Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

**SUNDRY NOTICES AND REPORTS ON WELLS** Carlsbad Field Office OCD Hobbs

*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*

*SUBMIT IN TRIPLICATE - Other instructions on page 2*

5. Lease Serial No.
NMNM121490

6. If Indian, Allottee or Tribe Name

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

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

8. Well Name and No.
COLGROVE 35 FED COM 702H

2. Name of Operator
EOG RESOURCES INCORPORATED
Contact: STAN WAGNER
E-Mail: stan_wagner@eogresources.com

9. API Well No.
30-025-42983-00-X1

3a. Address
MIDLAND, TX 79702

3b. Phone No. (include area code)
Ph: 432.686.3689

10. Field and Pool or Exploratory Area
WC025G09S263327G-UP WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 35 T26S R33E Lot 4 360FSL 245FWL

11. County or Parish, State
LEA COUNTY, NM

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

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

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

EOG Resources requests an amendment to our approved APD for this well to reflect changes in BHL, casing design, and the use of a multi-bowl wellhead system.

Attached are specific details related to these changes.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

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

**Electronic Submission #370548 verified by the BLM Well Information System**
**For EOG RESOURCES INCORPORATED, sent to the Hobbs**
**Committed to AFMSS for processing by DEBORAH MCKINNEY on 04/06/2017 (17DLM0722SE)**

Name *(Printed/Typed)* STAN WAGNER — Title AGENT

Signature (Electronic Submission) — Date 03/21/2017

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved By MUSTAFA HAQUE — Title PETROLEUM ENGINEER — Date 04/10/2017

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

Office Hobbs

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

(Instructions on page 2)

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

**EOG RESOURCES, INC.**
**COLGROVE 35 FED COM NO. 702H**

**1. GEOLOGIC NAME OF SURFACE FORMATION:**

Permian

**2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:**

| | |
|---|---|
| Rustler | 822' |
| Top of Salt | 1,160' |
| Base of Salt / Top Anhydrite | 4,860' |
| Base Anhydrite | 5,095' |
| Lamar | 5,095' |
| Bell Canyon | 5,121' |
| Cherry Canyon | 6,140' |
| Brushy Canyon | 7,850' |
| Bone Spring Lime | 9,310' |
| 1st Bone Spring Sand | 10,200' |
| 2nd Bone Spring Lime | 10,460' |
| 2nd Bone Spring Sand | 10,820' |
| 3rd Bone Spring Carb | 11,120' |
| 3rd Bone Spring Sand | 11,860' |
| Wolfcamp | 12,290' |
| TD | 12,500' |

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

| | | |
|---|---|---|
| Upper Permian Sands | 0- 400' | Fresh Water |
| Cherry Canyon | 6,140' | Oil |
| Brushy Canyon | 7,850' | Oil |
| 1st Bone Spring Sand | 10,200' | Oil |
| 2nd Bone Spring Lime | 10,460' | Oil |
| 2nd Bone Spring Sand | 10,820' | Oil |
| 3rd Bone Spring Carb | 11,120' | Oil |
| 3rd Bone Spring Sand | 11,860' | Oil |
| Wolfcamp | 12,290' | 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 10.75" casing at 850' and circulating cement back to surface.

**EOG RESOURCES, INC.**
**COLGROVE 35 FED COM NO. 702H**

## 4. CASING PROGRAM - NEW

| Hole Size | Interval | Csg OD | Weight | Grade | Conn | $DF_{min}$ Collapse | $DF_{min}$ Burst | $DF_{min}$ Tension |
|---|---|---|---|---|---|---|---|---|
| 14.75" | 0 – ~~850'~~ 1000' | 10.75" | 40.5# | J55 | STC | 1.125 | 1.25 | 1.60 |
| 9.875" | 0-8,000' | 7.625" | 29.7# | HCP-110 | LTC | 1.125 | 1.25 | 1.60 |
| 8.75" | 8,000' - 11,200' | 7.625" | 29.7# | HCP-110 | FlushMax III | 1.125 | 1.25 | 1.60 |
| 6.75 | 0' – 10,700' | 5.5" | 20# | P110EC | DWC-IS-MS | 1.125 | 1.25 | 1.60 |
| 6.75" | 10,700'-19,809' | 5.5" | 20# | P110EC | VAM SFC | 1.125 | 1.25 | 1.60 |

SEE COA

Variance is requested to wave the centralizer requirements for the 7-5/8" FJ casing in the 8-3/4" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 8-3/4" hole interval to maximize cement bond and zonal isolation. Centralizers will be placed in the 9-7/8" hole interval at least one every third joint.

Variance is also requested to wave any centralizer requirements for the 5-1/2" FJ 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.

**Cementing Program:**

| Depth | No. Sacks | Wt. ppg | Yld $Ft^3/ft$ | Mix Water Gal/sk | Slurry Description |
|---|---|---|---|---|---|
| 10-3/4" ~~850~~ 1000' | 325 | 13.5 | 1.73 | 9.13 | Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% $CaCl_2$ + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| | 200 | 14.8 | 1.34 | 6.34 | Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate |
| 7-5/8" 11,200' | 1250 | 9.0 | 2.50 | 9.06 | Class C + 0.6% ASM-3 + 0.15% CDF-4P + 0.6% LTR + 0.5% SCA-6 + 0.13 pps LCL-11 + 0.13 pps LDP-c-0215 (TOC @ Surface) |
| | 150 | 12.5 | 1.71 | 9.06 | Class C + 0.6% LTR + 0.5% SCA-6 + 0.6% ASM-3 + 0.15% CDF-4P + 0.13% LCL-11 + 0.13% LCF-7 |
| | 525 | 15.6 | 1.19 | 5.20 | Class H + 0.2% ASM-3 + 0.3% SCA-6 + 0.65% LTR + 0.3% SPC-2 |
| 5-1/2" 19,809' | 725 | 14.1 | 1.26 | 5.80 | Class H + 0.1% C-20 + 0.05% CSA-1000 + 0.20% C-49 + 0.40% C-17 (TOC @ 10,700') |

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.

Additional cement might be required. SEE COA

## 5. MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

Variance is requested to use a co-flex line between the BOP and choke manifold (instead of using a 4" OD steel line).

The minimum blowout preventer equipment (BOPE) shown in Exhibit #1 will consist of a single ram, mud cross and double ram-type (10,000 psi WP) preventer and an annular preventer (5000-psi WP). Both units will be hydraulically operated and the ram-type will be equipped with blind rams on bottom and drill pipe rams on top. All BOPE will be tested in accordance with Onshore Oil & Gas order No. 2.

Before drilling out of the surface casing, the ram-type BOP and accessory equipment will be tested to 5000/ 250 psig and the annular preventer to 3500/ 250 psig. The surface casing will be tested to 1500 psi for 30 minutes.

Before drilling out of the intermediate casing, the ram-type BOP and accessory equipment will be tested to 5000/ 250 psig and the annular preventer to 3500/ 250 psig. The intermediate casing will be tested to 2000 psi for 30 minutes.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.

A hydraulically operated choke will be installed prior to drilling out of the intermediate casing shoe.

## 6. TYPES AND CHARACTERISTICS OF THE PROPOSED MUD SYSTEM:

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.

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0 – ~~850'~~ 1000 | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| ~~850'~~ – 11,200' | Brine | 8.8-10.0 | 28-34 | N/c |
| 11,200' – 19,809' Lateral | Oil Base | 10.0-11.5 | 58-68 | 3 - 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.

## 7. AUXILIARY WELL CONTROL AND MONITORING EQUIPMENT:

(A) A kelly cock will be kept in the drill string at all times.

(B) A full opening drill pipe-stabbing valve (inside BOP) with proper drill pipe connections will be on the rig floor at all times.

(C) $H_2S$ monitoring and detection equipment will be utilized from surface casing point to TD.

## 8. LOGGING, TESTING AND CORING PROGRAM:

Open-hole logs are not planned for this well.

GR–CCL Will be run in cased hole during completions phase of operations.

## 9. ABNORMAL CONDITIONS, PRESSURES, TEMPERATURES AND POTENTIAL HAZARDS:

The estimated bottom-hole temperature (BHT) at TD is 182 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 7475 psig. No hydrogen sulfide or other hazardous gases or fluids have been encountered. reported or are known to exist at this depth in this area. Severe loss circulation is expected from 7,300' to Intermediate casing point.

## 10. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

The drilling operation should be finished in approximately one month. If the well is productive. an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

## 11. WELLHEAD: -D SEE COA

A multi-bowl wellhead system will be utilized.

After running the 10-3/4" surface casing. a 13-5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi pressure test. This pressure test will be repeated at least every 30 days. as per Onshore Order No. 2

The minimum working pressure of the BOP and related BOPE required for drilling below the surface casing shoe shall be 5000 psi.

The multi-bowl wellhead will be installed by vendor's representative(s). A copy of the installation instructions for the Stream Flo FBD100 Multi-Bowl WH system has been sent to the NM BLM office in Carlsbad. NM.

The wellhead will be installed by a third party welder while being monitored by WH vendor's representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi. The remaining BOPE will not be retested after installing the intermediate casing.

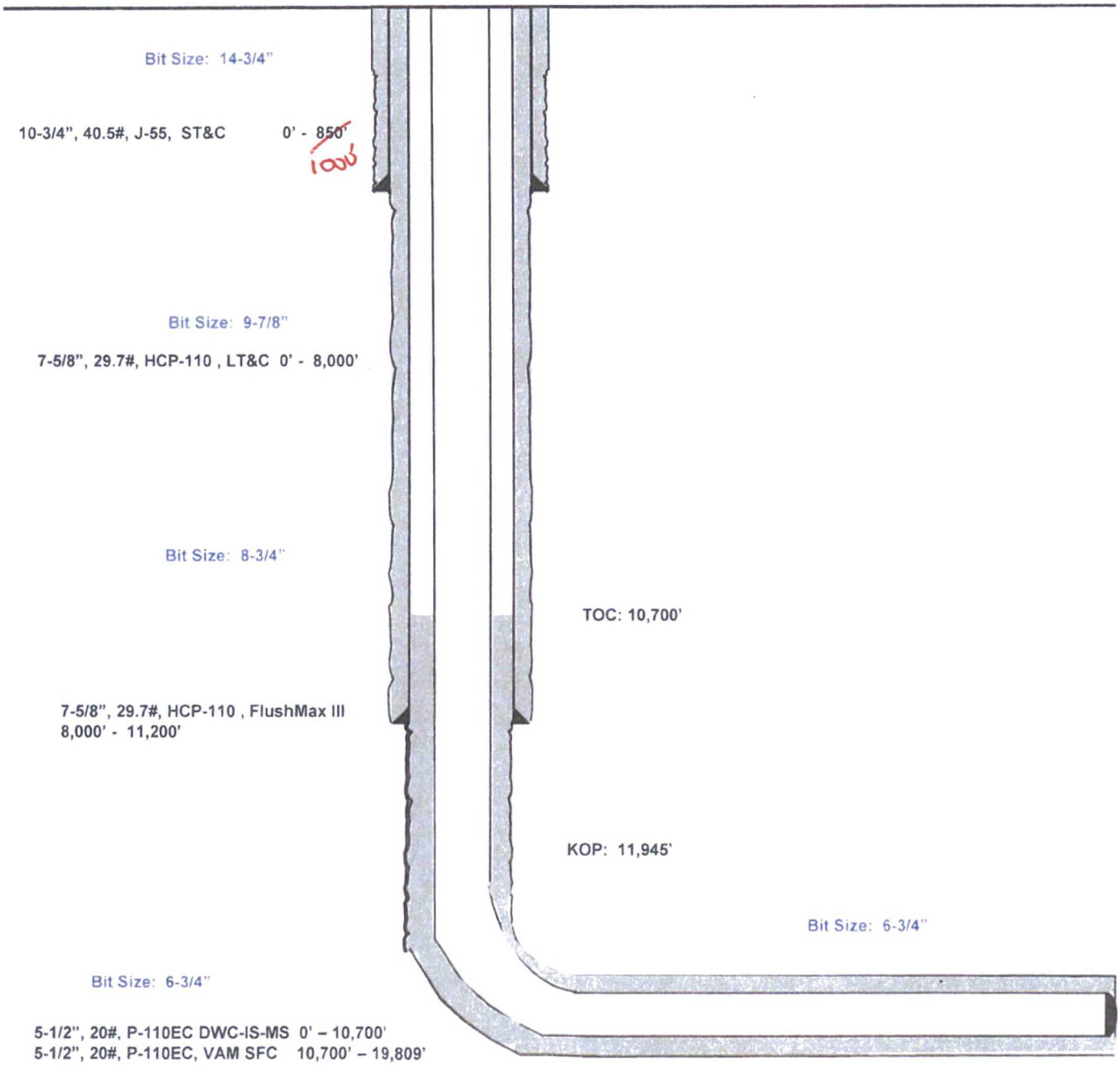
Both the surface and intermediate casing strings will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

# Colgrove 35 Fed Com #702H

360' FSL
245' FWL
Section 35
T-26-S, R-33-E

Lea County, New Mexico
Proposed Wellbore
Revised 3/21/17
API: 30-025-42983

KB: 3,350'
GL: 3,320'




Lateral: 19,809' MD, 12,500' TVD
Upper Most Perf:
330' FSL & 995' FWL Sec. 35
Lower Most Perf:
330' FNL & 990' FWL Sec. 26
BH Location: 230' FNL & 990' FWL
Section 26
T-26-S, R-33-E

eog resources

Lea County, NM (NAD 27 NME)

Colgrove 35 Fed Com #702H

Plan #0.2

Azimuths to Grid North
True North: -0.41°
Magnetic North: 6.73°

Magnetic Field
Strength: 48013.4snT
Dip Angle: 59.89°
Date: 6/18/2015
Model: IGRF2015

To convert a Magnetic Direction to a Grid Direction, Add 6.73°
To convert a Magnetic Direction to a True Direction, Add 7.14° East
To convert a True Direction to a Grid Direction, Subtract 0.41°

PROJECT DETAILS: Lea County, NM (NAD 27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

WELL DETAILS: #702H

| Ground Level | | | |
|---|---|---|---|
| KB = 25 @ 3345.0usft | 3320.0 | | |
| Northing | Easting | Latitude | Longitude |
| 365015.00 | 742712.00 | 32° 0' 4.046 N | 103° 33' 1.365 W |

SECTION DETAILS

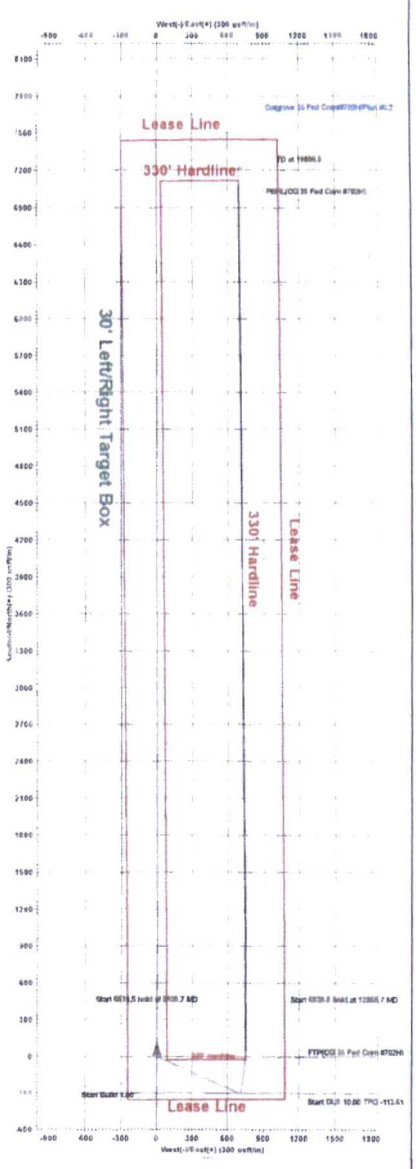
| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 4500.0 | 0.00 | 0.00 | 4500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 5109.7 | 6.10 | 113.25 | 5108.5 | -12.8 | 29.8 | 1.00 | 113.25 | -10.3 | |
| 4 | 11945.2 | 6.10 | 113.25 | 11905.4 | -299.4 | 696.8 | 0.00 | 0.00 | -240.5 | |
| 5 | 12869.7 | 90.00 | 359.52 | 12500.0 | 273.5 | 750.1 | 10.00 | -113.61 | 334.8 | |
| 6 | 19809.5 | 90.00 | 359.52 | 12500.0 | 7213.0 | 692.0 | 0.00 | 0.00 | 7245.6 | PBHL(CG 35 Fed Com #702H) |

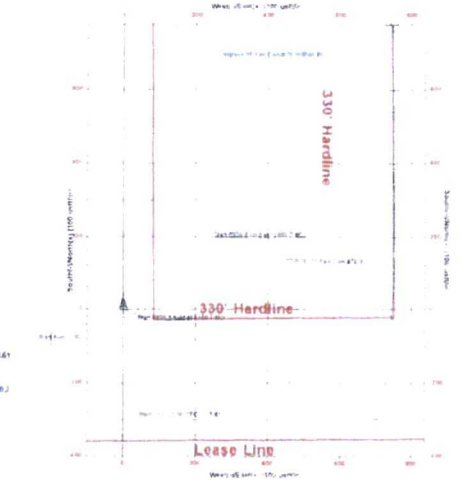
CASING DETAILS

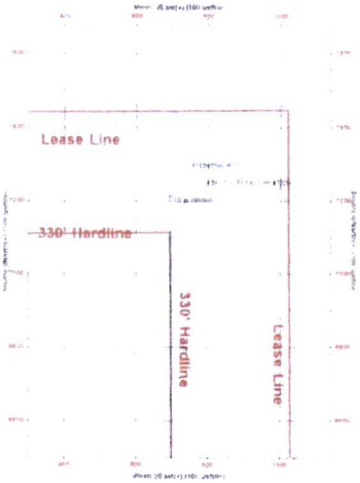
No casing data is available

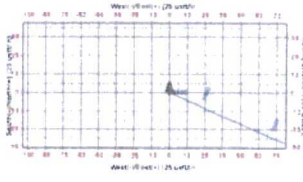
WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

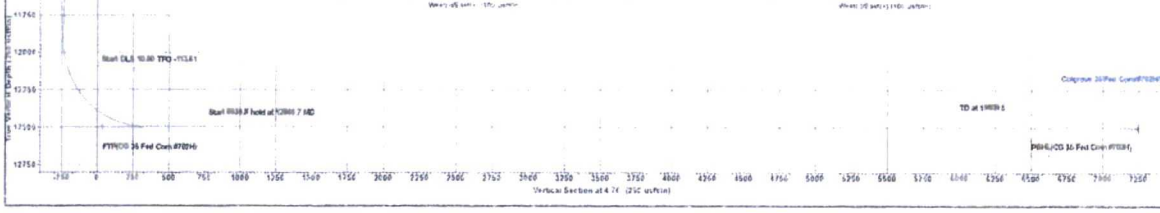
| Name | TVD | +N/-S | +E/-W | Northing | Easting |
|---|---|---|---|---|---|
| PBHL(CG 35 Fed Com #702H) | 12500.0 | 7213.0 | 692.0 | 372278.00 | 743404.00 |
| FTP(CG 35 Fed Com #702H) | 12500.0 | 25.0 | 750.0 | 364990.00 | 743462.00 |





# EOG Resources - Midland

Lea County, NM (NAD 27 NME)
Colgrove 35 Fed Com
#702H

OH

Plan: Plan #0.2

# Standard Planning Report

21 March, 2017

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

| | | | |
|---|---|---|---|
| **Project** | Lea County, NM (NAD 27 NME) | | |
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Site** | Colgrove 35 Fed Com | | | | |
| **Site Position:** | | **Northing:** | 365,015.00 usft | **Latitude:** | 32° 0' 4.048 N |
| **From:** | Map | **Easting:** | 742,682.00 usft | **Longitude:** | 103° 33' 1.713 W |
| **Position Uncertainty:** | 0.0 usft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.41 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well** | #702H | | | | | |
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 365,015.00 usft | **Latitude:** | 32° 0' 4.046 N |
| | **+E/-W** | 30.0 usft | **Easting:** | 742,712.00 usft | **Longitude:** | 103° 33' 1.365 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | 0.0 usft | **Ground Level:** | 3,320.0 usft |

| | | | | | |
|---|---|---|---|---|---|
| **Wellbore** | OH | | | | |
| **Magnetics** | **Model Name** | **Sample Date** | **Declination (°)** | **Dip Angle (°)** | **Field Strength (nT)** |
| | IGRF2015 | 6/18/2015 | 7.14 | 59.89 | 48,013 |

| | | | | | |
|---|---|---|---|---|---|
| **Design** | Plan #0.2 | | | | |
| **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 | 4.76 | |

**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 | |
| 4,500.0 | 0.00 | 0.00 | 4,500.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 5,109.7 | 6.10 | 113.25 | 5,108.5 | -12.8 | 29.8 | 1.00 | 1.00 | 0.00 | 113.25 | |
| 11,945.2 | 6.10 | 113.25 | 11,905.4 | -299.4 | 696.8 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 12,869.7 | 90.00 | 359.52 | 12,500.0 | 273.5 | 750.1 | 10.00 | 9.08 | -12.30 | -113.61 | |
| 19,809.5 | 90.00 | 359.52 | 12,500.0 | 7,213.0 | 692.0 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL(CG 35 Fed Co |

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

**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 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,400.0 | 0.00 | 0.00 | 1,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,500.0 | 0.00 | 0.00 | 1,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,600.0 | 0.00 | 0.00 | 1,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,700.0 | 0.00 | 0.00 | 1,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,800.0 | 0.00 | 0.00 | 1,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 1,900.0 | 0.00 | 0.00 | 1,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,000.0 | 0.00 | 0.00 | 2,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,100.0 | 0.00 | 0.00 | 2,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,200.0 | 0.00 | 0.00 | 2,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,300.0 | 0.00 | 0.00 | 2,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,400.0 | 0.00 | 0.00 | 2,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,500.0 | 0.00 | 0.00 | 2,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,600.0 | 0.00 | 0.00 | 2,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,700.0 | 0.00 | 0.00 | 2,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,800.0 | 0.00 | 0.00 | 2,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2,900.0 | 0.00 | 0.00 | 2,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,000.0 | 0.00 | 0.00 | 3,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,100.0 | 0.00 | 0.00 | 3,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,200.0 | 0.00 | 0.00 | 3,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,300.0 | 0.00 | 0.00 | 3,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,400.0 | 0.00 | 0.00 | 3,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,500.0 | 0.00 | 0.00 | 3,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,600.0 | 0.00 | 0.00 | 3,600.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,700.0 | 0.00 | 0.00 | 3,700.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,800.0 | 0.00 | 0.00 | 3,800.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 3,900.0 | 0.00 | 0.00 | 3,900.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,000.0 | 0.00 | 0.00 | 4,000.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,100.0 | 0.00 | 0.00 | 4,100.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,200.0 | 0.00 | 0.00 | 4,200.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,300.0 | 0.00 | 0.00 | 4,300.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,400.0 | 0.00 | 0.00 | 4,400.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,500.0 | 0.00 | 0.00 | 4,500.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 4,600.0 | 1.00 | 113.25 | 4,600.0 | -0.3 | 0.8 | -0.3 | 1.00 | 1.00 | 0.00 |
| 4,700.0 | 2.00 | 113.25 | 4,700.0 | -1.4 | 3.2 | -1.1 | 1.00 | 1.00 | 0.00 |
| 4,800.0 | 3.00 | 113.25 | 4,799.9 | -3.1 | 7.2 | -2.5 | 1.00 | 1.00 | 0.00 |
| 4,900.0 | 4.00 | 113.25 | 4,899.7 | -5.5 | 12.8 | -4.4 | 1.00 | 1.00 | 0.00 |
| 5,000.0 | 5.00 | 113.25 | 4,999.4 | -8.6 | 20.0 | -6.9 | 1.00 | 1.00 | 0.00 |
| 5,109.7 | 6.10 | 113.25 | 5,108.5 | -12.8 | 29.8 | -10.3 | 1.00 | 1.00 | 0.00 |
| 5,200.0 | 6.10 | 113.25 | 5,198.3 | -16.6 | 38.6 | -13.3 | 0.00 | 0.00 | 0.00 |
| 5,300.0 | 6.10 | 113.25 | 5,297.8 | -20.8 | 48.3 | -16.7 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

**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 | 6.10 | 113.25 | 5,397.2 | -25.0 | 58.1 | -20.1 | 0.00 | 0.00 | 0.00 |
| 5,500.0 | 6.10 | 113.25 | 5,496.6 | -29.2 | 67.9 | -23.4 | 0.00 | 0.00 | 0.00 |
| 5,600.0 | 6.10 | 113.25 | 5,596.1 | -33.4 | 77.6 | -26.8 | 0.00 | 0.00 | 0.00 |
| 5,700.0 | 6.10 | 113.25 | 5,695.5 | -37.5 | 87.4 | -30.2 | 0.00 | 0.00 | 0.00 |
| 5,800.0 | 6.10 | 113.25 | 5,794.9 | -41.7 | 97.1 | -33.5 | 0.00 | 0.00 | 0.00 |
| 5,900.0 | 6.10 | 113.25 | 5,894.4 | -45.9 | 106.9 | -36.9 | 0.00 | 0.00 | 0.00 |
| 6,000.0 | 6.10 | 113.25 | 5,993.8 | -50.1 | 116.7 | -40.3 | 0.00 | 0.00 | 0.00 |
| 6,100.0 | 6.10 | 113.25 | 6,093.2 | -54.3 | 126.4 | -43.6 | 0.00 | 0.00 | 0.00 |
| 6,200.0 | 6.10 | 113.25 | 6,192.7 | -58.5 | 136.2 | -47.0 | 0.00 | 0.00 | 0.00 |
| 6,300.0 | 6.10 | 113.25 | 6,292.1 | -62.7 | 145.9 | -50.4 | 0.00 | 0.00 | 0.00 |
| 6,400.0 | 6.10 | 113.25 | 6,391.6 | -66.9 | 155.7 | -53.7 | 0.00 | 0.00 | 0.00 |
| 6,500.0 | 6.10 | 113.25 | 6,491.0 | -71.1 | 165.4 | -57.1 | 0.00 | 0.00 | 0.00 |
| 6,600.0 | 6.10 | 113.25 | 6,590.4 | -75.3 | 175.2 | -60.5 | 0.00 | 0.00 | 0.00 |
| 6,700.0 | 6.10 | 113.25 | 6,689.9 | -79.5 | 185.0 | -63.8 | 0.00 | 0.00 | 0.00 |
| 6,800.0 | 6.10 | 113.25 | 6,789.3 | -83.7 | 194.7 | -67.2 | 0.00 | 0.00 | 0.00 |
| 6,900.0 | 6.10 | 113.25 | 6,888.7 | -87.9 | 204.5 | -70.6 | 0.00 | 0.00 | 0.00 |
| 7,000.0 | 6.10 | 113.25 | 6,988.2 | -92.1 | 214.2 | -73.9 | 0.00 | 0.00 | 0.00 |
| 7,100.0 | 6.10 | 113.25 | 7,087.6 | -96.3 | 224.0 | -77.3 | 0.00 | 0.00 | 0.00 |
| 7,200.0 | 6.10 | 113.25 | 7,187.0 | -100.4 | 233.8 | -80.7 | 0.00 | 0.00 | 0.00 |
| 7,300.0 | 6.10 | 113.25 | 7,286.5 | -104.6 | 243.5 | -84.1 | 0.00 | 0.00 | 0.00 |
| 7,400.0 | 6.10 | 113.25 | 7,385.9 | -108.8 | 253.3 | -87.4 | 0.00 | 0.00 | 0.00 |
| 7,500.0 | 6.10 | 113.25 | 7,485.3 | -113.0 | 263.0 | -90.8 | 0.00 | 0.00 | 0.00 |
| 7,600.0 | 6.10 | 113.25 | 7,584.8 | -117.2 | 272.8 | -94.2 | 0.00 | 0.00 | 0.00 |
| 7,700.0 | 6.10 | 113.25 | 7,684.2 | -121.4 | 282.5 | -97.5 | 0.00 | 0.00 | 0.00 |
| 7,800.0 | 6.10 | 113.25 | 7,783.6 | -125.6 | 292.3 | -100.9 | 0.00 | 0.00 | 0.00 |
| 7,900.0 | 6.10 | 113.25 | 7,883.1 | -129.8 | 302.1 | -104.3 | 0.00 | 0.00 | 0.00 |
| 8,000.0 | 6.10 | 113.25 | 7,982.5 | -134.0 | 311.8 | -107.6 | 0.00 | 0.00 | 0.00 |
| 8,100.0 | 6.10 | 113.25 | 8,081.9 | -138.2 | 321.6 | -111.0 | 0.00 | 0.00 | 0.00 |
| 8,200.0 | 6.10 | 113.25 | 8,181.4 | -142.4 | 331.3 | -114.4 | 0.00 | 0.00 | 0.00 |
| 8,300.0 | 6.10 | 113.25 | 8,280.8 | -146.6 | 341.1 | -117.7 | 0.00 | 0.00 | 0.00 |
| 8,400.0 | 6.10 | 113.25 | 8,380.2 | -150.8 | 350.8 | -121.1 | 0.00 | 0.00 | 0.00 |
| 8,500.0 | 6.10 | 113.25 | 8,479.7 | -155.0 | 360.6 | -124.5 | 0.00 | 0.00 | 0.00 |
| 8,600.0 | 6.10 | 113.25 | 8,579.1 | -159.2 | 370.4 | -127.8 | 0.00 | 0.00 | 0.00 |
| 8,700.0 | 6.10 | 113.25 | 8,678.5 | -163.3 | 380.1 | -131.2 | 0.00 | 0.00 | 0.00 |
| 8,800.0 | 6.10 | 113.25 | 8,778.0 | -167.5 | 389.9 | -134.6 | 0.00 | 0.00 | 0.00 |
| 8,900.0 | 6.10 | 113.25 | 8,877.4 | -171.7 | 399.6 | -137.9 | 0.00 | 0.00 | 0.00 |
| 9,000.0 | 6.10 | 113.25 | 8,976.8 | -175.9 | 409.4 | -141.3 | 0.00 | 0.00 | 0.00 |
| 9,100.0 | 6.10 | 113.25 | 9,076.3 | -180.1 | 419.2 | -144.7 | 0.00 | 0.00 | 0.00 |
| 9,200.0 | 6.10 | 113.25 | 9,175.7 | -184.3 | 428.9 | -148.0 | 0.00 | 0.00 | 0.00 |
| 9,300.0 | 6.10 | 113.25 | 9,275.1 | -188.5 | 438.7 | -151.4 | 0.00 | 0.00 | 0.00 |
| 9,400.0 | 6.10 | 113.25 | 9,374.6 | -192.7 | 448.4 | -154.8 | 0.00 | 0.00 | 0.00 |
| 9,500.0 | 6.10 | 113.25 | 9,474.0 | -196.9 | 458.2 | -158.2 | 0.00 | 0.00 | 0.00 |
| 9,600.0 | 6.10 | 113.25 | 9,573.5 | -201.1 | 467.9 | -161.5 | 0.00 | 0.00 | 0.00 |
| 9,700.0 | 6.10 | 113.25 | 9,672.9 | -205.3 | 477.7 | -164.9 | 0.00 | 0.00 | 0.00 |
| 9,800.0 | 6.10 | 113.25 | 9,772.3 | -209.5 | 487.5 | -168.3 | 0.00 | 0.00 | 0.00 |
| 9,900.0 | 6.10 | 113.25 | 9,871.8 | -213.7 | 497.2 | -171.6 | 0.00 | 0.00 | 0.00 |
| 10,000.0 | 6.10 | 113.25 | 9,971.2 | -217.9 | 507.0 | -175.0 | 0.00 | 0.00 | 0.00 |
| 10,100.0 | 6.10 | 113.25 | 10,070.6 | -222.0 | 516.7 | -178.4 | 0.00 | 0.00 | 0.00 |
| 10,200.0 | 6.10 | 113.25 | 10,170.1 | -226.2 | 526.5 | -181.7 | 0.00 | 0.00 | 0.00 |
| 10,300.0 | 6.10 | 113.25 | 10,269.5 | -230.4 | 536.3 | -185.1 | 0.00 | 0.00 | 0.00 |
| 10,400.0 | 6.10 | 113.25 | 10,368.9 | -234.6 | 546.0 | -188.5 | 0.00 | 0.00 | 0.00 |
| 10,500.0 | 6.10 | 113.25 | 10,468.4 | -238.8 | 555.8 | -191.8 | 0.00 | 0.00 | 0.00 |
| 10,600.0 | 6.10 | 113.25 | 10,567.8 | -243.0 | 565.5 | -195.2 | 0.00 | 0.00 | 0.00 |
| 10,700.0 | 6.10 | 113.25 | 10,667.2 | -247.2 | 575.3 | -198.6 | 0.00 | 0.00 | 0.00 |

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|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|---|---|---|---|---|---|---|---|---|---|
| 10,800.0 | 6.10 | 113.25 | 10,766.7 | -251.4 | 585.0 | -201.9 | 0.00 | 0.00 | 0.00 |
| 10,900.0 | 6.10 | 113.25 | 10,866.1 | -255.6 | 594.8 | -205.3 | 0.00 | 0.00 | 0.00 |
| 11,000.0 | 6.10 | 113.25 | 10,965.5 | -259.8 | 604.6 | -208.7 | 0.00 | 0.00 | 0.00 |
| 11,100.0 | 6.10 | 113.25 | 11,065.0 | -264.0 | 614.3 | -212.0 | 0.00 | 0.00 | 0.00 |
| 11,200.0 | 6.10 | 113.25 | 11,164.4 | -268.2 | 624.1 | -215.4 | 0.00 | 0.00 | 0.00 |
| 11,300.0 | 6.10 | 113.25 | 11,263.8 | -272.4 | 633.8 | -218.8 | 0.00 | 0.00 | 0.00 |
| 11,400.0 | 6.10 | 113.25 | 11,363.3 | -276.6 | 643.6 | -222.1 | 0.00 | 0.00 | 0.00 |
| 11,500.0 | 6.10 | 113.25 | 11,462.7 | -280.8 | 653.4 | -225.5 | 0.00 | 0.00 | 0.00 |
| 11,600.0 | 6.10 | 113.25 | 11,562.1 | -284.9 | 663.1 | -228.9 | 0.00 | 0.00 | 0.00 |
| 11,700.0 | 6.10 | 113.25 | 11,661.6 | -289.1 | 672.9 | -232.3 | 0.00 | 0.00 | 0.00 |
| 11,800.0 | 6.10 | 113.25 | 11,761.0 | -293.3 | 682.6 | -235.6 | 0.00 | 0.00 | 0.00 |
| 11,900.0 | 6.10 | 113.25 | 11,860.4 | -297.5 | 692.4 | -239.0 | 0.00 | 0.00 | 0.00 |
| 11,945.2 | 6.10 | 113.25 | 11,905.4 | -299.4 | 696.8 | -240.5 | 0.00 | 0.00 | 0.00 |
| 11,950.0 | 5.92 | 108.98 | 11,910.2 | -299.6 | 697.3 | -240.7 | 10.00 | -3.67 | -88.91 |
| 12,000.0 | 6.35 | 60.98 | 11,959.9 | -299.1 | 702.1 | -239.7 | 10.00 | 0.86 | -96.02 |
| 12,050.0 | 9.77 | 34.12 | 12,009.4 | -294.2 | 706.9 | -234.5 | 10.00 | 6.84 | -53.72 |
| 12,100.0 | 14.16 | 22.33 | 12,058.3 | -285.1 | 711.6 | -225.0 | 10.00 | 8.77 | -23.58 |
| 12,150.0 | 18.85 | 16.17 | 12,106.3 | -271.6 | 716.2 | -211.2 | 10.00 | 9.38 | -12.32 |
| 12,200.0 | 23.66 | 12.41 | 12,152.8 | -254.1 | 720.6 | -193.3 | 10.00 | 9.63 | -7.50 |
| 12,250.0 | 28.54 | 9.88 | 12,197.7 | -232.5 | 724.8 | -171.5 | 10.00 | 9.75 | -5.07 |
| 12,300.0 | 33.45 | 8.03 | 12,240.6 | -207.1 | 728.8 | -145.8 | 10.00 | 9.82 | -3.69 |
| 12,350.0 | 38.38 | 6.61 | 12,281.1 | -178.0 | 732.5 | -116.5 | 10.00 | 9.86 | -2.84 |
| 12,400.0 | 43.32 | 5.47 | 12,318.9 | -145.5 | 735.9 | -83.9 | 10.00 | 9.89 | -2.28 |
| 12,450.0 | 48.27 | 4.52 | 12,353.7 | -109.8 | 739.0 | -48.0 | 10.00 | 9.91 | -1.90 |
| 12,500.0 | 53.23 | 3.71 | 12,385.4 | -71.2 | 741.8 | -9.3 | 10.00 | 9.92 | -1.63 |
| 12,550.0 | 58.20 | 3.00 | 12,413.5 | -29.9 | 744.2 | 32.0 | 10.00 | 9.93 | -1.43 |
| 12,596.9 | 62.86 | 2.39 | 12,436.6 | 10.8 | 746.1 | 72.8 | 10.00 | 9.94 | -1.29 |
| **FTP(CG 35 Fed Com #702H)** | | | | | | | | | |
| 12,600.0 | 63.17 | 2.35 | 12,438.0 | 13.6 | 746.3 | 75.5 | 10.00 | 9.94 | -1.23 |
| 12,650.0 | 68.14 | 1.77 | 12,458.6 | 59.1 | 747.9 | 121.0 | 10.00 | 9.94 | -1.17 |
| 12,700.0 | 73.11 | 1.22 | 12,475.2 | 106.2 | 749.1 | 168.1 | 10.00 | 9.95 | -1.09 |
| 12,750.0 | 78.09 | 0.70 | 12,487.6 | 154.6 | 749.9 | 216.4 | 10.00 | 9.95 | -1.04 |
| 12,800.0 | 83.06 | 0.20 | 12,495.8 | 204.0 | 750.3 | 265.6 | 10.00 | 9.95 | -1.00 |
| 12,850.0 | 88.04 | 359.71 | 12,499.7 | 253.8 | 750.3 | 315.2 | 10.00 | 9.95 | -0.98 |
| 12,869.7 | 90.00 | 359.52 | 12,500.0 | 273.5 | 750.1 | 334.8 | 10.00 | 9.95 | -0.97 |
| 12,900.0 | 90.00 | 359.52 | 12,500.0 | 303.8 | 749.9 | 365.0 | 0.00 | 0.00 | 0.00 |
| 13,000.0 | 90.00 | 359.52 | 12,500.0 | 403.8 | 749.0 | 464.6 | 0.00 | 0.00 | 0.00 |
| 13,100.0 | 90.00 | 359.52 | 12,500.0 | 503.8 | 748.2 | 564.2 | 0.00 | 0.00 | 0.00 |
| 13,200.0 | 90.00 | 359.52 | 12,500.0 | 603.8 | 747.4 | 663.8 | 0.00 | 0.00 | 0.00 |
| 13,300.0 | 90.00 | 359.52 | 12,500.0 | 703.8 | 746.5 | 763.3 | 0.00 | 0.00 | 0.00 |
| 13,400.0 | 90.00 | 359.52 | 12,500.0 | 803.8 | 745.7 | 862.9 | 0.00 | 0.00 | 0.00 |
| 13,500.0 | 90.00 | 359.52 | 12,500.0 | 903.8 | 744.9 | 962.5 | 0.00 | 0.00 | 0.00 |
| 13,600.0 | 90.00 | 359.52 | 12,500.0 | 1,003.8 | 744.0 | 1,062.1 | 0.00 | 0.00 | 0.00 |
| 13,700.0 | 90.00 | 359.52 | 12,500.0 | 1,103.8 | 743.2 | 1,161.7 | 0.00 | 0.00 | 0.00 |
| 13,800.0 | 90.00 | 359.52 | 12,500.0 | 1,203.7 | 742.3 | 1,261.2 | 0.00 | 0.00 | 0.00 |
| 13,900.0 | 90.00 | 359.52 | 12,500.0 | 1,303.7 | 741.5 | 1,360.8 | 0.00 | 0.00 | 0.00 |
| 14,000.0 | 90.00 | 359.52 | 12,500.0 | 1,403.7 | 740.7 | 1,460.4 | 0.00 | 0.00 | 0.00 |
| 14,100.0 | 90.00 | 359.52 | 12,500.0 | 1,503.7 | 739.8 | 1,560.0 | 0.00 | 0.00 | 0.00 |
| 14,200.0 | 90.00 | 359.52 | 12,500.0 | 1,603.7 | 739.0 | 1,659.6 | 0.00 | 0.00 | 0.00 |
| 14,300.0 | 90.00 | 359.52 | 12,500.0 | 1,703.7 | 738.2 | 1,759.2 | 0.00 | 0.00 | 0.00 |
| 14,400.0 | 90.00 | 359.52 | 12,500.0 | 1,803.7 | 737.3 | 1,858.7 | 0.00 | 0.00 | 0.00 |
| 14,500.0 | 90.00 | 359.52 | 12,500.0 | 1,903.7 | 736.5 | 1,958.3 | 0.00 | 0.00 | 0.00 |
| 14,600.0 | 90.00 | 359.52 | 12,500.0 | 2,003.7 | 735.6 | 2,057.9 | 0.00 | 0.00 | 0.00 |

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|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

**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) |
|---|---|---|---|---|---|---|---|---|---|
| 14,700.0 | 90.00 | 359.52 | 12,500.0 | 2,103.7 | 734.8 | 2,157.5 | 0.00 | 0.00 | 0.00 |
| 14,800.0 | 90.00 | 359.52 | 12,500.0 | 2,203.7 | 734.0 | 2,257.1 | 0.00 | 0.00 | 0.00 |
| 14,900.0 | 90.00 | 359.52 | 12,500.0 | 2,303.7 | 733.1 | 2,356.6 | 0.00 | 0.00 | 0.00 |
| 15,000.0 | 90.00 | 359.52 | 12,500.0 | 2,403.7 | 732.3 | 2,456.2 | 0.00 | 0.00 | 0.00 |
| 15,100.0 | 90.00 | 359.52 | 12,500.0 | 2,503.7 | 731.5 | 2,555.8 | 0.00 | 0.00 | 0.00 |
| 15,200.0 | 90.00 | 359.52 | 12,500.0 | 2,603.7 | 730.6 | 2,655.4 | 0.00 | 0.00 | 0.00 |
| 15,300.0 | 90.00 | 359.52 | 12,500.0 | 2,703.7 | 729.8 | 2,755.0 | 0.00 | 0.00 | 0.00 |
| 15,400.0 | 90.00 | 359.52 | 12,500.0 | 2,803.7 | 728.9 | 2,854.6 | 0.00 | 0.00 | 0.00 |
| 15,500.0 | 90.00 | 359.52 | 12,500.0 | 2,903.7 | 728.1 | 2,954.1 | 0.00 | 0.00 | 0.00 |
| 15,600.0 | 90.00 | 359.52 | 12,500.0 | 3,003.7 | 727.3 | 3,053.7 | 0.00 | 0.00 | 0.00 |
| 15,700.0 | 90.00 | 359.52 | 12,500.0 | 3,103.7 | 726.4 | 3,153.3 | 0.00 | 0.00 | 0.00 |
| 15,800.0 | 90.00 | 359.52 | 12,500.0 | 3,203.7 | 725.6 | 3,252.9 | 0.00 | 0.00 | 0.00 |
| 15,900.0 | 90.00 | 359.52 | 12,500.0 | 3,303.7 | 724.8 | 3,352.5 | 0.00 | 0.00 | 0.00 |
| 16,000.0 | 90.00 | 359.52 | 12,500.0 | 3,403.7 | 723.9 | 3,452.0 | 0.00 | 0.00 | 0.00 |
| 16,100.0 | 90.00 | 359.52 | 12,500.0 | 3,503.7 | 723.1 | 3,551.6 | 0.00 | 0.00 | 0.00 |
| 16,200.0 | 90.00 | 359.52 | 12,500.0 | 3,603.7 | 722.2 | 3,651.2 | 0.00 | 0.00 | 0.00 |
| 16,300.0 | 90.00 | 359.52 | 12,500.0 | 3,703.7 | 721.4 | 3,750.8 | 0.00 | 0.00 | 0.00 |
| 16,400.0 | 90.00 | 359.52 | 12,500.0 | 3,803.7 | 720.6 | 3,850.4 | 0.00 | 0.00 | 0.00 |
| 16,500.0 | 90.00 | 359.52 | 12,500.0 | 3,903.7 | 719.7 | 3,949.9 | 0.00 | 0.00 | 0.00 |
| 16,600.0 | 90.00 | 359.52 | 12,500.0 | 4,003.6 | 718.9 | 4,049.5 | 0.00 | 0.00 | 0.00 |
| 16,700.0 | 90.00 | 359.52 | 12,500.0 | 4,103.6 | 718.0 | 4,149.1 | 0.00 | 0.00 | 0.00 |
| 16,800.0 | 90.00 | 359.52 | 12,500.0 | 4,203.6 | 717.2 | 4,248.7 | 0.00 | 0.00 | 0.00 |
| 16,900.0 | 90.00 | 359.52 | 12,500.0 | 4,303.6 | 716.4 | 4,348.3 | 0.00 | 0.00 | 0.00 |
| 17,000.0 | 90.00 | 359.52 | 12,500.0 | 4,403.6 | 715.5 | 4,447.9 | 0.00 | 0.00 | 0.00 |
| 17,100.0 | 90.00 | 359.52 | 12,500.0 | 4,503.6 | 714.7 | 4,547.4 | 0.00 | 0.00 | 0.00 |
| 17,200.0 | 90.00 | 359.52 | 12,500.0 | 4,603.6 | 713.9 | 4,647.0 | 0.00 | 0.00 | 0.00 |
| 17,300.0 | 90.00 | 359.52 | 12,500.0 | 4,703.6 | 713.0 | 4,746.6 | 0.00 | 0.00 | 0.00 |
| 17,400.0 | 90.00 | 359.52 | 12,500.0 | 4,803.6 | 712.2 | 4,846.2 | 0.00 | 0.00 | 0.00 |
| 17,500.0 | 90.00 | 359.52 | 12,500.0 | 4,903.6 | 711.3 | 4,945.8 | 0.00 | 0.00 | 0.00 |
| 17,600.0 | 90.00 | 359.52 | 12,500.0 | 5,003.6 | 710.5 | 5,045.3 | 0.00 | 0.00 | 0.00 |
| 17,700.0 | 90.00 | 359.52 | 12,500.0 | 5,103.6 | 709.7 | 5,144.9 | 0.00 | 0.00 | 0.00 |
| 17,800.0 | 90.00 | 359.52 | 12,500.0 | 5,203.6 | 708.8 | 5,244.5 | 0.00 | 0.00 | 0.00 |
| 17,900.0 | 90.00 | 359.52 | 12,500.0 | 5,303.6 | 708.0 | 5,344.1 | 0.00 | 0.00 | 0.00 |
| 18,000.0 | 90.00 | 359.52 | 12,500.0 | 5,403.6 | 707.2 | 5,443.7 | 0.00 | 0.00 | 0.00 |
| 18,100.0 | 90.00 | 359.52 | 12,500.0 | 5,503.6 | 706.3 | 5,543.2 | 0.00 | 0.00 | 0.00 |
| 18,200.0 | 90.00 | 359.52 | 12,500.0 | 5,603.6 | 705.5 | 5,642.8 | 0.00 | 0.00 | 0.00 |
| 18,300.0 | 90.00 | 359.52 | 12,500.0 | 5,703.6 | 704.6 | 5,742.4 | 0.00 | 0.00 | 0.00 |
| 18,400.0 | 90.00 | 359.52 | 12,500.0 | 5,803.6 | 703.8 | 5,842.0 | 0.00 | 0.00 | 0.00 |
| 18,500.0 | 90.00 | 359.52 | 12,500.0 | 5,903.6 | 703.0 | 5,941.6 | 0.00 | 0.00 | 0.00 |
| 18,600.0 | 90.00 | 359.52 | 12,500.0 | 6,003.6 | 702.1 | 6,041.2 | 0.00 | 0.00 | 0.00 |
| 18,700.0 | 90.00 | 359.52 | 12,500.0 | 6,103.6 | 701.3 | 6,140.7 | 0.00 | 0.00 | 0.00 |
| 18,800.0 | 90.00 | 359.52 | 12,500.0 | 6,203.6 | 700.5 | 6,240.3 | 0.00 | 0.00 | 0.00 |
| 18,900.0 | 90.00 | 359.52 | 12,500.0 | 6,303.6 | 699.6 | 6,339.9 | 0.00 | 0.00 | 0.00 |
| 19,000.0 | 90.00 | 359.52 | 12,500.0 | 6,403.6 | 698.8 | 6,439.5 | 0.00 | 0.00 | 0.00 |
| 19,100.0 | 90.00 | 359.52 | 12,500.0 | 6,503.6 | 697.9 | 6,539.1 | 0.00 | 0.00 | 0.00 |
| 19,200.0 | 90.00 | 359.52 | 12,500.0 | 6,603.6 | 697.1 | 6,638.6 | 0.00 | 0.00 | 0.00 |
| 19,300.0 | 90.00 | 359.52 | 12,500.0 | 6,703.6 | 696.3 | 6,738.2 | 0.00 | 0.00 | 0.00 |
| 19,400.0 | 90.00 | 359.52 | 12,500.0 | 6,803.6 | 695.4 | 6,837.8 | 0.00 | 0.00 | 0.00 |
| 19,500.0 | 90.00 | 359.52 | 12,500.0 | 6,903.5 | 694.6 | 6,937.4 | 0.00 | 0.00 | 0.00 |
| 19,600.0 | 90.00 | 359.52 | 12,500.0 | 7,003.5 | 693.8 | 7,037.0 | 0.00 | 0.00 | 0.00 |
| 19,700.0 | 90.00 | 359.52 | 12,500.0 | 7,103.5 | 692.9 | 7,136.5 | 0.00 | 0.00 | 0.00 |
| 19,809.5 | 90.00 | 359.52 | 12,500.0 | 7,213.0 | 692.0 | 7,245.6 | 0.00 | 0.00 | 0.00 |

**PBHL(CG 35 Fed Com #702H)**

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well #702H |
| **Company:** | EOG Resources - Midland | **TVD Reference:** | KB = 25 @ 3345.0usft |
| **Project:** | Lea County, NM (NAD 27 NME) | **MD Reference:** | KB = 25 @ 3345.0usft |
| **Site:** | Colgrove 35 Fed Com | **North Reference:** | Grid |
| **Well:** | #702H | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | OH | | |
| **Design:** | Plan #0.2 | | |

**Design Targets**

| Target Name<br>- hit/miss target<br>- Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| FTP(CG 35 Fed Com #7<br>- plan misses target center by 72.9usft at 12596.9usft MD (12436.6 TVD, 10.8 N, 746.1 E)<br>- Point | 0.00 | 0.00 | 12,500.0 | -25.0 | 750.0 | 364,990.00 | 743,462.00 | 32° 0' 3.744 N | 103° 32' 52.658 W |
| PBHL(CG 35 Fed Com #<br>- plan hits target center<br>- Point | 0.00 | 0.00 | 12,500.0 | 7,213.0 | 692.0 | 372,228.00 | 743,404.00 | 32° 1' 15.374 N | 103° 32' 52.721 W |

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | EOG Resources |
| LEASE NO.: | NMNM121490 |
| WELL NAME & NO.: | Colgrove 35 Fed Com 702H |
| SURFACE HOLE FOOTAGE: | 360'/S & 245'/W |
| BOTTOM HOLE FOOTAGE | 230'/N & 990'/W SEC 26 |
| LOCATION: | Section 26, T.26 S., R.33 E., NMPM |
| COUNTY: | Lea County, New Mexico |

## A. CASING

**All previous COAs still apply except the following:**

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) for Water Basin:**
**After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

**Risks:**
**Possibility of Water Flows in the Castile and in the Salado**
**Possibility of Lost Circulation in the Rustler, in the Red Beds and in the Delaware**
**Abnormal pressures may be encountered upon penetrating the 3rd Bone Spring Sandstones and the Wolfcamp Formation.**

1. The **10 3/4** inch surface casing shall be set at approximately **1000** feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt)** and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    **b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

    **Formation below the 10 3/4 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

    **Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.**

2. The minimum required fill of cement behind the **7 5/8** inch intermediate is:

    ☒ Cement to surface. If cement does not circulate see A.1.a, c-d above.

    **Formation below the 7 5/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.**

3. The minimum required fill of cement behind the **5 1/2** inch production casing is:

    ☒ Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 19%. Additional cement might be required.**

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.**

    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

**5M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches

500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

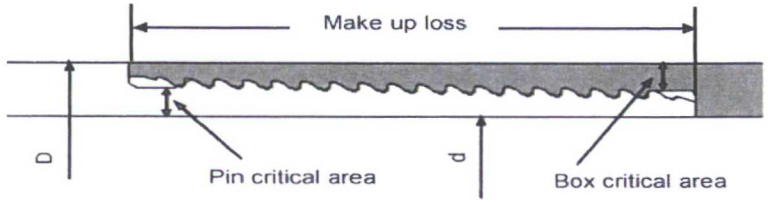
e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **3rd Bone Springs** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

**MHH 04102017**

| Metal One Corp | FLUSHMAX-III Connection Data Sheet | Page | 44-0 |
|---|---|---|---|
| | | Date | 1-Oct-15 |
| | | | |
| | | Rev. | N-0 |




| **Pipe Body** | **Imperial** | | **S.I.** | |
|---|---|---|---|---|
| Grade | P110 | | P110 | |
| Pipe OD ( D ) | 7 5/8 | in | 193.68 | mm |
| Weight | 29.7 | lb/ft | 44.25 | kg/m |
| Actual weight | 29.0 | lb/ft | 43.26 | kg/m |
| Wall thickness ( t ) | 0.375 | in | 9.53 | mm |
| Pipe ID ( d ) | 6.875 | in | 174.63 | mm |
| Pipe body cross section | 8.537 | $in^2$ | 5,508 | $mm^2$ |
| Drift Dia. | 6.750 | in | 171.45 | mm |

| **Connection** | | | | |
|---|---|---|---|---|
| Box OD ( W ) | 7.625 | in | 193.68 | mm |
| PIN ID | 6.875 | in | 174.63 | mm |
| Pin critical area | 4.420 | $in^2$ | 2,852 | $mm^2$ |
| Box critical area | 4.424 | $in^2$ | 2,854 | $mm^2$ |
| Joint load efficiency | 60 | % | 60 | % |
| Make up loss | 3.040 | in | 77.22 | mm |
| Thread taper | 1/16 ( 3/4 in per ft ) | | | |
| Number of threads | 5 thread per in. | | | |

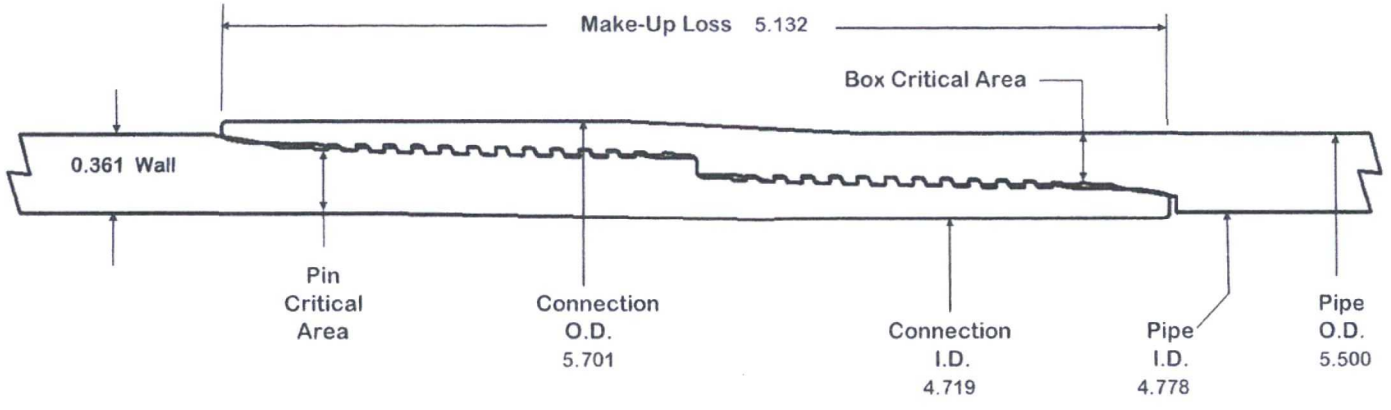
| **Connection Performance Properties** | | | | |
|---|---|---|---|---|
| Tensile Yield load | 563.4 | kips | 2,506 | kN |
| M.I.Y.P. | 7,574 | psi | 52.2 | MPa |
| Collapse strength | 5,350 | psi | 36.9 | MPa |

Note
M.I.Y.P. = Minimum Internal Yield Pressure of the connection

| **Torque Recommended** | | | | |
|---|---|---|---|---|
| Min. | 8,700 | ft-lb | 11,700 | N-m |
| Opti. | 9,700 | ft-lb | 13,100 | N-m |
| Max. | 10,700 | ft-lb | 14,500 | N-m |
| Operational Max. | 23,600 | ft-lb | 32,000 | N-m |

Note : Operational Max. torque can be applied for high torque application

# VAM® SFC




| O.D. | WEIGHT | WALL | GRADE | DRIFT |
|---|---|---|---|---|
| 5.500 | 20.00 | 0.361 | VST P110EC | 4.653 |

## PIPE BODY PROPERTIES

| | | |
|---|---|---|
| Material Grade | VST P110EC | |
| Min. Yield Strength | 125 | ksi |
| Min. Tensile Strength | 135 | ksi |
| Outside Diameter | 5.500 | in |
| Inside Diameter | 4.778 | in |
| Nominal Area | 5.828 | sq.in. |
| Yield Strength | 729 | kips |
| Ultimate Strength | 787 | kips |
| Min Internal Yield | 14,360 | psi |
| *High Collapse | 12,090 | psi |

## CONNECTION PROPERTIES

| | | |
|---|---|---|
| Connection OD | 5.701 | in |
| Connection ID | 4.719 | in |
| Make up Loss | 5.132 | in |
| Box Critical Area | 4.083 | sq.in. |
| %PB Section Area | 70.1% | |
| Pin Critical Area | 4.123 | sq.in. |
| %PB Section Area | 70.7% | |
| Yield Strength | 510 | kips |
| Parting Load | 551 | kips |
| Min Internal Yield | 14,360 | psi |
| *High Collapse | 12,090 | psi |
| Wk Compression | 357 | kips |
| Max Pure Bending | 20 | °/100 ft |

**TORQUE DATA ft-lb**

| min | opt | max |
|---|---|---|
| 8,700 | 9,700 | 10,700 |

Contact: tech.support@vam-usa.com
Ref. Drawing: SI-PD 100414 Rev.B
Date: 14-Jun-16
Time: 2:31 PM

# TECHNICAL SPECIFICATIONS

These specifications are furnished for general information only and are not intended for design purposes. This information is preliminary and may change subject to a final design by VAM-USA Engineering. This is not a controlled document.

**DWC/C-IS MS** *standard* | **Casing** | **5.500" O.D.** | **20.00 lb./ft.** | **VST P-110EC**

| | | |
|---|---|---|
| | | **Material** |
| VST P-110EC | | Grade |
| 125,000 | | Minimum Yield Strength (psi.) |
| 135,000 | | Minimum Ultimate Strength (psi.) |
| | | **Pipe Dimensions** |
| 5.500 | | Nominal Pipe Body OD (in.) |
| 4.778 | | Nominal Pipe Body ID (in.) |
| 0.361 | | Nominal Wall Thickness (in.) |
| 20.00 | | Nominal Weight (lbs./ft.) |
| 19.83 | | Plain End Weight (lbs./ft.) |
| 5.828 | | Nominal Pipe Body Area (sq. in.) |
| | | **Pipe Body Performance Properties** |
| 729,000 | | Minimum Pipe Body Yield Strength (lbs.) |
| 12,090 | | Minimum Collapse Pressure (psi.) |
| 14,360 | | Minimum Internal Yield Pressure (psi.) |
| 13,100 | | Hydrostatic Test Pressure (psi.) |
| | | **Connection Dimensions** |
| 6.115 | | Connection OD (in.) |
| 4.778 | | Connection ID (in.) |
| 4.653 | | Connection Drift Diameter (in.) |
| 4.13 | | Make-up Loss (in.) |
| 5.828 | | Critical Area (sq. in.) |
| 100.0 | | Joint Efficiency (%) |
| | | **Connection Performance Properties** |
| 729,000 | (1) | Joint Strength (lbs.) |
| 26,040 | (2) | Reference String Length (ft.) 1.4 Design Factor |
| 728,000 | (3) | API Joint Strength (lbs.) |
| 729,000 | | Compression Rating (lbs.) |
| 12,090 | | API Collapse Pressure Rating (psi.) |
| 14,360 | (4) | API Internal Pressure Resistance (psi.) |
| 104.2 | | Maximum Uniaxial Bend Rating (degrees/100 ft.) |
| | | **Approximated Field End Torque Values** |
| 16,600 | (5) | Minimum Final Torque (ft.-lbs.) |
| 19,100 | (5) | Maximum Final Torque (ft.-lbs.) |
| 21,600 | (6) | Connection Yield Torque (ft.-lbs.) |

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Phone: (713) 479-3200
Fax: (713) 479-3234
E-mail: VAMUSAsales@na.vallourec.com

(1) Joint Strength is the minimum pipe body yield strength multiplied by the connection critical area.
(2) Reference String Length is the joint strength divided by both the weight in air and the design factor.
(3) API Joint Strength is for reference only. It is calculated from Formulas 42 and 43 in the API Bulletin 5C3.
(4) API Internal Pressure Resistance is calculated from Formulas 31. 32. and 35 in the API Bulletin 5C3.
(5) Torque values are approximated and may be affected by field conditions.
(6) Connection yield torque is not to be exceeded.

*Connection specifications within the control of VAM-USA were correct as of the date printed. Specifications are subject to change without notice. Certain connection specifications are dependent on the mechanical properties of the pipe. Mechanical properties of mill proprietary pipe grades u obtained from mill publications and are subject to change. Properties of mill proprietary grades should be confirmed with the mill. Users are advi to obtain current connection specifications and verify pipe mechanical properties for each application.*