

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

**NMOCD
Hobbs**

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Serial No. NMNM118726
2. Name of Operator EOG RESOURCES, INC. ✓	6. If Indian, Allottee or Tribe Name
3a. Address P.O. BOX 2267 MIDLAND, TX 79702	7. If Unit or CA/Agreement, Name and/or No.
3b. Phone No. (include area code) Ph: 432-686-3689	8. Well Name and No. ROAD RUNNER FEDERAL 25-33-9 2H ✓
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 9 T25S R33E SESE 220FSL 730FEL	9. API Well No. 30-025-42916 ✓
	10. Field and Pool, or Exploratory WILDCAT WOLFCAMP OIL
	11. County or Parish, and State LEA COUNTY, NM

**NMOCD
HOBBS OGD
JAN 25 2016
RECEIVED**

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

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize <input type="checkbox"/> Deepen <input type="checkbox"/> Production (Start/Resume) <input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing <input type="checkbox"/> Fracture Treat <input type="checkbox"/> Reclamation <input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair <input type="checkbox"/> New Construction <input type="checkbox"/> Recomplete <input checked="" type="checkbox"/> Other Change to Original APD
	<input type="checkbox"/> Change Plans <input type="checkbox"/> Plug and Abandon <input type="checkbox"/> Temporarily Abandon
	<input type="checkbox"/> Convert to Injection <input type="checkbox"/> Plug Back <input type="checkbox"/> 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall 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 a change in TVD target, BHL, and well name as follows:

Change in TVD to 12430', 17233' MD, target Wildcat Wolfcamp Oil.

Change in BHL from 250' FNL & 430' FEL TO: 230' FNL & 985' FEL, 9-25S-33E.

Change well name from Road Runner Federal 25-33-9 2H TO: Antietam 9 Fed 702H.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

ANTIETAM 9 FEDERAL PROPERTY-ID 315966

14. I hereby certify that the foregoing is true and correct. Electronic Submission #322967 verified by the BLM Well Information System For EOG RESOURCES, INC., sent to the Hobbs Committed to AFMSS for processing by LINDA JIMENEZ on 11/13/2015 ()	
Name (Printed/Typed) STAN WAGNER	Title REGULATORY ANALYST
Signature (Electronic Submission)	Date 11/09/2015
THIS SPACE FOR FEDERAL OR STATE OFFICE USE 2016	
Approved By _____	Title _____ Date _____
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 BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE
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.	

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

B. PERM. KE

JAN 29 2016

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EOG RESOURCES, INC.
ANTIETAM 9 FED NO. 702H

1. GEOLOGIC NAME OF SURFACE FORMATION:

Permian

2. ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	1,103'
Top of Salt	1,468'
Base of Salt / Top Anhydrite	5,018'
Lamar	5,018'
Bell Canyon	5,053'
Cherry Canyon	6,128'
Brushy Canyon	7,618'
Bone Spring Lime	9,198'
1 st Bone Spring Sand	10,158'
2 nd Bone Spring Lime	10,383'
2 nd Bone Spring Sand	10,748'
3 rd Bone Spring Carb	11,218'
3 rd Bone Spring Sand	11,878'
Wolfcamp	12,328'
TD	12,430'

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

Upper Permian Sands	0- 400'	Fresh Water
Cherry Canyon	6,128'	Oil
Brushy Canyon	7,618'	Oil
1 st Bone Spring Sand	10,158'	Oil
2 nd Bone Spring Lime	10,383'	Oil
2 nd Bone Spring Sand	10,748'	Oil
3 rd Bone Spring Carb	11,218'	Oil
3 rd Bone Spring Sand	11,878'	Oil
Wolfcamp	12,328'	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 13.375" casing at 1,190' and circulating cement back to surface.

EOG RESOURCES, INC.
ANTIETAM 9 FED NO. 702H

4. CASING PROGRAM - NEW

Hole Size	Interval	Csg OD	Weight	Grade	Conn	DF _{min} Collapse	DF _{min} Burst	DF _{min} Tension
17.5"	0 - 1,190'	13.375"	54.5#	J55	STC	1.125	1.25	1.60
12.25"	0-4,000'	9.625"	40#	J55	LTC	1.125	1.25	1.60
12.25"	4,000' - 5,040'	9.625"	40#	HCK55	LTC	1.125	1.25	1.60
8.75"	0'-17,233'	5.5"	17#	HCP-110	BTC	1.125	1.25	1.60

Cementing Program:

Depth	No. Sacks	Wt. ppg	Yld Ft ³ /ft	Mix Water Gal/sk	Slurry Description
13-3/8" 1,190'	700	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)
	300	14.8	1.34	6.34	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
9-5/8" 5,040'	1000	12.7	2.22	12.38	Lead: Class 'C' + 1.50% R-3 + 0.25 lb/sk Cello-Flake + 2.0% Sodium Metasilicate + 10% Salt + 0.005 lb/sk Static Free (TOC @ surface)
	200	14.8	1.32	6.33	Tail: Class 'C' + 0.25 lb/sk Cello Flake + 0.005 lb/sk Static Free
5-1/2" 17,233'	775	9.0	2.79	10.12	Lead: LiteCRETE + 0.10% D-065 + 0.20% D-046 + 0.40% D-167 + 0.20% D-198 + 0.04% D-208 + 2.0% D-174 (TOC @ 4,540')
	2100	14.4	1.28	5.69	Tail: Class H + 47.01 pps D-909 + 37.01 pps + 5.0% D-020 + 0.30% D-013 + 0.20% D-046 + 0.10% D-065 + 0.50% D-167 + 2.0% D-174

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:

*Self
COA*

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.

EOG RESOURCES, INC.
ANTIETAM 9 FED NO. 702H

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.

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 - 1,190'	Fresh - Gel	8.6-8.8	28-34	N/c
1,190' - 5,040'	Oil Base	8.7-9.4	58-68	N/c - 6
5,040' - 11,947'	Oil Base	8.7-9.4	58-68	N/c - 6
11,947' - 17,233' Lateral	Oil Base	10.0-10.5	58-68	N/c - 6

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

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

**EOG RESOURCES, INC.
ANTIETAM 9 FED NO. 702H**

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) H₂S 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.

*Sell
COA*

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 5382 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. No major loss circulation zones have been reported in offsetting wells.

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.

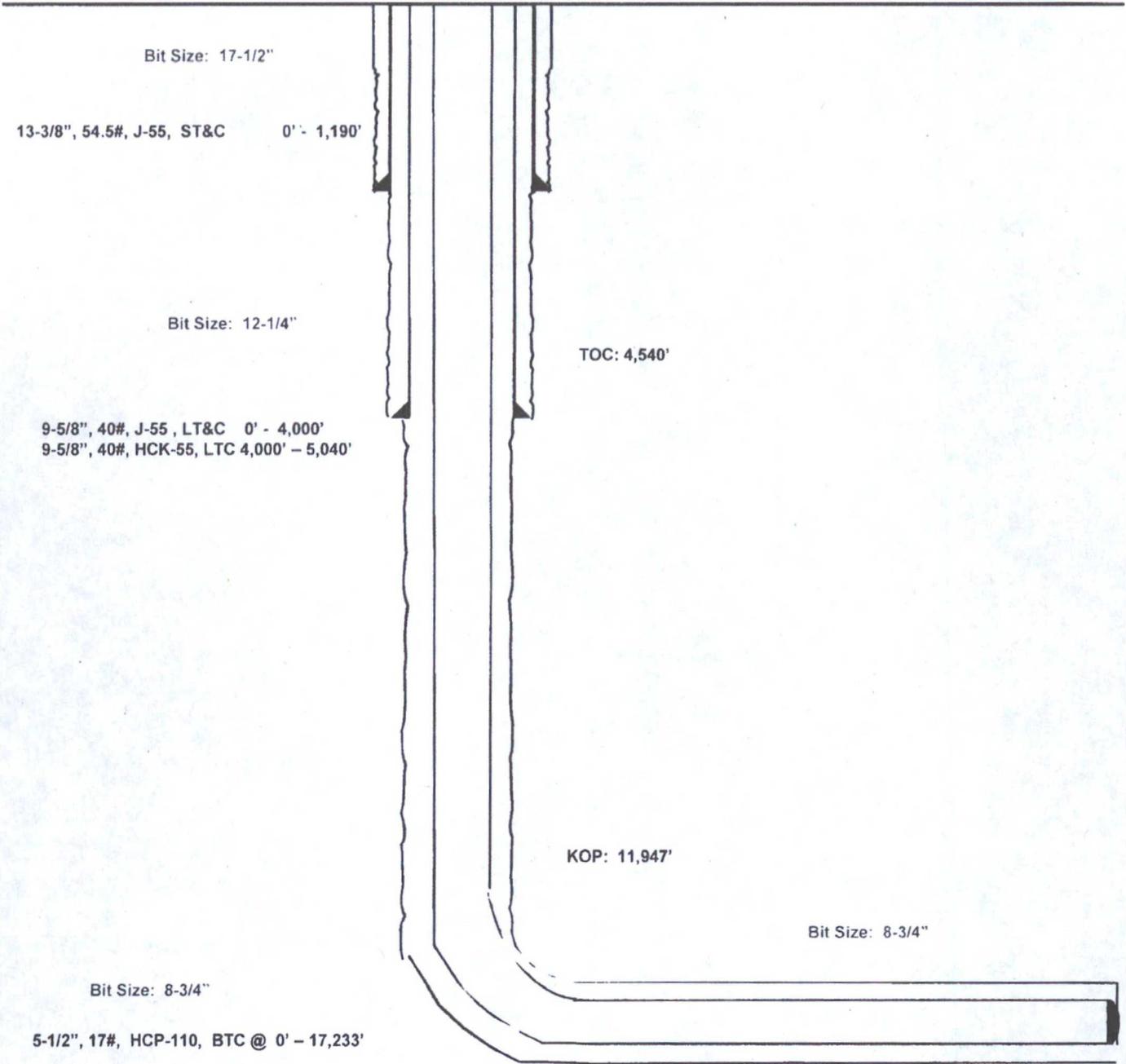
- (A) EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and cement on the subject well. If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

Antietam 9 Fed #702H

Lea County, New Mexico
Proposed Wellbore
Revised 11/6/15
API: 30-025-42916

220' FSL
730' FEL
Section 9
T-25-S, R-33-E

KB: 3,319'
GL: 3,394'



Lateral: 17,233' MD, 12,430' TVD
Upper Most Perf:
330' FSL & 984' FEL Sec. 9
Lower Most Perf:
330' FNL & 985' FEL Sec. 9
BH Location: 230' FNL & 985' FEL
Section 9
T-25-S, R-33-E



Lea County, NM (NAD 27 NME)

Antietam 9 Fed #702H

Precision 612

Plan #0.1

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: 3394.0
KB = 25 @ 3419.0usR (Precision 612)
Northing: 414873.00 Easting: 736071.00 Latitude: 32° 8' 17.897" N Longitude: 103° 34' 14.390" W

SECTION DETAILS

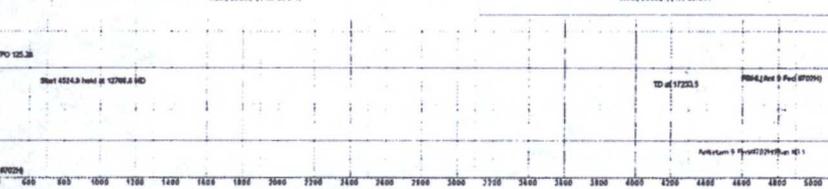
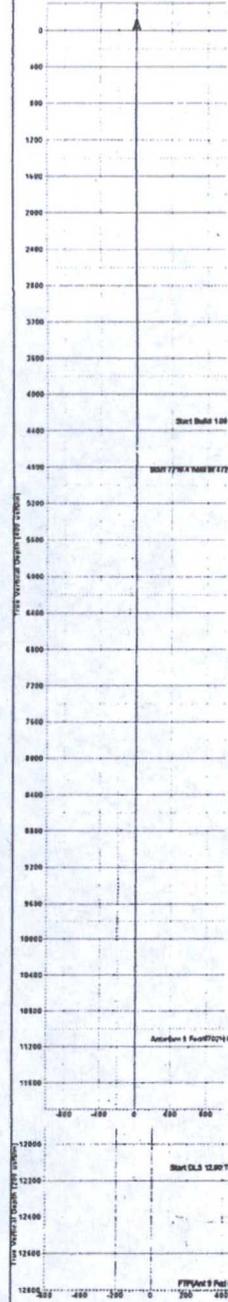
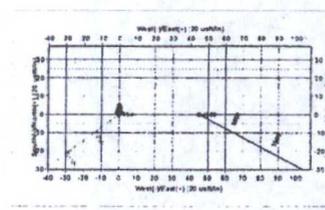
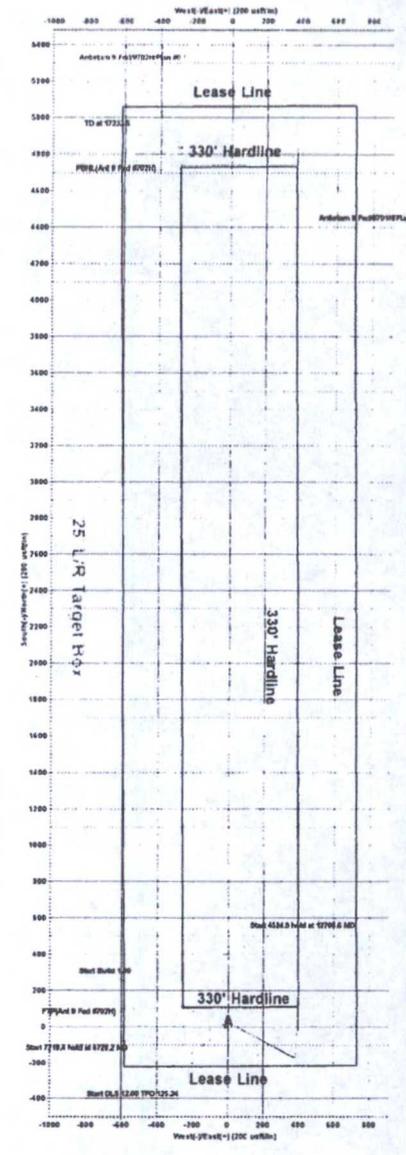
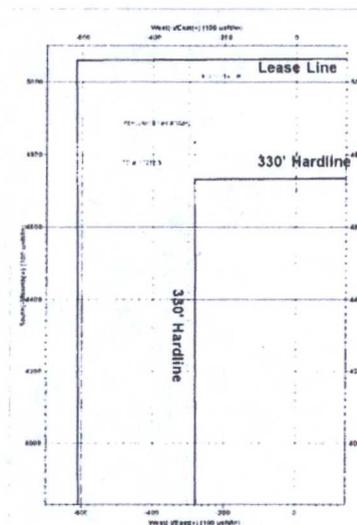
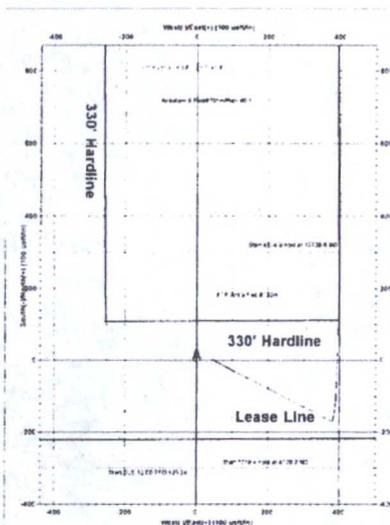
Sec	MD	Inc	Azi	TVD	+N: S	+E: W	Dirg	TFace	VSecl	Target	Annotation
1	0 0	0 00	0 00	0 0	0 0	0 00	0 00	0 00	0 0		
2	4560 0	0 00	0 00	4560 0	0 0	0 00	0 00	0 00	0 0		
3	4728 2	2 28	234 39	4728 2	-2 5	-3 7	1 00	234 38	-2 4		
4	11947 5	2 28	234 39	11947 8	-110 3	-237 4	0 00	0 00	-155 9		
5	12708 5	90 00	358 65	12630 0	307 7	-256 2	12 00	125 24	321 7		
6	17233 5	90 00	358 65	12430 0	4832 0	-284 0	0 00	0 00	4840 3	PBH(Ant 9 Fed #702H)	

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N: S	+E: W	Northing	Easting
PBH(Ant 9 Fed #702H)	12430 0	4832 0	254 0	418705 00	735787 00
FTP(Ant 9 Fed #702H)	12430 0	109 0	255 0	414892 00	735816 00





EOG Resources - Midland

Lea County, NM (NAD 27 NME)

Antietam 9 Fed

#702H

OH

Plan: Plan #0.1

Standard Planning Report

09 November, 2015



EOG Resources, Inc.
Planning Report

Database: EDM 5000.1 Single User Db
 Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 27 NME)
 Site: Antietam 9 Fed
 Well: #702H
 Wellbore: OH
 Design: Plan #0.1

Local Co-ordinate Reference: Well #702H
 TVD Reference: KB = 25 @ 3419.0usft (Precision 612)
 MD Reference: KB = 25 @ 3419.0usft (Precision 612)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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 Antietam 9 Fed

Site Position: Northing: 414,873.00 usft Latitude: 32° 8' 17.894 N
 From: Map Easting: 736,116.00 usft Longitude: 103° 34' 13.866 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: 414,873.00 usft Latitude: 32° 8' 17.897 N
 +E/-W -45.0 usft Easting: 736,071.00 usft Longitude: 103° 34' 14.390 W
 Position Uncertainty 0.0 usft Wellhead Elevation: 0.0 usft Ground Level: 3,394.0 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/14/2016	7.07	60.00	48,000

Design Plan #0.1

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	356.64

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	
4,728.2	2.28	234.39	4,728.2	-2.6	-3.7	1.00	1.00	0.00	234.39	
11,947.6	2.28	234.39	11,941.8	-170.0	-237.4	0.00	0.00	0.00	0.00	
12,708.6	90.00	359.65	12,430.0	307.2	-256.2	12.00	11.53	16.46	125.24	
17,233.5	90.00	359.65	12,430.0	4,832.0	-284.0	0.00	0.00	0.00	0.00	PBHL(Ant 9 Fed #702)



EOG Resources, Inc.

Planning Report

Database: EDM 5000.1 Single User Db
 Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 27 NME)
 Site: Antietam 9 Fed
 Well: #702H
 Wellbore: OH
 Design: Plan #0.1

Local Co-ordinate Reference: Well #702H
 TVD Reference: KB = 25 @ 3419.0usft (Precision 612)
 MD Reference: KB = 25 @ 3419.0usft (Precision 612)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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	234.39	4,600.0	-0.5	-0.7	-0.5	1.00	1.00	0.00
4,700.0	2.00	234.39	4,700.0	-2.0	-2.8	-1.9	1.00	1.00	0.00
4,728.2	2.28	234.39	4,728.2	-2.6	-3.7	-2.4	1.00	1.00	0.00
4,800.0	2.28	234.39	4,799.9	-4.3	-6.0	-4.0	0.00	0.00	0.00
4,900.0	2.28	234.39	4,899.8	-6.6	-9.3	-6.1	0.00	0.00	0.00
5,000.0	2.28	234.39	4,999.7	-8.9	-12.5	-8.2	0.00	0.00	0.00
5,100.0	2.28	234.39	5,099.6	-11.3	-15.7	-10.3	0.00	0.00	0.00
5,200.0	2.28	234.39	5,199.6	-13.6	-19.0	-12.4	0.00	0.00	0.00



EOG Resources, Inc.

Planning Report

Database: EDM 5000.1 Single User Db
 Company: EOG Resources - Midland
 Project: Lea County, NM (NAD 27 NME)
 Site: Antietam 9 Fed
 Well: #702H
 Wellbore: OH
 Design: Plan #0.1

Local Co-ordinate Reference: Well #702H
 TVD Reference: KB = 25 @ 3419.0usft (Precision 612)
 MD Reference: KB = 25 @ 3419.0usft (Precision 612)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.0	2.28	234.39	5,299.5	-15.9	-22.2	-14.6	0.00	0.00	0.00
5,400.0	2.28	234.39	5,399.4	-18.2	-25.4	-16.7	0.00	0.00	0.00
5,500.0	2.28	234.39	5,499.3	-20.5	-28.7	-18.8	0.00	0.00	0.00
5,600.0	2.28	234.39	5,599.2	-22.9	-31.9	-20.9	0.00	0.00	0.00
5,700.0	2.28	234.39	5,699.2	-25.2	-35.2	-23.1	0.00	0.00	0.00
5,800.0	2.28	234.39	5,799.1	-27.5	-38.4	-25.2	0.00	0.00	0.00
5,900.0	2.28	234.39	5,899.0	-29.8	-41.6	-27.3	0.00	0.00	0.00
6,000.0	2.28	234.39	5,998.9	-32.1	-44.9	-29.4	0.00	0.00	0.00
6,100.0	2.28	234.39	6,098.9	-34.5	-48.1	-31.6	0.00	0.00	0.00
6,200.0	2.28	234.39	6,198.8	-36.8	-51.3	-33.7	0.00	0.00	0.00
6,300.0	2.28	234.39	6,298.7	-39.1	-54.6	-35.8	0.00	0.00	0.00
6,400.0	2.28	234.39	6,398.6	-41.4	-57.8	-37.9	0.00	0.00	0.00
6,500.0	2.28	234.39	6,498.5	-43.7	-61.1	-40.1	0.00	0.00	0.00
6,600.0	2.28	234.39	6,598.5	-46.0	-64.3	-42.2	0.00	0.00	0.00
6,700.0	2.28	234.39	6,698.4	-48.4	-67.5	-44.3	0.00	0.00	0.00
6,800.0	2.28	234.39	6,798.3	-50.7	-70.8	-46.4	0.00	0.00	0.00
6,900.0	2.28	234.39	6,898.2	-53.0	-74.0	-48.6	0.00	0.00	0.00
7,000.0	2.28	234.39	6,998.1	-55.3	-77.2	-50.7	0.00	0.00	0.00
7,100.0	2.28	234.39	7,098.1	-57.6	-80.5	-52.8	0.00	0.00	0.00
7,200.0	2.28	234.39	7,198.0	-60.0	-83.7	-54.9	0.00	0.00	0.00
7,300.0	2.28	234.39	7,297.9	-62.3	-86.9	-57.1	0.00	0.00	0.00
7,400.0	2.28	234.39	7,397.8	-64.6	-90.2	-59.2	0.00	0.00	0.00
7,500.0	2.28	234.39	7,497.7	-66.9	-93.4	-61.3	0.00	0.00	0.00
7,600.0	2.28	234.39	7,597.7	-69.2	-96.7	-63.4	0.00	0.00	0.00
7,700.0	2.28	234.39	7,697.6	-71.6	-99.9	-65.6	0.00	0.00	0.00
7,800.0	2.28	234.39	7,797.5	-73.9	-103.1	-67.7	0.00	0.00	0.00
7,900.0	2.28	234.39	7,897.4	-76.2	-106.4	-69.8	0.00	0.00	0.00
8,000.0	2.28	234.39	7,997.3	-78.5	-109.6	-71.9	0.00	0.00	0.00
8,100.0	2.28	234.39	8,097.3	-80.8	-112.8	-74.1	0.00	0.00	0.00
8,200.0	2.28	234.39	8,197.2	-83.1	-116.1	-76.2	0.00	0.00	0.00
8,300.0	2.28	234.39	8,297.1	-85.5	-119.3	-78.3	0.00	0.00	0.00
8,400.0	2.28	234.39	8,397.0	-87.8	-122.6	-80.4	0.00	0.00	0.00
8,500.0	2.28	234.39	8,496.9	-90.1	-125.8	-82.6	0.00	0.00	0.00
8,600.0	2.28	234.39	8,596.9	-92.4	-129.0	-84.7	0.00	0.00	0.00
8,700.0	2.28	234.39	8,696.8	-94.7	-132.3	-86.8	0.00	0.00	0.00
8,800.0	2.28	234.39	8,796.7	-97.1	-135.5	-88.9	0.00	0.00	0.00
8,900.0	2.28	234.39	8,896.6	-99.4	-138.7	-91.1	0.00	0.00	0.00
9,000.0	2.28	234.39	8,996.6	-101.7	-142.0	-93.2	0.00	0.00	0.00
9,100.0	2.28	234.39	9,096.5	-104.0	-145.2	-95.3	0.00	0.00	0.00
9,200.0	2.28	234.39	9,196.4	-106.3	-148.5	-97.4	0.00	0.00	0.00
9,300.0	2.28	234.39	9,296.3	-108.7	-151.7	-99.6	0.00	0.00	0.00
9,400.0	2.28	234.39	9,396.2	-111.0	-154.9	-101.7	0.00	0.00	0.00
9,500.0	2.28	234.39	9,496.2	-113.3	-158.2	-103.8	0.00	0.00	0.00
9,600.0	2.28	234.39	9,596.1	-115.6	-161.4	-105.9	0.00	0.00	0.00
9,700.0	2.28	234.39	9,696.0	-117.9	-164.6	-108.1	0.00	0.00	0.00
9,800.0	2.28	234.39	9,795.9	-120.2	-167.9	-110.2	0.00	0.00	0.00
9,900.0	2.28	234.39	9,895.8	-122.6	-171.1	-112.3	0.00	0.00	0.00
10,000.0	2.28	234.39	9,995.8	-124.9	-174.4	-114.4	0.00	0.00	0.00
10,100.0	2.28	234.39	10,095.7	-127.2	-177.6	-116.6	0.00	0.00	0.00
10,200.0	2.28	234.39	10,195.6	-129.5	-180.8	-118.7	0.00	0.00	0.00
10,300.0	2.28	234.39	10,295.5	-131.8	-184.1	-120.8	0.00	0.00	0.00
10,400.0	2.28	234.39	10,395.4	-134.2	-187.3	-122.9	0.00	0.00	0.00
10,500.0	2.28	234.39	10,495.4	-136.5	-190.5	-125.1	0.00	0.00	0.00
10,600.0	2.28	234.39	10,595.3	-138.8	-193.8	-127.2	0.00	0.00	0.00



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Planning Report

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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)
10.700.0	2.28	234.39	10,695.2	-141.1	-197.0	-129.3	0.00	0.00	0.00
10.800.0	2.28	234.39	10,795.1	-143.4	-200.3	-131.4	0.00	0.00	0.00
10.900.0	2.28	234.39	10,895.0	-145.8	-203.5	-133.6	0.00	0.00	0.00
11.000.0	2.28	234.39	10,995.0	-148.1	-206.7	-135.7	0.00	0.00	0.00
11.100.0	2.28	234.39	11,094.9	-150.4	-210.0	-137.8	0.00	0.00	0.00
11.200.0	2.28	234.39	11,194.8	-152.7	-213.2	-139.9	0.00	0.00	0.00
11.300.0	2.28	234.39	11,294.7	-155.0	-216.4	-142.1	0.00	0.00	0.00
11.400.0	2.28	234.39	11,394.6	-157.3	-219.7	-144.2	0.00	0.00	0.00
11.500.0	2.28	234.39	11,494.6	-159.7	-222.9	-146.3	0.00	0.00	0.00
11.600.0	2.28	234.39	11,594.5	-162.0	-226.1	-148.4	0.00	0.00	0.00
11.700.0	2.28	234.39	11,694.4	-164.3	-229.4	-150.6	0.00	0.00	0.00
11.800.0	2.28	234.39	11,794.3	-166.6	-232.6	-152.7	0.00	0.00	0.00
11.900.0	2.28	234.39	11,894.3	-168.9	-235.9	-154.8	0.00	0.00	0.00
11.947.6	2.28	234.39	11,941.8	-170.0	-237.4	-155.8	0.00	0.00	0.00
11.950.0	2.13	240.72	11,944.2	-170.1	-237.5	-155.9	12.00	-6.38	264.34
11.975.0	2.71	316.26	11,969.2	-169.9	-238.3	-155.6	12.00	2.33	302.14
12.000.0	5.31	339.14	11,994.1	-168.4	-239.1	-154.1	12.00	10.38	91.55
12.025.0	8.18	346.57	12,019.0	-165.6	-239.9	-151.2	12.00	11.51	29.71
12.050.0	11.13	350.12	12,043.6	-161.5	-240.8	-147.1	12.00	11.77	14.21
12.075.0	14.09	352.20	12,068.0	-156.1	-241.6	-141.6	12.00	11.86	8.31
12.100.0	17.07	353.56	12,092.1	-149.4	-242.4	-134.9	12.00	11.91	5.46
12.125.0	20.05	354.53	12,115.8	-141.5	-243.2	-127.0	12.00	11.94	3.88
12.150.0	23.04	355.26	12,139.0	-132.4	-244.0	-117.8	12.00	11.95	2.91
12.175.0	26.03	355.83	12,161.8	-122.0	-244.9	-107.4	12.00	11.96	2.27
12.200.0	29.03	356.29	12,183.9	-110.5	-245.6	-95.9	12.00	11.97	1.83
12.225.0	32.02	356.67	12,205.5	-97.8	-246.4	-83.2	12.00	11.98	1.52
12.250.0	35.01	356.99	12,226.3	-84.0	-247.2	-69.4	12.00	11.98	1.28
12.275.0	38.01	357.26	12,246.4	-69.2	-247.9	-54.5	12.00	11.98	1.10
12.300.0	41.01	357.50	12,265.7	-53.3	-248.7	-38.6	12.00	11.98	0.97
12.325.0	44.00	357.72	12,284.1	-36.4	-249.4	-21.7	12.00	11.99	0.86
12.350.0	47.00	357.91	12,301.6	-18.6	-250.0	-3.9	12.00	11.99	0.77
12.375.0	50.00	358.08	12,318.2	0.1	-250.7	14.8	12.00	11.99	0.70
12.400.0	52.99	358.24	12,333.8	19.7	-251.3	34.4	12.00	11.99	0.64
12.425.0	55.99	358.39	12,348.3	40.0	-251.9	54.7	12.00	11.99	0.59
12.450.0	58.99	358.53	12,361.7	61.1	-252.5	75.8	12.00	11.99	0.55
12.475.0	61.99	358.66	12,374.0	82.8	-253.0	97.5	12.00	11.99	0.52
12.500.0	64.98	358.78	12,385.2	105.2	-253.5	119.9	12.00	11.99	0.49
12.521.4	67.55	358.88	12,393.8	124.8	-253.9	139.5	12.00	11.99	0.47
FTP(Ant 9 Fed #702H)									
12.525.0	67.98	358.89	12,395.2	128.1	-254.0	142.8	12.00	11.99	0.46
12.550.0	70.98	359.01	12,403.9	151.5	-254.4	166.2	12.00	11.99	0.45
12.575.0	73.98	359.11	12,411.4	175.3	-254.8	190.0	12.00	11.99	0.43
12.600.0	76.98	359.22	12,417.7	199.5	-255.2	214.2	12.00	11.99	0.42
12.625.0	79.98	359.32	12,422.7	224.0	-255.5	238.6	12.00	11.99	0.41
12.650.0	82.97	359.42	12,426.4	248.8	-255.7	263.3	12.00	11.99	0.40
12.675.0	85.97	359.52	12,428.8	273.6	-256.0	288.2	12.00	11.99	0.39
12.700.0	88.97	359.61	12,429.9	298.6	-256.2	313.1	12.00	11.99	0.39
12.708.6	90.00	359.65	12,430.0	307.2	-256.2	321.7	12.00	11.99	0.39
12.800.0	90.00	359.65	12,430.0	398.6	-256.8	413.0	0.00	0.00	0.00
12.900.0	90.00	359.65	12,430.0	498.6	-257.4	512.8	0.00	0.00	0.00
13.000.0	90.00	359.65	12,430.0	598.6	-258.0	612.7	0.00	0.00	0.00
13.100.0	90.00	359.65	12,430.0	698.6	-258.6	712.6	0.00	0.00	0.00
13.200.0	90.00	359.65	12,430.0	798.6	-259.2	812.4	0.00	0.00	0.00



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13,300.0	90.00	359.65	12,430.0	898.6	-259.8	912.3	0.00	0.00	0.00
13,400.0	90.00	359.65	12,430.0	998.6	-260.5	1,012.2	0.00	0.00	0.00
13,500.0	90.00	359.65	12,430.0	1,098.6	-261.1	1,112.0	0.00	0.00	0.00
13,600.0	90.00	359.65	12,430.0	1,198.6	-261.7	1,211.9	0.00	0.00	0.00
13,700.0	90.00	359.65	12,430.0	1,298.6	-262.3	1,311.7	0.00	0.00	0.00
13,800.0	90.00	359.65	12,430.0	1,398.6	-262.9	1,411.6	0.00	0.00	0.00
13,900.0	90.00	359.65	12,430.0	1,498.6	-263.5	1,511.5	0.00	0.00	0.00
14,000.0	90.00	359.65	12,430.0	1,598.6	-264.1	1,611.3	0.00	0.00	0.00
14,100.0	90.00	359.65	12,430.0	1,698.6	-264.8	1,711.2	0.00	0.00	0.00
14,200.0	90.00	359.65	12,430.0	1,798.6	-265.4	1,811.0	0.00	0.00	0.00
14,300.0	90.00	359.65	12,430.0	1,898.6	-266.0	1,910.9	0.00	0.00	0.00
14,400.0	90.00	359.65	12,430.0	1,998.6	-266.6	2,010.8	0.00	0.00	0.00
14,500.0	90.00	359.65	12,430.0	2,098.6	-267.2	2,110.6	0.00	0.00	0.00
14,600.0	90.00	359.65	12,430.0	2,198.6	-267.8	2,210.5	0.00	0.00	0.00
14,700.0	90.00	359.65	12,430.0	2,298.6	-268.4	2,310.4	0.00	0.00	0.00
14,800.0	90.00	359.65	12,430.0	2,398.6	-269.1	2,410.2	0.00	0.00	0.00
14,900.0	90.00	359.65	12,430.0	2,498.6	-269.7	2,510.1	0.00	0.00	0.00
15,000.0	90.00	359.65	12,430.0	2,598.6	-270.3	2,609.9	0.00	0.00	0.00
15,100.0	90.00	359.65	12,430.0	2,698.6	-270.9	2,709.8	0.00	0.00	0.00
15,200.0	90.00	359.65	12,430.0	2,798.6	-271.5	2,809.7	0.00	0.00	0.00
15,300.0	90.00	359.65	12,430.0	2,898.6	-272.1	2,909.5	0.00	0.00	0.00
15,400.0	90.00	359.65	12,430.0	2,998.6	-272.7	3,009.4	0.00	0.00	0.00
15,500.0	90.00	359.65	12,430.0	3,098.6	-273.4	3,109.3	0.00	0.00	0.00
15,600.0	90.00	359.65	12,430.0	3,198.6	-274.0	3,209.1	0.00	0.00	0.00
15,700.0	90.00	359.65	12,430.0	3,298.5	-274.6	3,309.0	0.00	0.00	0.00
15,800.0	90.00	359.65	12,430.0	3,398.5	-275.2	3,408.8	0.00	0.00	0.00
15,900.0	90.00	359.65	12,430.0	3,498.5	-275.8	3,508.7	0.00	0.00	0.00
16,000.0	90.00	359.65	12,430.0	3,598.5	-276.4	3,608.6	0.00	0.00	0.00
16,100.0	90.00	359.65	12,430.0	3,698.5	-277.0	3,708.4	0.00	0.00	0.00
16,200.0	90.00	359.65	12,430.0	3,798.5	-277.7	3,808.3	0.00	0.00	0.00
16,300.0	90.00	359.65	12,430.0	3,898.5	-278.3	3,908.1	0.00	0.00	0.00
16,400.0	90.00	359.65	12,430.0	3,998.5	-278.9	4,008.0	0.00	0.00	0.00
16,500.0	90.00	359.65	12,430.0	4,098.5	-279.5	4,107.9	0.00	0.00	0.00
16,600.0	90.00	359.65	12,430.0	4,198.5	-280.1	4,207.7	0.00	0.00	0.00
16,700.0	90.00	359.65	12,430.0	4,298.5	-280.7	4,307.6	0.00	0.00	0.00
16,800.0	90.00	359.65	12,430.0	4,398.5	-281.3	4,407.5	0.00	0.00	0.00
16,900.0	90.00	359.65	12,430.0	4,498.5	-282.0	4,507.3	0.00	0.00	0.00
17,000.0	90.00	359.65	12,430.0	4,598.5	-282.6	4,607.2	0.00	0.00	0.00
17,100.0	90.00	359.65	12,430.0	4,698.5	-283.2	4,707.0	0.00	0.00	0.00
17,200.0	90.00	359.65	12,430.0	4,798.5	-283.8	4,806.9	0.00	0.00	0.00
17,233.5	90.00	359.65	12,430.0	4,832.0	-284.0	4,840.3	0.00	0.00	0.00

PBHL(Ant 9 Fed #702H)



EOG Resources, Inc.
Planning Report

Database: EDM 5000.1 Single User Db
Company: EOG Resources - Midland
Project: Lea County, NM (NAD 27 NME)
Site: Antietam 9 Fed
Well: #702H
Wellbore: OH
Design: Plan #0.1

Local Co-ordinate Reference: Well #702H
TVD Reference: KB = 25 @ 3419.0usft (Precision 612)
MD Reference: KB = 25 @ 3419.0usft (Precision 612)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
FTP(Ant 9 Fed #702H)	0.00	0.00	12.430.0	109.0	-255.0	414,982.00	735,816.00	32° 8' 18.994 N	103° 34' 17.346 W
- plan misses target center by 39.5usft at 12521.4usft MD (12393.8 TVD, 124.8 N, -253.9 E)									
- Point									
PBHL(Ant 9 Fed #702H)	0.00	0.00	12.430.0	4,832.0	-284.0	419,705.00	735,787.00	32° 9' 5.733 N	103° 34' 17.295 W
- plan hits target center									
- Point									

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Roadrunner Oil and Gas LLC
LEASE NO.:	NMNM-118726
WELL NAME & NO.:	Antietam 9 Fed 702H
SURFACE HOLE FOOTAGE:	220'/S & 730'/E
BOTTOM HOLE FOOTAGE:	230'/N & 985'/E
LOCATION:	Section 9, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

The original COAs still stand with the following drilling modifications:

I. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

- 1. **Although there are no measured amounts of Hydrogen Sulfide reported, it is always a potential hazard. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**
- 2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
- 3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. 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. **DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE.**

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

Possibility of water flows in the Salado and in the Delaware.
Possibility of lost circulation in the Red Beds, in the Rustler and in the Delaware.
Abnormal pressures may be encountered when penetrating the 3rd Bone Spring Sandstone and all subsequent formations.

1. The 13-3/8 inch surface casing shall be set at approximately 1190 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 13-3/8" 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 and the mud weight for the bottom of the hole. Report results to BLM office.

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing, which shall be set at approximately 5040 feet (in a competent bed above the Delaware Sands, which is the Lamar Limestone), is:

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

Formation below the 9-5/8" 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 500 feet into previous casing string. Operator shall provide method of verification.

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.

C. 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. 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. 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 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 **Wolfcamp** 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.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

E. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

F. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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