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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

# APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

5. Lease Serial No.
NMNM118726

6. If Indian, Allotee or Tribe Name

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

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

8. Lease Name and Well No. (317731)
ANTIETAM 9 FED COM 709H

2. Name of Operator
EOG RESOURCES INCORPORATED (7377)

9. API Well No.
30-025-44352

3a. Address
1111 Bagby Sky Lobby2 Houston TX 77002

3b. Phone No. *(include area code)*
(713)651-7000

10. Field and Pool, or Exploratory (98180)
RED HILLS / WC-025 S253509D UPPEF

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface NWNE / 220 FNL / 1930 FEL / LAT 32.151746 / LONG -103.574997
At proposed prod. zone SWNE / 2410 FNL / 2297 FEL / LAT 32.1312087 / LONG -103.5762032

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 9 / T25S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*
22 miles

12. County or Parish
LEA

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
330 feet

16. No. of acres in lease
1319.75

17. Spacing Unit dedicated to this well
240

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
280 feet

19. Proposed Depth
12425 feet / 19869 feet

20. BLM/BIA Bond No. on file
FED: NM2308

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3427 feet

22. Approximate date work will start*
01/01/2018

23. Estimated duration
25 days

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Stan Wagner / Ph: (432)686-3689 | 08/25/2017 |

Title
Regulatory Specialsit

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| (Electronic Submission) | Cody Layton / Ph: (575)234-5959 | 01/04/2018 |

| Title | Office |
|---|---|
| Supervisor Multiple Resources | CARLSBAD |

Application approval 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.
Conditions of approval, if any, are attached.

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.

(Continued on page 2)

*(Instructions on page 2)

APPROVED WITH CONDITIONS

Approval Date: 01/04/2018

KZ
01/10/18

Double Sided

OCD Hobbs 17-881

AFMSS

U.S. Department of the Interior
Bureau of Land Management

*Application for Permit to Drill*

## APD Package Report

Date Printed: 01/04/2018 01:33 PM

APD ID: 10400019664
APD Received Date: 08/25/2017 11:56 AM (7377)
Operator: EOG RESOURCES INCORPORATED

Well Status: AAPD (317131)
Well Name: ANTIETAM 9 FED COM
Well Number: 709H

APD Package Report Contents pooled 98180

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- Form 3160-3

- Operator Certification Report

- Application Report
- Application Attachments
  -- Well Plat: 1 file(s)

- Drilling Plan Report
- Drilling Plan Attachments
  -- Blowout Prevention Choke Diagram Attachment: 3 file(s)
  -- Blowout Prevention BOP Diagram Attachment: 1 file(s)
  -- Casing Taperd String Specs: 6 file(s)
  -- Casing Design Assumptions and Worksheet(s): 3 file(s)
  -- Hydrogen sulfide drilling operations plan: 1 file(s)
  -- Proposed horizontal/directional/multi-lateral plan submission: 2 file(s)
  -- Other Facets: 4 file(s)

- SUPO Report
- SUPO Attachments
  -- Existing Road Map: 1 file(s)
  -- Attach Well map: 1 file(s)
  -- Production Facilities map: 1 file(s)
  -- Water source and transportation map: 1 file(s)
  -- Construction Materials source location attachment: 1 file(s)
  -- Well Site Layout Diagram: 3 file(s)
  -- Recontouring attachment: 1 file(s)
  -- Other SUPO Attachment: 2 file(s)

- PWD Report
- PWD Attachments
  -- None

**APD ID:** 10400019664 **Submission Date:** 08/25/2017

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Well Type:** OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|---|---|---|---|---|---|---|---|
| 1 | PERMIAN | 3427 | 0 | 0 | ALLUVIUM | NONE | No |
| 2 | RUSTLER | 2365 | 1075 | 1075 | ANHYDRITE | NONE | No |
| 3 | TOP SALT | 1943 | 1497 | 1497 | SALT | NONE | No |
| 4 | BASE OF SALT | -1259 | 4699 | 4699 | SALT | NONE | No |
| 5 | LAMAR | -1553 | 4993 | 4993 | LIMESTONE | NONE | No |
| 6 | BELL CANYON | -1589 | 5029 | 5029 | SANDSTONE | NATURAL GAS,OIL | No |
| 7 | CHERRY CANYON | -2646 | 6086 | 6086 | SANDSTONE | NATURAL GAS,OIL | No |
| 8 | BRUSHY CANYON | -4143 | 7583 | 7583 | SANDSTONE | NATURAL GAS,OIL | No |
| 9 | BONE SPRING LIME | -5748 | 9188 | 9188 | LIMESTONE | NONE | No |
| 10 | FIRST BONE SPRING SAND | -6643 | 10083 | 10083 | SANDSTONE | NATURAL GAS,OIL | No |
| 11 | BONE SPRING 2ND | -7394 | 10834 | 10834 | SANDSTONE | NATURAL GAS,OIL | No |
| 12 | BONE SPRING 3RD | -8405 | 11845 | 11845 | SANDSTONE | NATURAL GAS,OIL | No |
| 13 | WOLFCAMP | -8863 | 12303 | 12303 | SHALE | NATURAL GAS,OIL | Yes |

## Section 2 - Blowout Prevention

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Pressure Rating (PSI):** 10M **Rating Depth:** 12425

**Equipment:** 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 (10,000-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 and Gas order No. 2.

**Requesting Variance?** YES

**Variance request:** 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 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. 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.

**Testing Procedure:** 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 5000/ 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 5000/ 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.

**Choke Diagram Attachment:**

Antietam_9_FC_709H_10_M_Choke_Manifold_08-17-2017.pdf

Antietam_9_FC_709H_Co_Flex_Hose_Certification_08-17-2017.PDF

Antietam_9_FC_709H_Co_Flex_Hose_Chart_08-17-2017.pdf

**BOP Diagram Attachment:**

Antietam_9_FC_709H_10_M_BOP_Diagram_08-17-2017.pdf

## Section 3 - Casing

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | INTERMEDIATE | 9.875 | 7.625 | NEW | API | Y | 0 | 1000 | 0 | 1000 | 3427 | 2427 | 1000 | HCP-110 | 29.7 | LTC | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |
| 2 | SURFACE | 14.75 | 10.75 | NEW | API | N | 0 | 1100 | 0 | 1100 | 3427 | 2327 | 1100 | J-55 | 40.5 | STC | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |
| 3 | PRODUCTION | 6.75 | 5.5 | NEW | API | Y | 0 | 10900 | 0 | 10900 | 3427 | -7473 | 10900 | OTHER | 20 | OTHER - DWC/C-IS MS | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Casing Attachments**

**Casing ID:** 1 **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

Antietam_9_FC_709H_7.625in_29.70_P_110_FlushMax_III_08-17-2017.pdf
See_previously_attached_Drill_Plan_08-17-2017.pdf
Antietam_9_FC_709H_7.625in_29.7_P110EC_VAM_SLIJ_II_08-17-2017.pdf

**Casing Design Assumptions and Worksheet(s):**

Antietam_9_FC_709H_BLM_Plan_08-17-2017.pdf

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**Casing ID:** 2 **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Antietam_9_FC_709H_BLM_Plan_08-17-2017.pdf

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**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

See_previously_attached_Drill_Plan_08-17-2017.pdf
Antietam_9_FC_709H_5.5in_20.00_VST_P110EC_DWC_C_IS_MS_08-17-2017.pdf
Antietam_9_FC_709H_5.5in_20.00_VST_P110EC_VAM_SFC_08-17-2017.pdf

**Casing Design Assumptions and Worksheet(s):**

See_previously_attached_Drill_Plan_08-17-2017.pdf

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## Section 4 - Cement

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SURFACE | Lead | | 0 | 1100 | 520 | 1.73 | 13.5 | 899 | 25 | Class C | Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface) |
| SURFACE | Tail | | 1100 | 1100 | 200 | 1.34 | 14.8 | 268 | 25 | Class C | Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate |
| INTERMEDIATE | Lead | | 0 | 11400 | 2250 | 1.38 | 14.8 | 3105 | 25 | Class C | Class C + 5% Gypsum + 3% CaCl2 pumped via bradenhead (TOC@surface) |
| INTERMEDIATE | Tail | | 11400 | 11400 | 550 | 1.2 | 14.4 | 660 | 25 | Class H | 50:50 Class H:Poz + 0.25% CPT20A + 0.40% CPT49 + 0.20% CPT35 + 0.80% CPT16A + 0.25% CPT503P pumped conventionally |
| PRODUCTION | Lead | | 10900 | 19869 | 850 | 1.26 | 14.1 | 1071 | 25 | Class H | Class H + 0.1% C-20 + 0.05% CSA-1000 + 0.20% C-49 + 0.40% C-17 (TOC @ 10,900') |

## Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

**Description of the equipment for the circulating system in accordance with Onshore Order #2:**

**Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** (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) H2S monitoring and detection equipment will be utilized from surface casing point to TD.
**Describe the mud monitoring system utilized:** An electronic pit volume totalizer (PVT) will be utilized on the circulating system to monitor pit volume, flow rate, pump pressure and stroke rate.

**APD ID:** 10400019662 **Submission Date:** 08/25/2017

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 708H

**Well Type:** OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|---|---|---|---|---|---|---|---|
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| 3 | TOP SALT | 1943 | 1497 | 1497 | SALT | NONE | No |
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| 6 | BELL CANYON | -1589 | 5029 | 5029 | SANDSTONE | NATURAL GAS,OIL | No |
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| 13 | WOLFCAMP | -8863 | 12303 | 12303 | SHALE | NATURAL GAS,OIL | Yes |

## Section 2 - Blowout Prevention

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 708H

**Pressure Rating (PSI):** 10M **Rating Depth:** 12345

**Equipment:** 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 (10,000-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 and Gas order No. 2.

**Requesting Variance?** YES

**Variance request:** 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 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. 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.

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Antietam_9_FC_708H_10_M_Choke_Manifold_08-17-2017.pdf

Antietam_9_FC_708H_Co_Flex_Hose_Certification_08-17-2017.PDF

Antietam_9_FC_708H_Co_Flex_Hose_Chart_08-17-2017.pdf

**BOP Diagram Attachment:**

Antietam_9_FC_708H_10_M_BOP_Diagram_08-17-2017.pdf

## Section 3 - Casing

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
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| 2 | SURFACE | 14.75 | 10.75 | NEW | API | N | 0 | 1100 | 0 | 1100 | 3427 | 2825 | 1100 | J-55 | 40.5 | STC | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |
| 3 | PRODUCTION | 6.75 | 5.5 | NEW | API | Y | 0 | 10900 | 0 | 10900 | 3427 | -7473 | 10900 | OTHER | 20 | OTHER - DWC/C-IS MS | 1.125 | 1.25 | BUOY | 1.6 | BUOY | 1.6 |

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 708H

**Casing Attachments**

**Casing ID:** 1 **String Type:** INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

See_previously_attached_Drill_Plan_08-17-2017.pdf

**Casing Design Assumptions and Worksheet(s):**

See_previously_attached_Drill_Plan_08-17-2017.pdf

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**Casing ID:** 2 **String Type:** SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Antietam_9_FC_708H_BLM_Plan_08-17-2017.pdf

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**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

See_previously_attached_Drill_Plan_08-17-2017.pdf
See_previously_attached_Drill_Plan_08-17-2017.pdf
Antietam_9_FC_708H_5.5in_20.00_VST_P110EC_VAM_SFC_08-17-2017.pdf
Antietam_9_FC_708H_5.5in_20.00_VST_P110EC_VAM_SFC_08-17-2017.pdf

**Casing Design Assumptions and Worksheet(s):**

See_previously_attached_Drill_Plan_08-17-2017.pdf

---

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 708H

## Section 4 - Cement

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
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| SURFACE | Tail | | 1100 | 1100 | 200 | 1.34 | 14.8 | 268 | 25 | Class C | Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate |
| INTERMEDIATE | Lead | | 0 | 11400 | 2250 | 1.38 | 14.8 | 3105 | 25 | Class C | Class C + 5% Gypsum + 3% CaCl2 pumped via bradenhead (TOC@surface) |
| INTERMEDIATE | Tail | | 11400 | 11400 | 550 | 1.2 | 14.4 | 660 | 25 | Class H | 50:50 Class H:Poz + 0.25% CPT20A + 0.40% CPT49 + 0.20% CPT35 + 0.80% CPT16A + 0.25% CPT503P pumped conventionally |
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## Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

**Description of the equipment for the circulating system in accordance with Onshore Order #2:**

**Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** (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) H2S monitoring and detection equipment will be utilized from surface casing point to TD.
**Describe the mud monitoring system utilized:** An electronic pit volume totalizer (PVT) will be utilized on the circulating system to monitor pit volume, flow rate, pump pressure and stroke rate.

## Circulating Medium Table

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

## Circulating Medium Table

| Top Depth | Bottom Depth | Mud Type | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1100 | 11400 | SALT SATURATED | 8.8 | 10 | | | | | | | |
| 11400 | 12425 | OIL-BASED MUD | 10 | 14 | | | | | | | |
| 0 | 1100 | WATER-BASED MUD | 8.6 | 8.8 | | | | | | | |

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

Open-hole logs are not planned for this well.

**List of open and cased hole logs run in the well:**

DS

**Coring operation description for the well:**

None

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 7430 **Anticipated Surface Pressure:** 4696.5

**Anticipated Bottom Hole Temperature(F):** 181

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geoharzards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

Antietam_9_FC_709H_H2S_Plan_Summary_08-17-2017.pdf

## Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Antietam_9_Fed_Com_709H_Wall_Plot_08-17-2017.pdf

Antietam_9_Fed_Com_709H_Planning_Report_08-17-2017.pdf

**Other proposed operations facets description:**

**Other proposed operations facets attachment:**

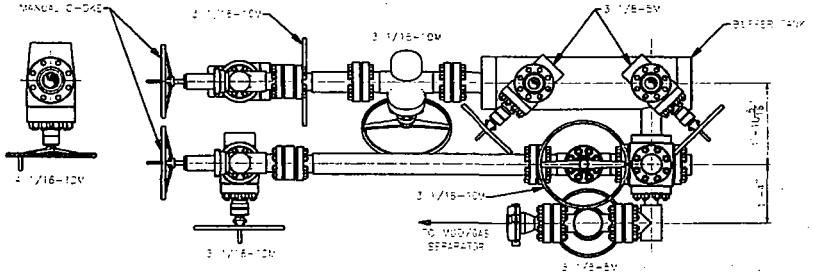
Antietam_9_FC_709H_Rig_Layout_08-17-2017.pdf

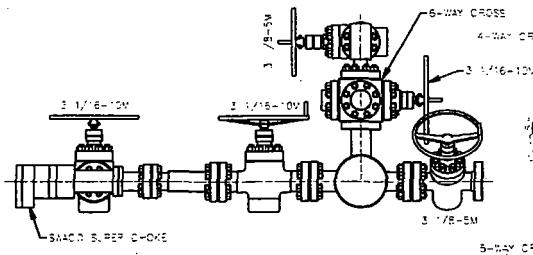
Antietam_9_FC_709H_Wellhead_Cap_08-17-2017.pdf

Antietam_9_FC_709H_Wellbore_08-17-2017.pdf

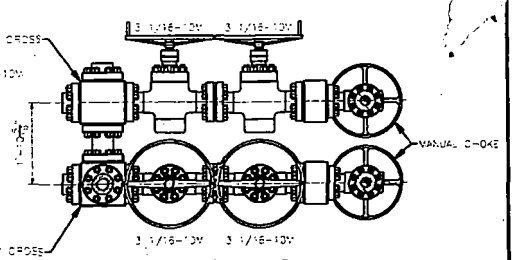
Antietam_9_Fed_Com_709H_gas_capture_08-17-2017.pdf

**Other Variance attachment:**

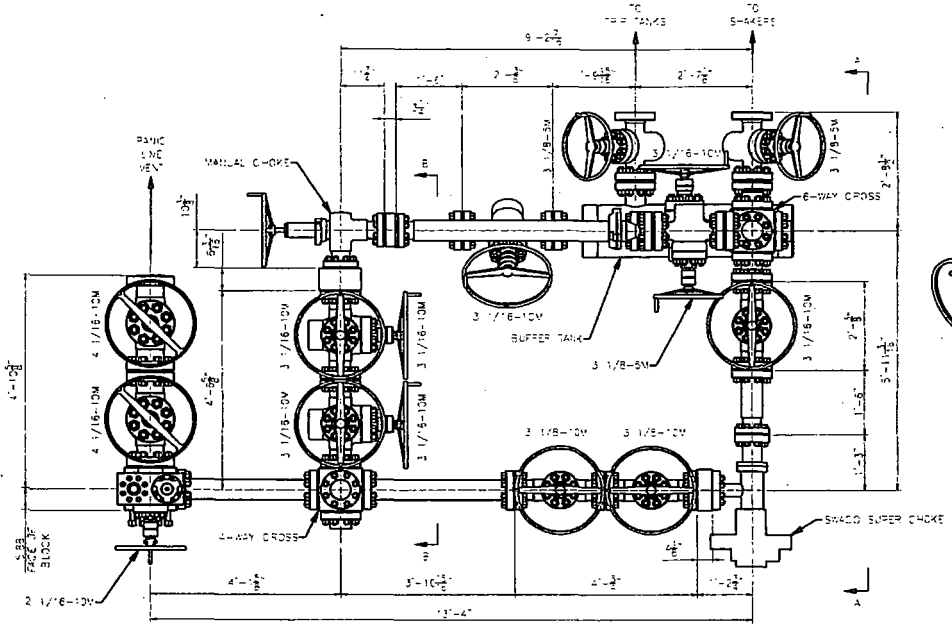


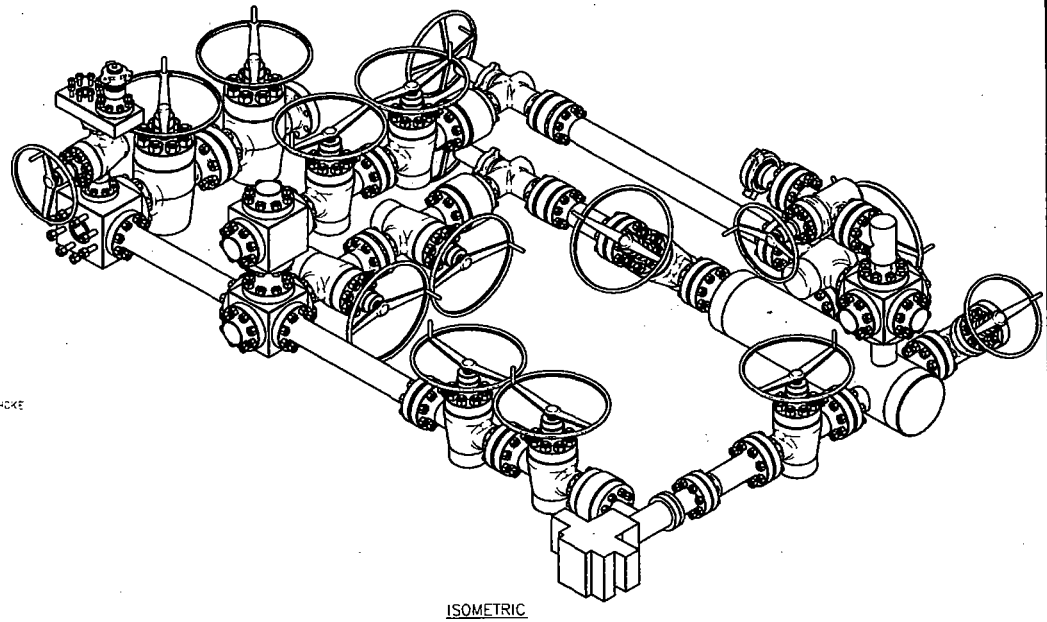

VIEW A–A



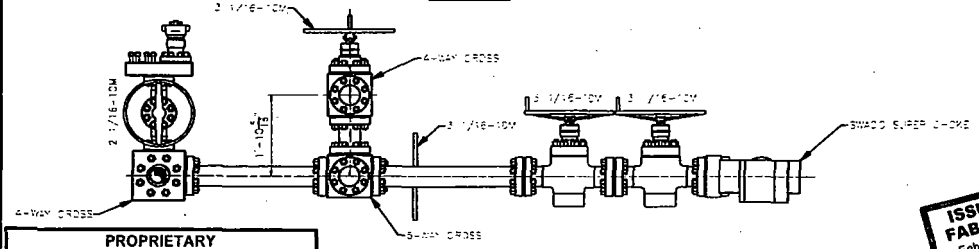

SECTION B–B




PLAN VIEW



ISOMETRIC






ISSUED FOR FABRICATION
February-10-2014
DRAFTSMAN
ENGINEER

**STANDARD TOLERANCES**

| | | |
|---|---|---|
| 1. FABRICATION DIMENSIONS: | A-0" TO 24" | ± 1/16" |
| | B-24" TO 120" | ± 1/8" |
| | C-OVER 120" | ± 1/4" |
| 2. MACHINED DIMENSIONS | A-ANGULAR | ± 30' |
| | B-LINEAR (EXPRESSED AS FRACTION) | ± 015 |
| | LINEAR (EXPRESSED TO ONE DECIMAL) | ± .1 |
| | LINEAR (EXPRESSED TO TWO DECIMALS) | ± 015 |
| | LINEAR (EXPRESSED TO THREE DECIMALS) | ± 005 |

| REV | DATE | DESCRIPTION | BY |
|---|---|---|---|
| – | | | |

HELMERICH & PAYNE
INTERNATIONAL DRILLING CO.

TITLE: 3 CHOKE, 3 LEVEL, 10M CHOKE MANIFOLD G.A.

CUSTOMER: H&P

PROJECT:

DRAWN: MWL | DATE: 2/10/2014 | DWG NO.: HP-D1254 | REV: –

SCALE: 3/4"=1'-0" | SHEET: 1 OF 1

| | | | | | |
|---|---|---|---|---|---|
| **Type:** | **CHOKE LINE** | | | **Length:** | **35'** |
| **I.D.** | **4"** | *INCHES* | **O.D.** | **8"** | *INCHES* |

| WORKING PRESSURE | TEST PRESSURE | BURST PRESSURE |
|---|---|---|
| **10,000** *PSI* | **15,000** *PSI* | *PSI* |

**COUPLINGS**

**Type of End Fitting**
**4 1/16 10K FLANGE**

| Type of Coupling: | MANUFACTURED BY |
|---|---|
| **SWEDGED** | **MIDWEST HOSE & SPECIALTY** |

**PROCEDURE**

*Hose assembly pressure tested with water at ambient temperature.*

| TIME HELD AT TEST PRESSURE | ACTUAL BURST PRESSURE: |
|---|---|
| **1** *MIN.* | **0** *PSI* |

**COMMENTS:**
**SN#90067 M10761**
**Hose is covered with stainless steel armour cover and wraped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes**

| Date: | Tested By: | Approved: |
|---|---|---|
| **6/6/2011** | BOBBY FINK | MENDI JACKSON |

Midwest Hose & Specialty, Inc.

# Internal Hydrostatic Test Graph

**Customer:** CACTUS

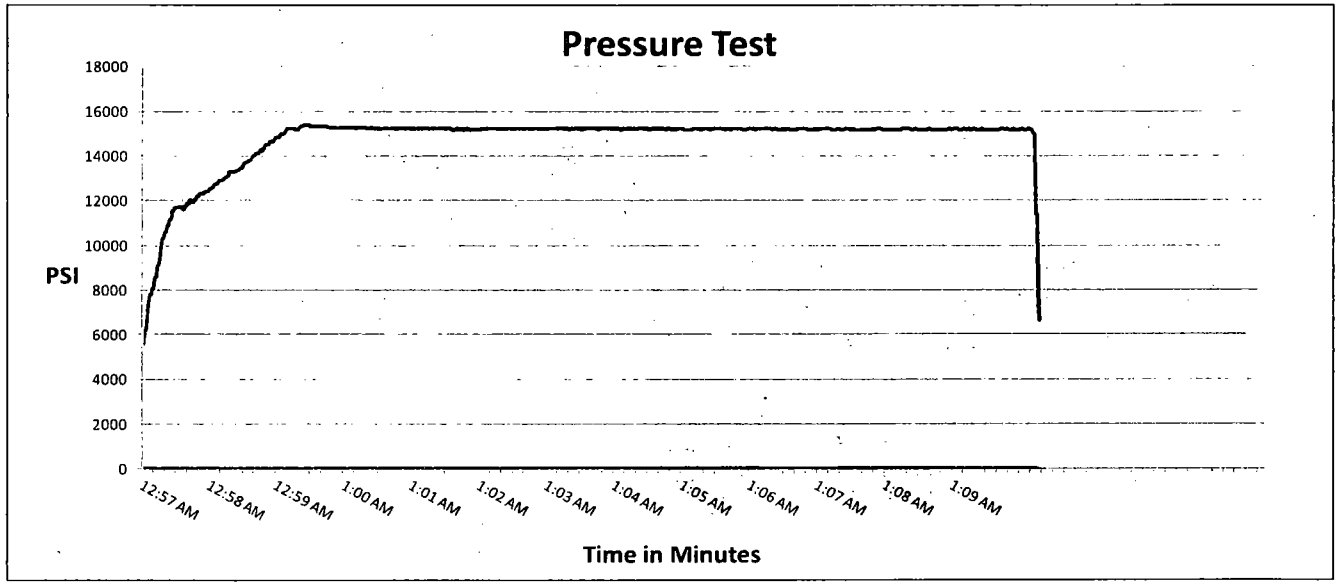
**SALES ORDER#** 90067

## Hose Specifications

| Hose Type | Length |
|---|---|
| C & K | 35' |
| **I.D.** | **O.D.** |
| 4" | 8" |
| **Working Pressure** | **Burst Pressure** |
| 10000 PSI | Standard Safety Multiplier Applies |

## Verification

| Type of Fitting | Coupling Method |
|---|---|
| 4 1/16 10K | Swage |
| **Die Size** | **Final O.D.** |
| 6.62" | 6.68" |
| **Hose Serial #** | **Hose Assembly Serial #** |
| | 90067 |




| Test Pressure | Time Held at Test Pressure | Actual Burst Pressure | Peak Pressure |
|---|---|---|---|
| 15000 PSI | 11 1/4 Minutes | | 15439 PSI |

**Comments:** Hose assembly pressure tested with water at ambient temperature.

**Tested By:** *Bobby Fink*

**Approved By:** *Mendi Jackson*

Mendi Jackson

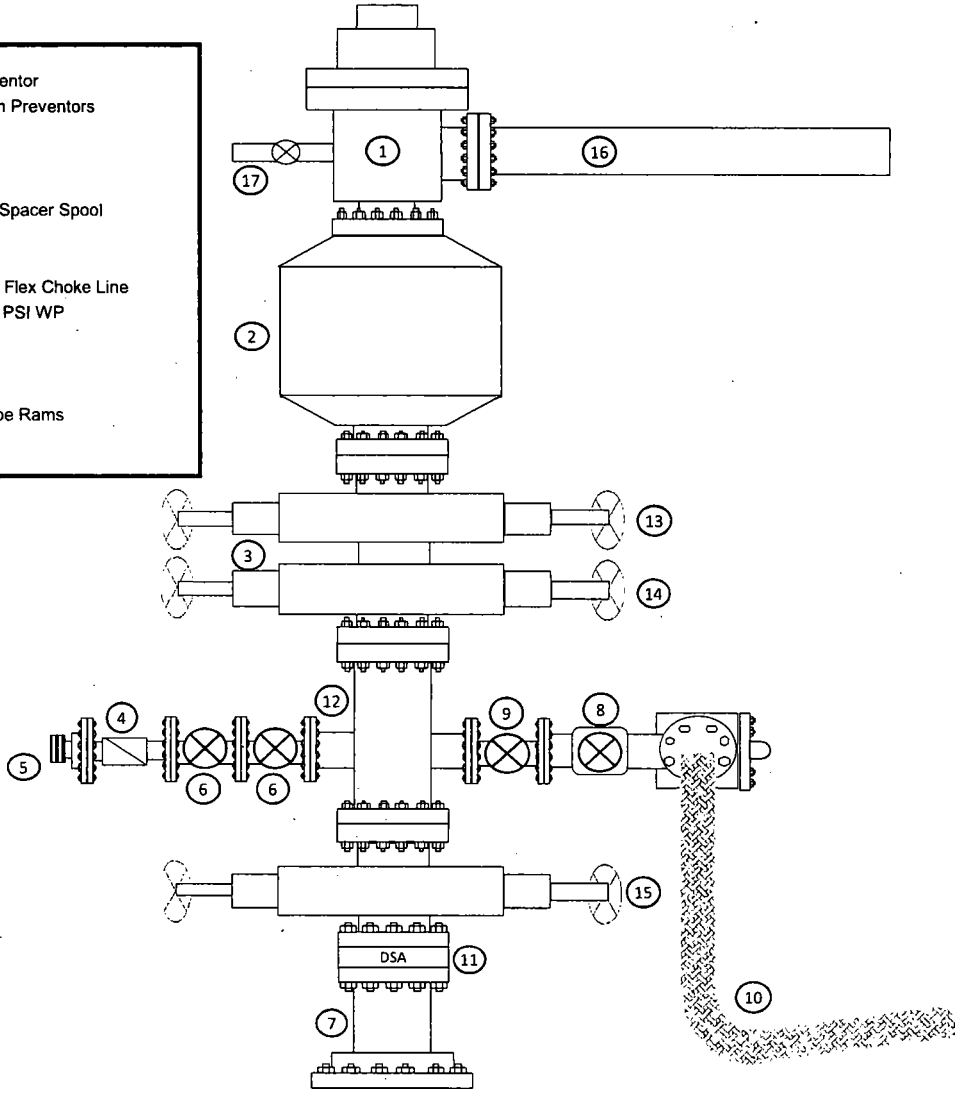
# Exhibit 1

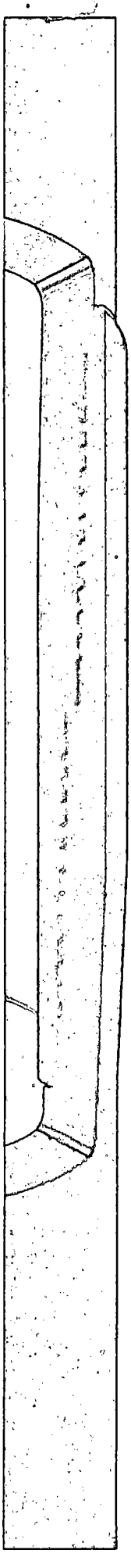
# EOG Resources

## 10M BOPE

Rig Floor

1. 13 5/8" Rotating Head
2. Hydril 13 5/8" 10,000 PSI WP GK Annular Preventor
3. 13 5/8" Cameron Type "U" 10,000 PSI WP Ram Preventors
4. 2 1/16" - 10,000 PSI WP Check Valve
5. 10,000 PSI WP - 1502 Union to kill line
6. 2 1/16" - 10,000 PSI WP Manual Valves
7. 13 5/8" 3,000 PSI WP x 13 5/8" 5,000 PSI WP Spacer Spool
8. 4 1/16" 10,000 PSI WP HCR Valve
9. 4 1/16" 10,000 PSI WP Manual Valve
10. 6" OD x 3" ID 10,000 PSI WP Steel Armoured Flex Choke Line
11. DSA - 13 5/8" 10,000 PSI WP x 13 5/8" 5,000 PSI WP
12. Mud Cross - 13 5/8" 10,000 PSI WP
13. Blind Rams
14. Pipe Rams
15. 13 5/8" Cameron Type "U" 10,000 PSI WP Pipe Rams
16. Flow Line
17. 2" Fill Line





Issued on: 24 Jan. 2017

# VAM® SLIJ-II

Connection Data Sheet

| OD | Weight | Wall Th. | Grade | API Drift | Connection |
|---|---|---|---|---|---|
| 7 5/8 in. | 29.70 lb/ft | 0.375 in. | VM 110 HC | 6.750 in. | VAM® SLIJ-II |

## PIPE PROPERTIES

| | |
|---|---|
| Nominal OD | 7.625 in. |
| Nominal ID | 6.875 in. |
| Nominal Cross Section Area | 8.541 sqin. |
| Grade Type | High Collapse |
| Min. Yield Strength | 110 ksi |
| Max. Yield Strength | 140 ksi |
| Min. Ultimate Tensile Strength | 125 ksi |

## CONNECTION PROPERTIES

| | |
|---|---|
| Connection Type | Premium integral semi-flush |
| Connection OD (nom) | 7.711 in. |
| Connection ID (nom) | 6.820 in. |
| Make-up Loss | 4.822 in. |
| Critical Cross Section | 5.912 sqin. |
| Tension Efficiency | 69.2 % of pipe |
| Compression Efficiency | 48.5 % of pipe |
| Internal Pressure Efficiency | 100 % of pipe |
| External Pressure Efficiency | 100 % of pipe |

## CONNECTION PERFORMANCES

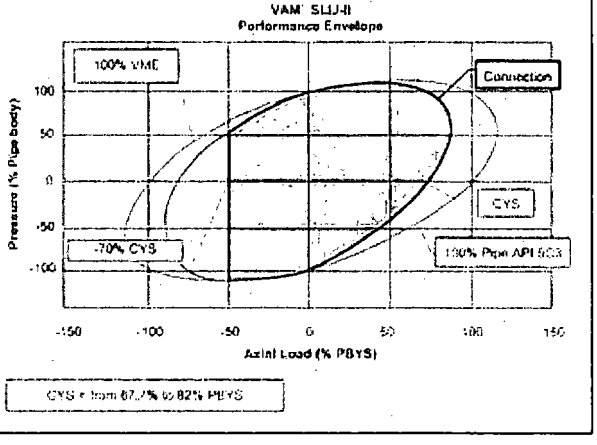
| | |
|---|---|
| Tensile Yield Strength | 651 klb |
| Compression Resistance | 455 klb |
| Internal Yield Pressure | 9470 psi |
| Uniaxial Collapse Pressure | 7890 psi |
| Max. Bending Capacity | TDB |
| Max Bending with Sealability | 20 °/100 ft |

## FIELD TORQUE VALUES

| | |
|---|---|
| Min. Make-up torque | 11300 ft.lb |
| Opti. Make-up torque | 12600 ft.lb |
| Max. Make-up torque | 13900 ft.lb |

**VAM® SLIJ-II** is a semi-flush integral premium connection for all casing applications. It combines a near flush design with high performances in tension, compression and gas sealability.

VAM® SLIJ-II has been validated according to the most stringent tests protocols, and has an excellent performance history in the world's most prolific HPHT wells.





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

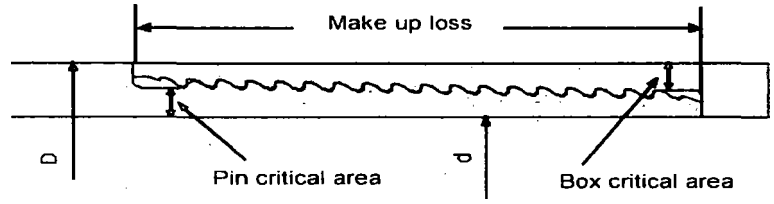
canada@vamfieldservice.com
usa@vamfieldservice.com
mexico@vamfieldservice.com
brazil@vamfieldservice.com
uk@vamfieldservice.com
dubai@vamfieldservice.com
nigeria@vamfieldservice.com
angola@vamfieldservice.com
china@vamfieldservice.com
baku@vamfieldservice.com
singapore@vamfieldservice.com
australia@vamfieldservice.com

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


Other Connection Data Sheets are available at www.vamservices.com

**Vallourec Group**

| Metal One Corp | FLUSHMAX-III<br>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

**EOG RESOURCES, INC.**
**ANTIETAM 9 FED COM NO. 709H**

## 1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

## 2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

| | |
|---|---|
| Rustler | 1,075' |
| Top of Salt | 1,497' |
| Base of Salt / Top Anhydrite | 4,699' |
| Base Anhydrite | 4,993' |
| Lamar | 4,993' |
| Bell Canyon | 5,029' |
| Cherry Canyon | 6,086' |
| Brushy Canyon | 7,583' |
| Bone Spring Lime | 9,188' |
| 1st Bone Spring Sand | 10,083' |
| 2nd Bone Spring Shale | 10,332' |
| 2nd Bone Spring Sand | 10,834' |
| 3rd Bone Spring Carb | 11,213' |
| 3rd Bone Spring Sand | 11,845' |
| Wolfcamp | 12,303' |
| TD | 12,425' |

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

| | | |
|---|---|---|
| Upper Permian Sands | 0- 400' | Fresh Water |
| Cherry Canyon | 6,086' | Oil |
| Brushy Canyon | 7,583' | Oil |
| 1st Bone Spring Sand | 10,083' | Oil |
| 2nd Bone Spring Shale | 10,332' | Oil |
| 2nd Bone Spring Sand | 10,834' | Oil |
| 3rd Bone Spring Carb | 11,213' | Oil |
| 3rd Bone Spring Sand | 11,845' | Oil |
| Wolfcamp | 12,303' | 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 1,100' and circulating cement back to surface.

**EOG RESOURCES, INC.**
**ANTIETAM 9 FED COM NO. 709H**

## 4. CASING PROGRAM - NEW

| Hole Size | Interval | Csg OD | Weight | Grade | Conn | $DF_{min}$ Collapse | $DF_{min}$ Burst | $DF_{min}$ Tension |
|---|---|---|---|---|---|---|---|---|
| 14.75" | 0 – 1,100' | 10.75" | 40.5# | J55 | STC | 1.125 | 1.25 | 1.60 |
| 9.875" | 0 – 1,000' | 7.625" | 29.7# | HCP-110 | LTC | 1.125 | 1.25 | 1.60 |
| 9.875" | 1,000' – 3,000' | 7.625" | 29.7# | P-110EC | SLIJ II | 1.125 | 1.25 | 1.60 |
| 8.75" | 3,000' – 11,400' | 7.625" | 29.7# | HCP-110 | FlushMax III | 1.125 | 1.25 | 1.60 |
| 6.75" | 0' – 10,900' | 5.5" | 20# | P-110EC | DWC/C-IS MS | 1.125 | 1.25 | 1.60 |
| 6.75" | 10,900'-19,869' | 5.5" | 20# | P-110EC | VAM SFC | 1.125 | 1.25 | 1.60 |

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.

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" 1,100' | 520 | 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" 11,400' | 250 | 14.8 | 1.38 | 6.48 | Class C + 5% Gypsum + 3% CaCl2 pumped via Bradenhead (TOC @ Surface) |
| | 2000 | 14.8 | 1.38 | 6.48 | Class C + 5% Gypsum + 3% CaCl2 pumped via Bradenhead |
| | 550 | 14.4 | 1.20 | 4.81 | 50:50 Class H:Poz + 0.25% CPT20A + 0.40% CPT49 + 0.20% CPT35 + 0.80% CPT16A + 0.25% CPT503P pumped Conventionally |
| 5-1/2" 19,869' | 850 | 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 @ 10,900') |

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.

## 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 (10,000-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 10,000/ 250 psig and the annular preventer to 5,000/ 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 10,000/ 250 psig and the annular preventer to 5000/ 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 – 1,100' | Fresh - Gel | 8.6-8.8 | 28-34 | N/c |
| 1,100' – 11,400' | Brine | 8.8-10.0 | 28-34 | N/c |
| 11,400' – 19,869' Lateral | Oil Base | 10.0-14.0 | 58-68 | 3 - 6 |

The highest mud weight needed to balance formation is expected to be 11.5 ppg. In order to maintain hole stability, mud weights up to 14.0 ppg may be utilized.

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 181 degrees F with an estimated maximum bottom-hole pressure (BHP) at TD of 7430 psig (based on 11.5 ppg MW). 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:

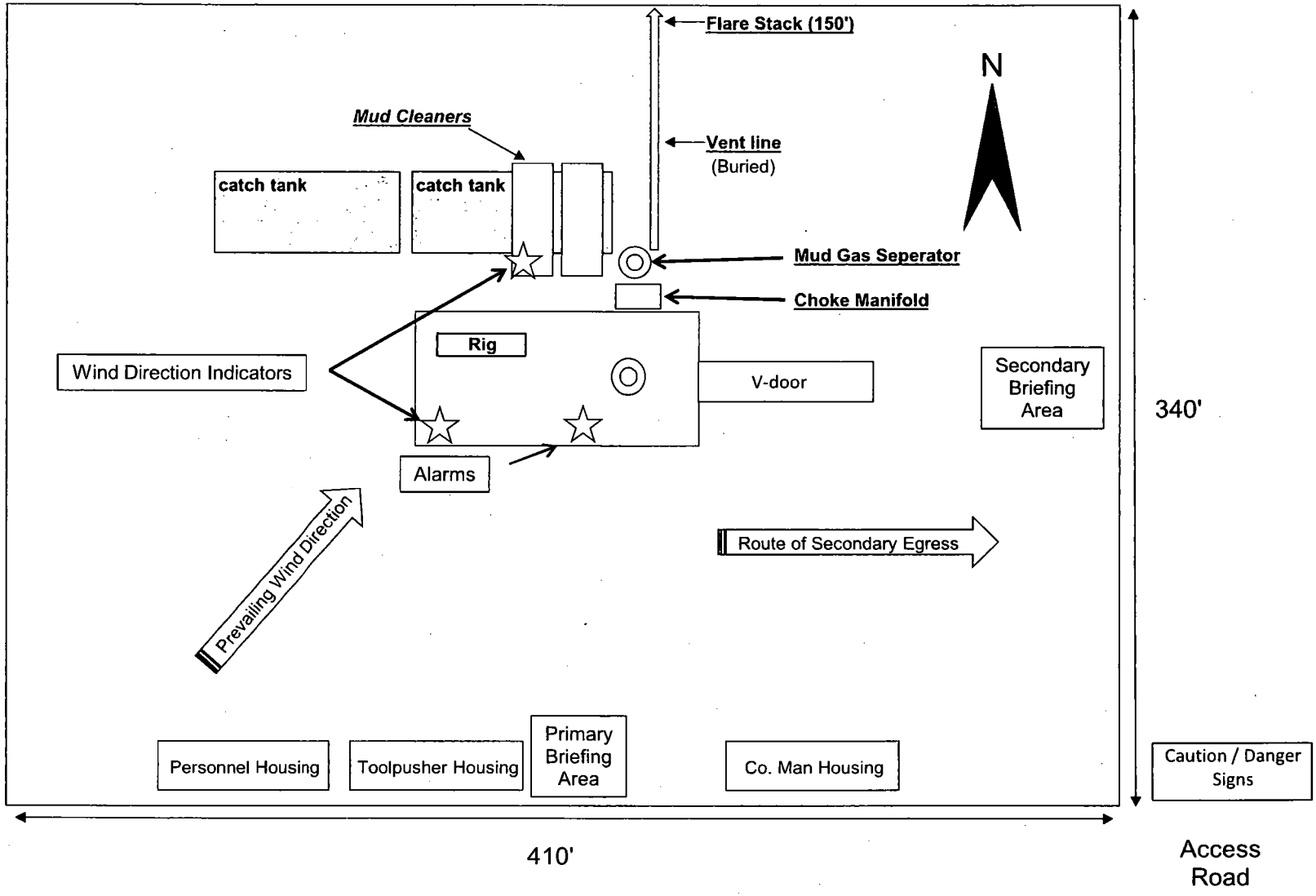
The drilling operation should be finished in approximately one month. If the well is productive, an additional 60-90 days will be required for completion and testing before a decision is made to install permanent facilities.

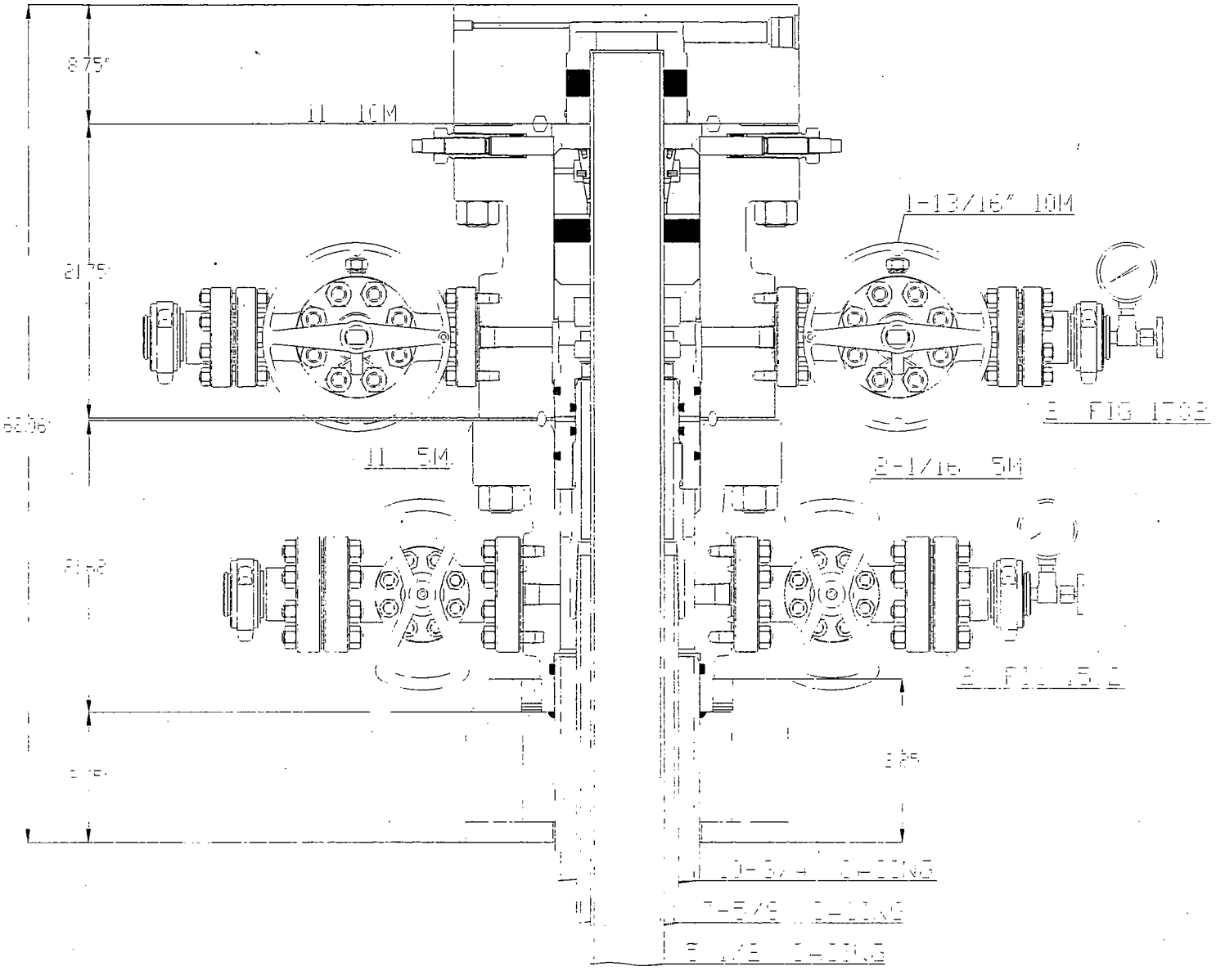
(A) EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and cement on the subject well. After WOC 8 hours or 500 psi compressive strength (whichever is greater), the Surface Rig will move off so the wellhead can be installed. A welder will cut the casing to the proper height and weld on the wellhead (both "A" and "B" sections). The weld will be tested to 1000 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.

Exhibit 4

# EOG Resources
# Antietam 9 Fed Com #709H

## Well Site Diagram






Stream Flo

Worldwide Expertise - Global Strength

**APD ID:** 10400019664 **Submission Date:** 08/25/2017

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Well Type:** OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

## Section 1 - Existing Roads

**Will existing roads be used?** YES

**Existing Road Map:**

ANTIETAM9FEDCOM709H_vicinity_08-21-2017.pdf

**Existing Road Purpose:** ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

### ROW ID(s)

**ID:**

**Do the existing roads need to be improved?** NO

**Existing Road Improvement Description:**

**Existing Road Improvement Attachment:**

## Section 2 - New or Reconstructed Access Roads

**Will new roads be needed?** NO

## Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

ANTIETAM9FEDCOM709H_radius_08-21-2017.pdf

**Existing Wells description:**

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:** Antietam 9 Fed Com central battery is located in the NE/4 of section 9

**Production Facilities map:**

ANTIETAM9FEDCOM_infrastructure_08-21-2017.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source use type:** OTHER **Water source type:** RECYCLED

**Describe type:**

**Source latitude:** **Source longitude:**

**Source datum:**

**Water source permit type:** WATER RIGHT

**Source land ownership:** FEDERAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 0 **Source volume (acre-feet):** 0

**Source volume (gal):** 0

**Water source and transportation map:**

Antietam_9_Fed_Com_water_and_caliche_Map__08-21-2017.pdf

**Water source comments:**

**New water well?** NO

### New Water Well Info

**Well latitude:** **Well Longitude:** **Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):** **Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):** **Well casing type:**

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Well casing outside diameter (in.):** **Well casing inside diameter (in.):**

**New water well casing?** **Used casing source:**

**Drilling method:** **Drill material:**

**Grout material:** **Grout depth:**

**Casing length (ft.):** **Casing top depth (ft.):**

**Well Production type:** **Completion Method:**

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

## Section 6 - Construction Materials

**Construction Materials description:** Caliche will be supplied from pits shown on the attached caliche source map. Caliche utilized for the drilling pad will be obtained either from an existing approved mineral pit, or by benching into a hill, which will allow the pad to be level with existing caliche from the cut, or extracted by "Flipping" the well location. A mineral material permit will be obtained from BLM prior to excavating any caliche on Federal Lands. Amount will vary for each pad. The procedure for "Flipping" a well location is as follows: * -An adequate amount of topsoil/root zone (usually top 6 inches of soil) will be stripped from the proposed well location and stockpiled along the side of the well location as depicted on the well site diagram/survey plat. -An area will be used within the proposed well site dimensions to excavate caliche. Subsoil will be removed and stockpiled within the surveyed well pad dimensions. -Once caliche/surfacing mineral is found, the mineral material will be excavated and stock piled within the approved drilling pad dimensions. -Then, subsoil will be pushed back in the excavated hole and caliche will be spread accordingly across the entire well pad and road (if available). -Neither caliche, nor subsoil will be stock piled outside of the well pad dimensions. Topsoil will be stockpiled along the edge of the pad as depicted in the Well Site Layout or survey plat. * In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other established mineral pit. A BLM mineral material permit will be acquired prior to obtaining any mineral material from BLM pits or federal land.

**Construction Materials source location attachment:**

Antietam_9_Fed_Com_water_and_caliche_Map__08-21-2017.pdf

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Drill fluids and produced oil and water from the well during drilling and completion operations will be stored safely and disposed of properly in an NMOCD approved disposal facility. Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly. Human waste and grey water will be properly contained of and disposed of properly. After drilling and completion operations; trash, chemicals, salts, frac sand, and other waste material will be removed and disposed of properly at a state approved disposal facility.

**Amount of waste:** 0 barrels

**Waste disposal frequency** : Daily

**Safe containment description:** Steel Tanks

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Trucked to NMOCD approved disposal facility

## Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)** **Reserve pit width (ft.)**

**Reserve pit depth (ft.)** **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

## Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** YES

**Description of cuttings location** Closed Loop System. Drill cuttings will be disposed of into steel tanks and taken to an NMOCD approved disposal facility.

**Cuttings area length (ft.)** **Cuttings area width (ft.)**

**Cuttings area depth (ft.)** **Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?**: NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Antietam_9_FC_709H_Rig_Layout_08-17-2017.pdf
ANTIETAM9FEDCOM709H_padsite_08-21-2017.pdf
ANTIETAM9FEDCOM709H_wellsite_08-21-2017.pdf

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Comments:** Exhibit 2A-Wellsite & Exhibit 2B-Padsite Rig Layout Exhibit 4

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance **Multiple Well Pad Name:** ANTIETAM 9 FED COM

**Multiple Well Pad Number:** 708H/709H710H

**Recontouring attachment:**

ANTIETAM9FEDCOM709H_reclamation_08-21-2017.pdf

**Drainage/Erosion control construction:** Proper erosion control methods will be used on the area to control erosion, runoff, and siltation of the surrounding area.

**Drainage/Erosion control reclamation:** The interim reclamation will be monitored periodically to ensure that vegetation has reestablished and that erosion is controlled.

**Wellpad long term disturbance (acres):** 1.997245

**Wellpad short term disturbance (acres):** 3.200184

**Access road long term disturbance (acres):** 0

**Access road short term disturbance (acres):** 0

**Pipeline long term disturbance (acres):** 0.7417355

**Pipeline short term disturbance (acres):** 1.2362258

**Other long term disturbance (acres):** 0

**Other short term disturbance (acres):** 0

**Total long term disturbance:** 2.7389805

**Total short term disturbance:** 4.43641

**Reconstruction method:** In areas planned for interim reclamation, all the surfacing material will be removed and returned to the original mineral pit or recycled to repair or build roads and well pads. Areas planned for interim reclamation will be recontoured to the original contour if feasible, or if not feasible, to an interim contour that blends with the surrounding topography as much as possible. Where applicable, the fill material of the well pad will be backfilled into the cut to bring the area back to the original contour. The interim cut and fill slopes prior to re-seeding will not be steeper than a 3:1 ratio, unless the adjacent native topography is steeper. Note: Constructed slopes may be much steeper during drilling, but will be recontoured to the above ratios during interim reclamation.

**Topsoil redistribution:** Topsoil will be evenly respread and aggressively revegetated over the entire disturbed area not needed for all-weather operations including cuts and fills. To seed the area, the proper BLM seed mixture, free of noxious weeds, will be used. Final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.

**Soil treatment:** Re-seed according to BLM standards. All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, and that erosion is controlled.

**Existing Vegetation at the well pad:** Grass, forbs, and small woody vegetation, such as mesquite will be excavated as the topsoil is removed. Large woody vegetation will be stripped and stored separately and respreads evenly on the site following topsoil respreading. Topsoil depth is defined as the top layer of soil that contains 80% of the roots. In areas to be heavily disturbed, the top 6 inches of soil material, will be stripped and stockpiled on the perimeter of the well location and along the perimeter of the access road to control run-on and run-off, to keep topsoil viable, and to make redistribution of topsoil more efficient during interim reclamation. Stockpiled topsoil should include vegetative material. Topsoil will be clearly segregated and stored separately from subsoils.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** All disturbed areas, including roads, pipelines, pads, will be recontoured to the contour existing prior to the initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** All disturbed areas, including roads, pipelines, pads, will be recontoured to the contour existing prior to the initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.
**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** All disturbed areas, including roads, pipelines, pads, will be recontoured to the contour existing prior to the initial construction or a contour that blends indistinguishably with the surrounding landscape. Topsoil that was spread over the interim reclamation areas will be stockpiled prior to recontouring. The topsoil will be redistributed evenly over the entire disturbed site to ensure successful revegetation.
**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## Seed Management

### Seed Table

**Seed type:** **Seed source:**

**Seed name:**

**Source name:** **Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:** **Proposed seeding season:**

### Seed Summary

**Total pounds/Acre:**

| Seed Type | Pounds/Acre |
|---|---|

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**Seed reclamation attachment:**

## Operator Contact/Responsible Official Contact Info

**First Name:** Stan **Last Name:** Wagner

**Phone:** (432)686-3689 **Email:** stan_wagner@eogresources.com

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, erosion is controlled, and free of noxious weeds. Weeds will be treated if found.
**Weed treatment plan attachment:**

**Monitoring plan description:** Reclamation will be completed within 6 months of well plugging. All reclaimed areas will be monitored periodically to ensure that revegetation occurs, that the area is not redisturbed, erosion is controlled, and free of noxious weeds.
**Monitoring plan attachment:**

**Success standards:** N/A

**Pit closure description:** NA

**Pit closure attachment:**

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

**USFS Region:**

**USFS Forest/Grassland:** **USFS Ranger District:**

**Fee Owner:** Oliver Kiehne **Fee Owner Address:** P.O. Box 135 Orla, TX 79770

**Phone:** (575)399-9281 **Email:**

**Surface use plan certification:** NO

**Surface use plan certification document:**

**Surface access agreement or bond:** Agreement

**Surface Access Agreement Need description:** surface use agreement

**Surface Access Bond BLM or Forest Service:**

**BLM Surface Access Bond number:**

**USFS Surface access bond number:**

## Section 12 - Other Information

**Right of Way needed?** NO **Use APD as ROW?**

**ROW Type(s):**

### ROW Applications

**SUPO Additional Information:** An onsite meeting was conducted 7/18/17. Poly lines are planned to transport water for operations. Will truck if necessary. See attached SUPO Plan.
**Use a previously conducted onsite?** NO

**Previous Onsite information:**

### Other SUPO Attachment

ANTIETAM9FEDCOM709H_location_08-21-2017.pdf
SUPO_Antietam_9_Fed_Com_709H_08-21-2017.pdf

## Section 3 - Unlined Pits

**Would you like to utilize Unlined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Unlined pit PWD on or off channel:**

**Unlined pit PWD discharge volume (bbl/day):**

**Unlined pit specifications:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Unlined pit precipitated solids disposal schedule:**

**Unlined pit precipitated solids disposal schedule attachment:**

**Unlined pit reclamation description:**

**Unlined pit reclamation attachment:**

**Unlined pit Monitor description:**

**Unlined pit Monitor attachment:**

**Do you propose to put the produced water to beneficial use?**

**Beneficial use user confirmation:**

**Estimated depth of the shallowest aquifer (feet):**

**Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?**

**TDS lab results:**

**Geologic and hydrologic evidence:**

**State authorization:**

**Unlined Produced Water Pit Estimated percolation:**

**Unlined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information attachment:**

## Section 4 - Injection

**Would you like to utilize Injection PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Injection PWD discharge volume (bbl/day):**

**Injection well mineral owner:**

**Injection well type:**

**Injection well number:** **Injection well name:**

**Assigned injection well API number?** **Injection well API number:**

**Injection well new surface disturbance (acres):**

**Minerals protection information:**

**Mineral protection attachment:**

**Underground Injection Control (UIC) Permit?**

**UIC Permit attachment:**

## Section 5 - Surface Discharge

**Would you like to utilize Surface Discharge PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Surface discharge PWD discharge volume (bbl/day):**

**Surface Discharge NPDES Permit?**

**Surface Discharge NPDES Permit attachment:**

**Surface Discharge site facilities information:**

**Surface discharge site facilities map:**

## Section 6 - Other

**Would you like to utilize Other PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Other PWD discharge volume (bbl/day):**

**Other PWD type description:**

**Other PWD type attachment:**

**Have other regulatory requirements been met?**

**Other regulatory requirements attachment:**

AFMSS

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

# Bond Info Data Report

01/04/2018

## Bond Information

**Federal/Indian APD:** FED

**BLM Bond number:** NM2308

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**

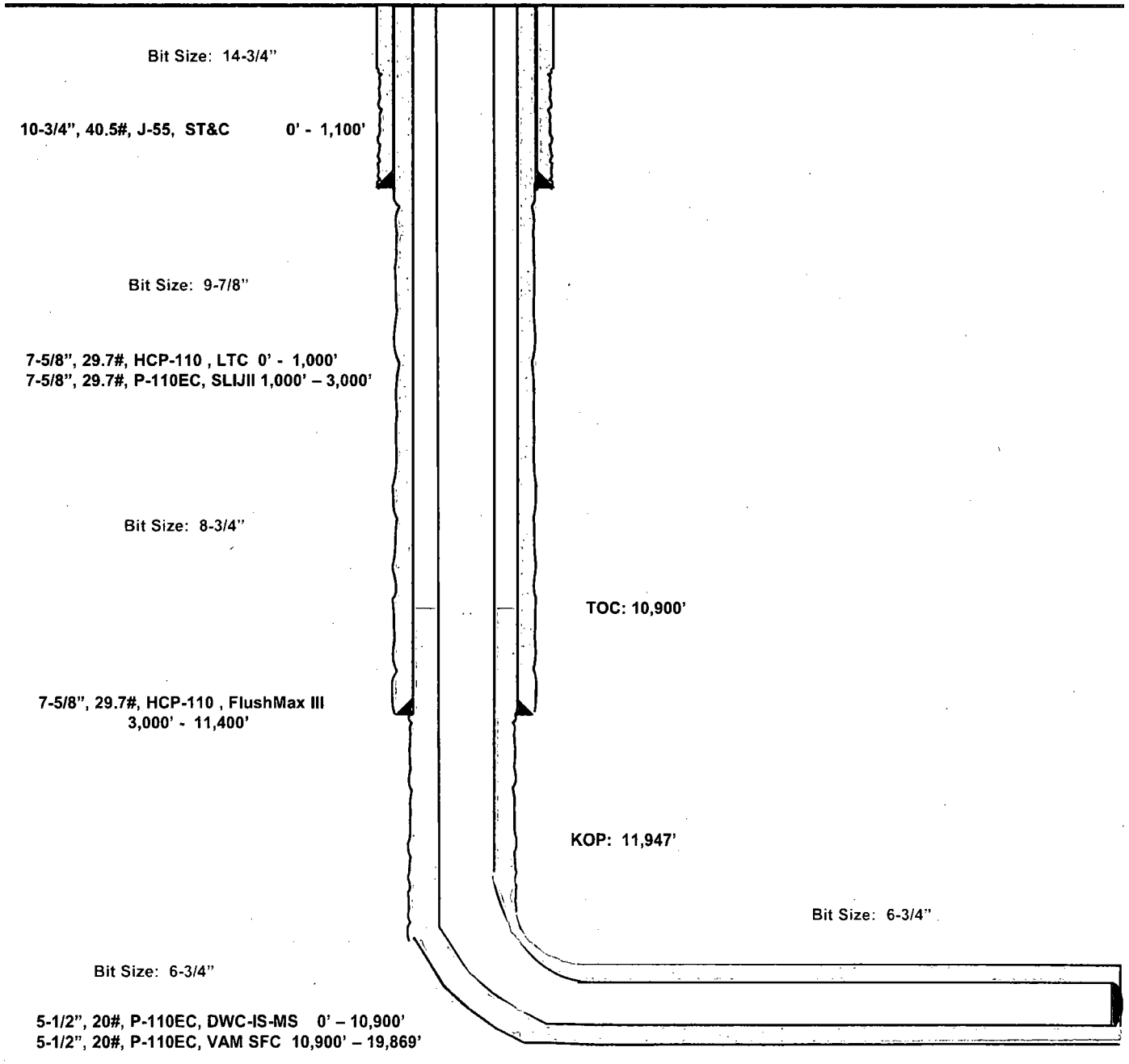
# Antietam 9 Fed Com #709H

## Lea County, New Mexico
## Proposed Wellbore

220' FNL
1930' FEL
Section 9
T-25-S, R-33-E

API: 30-025-*****

KB: 3,452'
GL: 3,427'




Lateral: 19,869' MD, 12,425' TVD
Upper Most Perf:
330' FNL & 2301' FEL Sec. 9
Lower Most Perf:
2310' FNL & 2297' FWL Sec. 16
BH Location: 2410' FNL & 2297' FWL
Section 16
T-25-S, R-33-E

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Submit Original to Appropriate District Office

HOBBS OCD
JAN 09 2018
RECEIVED

# GAS CAPTURE PLAN

Date: 08/18/2017

☒ Original
☐ Amended - Reason for Amendment:

Operator & OGRID No.: EOG Resources, Inc. 7377

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

*Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).*

## Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

| Well Name | API | Well Location (ULSTR) | Footages | Expected MCF/D | Flared or Vented | Comments |
|---|---|---|---|---|---|---|
| Antietam 9 Fed Com 709H | 30-025-*** | B-9-25S-33E | 220 FNL & 1930 FWL | ±3500 | None Planned | APD Submission |
| | | | | | | |

## Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to **Enterprise Field Services** and will be connected to **EOG Resources** low/high pressure gathering system located in Eddy/Lea County, New Mexico. **EOG Resources** provides (periodically) to **Enterprise Field Services** a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, **EOG Resources** and **Enterprise Field Services** have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at **Enterprise Field Services** Processing Plant located in **Lea** County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

## Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on **Enterprise Field Services** system at that time. Based on current information, it is **EOG Resources'** belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

## Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

**Operator Name:** EOG RESOURCES INCORPORATED

**Well Name:** ANTIETAM 9 FED COM **Well Number:** 709H

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EXIT Leg #1 | 2310 | FNL | 2297 | FEL | 25S | 33E | 16 | Aliquot SWNE | 32.1314836 | -103.5762031 | LEA | NEW MEXICO | NEW MEXICO | S | STATE | -8998 | 19769 | 12425 |
| BHL Leg #1 | 2410 | FNL | 2297 | FEL | 25S | 33E | 16 | Aliquot SWNE | 32.1312087 | -103.5762032 | LEA | NEW MEXICO | NEW MEXICO | S | STATE | -8998 | 19869 | 12425 |