139667 | 352253 | 17627.2 | 1.53 | 1.57 | N/A | 2.09 F | 88.70 | 3241.64 | 741.64 | | |
| 5 | 1700 | 312979 | 139666 | 323488 | 15131.5 | 1.58 | 1.57 | N/A | 2.28 F | 88.70 | 3241.65 | 741.65 | | |
| 6 | 1850 | 336881 | 132027 | 348440 | 17885.2 | 1.51 | 1.57 | N/A | 2.12 F | 90.29 | 3305.05 | 805.05 | | |
| 7 | 1850 | 318549 | 132027 | 329984 | 16284.8 | 1.54 | 1.57 | N/A | 2.24 F | 90.29 | 3305.06 | 805.06 | | |
| 8 | 1950 | 320468 | 127243 | 332475 | 16869.9 | 1.52 | 1.57 | N/A | 2.23 F | 91.30 | 3344.87 | 844.87 | | |
| 9 | 1950 | 312802 | 127243 | 324756 | 16200.7 | 1.53 | 1.57 | N/A | 2.28 F | 91.30 | 3344.87 | 844.87 | | |
| 10 | 2050 | 307858 | 122773 | 320295 | 16159.3 | 1.52 | 1.57 | N/A | 2.32 F | 92.23 | 3381.89 | 881.89 | | |
| 11 | 2050 | 303560 | 122772 | 315965 | 15784.1 | 1.53 | 1.57 | N/A | 2.35 F | 92.23 | 3381.89 | 881.89 | | |
| 12 | 2300 | 151294 | 112633 | 163658 | 3375.4 | 1.71 | 1.57 | N/A | 4.72 F | 94.35 | 3466.13 | 966.13 | | |
| 13 | 2300 | 132741 | 112633 | 144956 | 1755.6 | 1.72 | 1.57 | N/A | 5.38 F | 94.35 | 3466.14 | 966.14 | | |
| 14 | 2370 | 129966 | 109858 | 142452 | 1755.6 | 1.72 | 1.57 | N/A | 5.49 F | 94.94 | 3489.28 | 989.28 | | |
| 15 | 2370 | 127909 | 107800 | 140922 | 1755.6 | 1.75 | 1.60 | N/A | 5.58 F | 94.94 | 3489.29 | 1036.40 | | |
| 16 | 2700 | 105515 | 94232 | 119785 | 985.1 | 1.75 | 1.60 | N/A | 6.77 F | 97.73 | 3599.97 | 1152.35 | | |
| 17 | 2700 | 111680 | 94231 | 126006 | 1523.4 | 1.75 | 1.60 | N/A | 6.39 F | 97.73 | 3599.97 | 1152.35 | | |
| 18 | 3100 | 110766 | 77783 | 126839 | 2879.6 | 1.71 | 1.60 | N/A | 6.44 F | 101.11 | 3734.23 | 1293.00 | | |
| 19 | 3100 | 97392 | 77783 | 113331 | 1712.1 | 1.73 | 1.60 | N/A | 7.33 F | 101.11 | 3734.23 | 1293.01 | | |
| 20 | 3700 | 71565 | 53303 | 89806 | 1594.4 | 1.70 | 1.61 | N/A | 9.97 F | 106.15 | 3934.24 | 1502.54 | | |
| 21 | 3700 | 60887 | 53302 | 79004 | 662.3 | 1.71 | 1.61 | N/A | 11.72 F | 106.16 | 3934.25 | 1502.55 | | |
| 22 | 4650 | 34671 | 14219 | 56495 | 1785.6 | 1.64 | 1.61 | N/A | 20.59 F | 114.20 | 4253.37 | 1836.86 | | |
| 23 | 4900 | 44595 | 4828 | 67626 | 3472.0 | 1.59 | 1.61 | N/A | 16.01 F | 116.32 | 4337.37 | 1924.87 | | |
| 24 | 4900 | 28975 | 4828 | 51775 | 2108.2 | 1.62 | 1.61 | N/A | 24.64 F | 116.32 | 4337.38 | 1924.87 | | |
| 25 | 5029 | 22103 | 34 | 45340 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.40 | 1969.94 | | |
| 26 | 5029 | 22102 | 33 | 45339 | 1926.8 | 1.61 | 1.61 | N/A | 32.30 F | 117.40 | 4380.41 | 1969.95 | | |
| 27 | 5600 | -45329 | -21341 | -20805 | 2094.3 | 1.57 | 1.62 | N/A | (13.67) | 122.23 | 4572.11 | 2170.78 | | |
| 28 | 5650 | -40465 | -23210 | -15657 | 1506.5 | 1.58 | 1.62 | N/A | (15.31) | 122.66 | 4588.87 | 2188.34 | | |
| 29 | | | | | | | | | | | | | | |
| 30 | F | Conn Fracture | | | | | | | | | | | | |
| 31 | ( ) | Compression | | | | | | | | | | | | |
| 32 | (V) | Vector Collapse Safety Factor | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | |

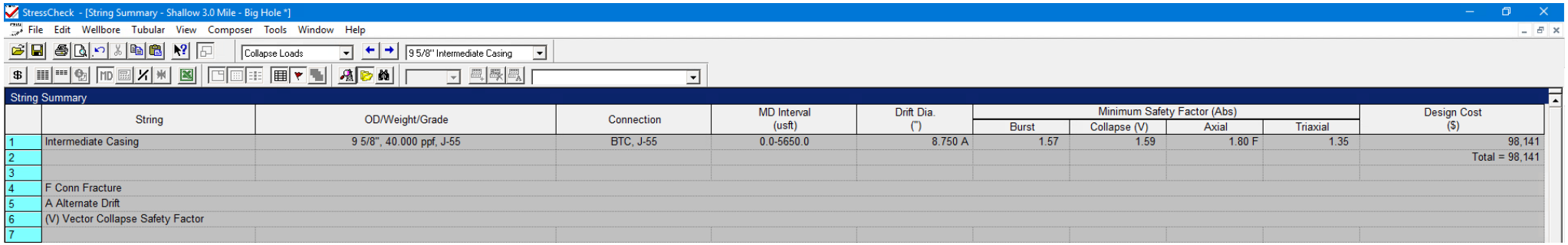
Working Config Min SF Load/SF DF Summary VME Wallplot

For Help, press F1

Default Datum @ 0.00 usft API - US Survey Feet jqriffin2

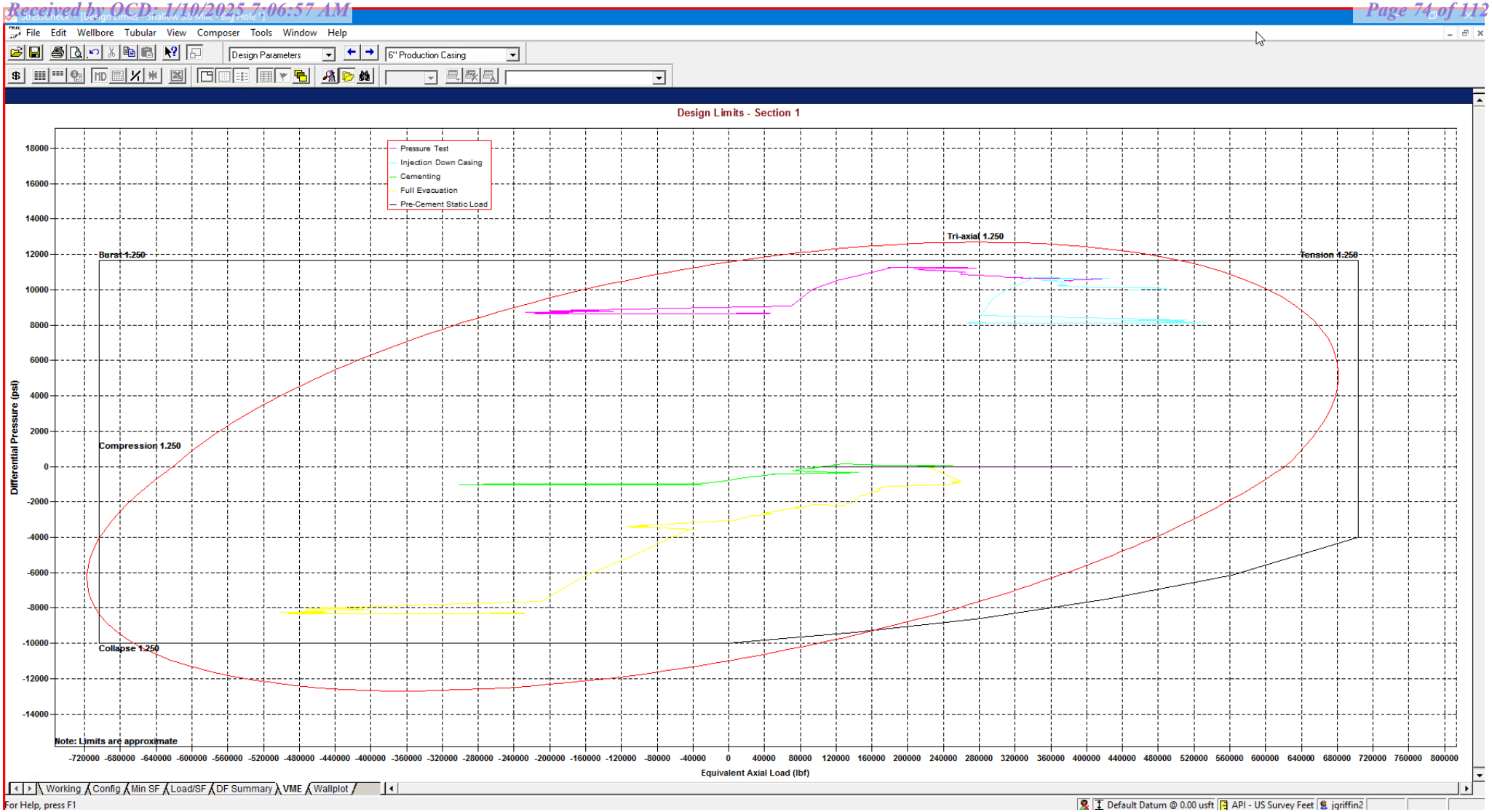
9-5/8” Intermediate Casing Pressure Test:
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi
External Profile based off Pore Pressure: 2188 psi

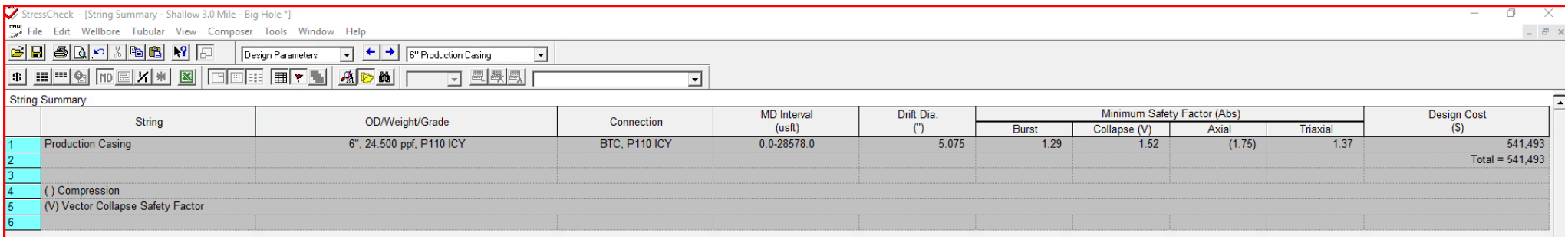



| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Intermediate Casing | 9 5/8", 40.000 ppf, J-55 | BTC, J-55 | 0.0-5650.0 | 8.750 A | 1.57 | 1.59 | 1.80 F | 1.35 | 98,141 |
| 2 | | | | | | | | | | Total = 98,141 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | A Alternate Drift | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 9-5/8” 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

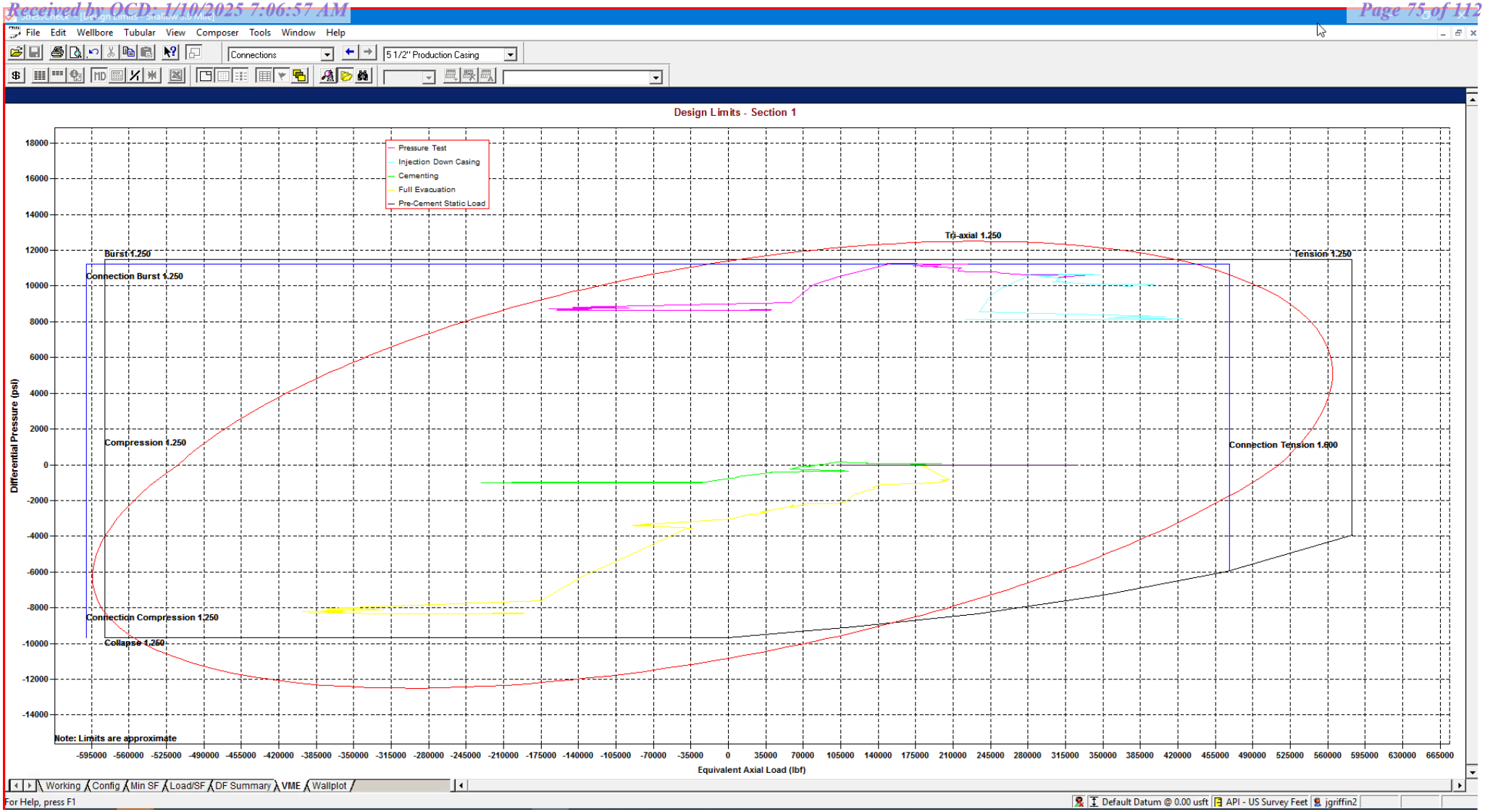


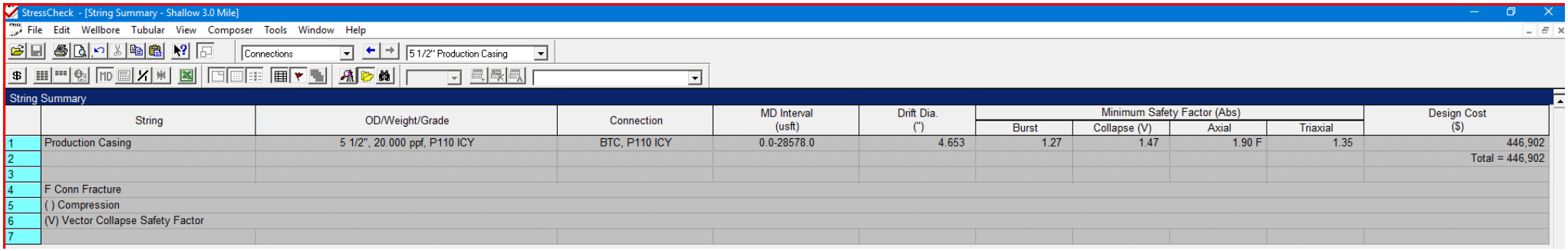




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 6", 24.500 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 5.075 | 1.29 | 1.52 | (1.75) | 1.37 | 541,493 |
| 2 | | | | | | | | | | Total = 541,493 |
| 3 | | | | | | | | | | |
| 4 | ( ) Compression | | | | | | | | | |
| 5 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 6 | | | | | | | | | | |

*Modelling done with 6” Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 5 1/2", 20.000 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 4.653 | 1.27 | 1.47 | 1.90 F | 1.35 | 446,902 |
| 2 | | | | | | | | | | Total = 446,902 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | ( ) Compression | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 5-1/2” 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

eog resources

## Shallow Casing Design E

### 1. CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 13" | 0 | 2,025 | 0 | 2,025 | 10-3/4" | 40.5# | J-55 | STC |
| 9-7/8" | 0 | 7,793 | 0 | 5,645 | 8-5/8" | 32# | J-55 | BTC-SC |
| 7-7/8" | 0 | 12,626 | 0 | 10,896 | 6" | 24.5# | P110-EC | VAM Sprint-TC |
| 6-3/4" | 12,626 | 28,578 | 10,896 | 11,225 | 5-1/2" | 20# | P110-EC | VAM Sprint SF |

**For highlighted rows above, variance is requested to run entire string of either 6'' or 5-1/2'' casing string above due to availablility.

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

Variance is requested to waive the centralizer requirements for the 8-5/8" casing in the 9-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 9-7/8" hole interval to maximize cement bond and zonal isolation.

Variance is also requested to waive any centralizer requirements for the 6" and 5-1/2" casings in the 7-7/8" and 6-3/4" hole sizes. An expansion additive will be utilized in the cement slurry for the entire length of the 7-7/8" and 6-3/4" hole intervals to maximize cement bond and zonal isolation.

EOG requests permission to allow deviation from the 0.422'' annulus clearance requirement for the intermediate (salt) section from Title 43 CFR Part 3170 under the following conditions:

- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

### 2. CEMENTING PROGRAM:

| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,030' 10-3/4" | 450 | 13.5 | 1.73 | Lead: Class C/H + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 120 | 14.8 | 1.34 | Tail: Class C/H + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830') |
| 7,890' 8-5/8" | 460 | 12.7 | 2.22 | Lead: Class C/H + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface) |
| | 210 | 14.8 | 1.32 | Tail: Class C/H + 10% NaCL + 3% MagOx (TOC @ 6234') |
| 28,578' 6" | 1000 | 14.8 | 1.32 | Bradenhead squeeze: Class C/H + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface) |
| | 2410 | 13.2 | 1.52 | Tail: Class C/H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ 8140') |

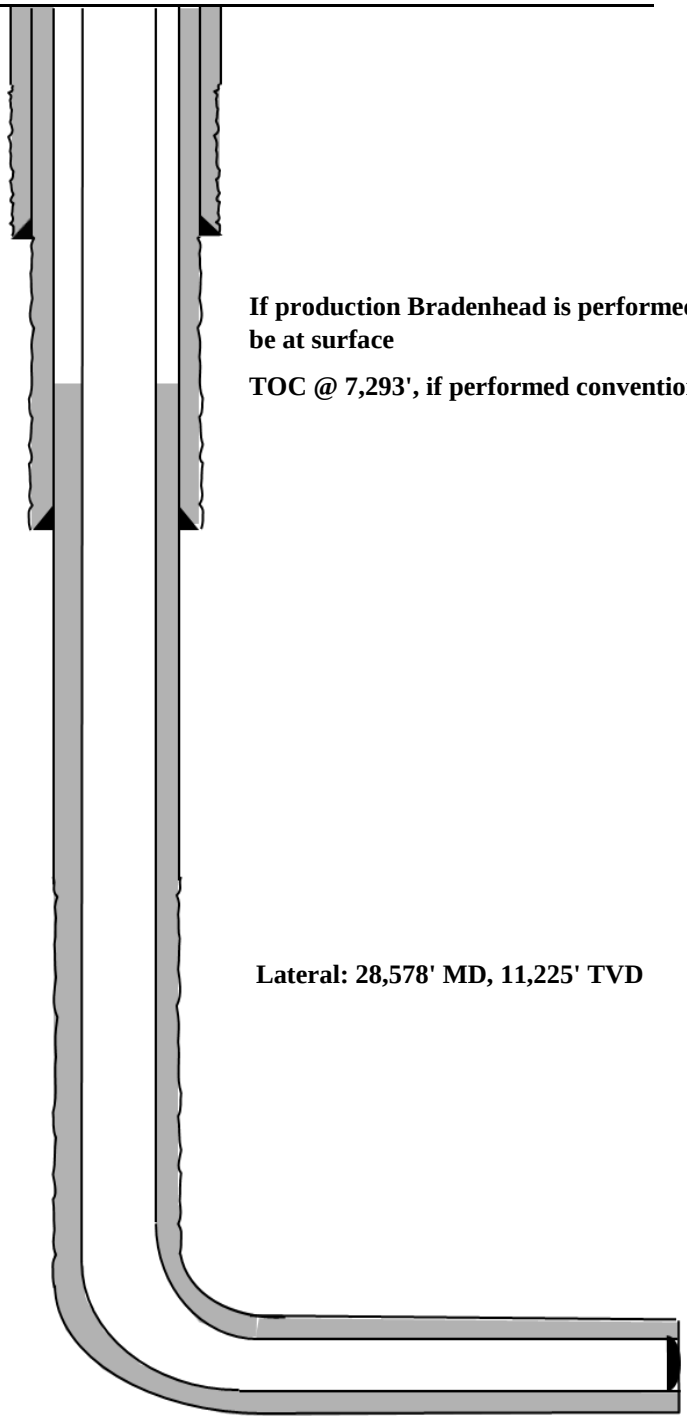
eog resources

**Shallow Casing Design E**

**Proposed Wellbore**

**KB: 3558'**
**GL: 3533'**

**API: 30-025-*****



**Bit Size: 13''**
**10-3/4'', 40.5#, J-55, STC**
**@ 0' - 2,025'**

**If production Bradenhead is performed, TOC will be at surface**

**TOC @ 7,293', if performed conventionally.**

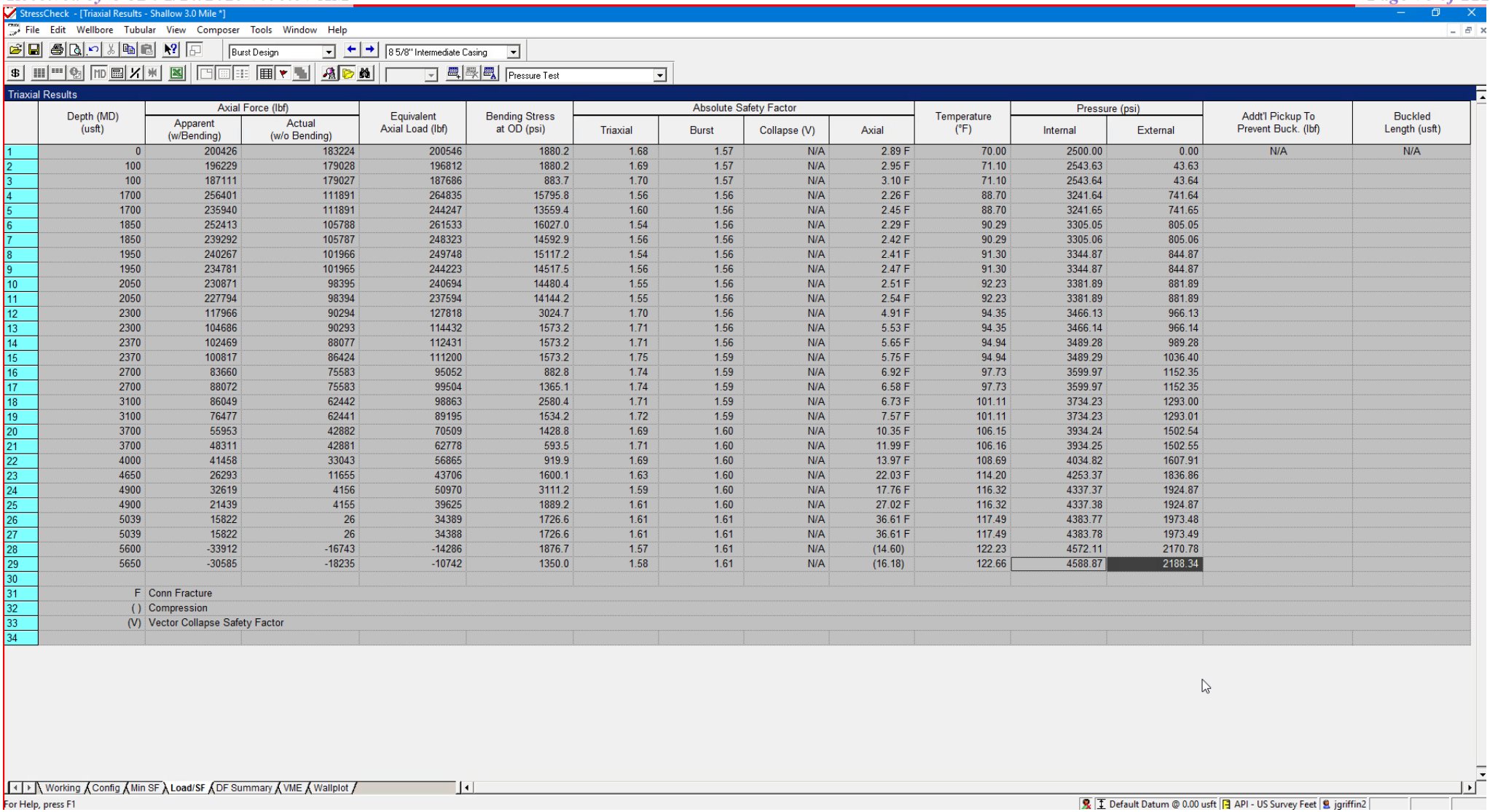
**Bit Size: 9-7/8''**
**8-5/8'', 32.#, J-55, BTC-SC**
**@ 0' - 7,793'**

**Lateral: 28,578' MD, 11,225' TVD**

**Bit Size: 7-7/8''|Bit Size: 6-3/4''**
**6'', 24.5#, P110-EC, VAM Sprint-TC**
**@ 0' - 10,896'**

**5-1/2'', 20.#, P110-EC, VAM Sprint SF**
**@ 10,896' - 28,578'**

**KOP: 12,726' MD, 10,996' TVD**
**EOC: 12,963' MD, 11,225' TVD**


StressCheck - [Triaxial Results - Shallow 3.0 Mile *]

File Edit Wellbore Tubular View Composer Tools Window Help

Burst Design | 8 5/8" Intermediate Casing | Pressure Test

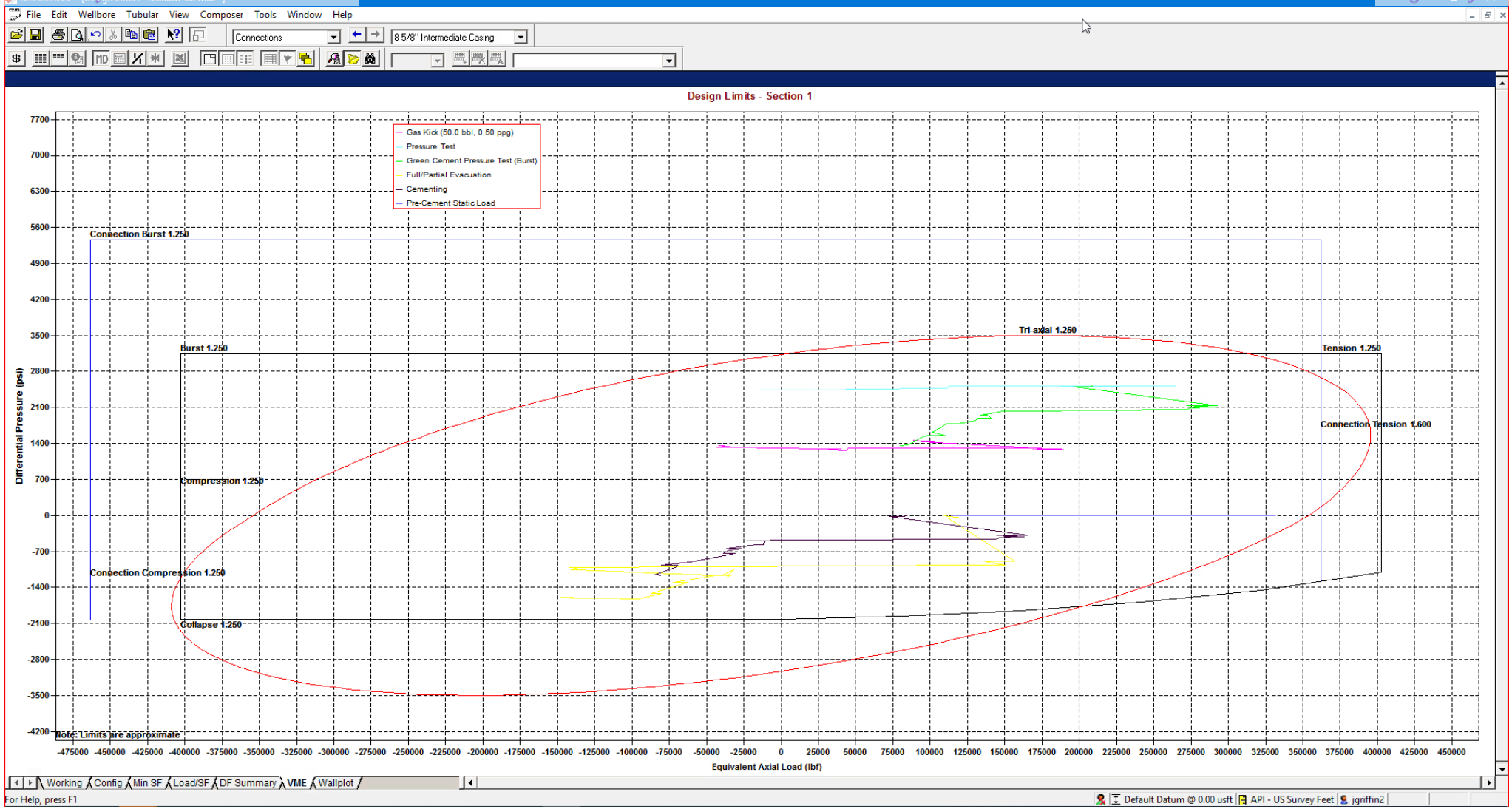
Triaxial Results

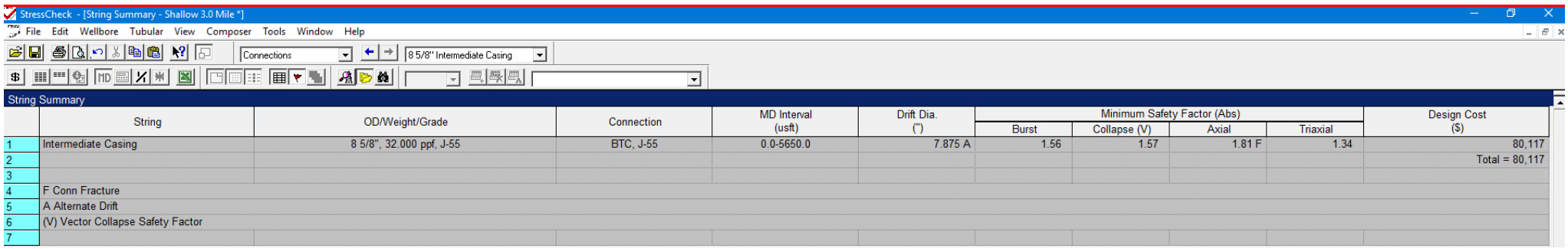
| | Depth (MD) (usft) | Axial Force (lbf) | | Equivalent Axial Load (lbf) | Bending Stress at OD (psi) | Absolute Safety Factor | | | | Temperature (°F) | Pressure (psi) | | Addt'l Pickup To Prevent Buck. (lbf) | Buckled Length (usft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apparent (w/Bending) | Actual (w/o Bending) | | | Triaxial | Burst | Collapse (V) | Axial | | Internal | External | | |
| 1 | 0 | 200426 | 183224 | 200546 | 1880.2 | 1.68 | 1.57 | N/A | 2.89 F | 70.00 | 2500.00 | 0.00 | N/A | N/A |
| 2 | 100 | 196229 | 179028 | 196812 | 1880.2 | 1.69 | 1.57 | N/A | 2.95 F | 71.10 | 2543.63 | 43.63 | | |
| 3 | 100 | 187111 | 179027 | 187686 | 883.7 | 1.70 | 1.57 | N/A | 3.10 F | 71.10 | 2543.64 | 43.64 | | |
| 4 | 1700 | 256401 | 111891 | 264835 | 15795.8 | 1.56 | 1.56 | N/A | 2.26 F | 88.70 | 3241.64 | 741.64 | | |
| 5 | 1700 | 235940 | 111891 | 244247 | 13559.4 | 1.60 | 1.56 | N/A | 2.45 F | 88.70 | 3241.65 | 741.65 | | |
| 6 | 1850 | 252413 | 105788 | 261533 | 16027.0 | 1.54 | 1.56 | N/A | 2.29 F | 90.29 | 3305.05 | 805.05 | | |
| 7 | 1850 | 239292 | 105787 | 248323 | 14592.9 | 1.56 | 1.56 | N/A | 2.42 F | 90.29 | 3305.06 | 805.06 | | |
| 8 | 1950 | 240267 | 101966 | 249748 | 15117.2 | 1.54 | 1.56 | N/A | 2.41 F | 91.30 | 3344.87 | 844.87 | | |
| 9 | 1950 | 234781 | 101965 | 244223 | 14517.5 | 1.56 | 1.56 | N/A | 2.47 F | 91.30 | 3344.87 | 844.87 | | |
| 10 | 2050 | 230871 | 98395 | 240694 | 14480.4 | 1.55 | 1.56 | N/A | 2.51 F | 92.23 | 3381.89 | 881.89 | | |
| 11 | 2050 | 227794 | 98394 | 237594 | 14144.2 | 1.55 | 1.56 | N/A | 2.54 F | 92.23 | 3381.89 | 881.89 | | |
| 12 | 2300 | 117966 | 90294 | 127818 | 3024.7 | 1.70 | 1.56 | N/A | 4.91 F | 94.35 | 3466.13 | 966.13 | | |
| 13 | 2300 | 104686 | 90293 | 114432 | 1573.2 | 1.71 | 1.56 | N/A | 5.53 F | 94.35 | 3466.14 | 966.14 | | |
| 14 | 2370 | 102469 | 88077 | 112431 | 1573.2 | 1.71 | 1.56 | N/A | 5.65 F | 94.94 | 3489.28 | 989.28 | | |
| 15 | 2370 | 100817 | 86424 | 111200 | 1573.2 | 1.75 | 1.59 | N/A | 5.75 F | 94.94 | 3489.29 | 1036.40 | | |
| 16 | 2700 | 83660 | 75583 | 95052 | 882.8 | 1.74 | 1.59 | N/A | 6.92 F | 97.73 | 3599.97 | 1152.35 | | |
| 17 | 2700 | 88072 | 75583 | 99504 | 1365.1 | 1.74 | 1.59 | N/A | 6.58 F | 97.73 | 3599.97 | 1152.35 | | |
| 18 | 3100 | 86049 | 62442 | 98863 | 2580.4 | 1.71 | 1.59 | N/A | 6.73 F | 101.11 | 3734.23 | 1293.00 | | |
| 19 | 3100 | 76477 | 62441 | 89195 | 1534.2 | 1.72 | 1.59 | N/A | 7.57 F | 101.11 | 3734.23 | 1293.01 | | |
| 20 | 3700 | 55953 | 42882 | 70509 | 1428.8 | 1.69 | 1.60 | N/A | 10.35 F | 106.15 | 3934.24 | 1502.54 | | |
| 21 | 3700 | 48311 | 42881 | 62778 | 593.5 | 1.71 | 1.60 | N/A | 11.99 F | 106.16 | 3934.25 | 1502.55 | | |
| 22 | 4000 | 41458 | 33043 | 56865 | 919.9 | 1.69 | 1.60 | N/A | 13.97 F | 108.69 | 4034.82 | 1607.91 | | |
| 23 | 4650 | 26293 | 11655 | 43706 | 1600.1 | 1.63 | 1.60 | N/A | 22.03 F | 114.20 | 4253.37 | 1836.86 | | |
| 24 | 4900 | 32619 | 4156 | 50970 | 3111.2 | 1.59 | 1.60 | N/A | 17.76 F | 116.32 | 4337.37 | 1924.87 | | |
| 25 | 4900 | 21439 | 4155 | 39625 | 1889.2 | 1.61 | 1.60 | N/A | 27.02 F | 116.32 | 4337.38 | 1924.87 | | |
| 26 | 5039 | 15822 | 26 | 34389 | 1726.6 | 1.61 | 1.61 | N/A | 36.61 F | 117.49 | 4383.77 | 1973.48 | | |
| 27 | 5039 | 15822 | 26 | 34388 | 1726.6 | 1.61 | 1.61 | N/A | 36.61 F | 117.49 | 4383.78 | 1973.49 | | |
| 28 | 5600 | -33912 | -16743 | -14286 | 1876.7 | 1.57 | 1.61 | N/A | (14.60) | 122.23 | 4572.11 | 2170.78 | | |
| 29 | 5650 | -30585 | -18235 | -10742 | 1350.0 | 1.58 | 1.61 | N/A | (16.18) | 122.66 | 4588.87 | 2188.34 | | |
| 30 | | | | | | | | | | | | | | |
| 31 | F | Conn Fracture | | | | | | | | | | | | |
| 32 | ( ) | Compression | | | | | | | | | | | | |
| 33 | (V) | Vector Collapse Safety Factor | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | |

Working | Config | Min SF | Load/SF | DF Summary | VME | Wallplot

For Help, press F1 | Default Datum @ 0.00 usft | API - US Survey Feet | jgriffin2

8-5/8” Intermediate Casing Pressure Test:
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi
External Profile based off Pore Pressure: 2188 psi

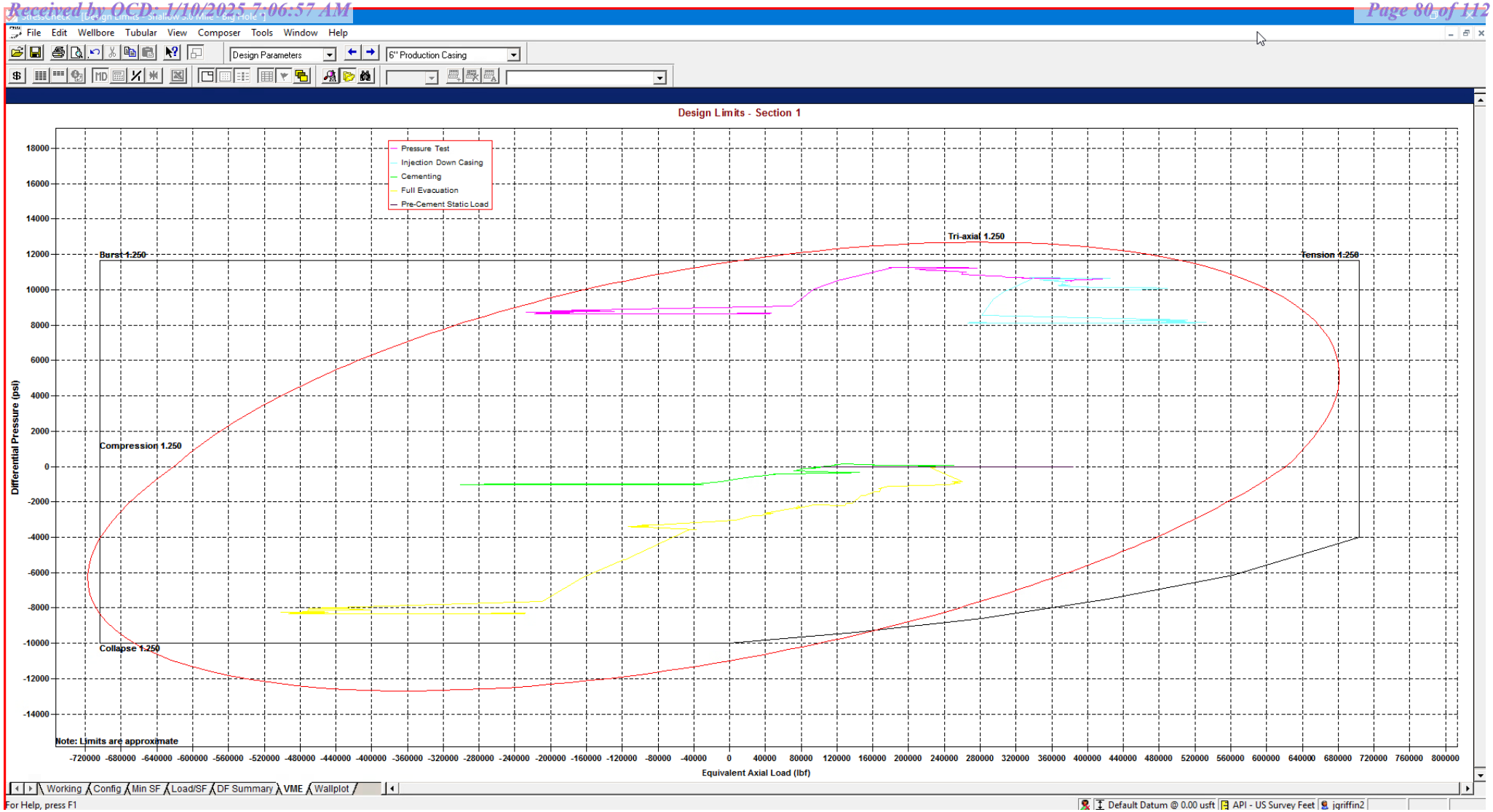


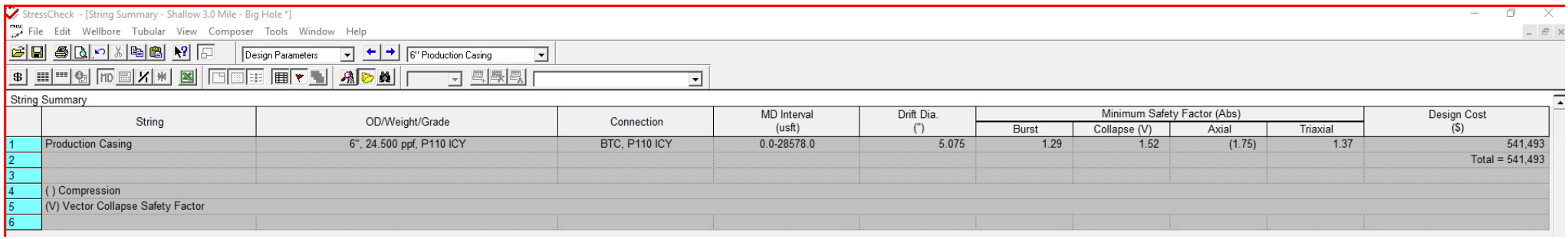




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Intermediate Casing | 8 5/8", 32.000 ppf, J-55 | BTC, J-55 | 0.0-5650.0 | 7.875 A | 1.56 | 1.57 | 1.81 F | 1.34 | 80,117 |
| 2 | | | | | | | | | | Total = 80,117 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | A Alternate Drift | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 8-5/8" 32# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

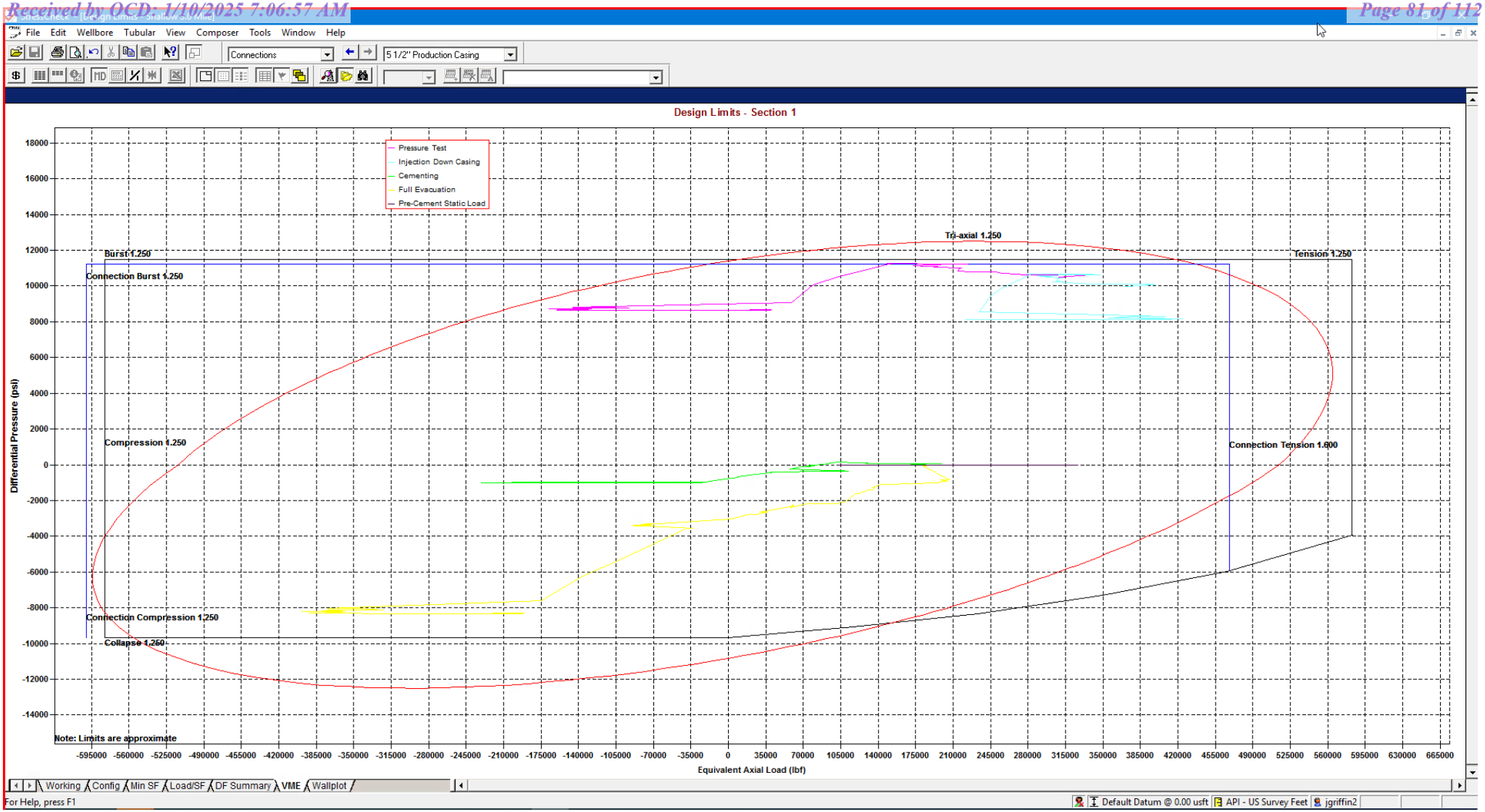


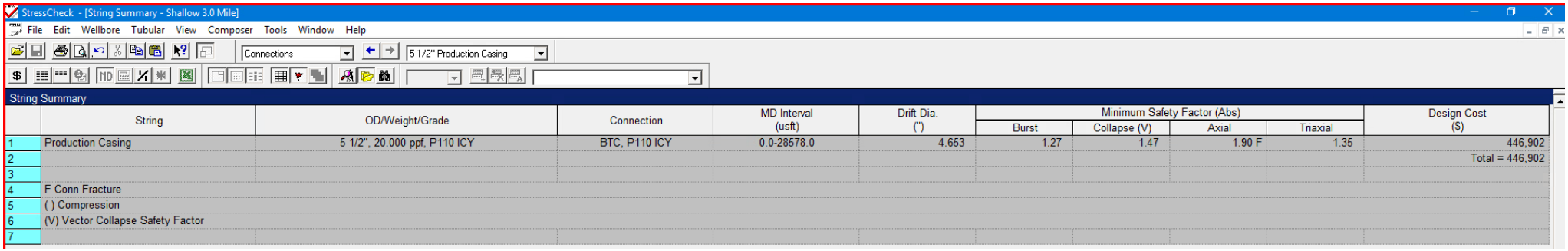




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 6", 24.500 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 5.075 | 1.29 | 1.52 | (1.75) | 1.37 | 541,493 |
| 2 | | | | | | | | | | Total = 541,493 |
| 3 | | | | | | | | | | |
| 4 | ( ) Compression | | | | | | | | | |
| 5 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 6 | | | | | | | | | | |

*Modelling done with 6” Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.




String Summary

| | String | OD/Weight/Grade | Connection | MD Interval (usft) | Drift Dia. (") | Minimum Safety Factor (Abs) Burst | Collapse (V) | Axial | Triaxial | Design Cost ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Production Casing | 5 1/2", 20.000 ppf, P110 ICY | BTC, P110 ICY | 0.0-28578.0 | 4.653 | 1.27 | 1.47 | 1.90 F | 1.35 | 446,902 |
| 2 | | | | | | | | | | Total = 446,902 |
| 3 | | | | | | | | | | |
| 4 | F Conn Fracture | | | | | | | | | |
| 5 | ( ) Compression | | | | | | | | | |
| 6 | (V) Vector Collapse Safety Factor | | | | | | | | | |
| 7 | | | | | | | | | | |

*Modelling done with 5-1/2” 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

**Shallow Casing Design 501H**

| Additive | Purpose |
|---|---|
| Bentonite Gel | Lightweight/Lost circulation prevention |
| Calcium Chloride | Accelerator |
| Cello-flake | Lost circulation prevention |
| Sodium Metasilicate | Accelerator |
| MagOx | Expansive agent |
| Pre-Mag-M | Expansive agent |
| Sodium Chloride | Accelerator |
| FL-62 | Fluid loss control |
| Halad-344 | Fluid loss control |
| Halad-9 | Fluid loss control |
| HR-601 | Retarder |
| Microbond | Expansive Agent |

Cement integrity tests will be performed immediately following plug bump.

Note: Cement volumes based on bit size plus at least 25% excess in the open hole plus 10% excess in the cased-hole overlap section.

EOG requests variance from minimum standards to pump a two stage cement job on the production casing string with the first stage being pumped conventionally with the calculated top of cement at the top of the Brushy Canyon and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 400 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (1.32 yld, 14.8 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

Bradenhead will be the primary option for production cementing. EOG also requests to have the conventional option in place to accommodate for logistical or wellbore conditions. The tie back requirements will be met if the cement is pumped conventionally, and cement volumes will be adjusted accordingly. TOC will be verified by CBL.

**MUD PROGRAM:**

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal. The applicable depths and properties of the drilling fluid systems are as follows:

| Measured Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0 – 2,030' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 2,030' – 7,793' | Brine | 9-10.5 | 28-34 | N/c |
| 5,450' – 28,578' Lateral | Oil Base | 8.8-9.5 | 58-68 | N/c - 6 |

An electronic pit volume totalizer (PVT) will be utilized on the circulating system, to monitor pit volume, flow rate, pump pressure and stroke rate.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the wellsite at all times.

eog resources

# Appendix A - Spec Sheets

# Pipe Body and API Connections Performance Data

13.375 54.50/0.380 J55

PDF

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USC Metric

6/8/2015 10:04:37 AM

| Mechanical Properties | Pipe | BTC | LTC | STC | |
|---|---|---|---|---|---|
| Minimum Yield Strength | 55,000 | -- | -- | -- | psi |
| Maximum Yield Strength | 80,000 | -- | -- | -- | psi |
| Minimum Tensile Strength | 75,000 | -- | -- | -- | psi |
| **Dimensions** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Outside Diameter | 13.375 | 14.375 | -- | 14.375 | in. |
| Wall Thickness | 0.380 | -- | -- | -- | in. |
| Inside Diameter | 12.615 | 12.615 | -- | 12.615 | in. |
| Standard Drift | 12.459 | 12.459 | -- | 12.459 | in. |
| Alternate Drift | -- | -- | -- | -- | in. |
| Nominal Linear Weight, T&C | 54.50 | -- | -- | -- | lbs/ft |
| Plain End Weight | 52.79 | -- | -- | -- | lbs/ft |
| **Performance** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Minimum Collapse Pressure | 1,130 | 1,130 | -- | 1,130 | psi |
| Minimum Internal Yield Pressure | 2,740 | 2,740 | -- | 2,740 | psi |
| Minimum Pipe Body Yield Strength | 853.00 | -- | -- | -- | 1000 lbs |
| Joint Strength | -- | 909 | -- | 514 | 1000 lbs |
| Reference Length | -- | 11,125 | -- | 6,290 | ft |
| **Make-Up Data** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Make-Up Loss | -- | 4.81 | -- | 3.50 | in. |
| Minimum Make-Up Torque | -- | -- | -- | 3,860 | ft-lbs |
| Maximum Make-Up Torque | -- | -- | -- | 6,430 | ft-lbs |

# Pipe Body and API Connections Performance Data

9.625 40.00/0.395 J55

PDF

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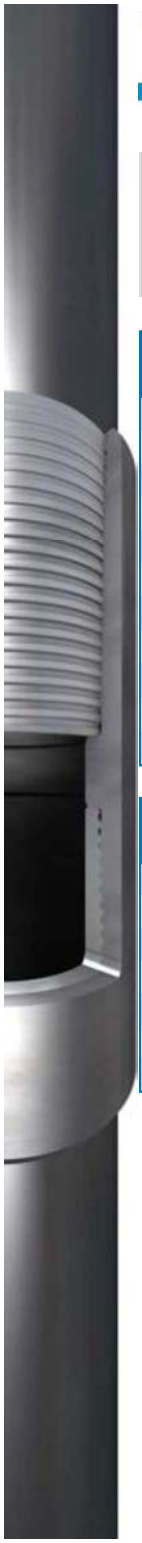
« Back to Previous List

USC Metric

6/8/2015 10:23:27 AM

| Mechanical Properties | Pipe | BTC | LTC | STC | |
|---|---|---|---|---|---|
| Minimum Yield Strength | 55,000 | -- | -- | -- | psi |
| Maximum Yield Strength | 80,000 | -- | -- | -- | psi |
| Minimum Tensile Strength | 75,000 | -- | -- | -- | psi |
| **Dimensions** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Outside Diameter | 9.625 | 10.625 | 10.625 | 10.625 | in. |
| Wall Thickness | 0.395 | -- | -- | -- | in. |
| Inside Diameter | 8.835 | 8.835 | 8.835 | 8.835 | in. |
| Standard Drift | 8.679 | 8.679 | 8.679 | 8.679 | in. |
| Alternate Drift | 8.750 | 8.750 | 8.750 | 8.750 | in. |
| Nominal Linear Weight, T&C | 40.00 | -- | -- | -- | lbs/ft |
| Plain End Weight | 38.97 | -- | -- | -- | lbs/ft |
| **Performance** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Minimum Collapse Pressure | 2,570 | 2,570 | 2,570 | 2,570 | psi |
| Minimum Internal Yield Pressure | 3,950 | 3,950 | 3,950 | 3,950 | psi |
| Minimum Pipe Body Yield Strength | 630.00 | -- | -- | -- | 1000 lbs |
| Joint Strength | -- | 714 | 520 | 452 | 1000 lbs |
| Reference Length | -- | 11,898 | 8,665 | 7,529 | ft |
| **Make-Up Data** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Make-Up Loss | -- | 4.81 | 4.75 | 3.38 | in. |
| Minimum Make-Up Torque | -- | -- | 3,900 | 3,390 | ft-lbs |
| Maximum Make-Up Torque | -- | -- | 6,500 | 5,650 | ft-lbs |



# DWC/C-IS MS™

## Connection Data Sheet

| OD (in.) | WEIGHT (lbs./ft.) | WALL (in.) | GRADE | API DRIFT (in.) | RBW% | CONNECTION |
|---|---|---|---|---|---|---|
| 5.500 | Nominal: 20.00<br>Plain End: 19.83 | 0.361 | VST P110EC | 4.653 | 87.5 | DWC/C-IS MS |

| PIPE PROPERTIES | | |
|---|---|---|
| Outside Diameter | 5.500 | in. |
| Inside Diameter | 4.778 | in. |
| Nominal Area | 5.828 | sq.in. |
| Grade Type | API 5CT | |
| Min. Yield Strength | 125 | ksi |
| Max. Yield Strength | 140 | ksi |
| Min. Tensile Strength | 135 | ksi |
| Yield Strength | 729 | klb |
| Ultimate Strength | 787 | klb |
| Min. Internal Yield | 14,360 | psi |
| Collapse | 12,090 | psi |

| CONNECTION PROPERTIES | | |
|---|---|---|
| Connection Type | Semi-Premium T&C | |
| Connection O.D. (nom) | 6.115 | in. |
| Connection I.D. (nom) | 4.778 | in. |
| Make-Up Loss | 4.125 | in. |
| Coupling Length | 9.250 | in. |
| Critical Cross Section | 5.828 | sq.in. |
| Tension Efficiency | 100.0% | of pipe |
| Compression Efficiency | 100.0% | of pipe |
| Internal Pressure Efficiency | 100.0% | of pipe |
| External Pressure Efficiency | 100.0% | of pipe |

| CONNECTION PERFORMANCES | | |
|---|---|---|
| Yield Strength | 729 | klb |
| Parting Load | 787 | klb |
| Compression Rating | 729 | klb |
| Min. Internal Yield | 14,360 | psi |
| External Pressure | 12,090 | psi |
| Maximum Uniaxial Bend Rating | 104.2 | °/100 ft |
| Reference String Length w 1.4 Design Factor | 26,040 | ft |

| FIELD END TORQUE VALUES | | |
|---|---|---|
| Min. Make-up torque | 16,100 | ft.lb |
| Opti. Make-up torque | 17,350 | ft.lb |
| Max. Make-up torque | 18,600 | ft.lb |
| Min. Shoulder Torque | 1,610 | ft.lb |
| Max. Shoulder Torque | 12,880 | ft.lb |
| Min. Delta Turn | - | Turns |
| Max. Delta Turn | 0.200 | Turns |
| Maximum Operational Torque | 21,100 | ft.lb |
| Maximum Torsional Value (MTV) | 23,210 | ft.lb |

Need Help? Contact: tech.support@vam-usa.com

Reference Drawing: 8136PP Rev.01 & 8136BP Rev.01

Date: 12/03/2019

Time: 06:19:27 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).

VAM USA
2107 CityWest Boulevard Suite 1300
Houston, TX 77042
Phone: 713-479-3200
Fax: 713-479-3234
VAM® USA Sales E-mail: VAMUSAsales@vam-usa.com
Tech Support Email: tech.support@vam-usa.com

**DWC Connection Data Sheet Notes:**

1. DWC connections are available with a seal ring (SR) option.
2. All standard DWC/C connections are interchangeable for a given pipe OD. DWC connections are interchangeable with DWC/C-SR connections of the same OD and wall.
3. Connection performance properties are based on nominal pipe body and connection dimensions.
4. DWC connection internal and external pressure resistance is calculated using the API rating for buttress connections. API Internal pressure resistance is calculated from formulas 31, 32, and 35 in the API Bulletin 5C3.
5. DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.
6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.
7. Bending efficiency is equal to the compression efficiency.
8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.
9. Connection yield torque is not to be exceeded.
10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.
11. DWC connections will accommodate API standard drift diameters.
12. DWC/C family of connections are compatible with API Buttress BTC connections. Please contact tech.support@vam-usa.com for details on connection ratings and make-up.

# Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55

PDF

New Search »

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USC Metric

6/8/2015 10:14:05 AM

| Mechanical Properties | Pipe | BTC | LTC | STC | |
|---|---|---|---|---|---|
| Minimum Yield Strength | 55,000 | -- | -- | -- | psi |
| Maximum Yield Strength | 80,000 | -- | -- | -- | psi |
| Minimum Tensile Strength | 75,000 | -- | -- | -- | psi |
| **Dimensions** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Outside Diameter | 10.750 | 11.750 | -- | 11.750 | in. |
| Wall Thickness | 0.350 | -- | -- | -- | in. |
| Inside Diameter | 10.050 | 10.050 | -- | 10.050 | in. |
| Standard Drift | 9.894 | 9.894 | -- | 9.894 | in. |
| Alternate Drift | -- | -- | -- | -- | in. |
| Nominal Linear Weight, T&C | 40.50 | -- | -- | -- | lbs/ft |
| Plain End Weight | 38.91 | -- | -- | -- | lbs/ft |
| **Performance** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Minimum Collapse Pressure | 1,580 | 1,580 | -- | 1,580 | psi |
| Minimum Internal Yield Pressure | 3,130 | 3,130 | -- | 3,130 | psi |
| Minimum Pipe Body Yield Strength | 629.00 | -- | -- | -- | 1000 lbs |
| Joint Strength | -- | 700 | -- | 420 | 1000 lbs |
| Reference Length | -- | 11,522 | -- | 6,915 | ft |
| **Make-Up Data** | **Pipe** | **BTC** | **LTC** | **STC** | |
| Make-Up Loss | -- | 4.81 | -- | 3.50 | in. |
| Minimum Make-Up Torque | -- | -- | -- | 3,150 | ft-lbs |
| Maximum Make-Up Torque | -- | -- | -- | 5,250 | ft-lbs |

VALLOUREC STAR 8.625 32# J55 S S2L2 DA 7.875 W/O# SLN # PO# MADE IN USA FT LB

vallourec

**API 5CT, 10th Ed. Connection Data Sheet**

| O.D. (in) | WEIGHT (lb/ft) | WALL (in) | GRADE | *API DRIFT (in) | RBW % |
|---|---|---|---|---|---|
| 8.625 | Nominal: 32.00<br>Plain End: 31.13 | 0.352 | J55 | 7.796 | 87.5 |

| Material Properties (PE) | | |
|---|---|---|
| **Pipe** | | |
| Minimum Yield Strength: | 55 | ksi |
| Maximum Yield Strength: | 80 | ksi |
| Minimum Tensile Strength: | 75 | ksi |
| **Coupling** | | |
| Minimum Yield Strength: | 55 | ksi |
| Maximum Yield Strength: | 80 | ksi |
| Minimum Tensile Strength: | 75 | ksi |

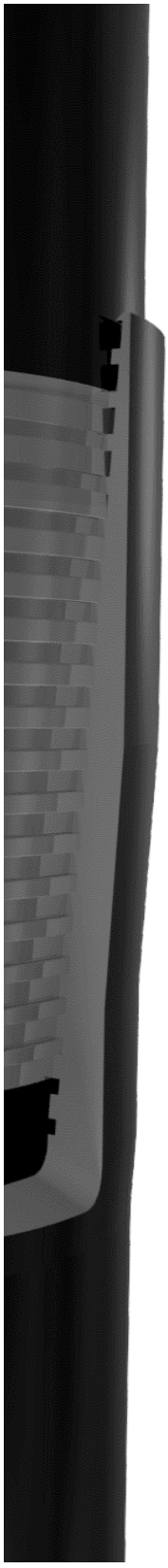
| Pipe Body Data (PE) | | |
|---|---|---|
| **Geometry** | | |
| Nominal ID: | 7.92 | inch |
| Nominal Area: | 9.149 | $in^2$ |
| *Special/Alt. Drift: | 7.875 | inch |
| **Performance** | | |
| Pipe Body Yield Strength: | 503 | kips |
| Collapse Resistance: | 2,530 | psi |
| Internal Yield Pressure: (API Historical) | 3,930 | psi |

| API Connection Data<br>Coupling OD: 9.625" | | |
|---|---|---|
| **STC Performance** | | |
| STC Internal Pressure: | 3,930 | psi |
| STC Joint Strength: | 372 | kips |
| **LTC Performance** | | |
| LTC Internal Pressure: | 3,930 | psi |
| LTC Joint Strength: | 417 | kips |
| **SC-BTC Performance - Cplg OD = 9.125"** | | |
| BTC Internal Pressure: | 3,930 | psi |
| BTC Joint Strength: | 503 | kips |

| API Connection Torque | | | | | |
|---|---|---|---|---|---|
| **STC Torque (ft-lbs)** | | | | | |
| Min: | 2,793 | Opti: | 3,724 | Max: | 4,655 |
| **LTC Torque (ft-lbs)** | | | | | |
| Min: | 3,130 | Opti: | 4,174 | Max: | 5,217 |
| **BTC Torque (ft-lbs)** | | | | | |
| *follow API guidelines regarding positional make up* | | | | | |

*Alt. Drift will be used unless API Drift is specified on order.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.



Issued on: 10 Feb. 2021 by Wesley Ott

# VAM® SPRINT-SF
## Connection Data Sheet

| OD | Weight (lb/ft) | Wall Th. | Grade | API Drift: | Connection |
|---|---|---|---|---|---|
| 6 in. | Nominal: 24.50<br>Plain End: 23.95 | 0.400 in. | P110EC | 5.075 in. | **VAM® SPRINT-SF** |

| PIPE PROPERTIES | | |
|---|---|---|
| Nominal OD | 6.000 | in. |
| Nominal ID | 5.200 | in. |
| Nominal Cross Section Area | 7.037 | sqin. |
| Grade Type | High Yield | |
| Min. Yield Strength | 125 | ksi |
| Max. Yield Strength | 140 | ksi |
| Min. Ultimate Tensile Strength | 135 | ksi |

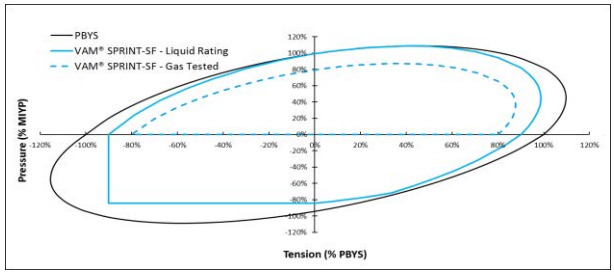
| CONNECTION PROPERTIES | | |
|---|---|---|
| Connection Type | Integral Semi-Flush | |
| Connection OD (nom): | 6.277 | in. |
| Connection ID (nom): | 5.146 | in. |
| Make-Up Loss | 5.386 | in. |
| Critical Cross Section | 6.417 | sqin. |
| Tension Efficiency | 91.0 | % of pipe |
| Compression Efficiency | 91.0 | % of pipe |
| Internal Pressure Efficiency | 100 | % of pipe |
| External Pressure Efficiency | 100 | % of pipe |

| CONNECTION PERFORMANCES | | |
|---|---|---|
| Tensile Yield Strength | 801 | klb |
| Compression Resistance | 801 | klb |
| Internal Yield Pressure | 14,580 | psi |
| Collapse Resistance | 12,500 | psi |
| Max. Structural Bending | 83 | °/100ft |
| Max. Bending with ISO/API Sealability | 30 | °/100ft |

* 87.5% RBW

| TORQUE VALUES | | |
|---|---|---|
| Min. Make-up torque | 21,750 | ft.lb |
| Opt. Make-up torque | 24,250 | ft.lb |
| Max. Make-up torque | 26,750 | ft.lb |
| Max. Torque with Sealability (MTS) | 53,000 | ft.lb |

VAM® SPRINT-SF is a semi-flush connection innovatively designed for extreme shale applications. Its high tension rating and ultra high torque capacity make it ideal to run a fill string length as production casing in shale wells with extended horizontal sections and tight clearance requirements.




Do you need help on this product? - Remember no one knows VAM® like VAM®

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singapore@vamfieldservice.com
australia@vamfieldservice.com

Over 140 VAM® Specialists available worldwide 24/7 for Rig Site Assistance

DWC/C-IS™

# Connection Data Sheet

| OD (in.) | WEIGHT (lbs./ft.) | WALL (in.) | GRADE | API DRIFT (in.) | RBW% | CONNECTION |
|---|---|---|---|---|---|---|
| 6.000 | Nominal: 22.30<br>Plain End: 21.70 | 0.360 | VST P110EC | 5.155 | 92.5 | DWC/C-IS |

## PIPE PROPERTIES

| | | |
|---|---|---|
| Nominal OD | 6.000 | in. |
| Nominal ID | 5.280 | in. |
| Nominal Area | 6.379 | sq.in. |
| Grade Type | API 5CT | |
| Min. Yield Strength | 125 | ksi |
| Max. Yield Strength | 140 | ksi |
| Min. Tensile Strength | 135 | ksi |
| Yield Strength | 797 | klb |
| Ultimate Strength | 861 | klb |
| Min. Internal Yield Pressure | 13,880 | psi |
| Collapse Pressure | 9,800 | psi |

## CONNECTION PROPERTIES

| | | |
|---|---|---|
| Connection Type | Semi-Premium T&C | |
| Connection OD (nom) | 6.650 | in. |
| Connection ID (nom) | 5.280 | in. |
| Make-Up Loss | 4.313 | in. |
| Coupling Length | 9.625 | in. |
| Critical Cross Section | 6.379 | sq.in. |
| Tension Efficiency | 100.0% | of pipe |
| Compression Efficiency | 100.0% | of pipe |
| Internal Pressure Efficiency | 100.0% | of pipe |
| External Pressure Efficiency | 100.0% | of pipe |

## CONNECTION PERFORMANCES

| | | |
|---|---|---|
| Yield Strength | 797 | klb |
| Parting Load | 861 | klb |
| Compression Rating | 797 | klb |
| Min. Internal Yield | 13,880 | psi |
| External Pressure | 9,800 | psi |
| Maximum Uniaxial Bend Rating | 47.7 | °/100 ft |
| Reference String Length w 1.4 Design Factor | 25,530 | ft. |

## FIELD END TORQUE VALUES

| | | |
|---|---|---|
| Min. Make-up torque | 17,000 | ft.lb |
| Opti. Make-up torque | 18,250 | ft.lb |
| Max. Make-up torque | 19,500 | ft.lb |
| Min. Shoulder Torque | 1,700 | ft.lb |
| Max. Shoulder Torque | 13,600 | ft.lb |
| Min. Delta Turn | - | Turns |
| Max. Delta Turn | 0.200 | Turns |
| Maximum Operational Torque | 24,200 | ft.lb |
| Maximum Torsional Value (MTV) | 26,620 | ft.lb |

Need Help? Contact: tech.support@vam-usa.com

Reference Drawing: 8135PP Rev.02 & 8135BP Rev.02

Date: 07/30/2020

Time: 07:50:47 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).



VAM® USA

VAM USA
2107 CityWest Boulevard Suite 1300
Houston, TX 77042
Phone: 713-479-3200
Fax: 713-479-3234
VAM® USA Sales E-mail: VAMUSAsales@vam-usa.com
Tech Support Email: tech.support@vam-usa.com

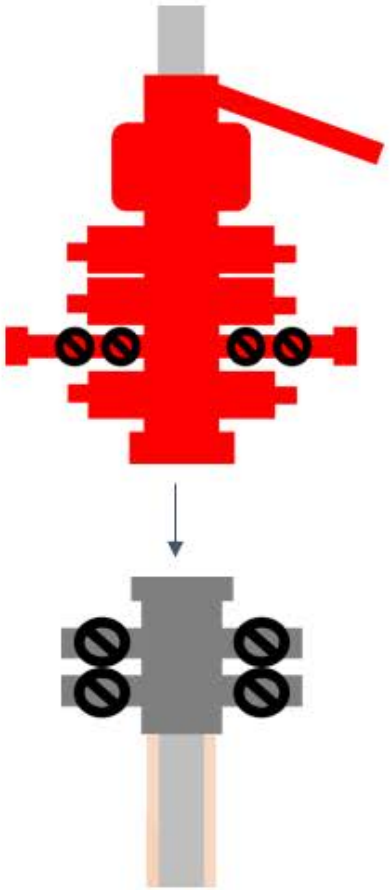
DWC Connection Data Sheet Notes:
1. DWC connections are available with a seal ring (SR) option.
2. All standard DWC/C connections are interchangeable for a given pipe OD. DWC connections are interchangeable with DWC/C-SR connections of the same OD and wall.
3. Connection performance properties are based on nominal pipe body and connection dimensions.
4. DWC connection internal and external pressure resistance is calculated using the API rating for buttress connections. API Internal pressure resistance is calculated from formulas 31, 32, and 35 in the API Bulletin 5C3.
5. DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.
6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.
7. Bending efficiency is equal to the compression efficiency.
8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.
9. Connection yield torque is not to be exceeded.
10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.
11. DWC connections will accommodate API standard drift diameters.
12. DWC/C family of connections are compatible with API Buttress BTC connections. Please contact tech.support@vam-usa.com for details on connection ratings and make-up.

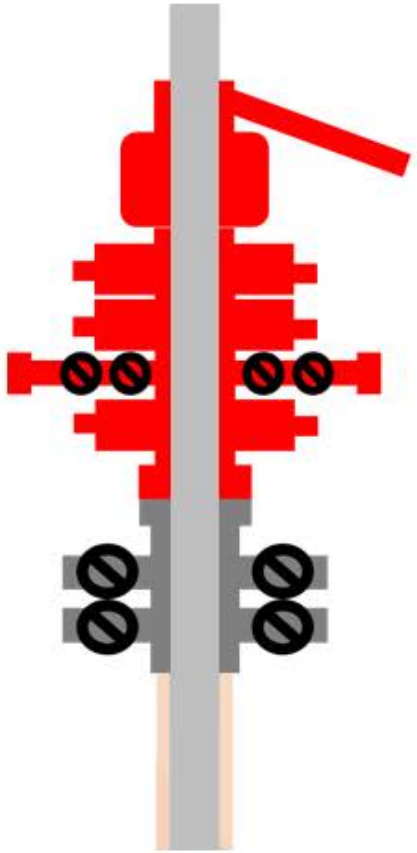
**Break-test BOP & Offline Cementing:**

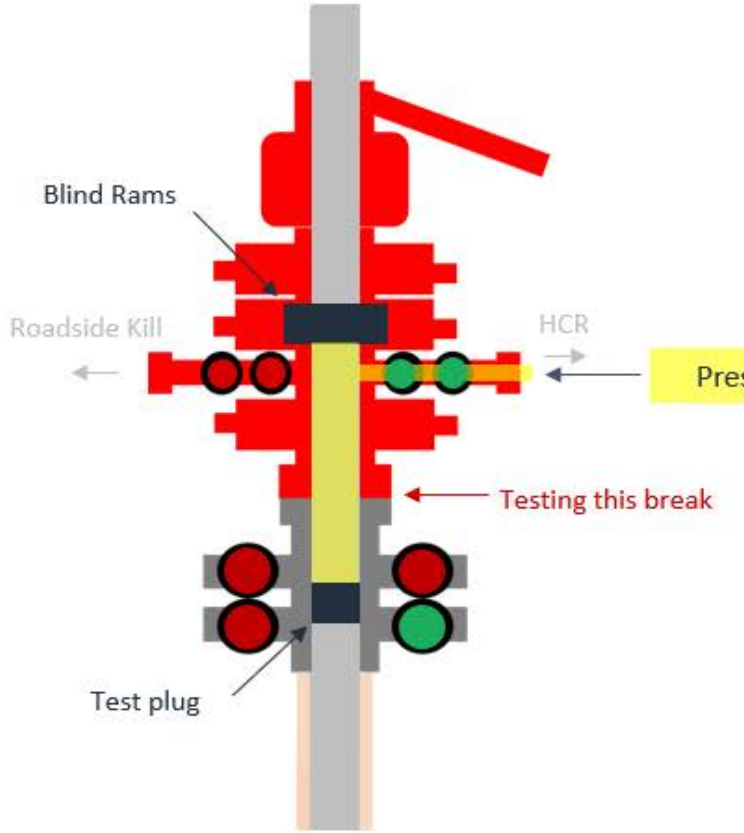
EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of ECFR Title 43 Part 3172.6(b)(9)(iv) to allow a testing schedule of the blow out preventer (BOP) and blow out prevention equipment (BOPE) along with Batch Drilling & Offline cement operations to include the following:

- Full BOPE test at first installation on the pad.
- Full BOPE test every 30 days.
- This test will be conducted for 5M rated hole intervals only.
- Each rig requesting the break-test variance is capable of picking up the BOP without damaging components using winches, following API Standard 53, Well Control Equipment Systems for Drilling Wells (Fifth edition, December 2018, Annex C. Table C.4) which recognizes break testing as an acceptable practice.
- Function tests will be performed on the following BOP elements:
    - Annular à during each full BOPE test
    - Upper Pipe Rams à On trip ins where FIT required
    - Blind Rams à Every trip
    - Lower Pipe Rams à during each full BOPE test
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or intermediate sections, according to attached offline cementing support documentation.
- After the well section is secured, the BOP will be disconnected from the wellhead and walked with the rig to another well on the pad.
- TA cap will also be installed per Wellhead vendor procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.

# Break Test Diagram (HCR valve)



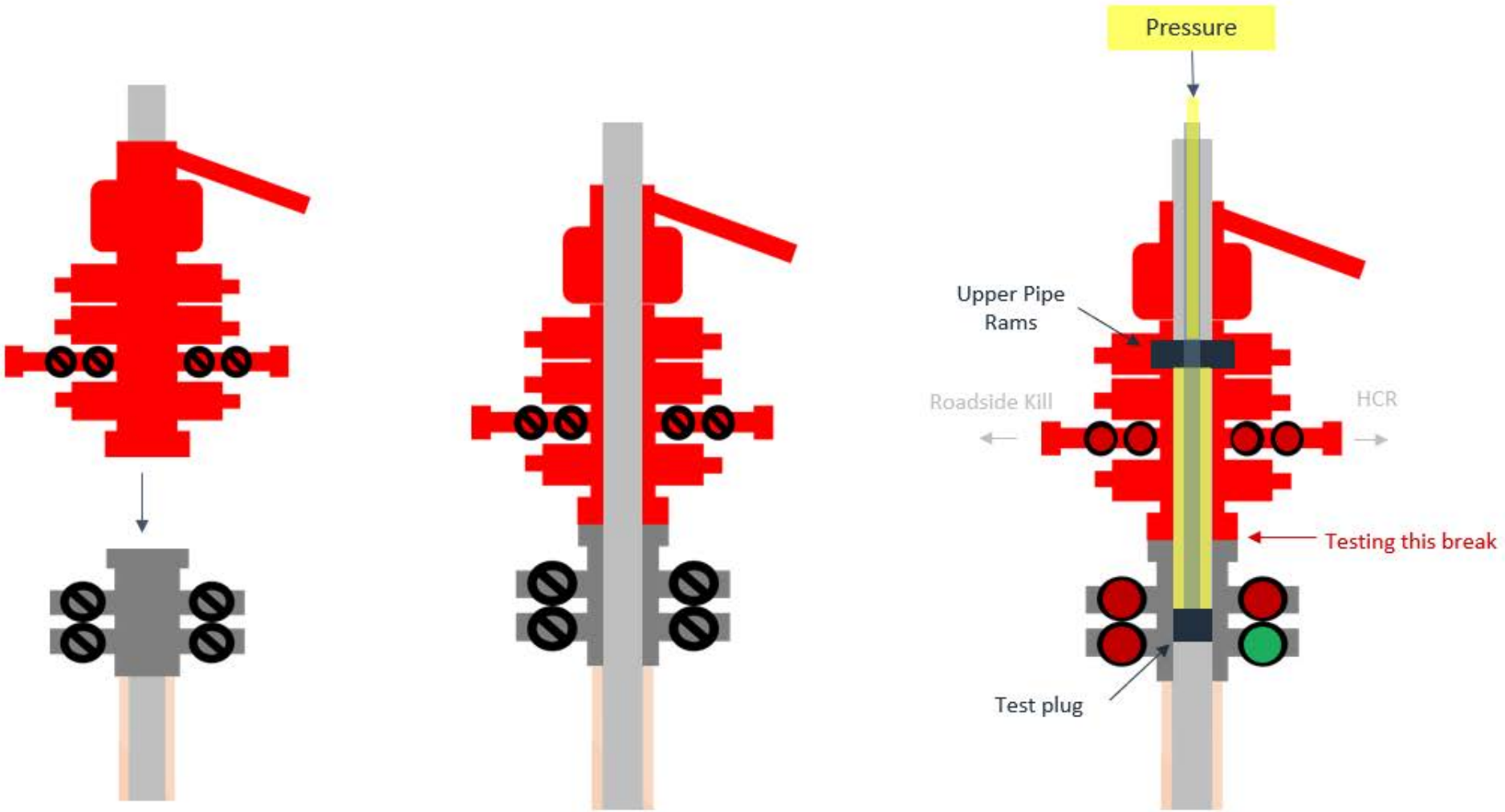





**Steps**

1. Set plug in wellhead (lower barrier)
2. Close Blind Rams (upper barrier)
3. Close roadside kill
4. Open HCR (pressure application)
5. Open wellhead valves below test plug to ensure if leak past test plug, pressure won't be applied to wellbore
6. Tie BOP testers high pressure line to main choke manifold crown valve
7. Pressure up to test break
8. Bleed test pressure from BOP testing unit

# Break Test Diagram (Test Joint)




**Steps**

1. Set plug in with test joint wellhead (lower barrier)
2. Close Upper Pipe Rams (upper barrier)
3. Close roadside kill
4. Close HCR
5. Open wellhead valves below test plug to ensure if leak past test plug, pressure won't be applied to wellbore
6. Tie BOP testers high pressure line to top of test joint
7. Pressure up to test break
8. Bleed test pressure from BOP testing unit

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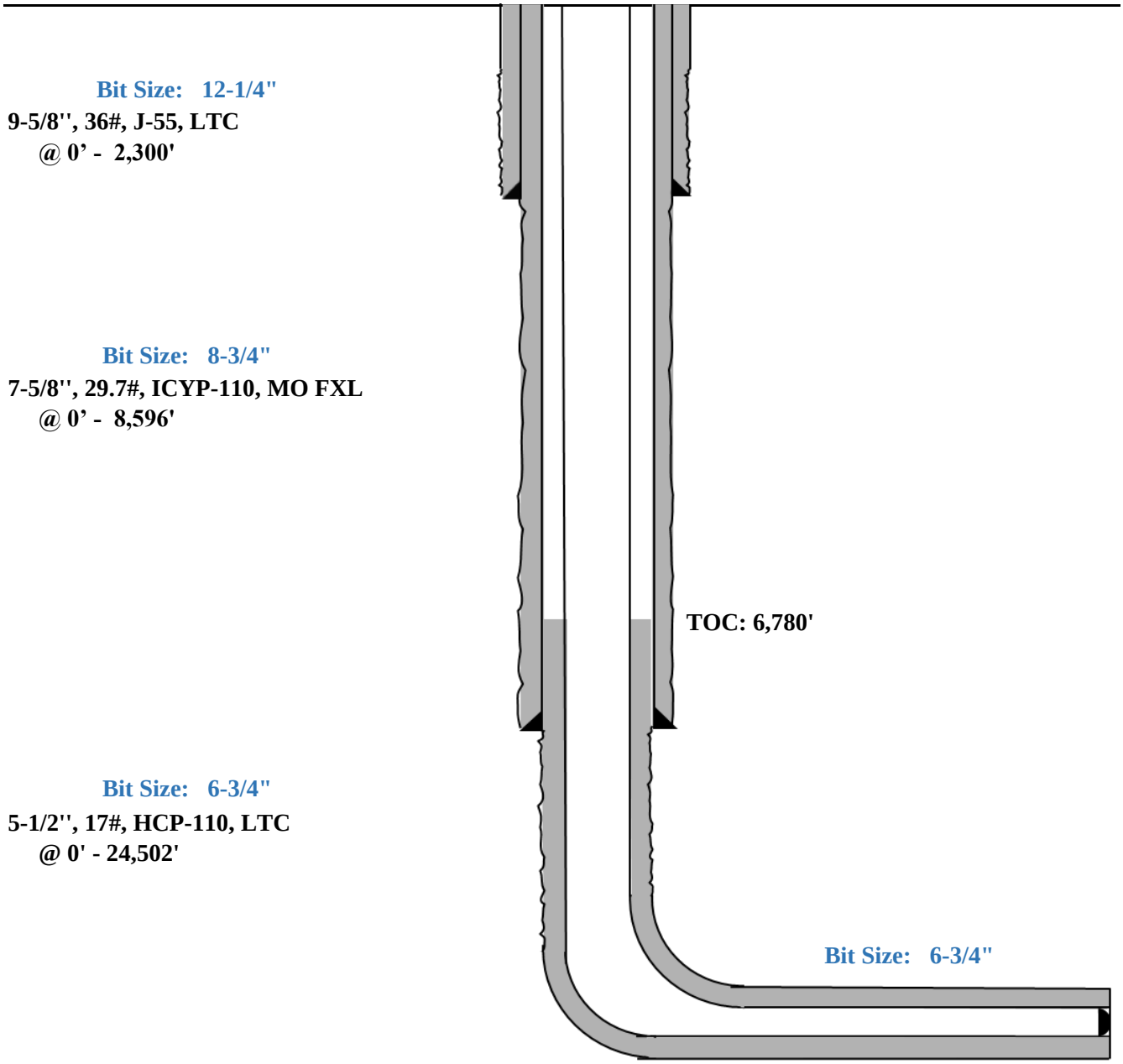
**Padron 3 State WC Unit #713H**
**EDDY County, New Mexico**

**666' FNL**
**376' FWL**
**Section 3**
**T-25-S, R-27-E**

**Proposed Wellbore**
**Design A**

**API: 30-025-*****

**KB: 3270'**
**GL: 3245'**




**KOP: 8,595' MD, 8,576' TVD**
**EOC: 9,345' MD, 9,053' TVD**

**Lateral: 24,502' MD, 9,053' TVD**
**BH Location: 1100' FNL & 230' FEL**
**Sec. 1**
**T-25-S R-27-E**

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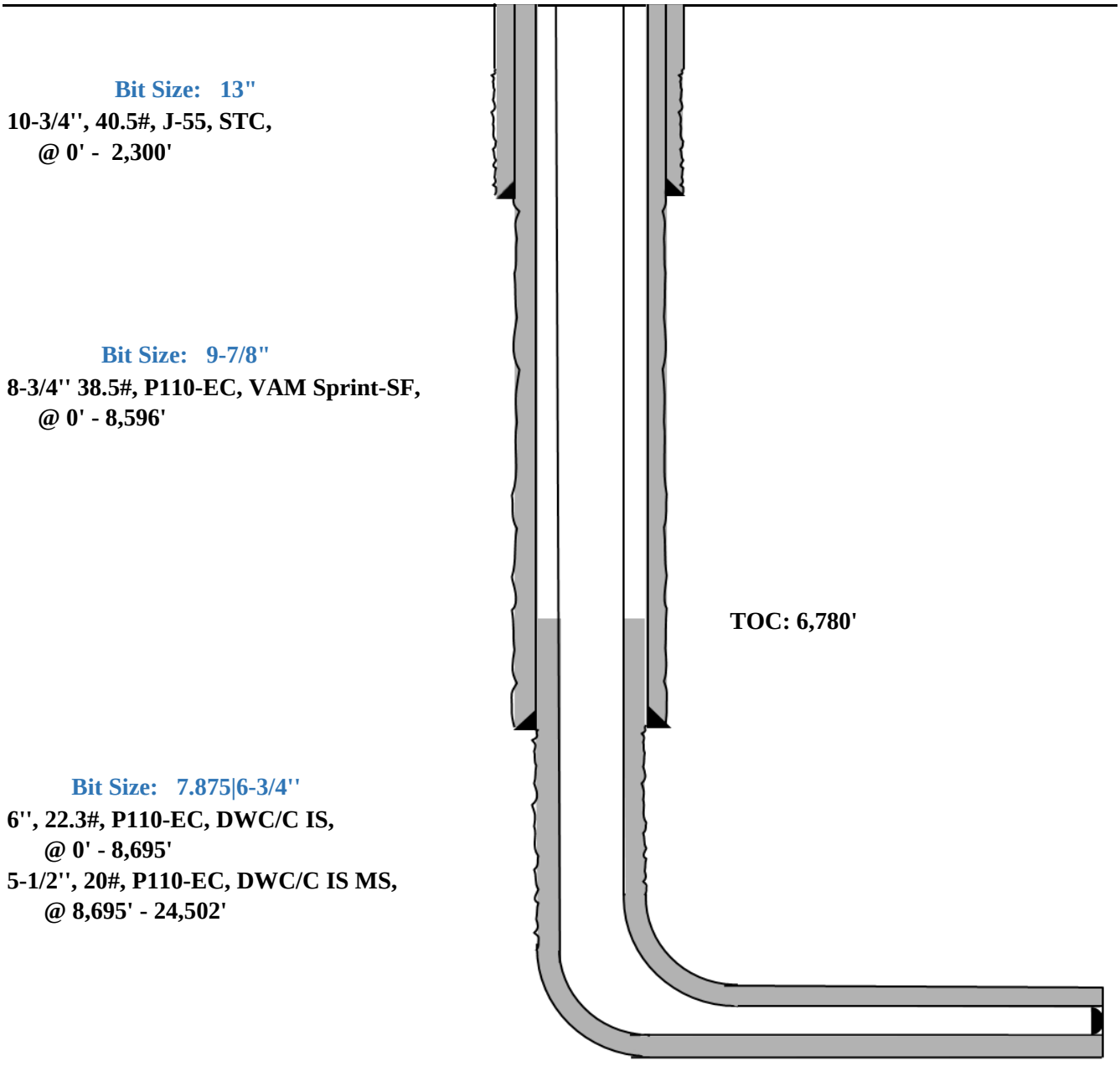
**Padron 3 State WC Unit #713H**
**EDDY County, New Mexico**

**666' FNL**
**376' FWL**
**Section 3**
**T-25-S, R-27-E**

**Proposed Wellbore**
**Design B**

**API: 30-025-*****

**KB: 3270'**
**GL: 3245'**



**Bit Size: 13"**
**10-3/4'', 40.5#, J-55, STC,**
**@ 0' - 2,300'**

**Bit Size: 9-7/8"**
**8-3/4'' 38.5#, P110-EC, VAM Sprint-SF,**
**@ 0' - 8,596'**

**TOC: 6,780'**

**Bit Size: 7.875|6-3/4''**
**6'', 22.3#, P110-EC, DWC/C IS,**
**@ 0' - 8,695'**
**5-1/2'', 20#, P110-EC, DWC/C IS MS,**
**@ 8,695' - 24,502'**

**KOP: 8,595' MD, 8,576' TVD**
**EOC: 9,345' MD, 9,053' TVD**

**Lateral: 24,502' MD, 9,053' TVD**
**BH Location: 1100' FNL & 230' FEL**
**Sec. 1**
**T-25-S R-27-E**

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# Padron 3 State WC Unit #713H

**Permit Informati**

Well Name: Padron 3 State WC Unit #713H

Location:

SHL: 666' FNL & 376' FWL, Section 3, T-25-S, R-27-E, EDDY Co., N.M.

BHL: 1100' FNL & 230' FEL, Section 1, T-25-S, R-27-E, EDDY Co., N.M.

## Design A

### Casing Program:

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 12-1/4" | 0 | 2,320 | 0 | 2,300 | 9-5/8" | 36# | J-55 | LTC |
| 8-3/4" | 0 | 8,596 | 0 | 8,576 | 7-5/8" | 29.7# | ICYP-110 | MO FXL |
| 6-3/4" | 0 | 24,502 | 0 | 9,053 | 5-1/2" | 17# | HCP-110 | LTC |

### Cement Program:

| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,300' | 580 | 13.5 | 1.73 | Class C/H + additives (TOC @ Surface) |
| | 80 | 14.8 | 1.34 | Class C/H + additives |
| 7,780' | 450 | 14.2 | 1.11 | 1st Stage (Tail): Class C/H + additives (TOC @ 3,974') |
| | 1000 | 14.8 | 1.5 | 2nd Stage (Bradenhead squeeze): Class C/H + additives + expansion additives (TOC @ surface) |
| 24,502' | 1440 | 13.2 | 1.31 | Class C/H + additives (TOC @ 7,280') |

### Mud Program:

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0 – 2,300' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 2,300' – 7,780' | Brine | 10.0-10.2 | 28-34 | N/c |
| 7,780' – 8,595' | Water - Gel | 8.7-9.4 | 58-68 | N/c - 6 |
| 8,595' – 24,502' Lateral | Oil Base | 10.0-14.0 | 58-68 | 4 - 6 |

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# Padron 3 State WC Unit #713H

## Design B

### CASING PROGRAM

| Hole Size | Interval MD From (ft) | Interval MD To (ft) | Interval TVD From (ft) | Interval TVD To (ft) | Csg OD | Weight | Grade | Conn |
|---|---|---|---|---|---|---|---|---|
| 13" | 0 | 2,320 | 0 | 2,300 | 10-3/4" | 40.5# | J-55 | STC |
| 9-7/8" | 0 | 8,596 | 0 | 8,576 | 8-3/4" | 38.5# | P110-EC | VAM Sprint-SF |
| 7-7/8" | 0 | 8,695 | 0 | 8,676 | 6" | 22.3# | P110-EC | DWC/C IS |
| 6-3/4" | 0 | 24,502 | 0 | 9,053 | 5-1/2" | 20# | P110-EC | DWC/C IS MS |

**For highlighted rows above, variance is requested to run entire string of either 6" or 5-1/2" casing string above.

### Cementing Program:

| Depth | No. Sacks | Wt. ppg | Yld Ft3/sk | Slurry Description |
|---|---|---|---|---|
| 2,300' 10-3/4" | 540 | 13.5 | 1.73 | Lead: Class C/H + additives (TOC @ Surface) |
| | 70 | 14.8 | 1.34 | Tail: Class C/H + additives (TOC @ 2,100') |
| 7,784' 8-3/4" | 1020 | 14.2 | 1.11 | 1st Stage (Tail): Class C/H + additives (TOC @ 3,974') |
| | 1000 | 14.8 | 1.5 | 2nd Stage (Bradenhead squeeze): Class C/H + additives + expansion additives (TOC @ surface) |
| 24,502' 6" | 2380 | 13.2 | 1.31 | Lead: Class C/H + additives (TOC @ 7,284') |

EOG requests a variance to set the intermediate casing shoe in the Bone Spring formation OR the Wolfcamp formation, depending on depletion in the area and well conditions. EOG will monitor the well and ensure the well is static before casing operations begin.

EOG requests variance from minimum standards to pump a two stage cement job on the 8-3/4" intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon (4,174') and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 100 sacks of Class C/H cement + additives + expansion additives (2.30 yld, 12.91 ppg) will be executed as a contingency.

### Mud Program:

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0 – 2,300' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 2,300' – 2,154' | Brine | 10.0-10.2 | 28-34 | N/c |
| 2,154' – 7,780' | Water - Gel | 8.7-9.4 | 58-68 | N/c - 6 |
| 7,780' – 24,502' Lateral | Oil Base | 10.0-14.0 | 58-68 | 4 - 6 |

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**Padron 3 State WC Unit 713H**

**TUBING REQUIREMENTS**

EOG respectively requests an exception to the following NMOCD rule:

- 19.15.16.10 Casing AND TUBING RQUIREMENTS:
  J (3): "The operator shall set tubing as near the bottom as practical and tubing perforations shall not be more than 250 feet above top of pay zone."

With horizontal flowing and gas lifted wells an end of tubing depth placed at or slightly above KOP is a conservative way to ensure the tubing stays clean from debris, plugging, and allows for fewer well interventions post offset completion. The deeper the tubulars are run into the curve, the higher the probability is that the tubing will become stuck in sand and or well debris as the well produces over time. An additional consideration for EOT placement during artificial lift installations is avoiding the high dog leg severity and inclinations found in the curve section of the wellbore to help improve reliability and performance. Dog leg severity and inclinations tend not to hamper gas lifted or flowing wells, but they do effect other forms of artificial lift like rod pump or ESP (electric submersible pump). Keeping the EOT above KOP is an industry best practice for those respective forms of artificial lift.

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**Padron 3 State WC Unit #713H**

# Hydrogen Sulfide Plan Summary

A. All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a.

B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.

C. Required Emergency Equipment:

■ Well control equipment
a. Flare line 150' from wellhead to be ignited by flare gun.
b. Choke manifold with a remotely operated choke.
c. Mud/gas separator

■ Protective equipment for essential personnel.
Breathing apparatus:
a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
b. Work/Escape packs —4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

Auxiliary Rescue Equipment:
a. Stretcher
b. Two OSHA full body harness
c. 100 ft 5/8 inch OSHA approved rope
d. 1-20# class ABC fire extinguisher

■ H2S detection and monitoring equipment:
The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.
(Gas sample tubes will be stored in the safety trailer)

■ Visual warning systems.
a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
c. Two wind socks will be placed in strategic locations, visible from all angles.

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**Padron 3 State WC Unit #713H**

- Mud program:
  The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

- Metallurgy:
  All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

- Communication:
  Communication will be via cell phones and land lines where available.

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**Padron 3 State WC Unit #713H**

## Emergency Assistance Telephone List

| **PUBLIC SAFETY:** | | **911 or** |
|---|---|---|
| Lea County Sheriff's Department | | (575) 396-3611 |
| Rod Coffman | | |
| Fire Department: | | |
| Carlsbad | | (575) 885-3125 |
| Artesia | | (575) 746-5050 |
| Hospitals: | | |
| Carlsbad | | (575) 887-4121 |
| Artesia | | (575) 748-3333 |
| Hobbs | | (575) 392-1979 |
| Dept. of Public Safety/Carlsbad | | (575) 748-9718 |
| Highway Department | | (575) 885-3281 |
| New Mexico Oil Conservation | | (575) 476-3440 |
| NMOCD Inspection Group - South | | (575) 626-0830 |
| U.S. Dept. of Labor | | (575) 887-1174 |
| **EOG Resources, Inc.** | | |
| EOG / Midland | Office | (432) 686-3600 |
| | | |
| **Company Drilling Consultants:** | | |
| David Dominque | Cell | (985) 518-5839 |
| Mike Vann | Cell | (817) 980-5507 |
| | | |
| **Drilling Engineer** | | |
| Stephen Davis | Cell | (432) 235-9789 |
| Matt Day | Cell | (432) 296-4456 |
| **Drilling Manager** | | |
| Branden Keener | Office | (432) 686-3752 |
| | Cell | (210) 294-3729 |
| **Drilling Superintendent** | | |
| Ryan Reynolds | Cell | (432) 215-5978 |
| Steve Kelly | Cell | (210) 416-7894 |
| **H&P Drilling** | | |
| H&P Drilling | Office | (432) 563-5757 |
| H&P 651 Drilling Rig | Rig | (903) 509-7131 |
| | | |
| **Tool Pusher:** | | |
| Johnathan Craig | Cell | (817) 760-6374 |
| Brad Garrett | | |
| | | |
| **Safety:** | | |
| Brian Chandler (HSE Manager) | Office | (432) 686-3695 |
| | Cell | (817) 239-0251 |

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:** ___EOG Resources, Inc._____ **OGRID:** _____7377_____ **Date:** 1/03/2025

**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 |
|---|---|---|---|---|---|---|
| PADRON 3 STATE WC UNIT 713H | | L4-3-25S-27E | 666' FNL & 376' FWL | +/- 1000 | +/- 3500 | +/- 3000 |
| | | | | | | |

**IV. Central Delivery Point Name:** ___ PADRON 3 STATE WC UNIT CTB_____ [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 |
|---|---|---|---|---|---|---|
| PADRON 3 STATE WC UNIT 713H | | 01/15/25 | 03/26/25 | 04/1/25 | 05/1/25 | 05/15/25 |
| | | | | | | |

**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: Kayla McConnell |
| Printed Name: KAYLA MCCONNELL |
| Title: Regulatory Specialist |
| E-mail Address: KAYLA_MCCONNELL@EOGRESOURCES.COM |
| Date: 01/03/2025 |
| Phone: (432) 265-6804 |

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

**Natural Gas Management Plan**
**Items VI-VIII**

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

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid – Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release gas from the well.

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

Drilling Operations

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

Completions/Recompletions Operations

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

Production Operations

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All plunger lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.

Performance Standards

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 Mcfd.

Measurement & Estimation

- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses with be installed.

- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

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

- During downhole well maintenance, EOG will use best management practices to vent as minimally as possible.
- Prior to the commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
- All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, the equipment will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.

## Kayla McConnell

**From:** Marks, Allison <amarks@nmslo.gov>
**Sent:** Tuesday, January 7, 2025 11:23 AM
**To:** Jordan Kessler
**Cc:** Riker Everett; Lamkin, Baylen L.
**Subject:** RE: Padron Unit APDs



Thanks, Jordan. Yes, for State Padron Unit, the SLO will forgo notice for APDs wholly within the unit.

Thank you again for reaching out to discuss.

*Allison Marks*

*Director*
*Oil, Gas & Minerals Division*
505.827.5745
New Mexico State Land Office
310 Old Santa Fe Trail
P.O. Box 1148
Santa Fe, NM 87504-1148
amarks@nmslo.gov (note the new email address)
nmstatelands.org



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**From:** Jordan Kessler <Jordan_Kessler@eogresources.com>
**Sent:** Tuesday, January 7, 2025 10:17 AM
**To:** Marks, Allison <amarks@nmslo.gov>
**Cc:** Riker Everett <Riker_Everett@eogresources.com>
**Subject:** [EXTERNAL] Padron Unit APDs

Hi Allison,

Pursuant to our discussion, EOG is requesting that the SLO allow EOG to forgo providing the SLO with notice of overlapping spacing units for wells wholly within the boundaries of the EOG's State Padron Unit. NMAC 19.15.15.12(B)(1) requires an operator to provide notice to interest owners and the SLO/BLM when a new spacing unit will overlap an existing spacing unit. There are a few existing spacing units operated by Mewbourne within the

boundaries of the EOG's Padron Unit. As part of the unit formation process, EOG and the SLO discussed the existing spacing units, the wells, the benches that would be developed, and the fact that Mewbourne had voluntarily committed the acreage to the Unit.

Accordingly, EOG asks that the SLO waive notice /objection to overlapping spacing units for APDs wholly within the boundaries of the EOG operated Padron Unit.

Thanks for the time!
Jordan

**Jordan Kessler**
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