Form 3160-5 (June 2019)

### UNITED STATES DEPARTMENT OF THE INTERIOR BURGELLAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 202

BUREAU OF LAND MANAGEMENT	5. Lease Serial No. NMNM118726			
SUNDRY NOTICES AND REPORTS ON W Do not use this form for proposals to drill or to abandoned well. Use Form 3160-3 (APD) for suc	re-enter an	6. If Indian, Allottee	or Tribe Name	
SUBMIT IN TRIPLICATE - Other instructions on pag	7. If Unit of CA/Agr	eement, Name and/or No.		
1. Type of Well  Oil Well  Gas Well  Other		8. Well Name and No	D. ANTIETAM 9 FED COM/306H	
2. Name of Operator EOG RESOURCES INCORPORATED		9. API Well No.	30-025-52258	
3a. Address 1111 BAGBY SKY LOBBY 2, HOUSTON, TX 77( 3b. Phone No.	(include area code)	10. Field and Pool or		
(713) 651-700	00		ER BONE SPRING SHALE	
4. Location of Well (Footage, Sec., T.,R.,M., or Survey Description) SEC 9/T25S/R33E/NMP		11. Country or Parish LEA/NM	1, State	
12. CHECK THE APPROPRIATE BOX(ES) TO INI	DICATE NATURE OF NOTI	CE, REPORT OR OT	THER DATA	
TYPE OF SUBMISSION	TYPE OF AC	ΓΙΟΝ		
Coging Renair News	aulic Fracturing Recla	uction (Start/Resume) amation omplete	Water Shut-Off Well Integrity Other	
Subsequent Report  Change Plans  Plug	and Abandon Temp	porarily Abandon er Disposal	Oulci	
the Bond under which the work will be perfonned or provide the Bond No. on f completion of the involved operations. If the operation results in a multiple com completed. Final Abandonment Notices must be filed only after all requirement is ready for final inspection.)  Antietam 9 Fed Com 229H (FKA 306H) API #: 30-025-52258  EOG respectfully requests an amendment to our approved APD for this Change name from Antietam 9 Fed Com 306H to Antietam 9 Fed Com Change BHL from T-25-S, R-33-E, Sec 16, 2540' FNL, 570' FWL, Lea to T-25-S, R-33-E, Sec 16, 2540' FNL, 330' FWL, Lea Co., N.M.  Change target formation to Leonard B.  Update casing and cement program to current design.	npletion or recompletion in a s, including reclamation, have s well to reflect the following 229H.	new interval, a Form e been completed and	3160-4 must be filed once testing has been	
STAR HARRELL / Ph: (432) 848-9161	Regulatory Specialis	st		
Signature (Electronic Submission)	Date	12/04/2	2023	
THE SPACE FOR FEDI	ERAL OR STATE OF	ICE USE		
Approved by				
KEITH P IMMATTY / Ph: (575) 988-4722 / Approved	ENGINEER Title		12/21/2023 Date	
Conditions of approval, if any, are attached. Approval of this notice does not warran certify that the applicant holds legal or equitable title to those rights in the subject le which would entitle the applicant to conduct operations thereon.				

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

(Instructions on page 2)

#### **GENERAL INSTRUCTIONS**

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

#### SPECIFIC INSTRUCTIONS

*Item 4* - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

#### **NOTICES**

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c)and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

(Form 3160-5, page 2)

#### **Additional Information**

#### **Location of Well**

 $0. \ SHL: TR\ D\ /\ 731\ FNL\ /\ 317\ FWL\ /\ TWSP: 25S\ /\ RANGE: 33E\ /\ SECTION: 9\ /\ LAT: 32.1503544\ /\ LONG: -103.5847216\ (\ TVD: 0\ feet, MD: 0\ feet\ )$  PPP: TR\ D\ /\ 100\ FNL\ /\ 570\ FWL\ /\ TWSP: 25S\ /\ RANGE: 33E\ /\ SECTION: 9\ /\ LAT: 32.1520862\ /\ LONG: -103.5839016\ (\ TVD: 9834\ feet, MD: 9885\ feet\ ) BHL: TR\ E\ /\ 2540\ FNL\ /\ 570\ FWL\ /\ TWSP: 25S\ /\ RANGE: 33E\ /\ SECTION: 16\ /\ LAT: 32.1308665\ /\ LONG: -103.5839147\ (\ TVD: 9630\ feet, MD: 17233\ feet\ )

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-0161 Fast: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 478-1283 Fast: (575) 748-9720
DISTRICT III
000 Rio Brazos Rd., Aztec, NM 87410
Phone: (505) 334-6178 Fast: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fc, NM 87505
Phone: (505) 476-3460 Fast: (505) 476-3462

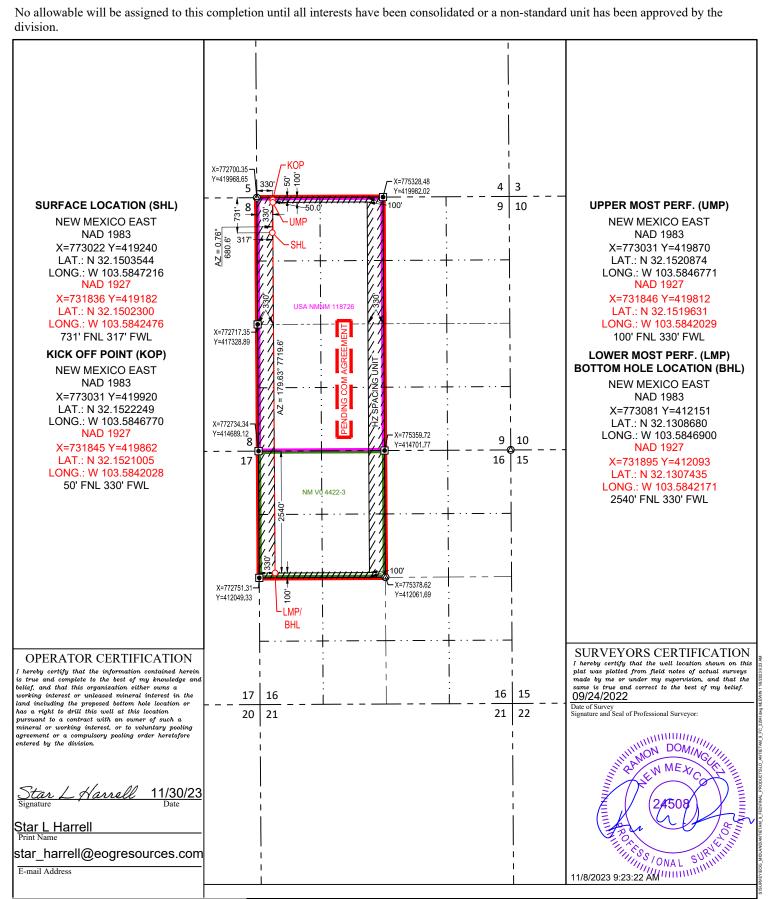
# State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

Form C-102 Revised August 1, 2011 Submit one copy to appropriate District Office

☐ AMENDED REPORT

#### WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number Pool Cod 30-025-52258 97900										
Property Code 317131					Property Name NTIETAM 9 FE	Well Number 229H				
0GRID N 7377				EC	Operator Name	Elevation 3429'				
	Surface Location									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County	
D	9	25-S	S 33-E - 731' NORTH 317'		317'	WEST	LEA			
			Bott	om Hole	Location If Diffe	erent From Surfac	e			
UL or lot no.	L or lot no. Section Township Range Lot		Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
E	16	25-S	25-S 33-E -		2540'	0' NORTH 330'		WEST	LEA	
Dedicated Acres 480.00	Joint or	Infill	Consolidated Code Order No.  PENDING COM AGREEMENT							





#### **Revised Permit Information 11/02/2023:**

Well Name: Antietam 9 Fed Com 229H

Location: SHL: 731' FNL & 317' FWL, Section 9, T-25-S, R-33-E, Lea Co., N.M.

BHL: 2540' FNL & 330' FWL, Section 16, T-25-S, R-33-E, Lea Co., N.M.

**Casing Program A:** 

Hole	Interv	al MD	Interva	al TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	1,270	0	1,270	13-3/8"	54.5#	J-55	STC
11"	0	5,087	0	5,050	9-5/8"	40#	J-55	LTC
6-3/4"	0	17,412	0	9,810	5-1/2"	17#	HCP-110	LTC

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

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

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

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

**Cementing Program:** 

Ceme	nung 110	51 41111.	T	
Depth	No. Sacks	Wt. ppg	Yld Ft3/sk	Slurry Description
1,270'	340	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	160	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,070')
5,050' 9-5/8''	490	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	100	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 4,040')
17,412' 5-1/2"	280	10.5	3.21	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,550')
	570	13.2	1.52	Tail: Class H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ 9370')



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

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.

#### **Mud Program:**

		I			
Depth (TVD) Type		Weight (ppg)	Viscosity	Water Loss	
0 – 1,270'	Fresh - Gel	8.6-8.8	28-34	N/c	
1,270' – 5,050'	Brine	8.6-8.8	28-34	N/c	
5,050' - 17,412'	Oil Base	8.8-9.5	58-68	N/c - 6	



#### **TUBING REQUIREMENTS**

EOG respectively requests an exception to the following NMOCD rule:

• 19.15.16.10 Casing AND TUBING RQUIREMENTS:

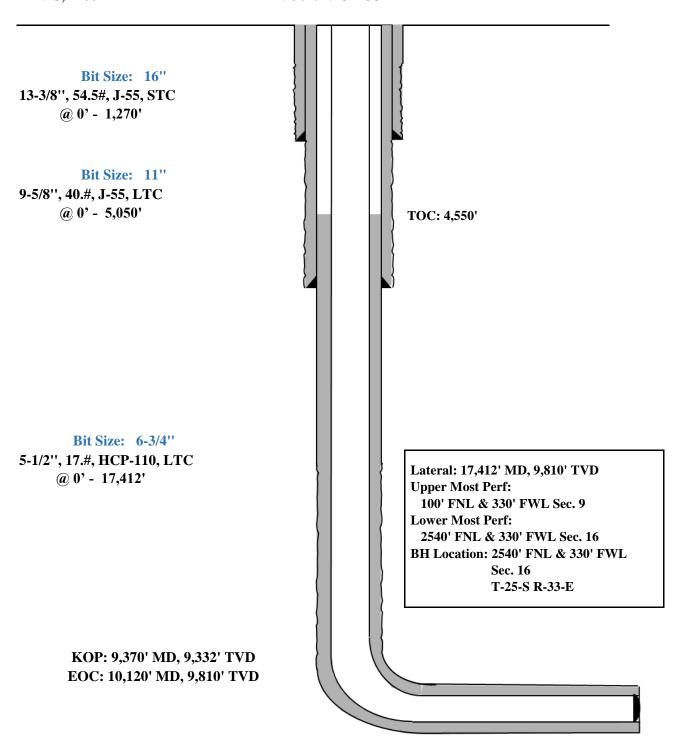
J (3): "The operator shall set tubing as near the bottom as practical and tubing perforations shall not be more than 250 feet above top of pay zone."

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

731' FNL Revised Wellbore A: KB: 3454'
317' FWL GL: 3429'

317' FWL Section 9

T-25-S, R-33-E API: 30-025-52258





#### **Revised Permit Information 11/02/2023:**

Well Name: Antietam 9 Fed Com 229H

Location: SHL: 731' FNL & 317' FWL, Section 9, T-25-S, R-33-E, Lea Co., N.M.

BHL: 2540' FNL & 330' FWL, Section 16, T-25-S, R-33-E, Lea Co., N.M.

#### **Casing Program B:**

Hole	Interv	al MD	Interval TVD		Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13-1/2"	0	1,270	0	1,270	10-3/4"	40.5#	J-55	STC
9-7/8"	0	5,087	0	5,050	8-5/8"	32#	J-55	BTC-SC
6-3/4"	0	17,412	0	9,810	5-1/2"	17#	HCP-110	LTC

#### **Cementing Program:**

Depth	No. Sacks	Wt.	Yld Ft3/sk	Slurry Description
1,270' 10-3/4''	410	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello- Flake (TOC @ Surface)
	110	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,070')
5,050' 8-5/8"	400	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	640	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 4,040')
17,412' 5-1/2"	460	10.5	3.21	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,550')
	800	13.2	1.52	Tail: Class H + 5% NEX-020 + 0.2% NAC-102 + 0.15% NAS-725 + 0.5% NFL-549 + 0.2% NFP-703 + 1% NBE-737 + 0.3% NRT-241 (TOC @ 9370')



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

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

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

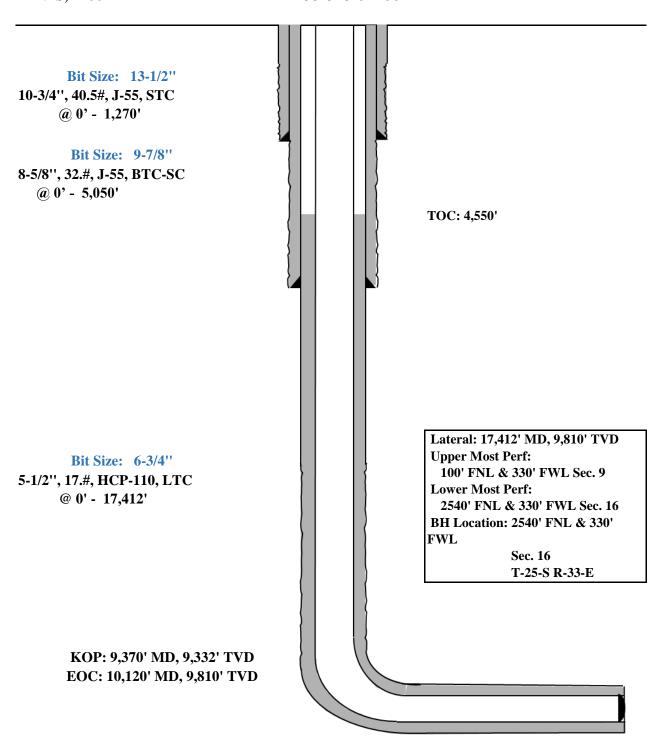
- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.



731' Revised Wellbore B: KB: 3454' 317' GL: 3429'

**Section 9** 

T-25-S, R-33-E API: 30-025-52258





#### GEOLOGIC NAME OF SURFACE FORMATION:

Permian

#### ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	1,162'
Tamarisk Anhydrite	1,244'
Top of Salt	1,532'
Base of Salt	4,949'
Lamar	5,105'
Bell Canyon	5,133'
Cherry Canyon	6,156'
Brushy Canyon	9,001'
Bone Spring Lime	9,197'
Leonard (Avalon) Shale	9,246'
1st Bone Spring Sand	10,107'
2nd Bone Spring Shale	10,349'
TD	9,810'

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

Upper Permian Sands	0- 400'	Fresh Wate
Bell Canyon	5,133'	Oil
Cherry Canyon	6,156'	Oil
Brushy Canyon	9,001'	Oil
Leonard (Avalon) Shale	9,246'	Oil
1st Bone Spring Sand	10,107'	Oil
2nd Bone Spring Shale	10,349'	Oil



### **Midland**

Lea County, NM (NAD 83 NME) Antietam 9 Fed Com #229H

OH

Plan: Plan #0.2

### **Standard Planning Report**

**08 November, 2023** 



#### **Planning Report**

Database: Company: PEDM Midland

Lea County, NM (NAD 83 NME)

Antietam 9 Fed Com Site:

Well: #229H Wellbore: ОН Plan #0.2 Design:

**Local Co-ordinate Reference:** 

**TVD Reference:** MD Reference: North Reference:

**Survey Calculation Method:** 

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

Minimum Curvature

Project

Project:

Lea County, NM (NAD 83 NME)

Map System: Geo Datum:

Map Zone:

US State Plane 1983 North American Datum 1983 New Mexico Eastern Zone

System Datum:

Mean Sea Level

Antietam 9 Fed Com Site

Site Position: From:

Northing: Мар Easting:

419,815.00 usft 774,698.00 usft

Latitude: Longitude:

usft

32° 9' 6.852 N 103° 34' 45.452 W

**Position Uncertainty:** 0.0 usft Slot Radius: 13-3/16 "

Well #229H

> +N/-S +E/-W

0.0 usft 0.0 usft 0.0 usft

Northing: Easting:

419,240.00 usft 773,022.00 usft Wellhead Elevation:

Latitude: Longitude: **Ground Level:** 

32° 9' 1.278 N 103° 35' 4.993 W

3,429.0 usft

0.40 ° **Grid Convergence:** 

Wellbore

**Well Position** 

**Position Uncertainty** 

ОН

Declination Magnetics **Model Name** Sample Date Dip Angle Field Strength (°) (°) (nT) 47,303.39045359 IGRF2020 11/7/2022 6.38 59.78

Design

Audit Notes:

Version:

Phase: Vertical Section: Depth From (TVD)

17,411.7

Plan #0.2

PLAN

+N/-S (usft)

Tie On Depth: +E/-W

(usft)

0.0

0.0

Direction (°) 179.52

**Plan Survey Tool Program** 

Date 11/8/2023

(usft)

0.0

**Depth From** (usft)

0.0

Depth To (usft)

Survey (Wellbore)

Plan #0.2 (OH)

**Tool Name** 

Remarks

EOG MWD+IFR1 MWD + IFR1

0.0

11/8/2023 3:11:01PM



#### **Planning Report**

Database: Company:

Project:

PEDM

Midland

Lea County, NM (NAD 83 NME)

Site: Antietam 9 Fed Com

 Well:
 #229H

 Wellbore:
 OH

 Design:
 Plan #0.2

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #229H

kb = 26' @ 3455.0usft

kb = 26' @ 3455.0usft

Grid

an 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	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,621.6	6.43	0.76	1,620.9	18.0	0.2	2.00	2.00	0.00	0.76	
7,371.0	6.43	0.76	7,334.1	662.0	8.8	0.00	0.00	0.00	0.00	
7,692.5	0.00	0.01	7,655.0	680.0	9.0	2.00	-2.00	0.00	180.00	
9,370.0	0.00	0.01	9,332.5	680.0	9.0	0.00	0.00	0.00	0.00	KOP(Antietam 9 Fed
9,590.5	26.46	180.00	9,545.2	630.0	9.0	12.00	12.00	81.65	180.00	FTP(Antietam 9 Fed 0
10,120.0	90.00	179.62	9,809.9	202.5	10.9	12.00	12.00	-0.07	-0.42	
17,411.7	90.00	179.62	9,810.0	-7,089.0	59.0	0.00	0.00	0.00	0.00	PBHL(Antietam 9 Fed

# eog resources

#### **Planning Report**

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antietam 9 Fed Com

 Well:
 #229H

 Wellbore:
 OH

 Design:
 Plan #0.2

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

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				0.0					
	0.00	0.00	300.0		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	2.00	0.76	1,400.0	1.7	0.0	-1.7	2.00	2.00	0.00
4.500.0	4.00	0.70	4 400 0	7.0	0.4	7.0	0.00	0.00	0.00
1,500.0	4.00	0.76	1,499.8	7.0	0.1	-7.0	2.00	2.00	0.00
1,600.0	6.00	0.76	1,599.5	15.7	0.2	-15.7	2.00	2.00	0.00
1,621.6	6.43	0.76	1,620.9	18.0	0.2	-18.0	2.00	2.00	0.00
1,700.0	6.43	0.76	1,698.8	26.8	0.4	-26.8	0.00	0.00	0.00
1,800.0	6.43	0.76	1,798.2	38.0	0.5	-38.0	0.00	0.00	0.00
1,900.0	6.43	0.76	1,897.6	49.2	0.7	-49.2	0.00	0.00	0.00
2,000.0	6.43	0.76	1,996.9	60.4	0.8	-60.4	0.00	0.00	0.00
2,100.0	6.43	0.76	2,096.3	71.6	0.9	-71.6	0.00	0.00	0.00
2,200.0	6.43	0.76	2,195.7	82.8	1.1	-82.8	0.00	0.00	0.00
2,300.0	6.43	0.76	2,295.1	94.0	1.2	-94.0	0.00	0.00	0.00
2,300.0	0.43	0.70	2,295.1	34.0	1.2	-34.0	0.00	0.00	0.00
2,400.0	6.43	0.76	2,394.4	105.2	1.4	-105.2	0.00	0.00	0.00
2,500.0	6.43	0.76	2,493.8	116.4	1.5	-116.4	0.00	0.00	0.00
2,600.0	6.43	0.76	2,593.2	127.6	1.7	-127.6	0.00	0.00	0.00
2,700.0	6.43	0.76	2,692.5	138.8	1.8	-138.8	0.00	0.00	0.00
							0.00		
2,800.0	6.43	0.76	2,791.9	150.0	2.0	-150.0	0.00	0.00	0.00
2,900.0	6.43	0.76	2,891.3	161.2	2.1	-161.2	0.00	0.00	0.00
3,000.0	6.43	0.76	2,990.7	172.4	2.3	-172.4	0.00	0.00	0.00
3,100.0	6.43	0.76	3,090.0	183.6	2.4	-183.6	0.00	0.00	0.00
·		0.76	3,189.4	194.8		-194.8			
3,200.0	6.43		,		2.6		0.00	0.00	0.00
3,300.0	6.43	0.76	3,288.8	206.0	2.7	-206.0	0.00	0.00	0.00
3,400.0	6.43	0.76	3,388.1	217.2	2.9	-217.2	0.00	0.00	0.00
3,500.0	6.43	0.76	3,487.5	228.4	3.0	-228.4	0.00	0.00	0.00
3,600.0	6.43	0.76	3,586.9	239.6	3.2	-239.6	0.00	0.00	0.00
3,700.0	6.43	0.76	3,686.2	250.8	3.3	-250.8	0.00	0.00	0.00
3,800.0	6.43	0.76	3,785.6	262.0	3.5	-262.0	0.00	0.00	0.00
3,900.0	6.43	0.76	3,885.0	273.2	3.6	-273.2	0.00	0.00	0.00
4,000.0	6.43	0.76	3,984.4	284.4	3.8	-284.4	0.00	0.00	0.00
4,100.0	6.43	0.76	4,083.7	295.6	3.9	-295.6	0.00	0.00	0.00
4,200.0	6.43	0.76	4,183.1	306.8	4.1	-306.8	0.00	0.00	0.00
4,300.0	6.43	0.76	4,282.5	318.0	4.2	-318.0	0.00	0.00	0.00
4,400.0	6.43	0.76	4,381.8	329.2	4.4	-329.2	0.00	0.00	0.00
4,500.0	6.43	0.76	4,481.2	340.4		-340.4	0.00	0.00	0.00
					4.5				
4,600.0	6.43	0.76	4,580.6	351.6	4.7	-351.6	0.00	0.00	0.00
4,700.0	6.43	0.76	4,680.0	362.8	4.8	-362.8	0.00	0.00	0.00
4,800.0	6.43	0.76	4,779.3	374.0	5.0	-374.0	0.00	0.00	0.00
4.000.0	0.40	0.70	4 070 7	205.0	<b>-</b> 1	205.0	0.00	0.00	0.00
4,900.0	6.43	0.76	4,878.7	385.2	5.1	-385.2	0.00	0.00	0.00
5,000.0	6.43	0.76	4,978.1	396.4	5.2	-396.4	0.00	0.00	0.00
5,100.0	6.43	0.76	5,077.4	407.6	5.4	-407.6	0.00	0.00	0.00
5,200.0	6.43	0.76	5,176.8	418.8	5.5	-418.8			0.00

# eog resources

#### **Planning Report**

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antietam 9 Fed Com

 Well:
 #229H

 Wellbore:
 OH

 Design:
 Plan #0.2

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

Design:	Plan #0.2								
Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.0	6.43	0.76	5,276.2	430.0	5.7	-430.0	0.00	0.00	0.00
5,400.0	6.43	0.76	5,375.5	441.2	5.8	-441.2	0.00	0.00	0.00
5,500.0	6.43	0.76	5,474.9	452.4	6.0	-452.4	0.00	0.00	0.00
5,600.0	6.43	0.76	5,574.3	463.6	6.1	-463.6	0.00	0.00	0.00
5,700.0	6.43	0.76	5,673.7	474.8	6.3	-474.8	0.00	0.00	0.00
5,800.0	6.43	0.76	5,773.0	486.0	6.4	-486.0	0.00	0.00	0.00
5,900.0	6.43	0.76	5,872.4	497.2	6.6	-497.1	0.00	0.00	0.00
6,000.0	6.43	0.76	5,971.8	508.4	6.7	-508.3	0.00	0.00	0.00
6,100.0	6.43	0.76	6,071.1	519.6	6.9	-519.5	0.00	0.00	0.00
6,200.0	6.43	0.76	6,170.5	530.8	7.0	-530.7	0.00	0.00	0.00
6,300.0	6.43	0.76	6,269.9	542.0	7.2	-541.9	0.00	0.00	0.00
6,400.0	6.43	0.76	6,369.3	553.2	7.3	-553.1	0.00	0.00	0.00
6,500.0	6.43	0.76	6,468.6	564.4	7.5	-564.3	0.00	0.00	0.00
6,600.0	6.43	0.76	6,568.0	575.6	7.6	-575.5	0.00	0.00	0.00
6,700.0	6.43	0.76	6,667.4	586.8	7.8	-586.7	0.00	0.00	0.00
6,800.0	6.43	0.76	6,766.7	598.0	7.9	-597.9	0.00	0.00	0.00
6,900.0	6.43	0.76	6,866.1	609.2	8.1	-609.1	0.00	0.00	0.00
7,000.0	6.43	0.76	6,965.5	620.4	8.2	-620.3	0.00	0.00	0.00
7,100.0	6.43	0.76	7,064.8	631.6	8.4	-631.5	0.00	0.00	0.00
7,200.0	6.43	0.76	7,164.2	642.8	8.5	-642.7	0.00	0.00	0.00
7,300.0	6.43	0.76	7,263.6	654.0	8.7	-653.9	0.00	0.00	0.00
7,371.0	6.43	0.76	7,334.1	662.0	8.8	-661.9	0.00	0.00	0.00
7,400.0	5.85	0.76	7,363.0	665.1	8.8	-665.0	2.00	-2.00	0.00
7,500.0	3.85	0.76	7,462.6	673.5	8.9	-673.4	2.00	-2.00	0.00
7,600.0	1.85	0.76	7,562.5	678.5	9.0	-678.4	2.00	-2.00	0.00
7,692.5	0.00	0.01	7,655.0	680.0	9.0	-679.9	2.00	-2.00	0.00
7,700.0	0.00	0.00	7,662.5	680.0	9.0	-679.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,762.5	680.0	9.0	-679.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,862.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,962.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,100.0	0.00	0.00	8,062.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,200.0	0.00	0.00	8,162.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,300.0	0.00	0.00	8,262.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,400.0	0.00	0.00	8,362.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,500.0	0.00	0.00	8,462.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,600.0	0.00	0.00	8,562.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,700.0	0.00	0.00	8,662.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,800.0	0.00	0.00	8,762.5	680.0	9.0	-679.9	0.00	0.00	0.00
8,900.0	0.00	0.00	8,862.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,000.0	0.00	0.00	8,962.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,100.0	0.00	0.00	9,062.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,200.0	0.00	0.00	9,162.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,300.0	0.00	0.00	9,262.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,370.0	0.00	0.01	9,332.5	680.0	9.0	-679.9	0.00	0.00	0.00
9,375.0	0.60	180.00	9,337.5	680.0	9.0	-679.9	12.00	12.00	0.00
9,400.0	3.60	180.00	9,362.4	679.1	9.0	-679.0	12.00	12.00	0.00
9,425.0	6.60	180.00	9,387.3	676.8	9.0	-676.7	12.00	12.00	0.00
9,450.0	9.60	180.00	9,412.1	673.3	9.0	-673.2	12.00	12.00	0.00
9,475.0	12.60	180.00	9,436.6	668.5	9.0	-668.4	12.00	12.00	0.00
9,500.0	15.60	180.00	9,460.9	662.4	9.0	-662.3	12.00	12.00	0.00
9,525.0	18.60	180.00	9,484.8	655.1	9.0	-655.0	12.00	12.00	0.00
9,550.0	21.60	180.00	9,508.2	646.5	9.0	-646.4	12.00	12.00	0.00
9,575.0	24.60	180.00	9,531.2	636.7	9.0	-636.6	12.00	12.00	0.00
9,590.5	26.46	180.00	9,545.2	630.0	9.0	-629.9	12.00	12.00	0.00

# eog resources

#### **Planning Report**

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antietam 9 Fed Com

 Well:
 #229H

 Wellbore:
 OH

 Design:
 Plan #0.2

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

Design:	Plan #0.2								
Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,600.0 9,625.0	27.60 30.60	179.98 179.94	9,553.7 9,575.5	625.7 613.5	9.0 9.0	-625.6 -613.4	12.00 12.00	12.00 12.00	-0.19 -0.17
9,650.0	33.60	179.91	9,596.7	600.2	9.0	-600.1	12.00	12.00	-0.14
9,675.0	36.60	179.88	9,617.1	585.9	9.1	-585.8	12.00	12.00	-0.12
9,700.0	39.60	179.85	9,636.8	570.4	9.1	-570.3	12.00	12.00	-0.10
9,725.0	42.60	179.83	9,655.7	554.0	9.1	-553.9	12.00	12.00	-0.09
9,750.0	45.60	179.81	9,673.6	536.6	9.2	-536.5	12.00	12.00	-0.08
9,775.0	48.60	179.79	9,690.6	518.3	9.3	-518.2	12.00	12.00	-0.07
9,800.0	51.60	179.77	9,706.7	499.1	9.3	-499.0	12.00	12.00	-0.07
9,825.0	54.60	179.76	9,721.7	479.1	9.4	-479.0	12.00	12.00	-0.06
9,850.0	57.60	179.74	9,735.6	458.4	9.5	-458.3	12.00	12.00	-0.06
9,875.0	60.60	179.73	9,748.4	436.9	9.6	-436.8	12.00	12.00	-0.05
9,900.0	63.60	179.72	9,760.1	414.8	9.7	-414.8	12.00	12.00	-0.05
9,925.0 9,950.0	66.60	179.70 179.69	9,770.7 9,780.0	392.2 369.0	9.8	-392.1 -368.9	12.00	12.00 12.00	-0.05
9,950.0 9,975.0	69.60 72.60	179.69	9,780.0 9,788.1	369.0 345.3	10.0 10.1	-368.9 -345.2	12.00 12.00	12.00 12.00	-0.05 -0.04
10,000.0	72.60 75.60	179.68	9,788.1 9,794.9	345.3 321.3	10.1	-345.2 -321.2	12.00	12.00	-0.04 -0.04
10,025.0	78.60	179.66	9,800.5	296.9	10.4	-296.8	12.00	12.00	-0.04
10,050.0	81.60	179.65	9,804.8	272.3	10.5	-272.2	12.00	12.00	-0.04
10,075.0	84.60	179.64	9,807.8	247.5	10.7	-247.4	12.00	12.00	-0.04
10,100.0	87.60	179.63	9,809.5	222.5	10.8	-222.5	12.00	12.00	-0.04
10,120.0	90.00	179.62	9,809.9	202.5	10.9	-202.4	12.00	12.00	-0.04
10,200.0	90.00	179.62	9,809.9	122.6	11.5	-122.5	0.00	0.00	0.00
10,300.0	90.00	179.62	9,809.9	22.6	12.1	-22.5	0.00	0.00	0.00
10,400.0	90.00	179.62	9,809.9	-77.4	12.8	77.5	0.00	0.00	0.00
10,500.0	90.00	179.62	9,809.9	-177.4	13.5	177.5	0.00	0.00	0.00
10,600.0	90.00	179.62	9,809.9	-277.4	14.1	277.5	0.00	0.00	0.00
10,700.0	90.00	179.62	9,809.9	-377.4	14.8	377.5	0.00	0.00	0.00
10,800.0	90.00	179.62	9,809.9	-477.4	15.4	477.5	0.00	0.00	0.00
10,900.0	90.00	179.62	9,810.0	-577.4	16.1	577.5	0.00	0.00	0.00
11,000.0	90.00	179.62	9,810.0	-677.4	16.7	677.5	0.00	0.00	0.00
11,100.0	90.00	179.62	9,810.0	-777.4	17.4	777.5	0.00	0.00	0.00
11,200.0 11,300.0	90.00 90.00	179.62 179.62	9,810.0 9,810.0	-877.4 -977.4	18.1	877.5 977.5	0.00	0.00 0.00	0.00
11,400.0	90.00	179.62	9,810.0	-977.4 -1,077.4	18.7 19.4	977.5 1,077.5	0.00 0.00	0.00	0.00 0.00
11,500.0	90.00	179.62	9,810.0	-1,177.4	20.0	1,077.5	0.00	0.00	0.00
11,600.0	90.00	179.62	9,810.0	-1,277.4	20.7	1,277.5	0.00	0.00	0.00
11,700.0	90.00	179.62	9,810.0	-1,377.4	21.4	1,377.5	0.00	0.00	0.00
11,800.0	90.00	179.62	9,810.0	-1,477.4	22.0	1,477.5	0.00	0.00	0.00
11,900.0	90.00	179.62	9,810.0	-1,577.4	22.7	1,577.5	0.00	0.00	0.00
12,000.0	90.00	179.62	9,810.0	-1,677.4	23.3	1,677.5	0.00	0.00	0.00
12,100.0	90.00	179.62	9,810.0	-1,777.4	24.0	1,777.5	0.00	0.00	0.00
12,200.0	90.00	179.62	9,810.0	-1,877.4	24.7	1,877.5	0.00	0.00	0.00
12,300.0	90.00	179.62	9,810.0	-1,977.4	25.3	1,977.5	0.00	0.00	0.00
12,400.0	90.00	179.62	9,810.0	-2,077.4	26.0	2,077.5	0.00	0.00	0.00
12,500.0 12,600.0	90.00 90.00	179.62 179.62	9,810.0 9,810.0	-2,177.4 -2,277.4	26.6 27.3	2,177.5 2,277.5	0.00 0.00	0.00 0.00	0.00 0.00
12,700.0	90.00	179.62	9,810.0	-2,377.4	28.0	2,377.5	0.00	0.00	0.00
12,800.0	90.00	179.62	9,810.0	-2,477.4	28.6	2,477.5	0.00	0.00	0.00
12,900.0	90.00	179.62	9,810.0	-2,577.4	29.3	2,577.5	0.00	0.00	0.00
13,000.0	90.00	179.62	9,810.0	-2,677.4	29.9	2,677.5	0.00	0.00	0.00
13,100.0	90.00	179.62	9,810.0	-2,777.4	30.6	2,777.5	0.00	0.00	0.00
13,200.0 13,300.0	90.00 90.00	179.62 179.62	9,810.0 9,810.0	-2,877.4 -2,977.4	31.2 31.9	2,877.5 2,977.5	0.00 0.00	0.00 0.00	0.00 0.00



#### **Planning Report**

Database: Company: PEDM

Midland Lea County, NM (NAD 83 NME) Antietam 9 Fed Com

Project: Site:

 Well:
 #229H

 Wellbore:
 OH

 Design:
 Plan #0.2

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,400.0	90.00	179.62	9,810.0	-3,077.4	32.6	3,077.5	0.00	0.00	0.00
13,500.0	90.00	179.62	9,810.0	-3,177.4	33.2	3,177.5	0.00	0.00	0.00
13,600.0	90.00	179.62	9,810.0	-3,277.4	33.9	3,277.5	0.00	0.00	0.00
13,700.0	90.00	179.62	9,810.0	-3,377.4	34.5	3,377.5	0.00	0.00	0.00
13,800.0	90.00	179.62	9,810.0	-3,477.4	35.2	3,477.5	0.00	0.00	0.00
13,900.0	90.00	179.62	9,810.0	-3,577.4	35.9	3,577.5	0.00	0.00	0.00
14,000.0	90.00	179.62	9,810.0	-3,677.4	36.5	3,677.5	0.00	0.00	0.00
14,100.0	90.00	179.62	9,810.0	-3,777.4	37.2	3,777.5	0.00	0.00	0.00
14,200.0	90.00	179.62	9,810.0	-3,877.4	37.8	3,877.5	0.00	0.00	0.00
14,300.0	90.00	179.62	9,810.0	-3,977.4	38.5	3,977.5	0.00	0.00	0.00
14,400.0	90.00	179.62	9,810.0	-4,077.4	39.2	4,077.5	0.00	0.00	0.00
14,500.0	90.00	179.62	9,810.0	-4,177.4	39.8	4,177.5	0.00	0.00	0.00
14,600.0	90.00	179.62	9,810.0	-4,277.3	40.5	4,277.5	0.00	0.00	0.00
14,700.0	90.00	179.62	9,810.0	-4,377.3	41.1	4,377.5	0.00	0.00	0.00
14,800.0	90.00	179.62	9,810.0	-4,477.3	41.8	4,477.5	0.00	0.00	0.00
14,900.0	90.00	179.62	9,810.0	-4,577.3	42.4	4,577.5	0.00	0.00	0.00
15,000.0	90.00	179.62	9,810.0	-4,677.3	43.1	4,677.5	0.00	0.00	0.00
15,100.0	90.00	179.62	9,810.0	-4,777.3	43.8	4,777.5	0.00	0.00	0.00
15,200.0	90.00	179.62	9,810.0	-4,877.3	44.4	4,877.5	0.00	0.00	0.00
15,300.0	90.00	179.62	9,810.0	-4,977.3	45.1	4,977.5	0.00	0.00	0.00
15,400.0	90.00	179.62	9,810.0	-5,077.3	45.7	5,077.5	0.00	0.00	0.00
15,500.0	90.00	179.62	9,810.0	-5,177.3	46.4	5,177.5	0.00	0.00	0.00
15,600.0	90.00	179.62	9,810.0	-5,277.3	47.1	5,277.5	0.00	0.00	0.00
15,700.0	90.00	179.62	9,810.0	-5,377.3	47.7	5,377.5	0.00	0.00	0.00
15,800.0	90.00	179.62	9,810.0	-5,477.3	48.4	5,477.5	0.00	0.00	0.00
15,900.0	90.00	179.62	9,810.0	-5,577.3	49.0	5,577.5	0.00	0.00	0.00
16,000.0	90.00	179.62	9,810.0	-5,677.3	49.7	5,677.5	0.00	0.00	0.00
16,100.0	90.00	179.62	9,810.0	-5,777.3	50.4	5,777.5	0.00	0.00	0.00
16,200.0	90.00	179.62	9,810.0	-5,877.3	51.0	5,877.5	0.00	0.00	0.00
16,300.0	90.00	179.62	9,810.0	-5,977.3	51.7	5,977.5	0.00	0.00	0.00
16,400.0	90.00	179.62	9,810.0	-6,077.3	52.3	6,077.5	0.00	0.00	0.00
16,500.0	90.00	179.62	9,810.0	-6,177.3	53.0	6,177.5	0.00	0.00	0.00
16,600.0	90.00	179.62	9,810.0	-6,277.3	53.7	6,277.5	0.00	0.00	0.00
16,700.0	90.00	179.62	9,810.0	-6,377.3	54.3	6,377.5	0.00	0.00	0.00
16,800.0	90.00	179.62	9,810.0	-6,477.3	55.0	6,477.5	0.00	0.00	0.00
16,900.0	90.00	179.62	9,810.0	-6,577.3	55.6	6,577.5	0.00	0.00	0.00
17,000.0	90.00	179.62	9,810.0	-6,677.3	56.3	6,677.5	0.00	0.00	0.00
17,100.0	90.00	179.62	9,810.0	-6,777.3	56.9	6,777.5	0.00	0.00	0.00
17,200.0	90.00	179.62	9,810.0	-6,877.3	57.6	6,877.5	0.00	0.00	0.00
17,300.0	90.00	179.62	9,810.0	-6,977.3	58.3	6,977.5	0.00	0.00	0.00
17,400.0	90.00	179.62	9,810.0	-7,077.3	58.9	7,077.5	0.00	0.00	0.00
17,411.7	90.00	179.62	9,810.0	-7,089.0	59.0	7,089.2	0.00	0.00	0.00



#### **Planning Report**

PEDM Database: Company:

Midland

Project: Lea County, NM (NAD 83 NME)

Antietam 9 Fed Com Site:

Well: #229H ОН Wellbore: Design: Plan #0.2 Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

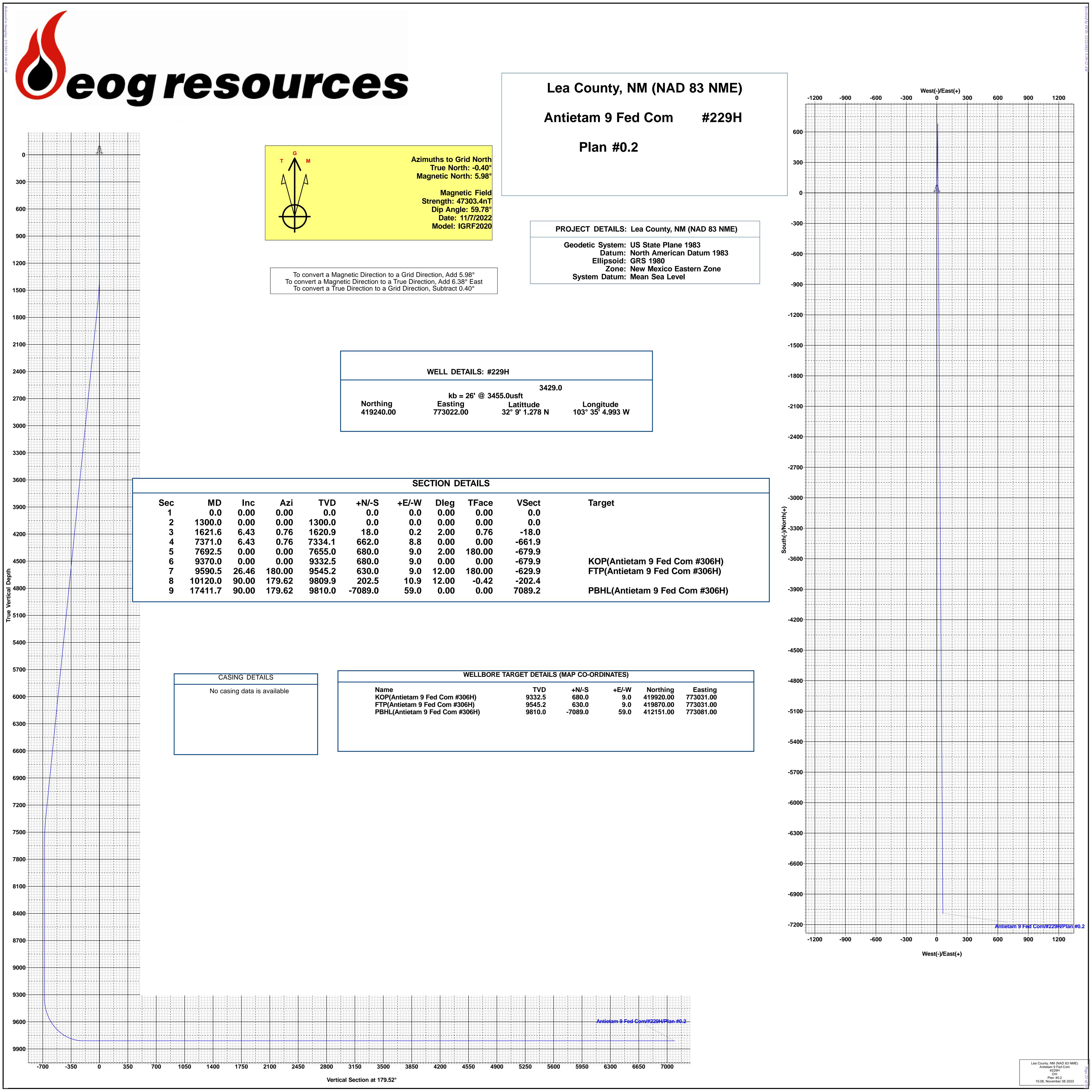
**Survey Calculation Method:** 

Well #229H

kb = 26' @ 3455.0usft kb = 26' @ 3455.0usft

Grid

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP(Antietam 9 Fed Co - plan hits target cen - Point	0.00 ter	0.00	9,332.5	680.0	9.0	419,920.00	773,031.00	32° 9' 8.006 N	103° 35' 4.833 W
FTP(Antietam 9 Fed Cor - plan hits target cen - Point	0.00 ter	0.00	9,545.2	630.0	9.0	419,870.00	773,031.00	32° 9' 7.512 N	103° 35' 4.837 W
PBHL(Antietam 9 Fed C - plan hits target cen - Point	0.00 ter	0.00	9,810.0	-7,089.0	59.0	412,151.00	773,081.00	32° 7′ 51.126 N	103° 35' 4.880 W



### PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

#### ALL PREVIOUS COAs STILL APPLY

COA

H2S	O Yes	• No	
Potash	None	Secretary	© R-111-P
Cave/Karst Potential	• Low	O Medium	O High
Cave/Karst Potential	Critical		
Variance	O None	Flex Hose	Other
Wellhead	Conventional	• Multibowl	O Both
Other	☐4 String Area	☐ Capitan Reef	□WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	<b>☑</b> COM	□ Unit

#### A. CASING

#### **Alternate Casing Design:**

- 1. The 13-3/8 inch surface casing shall be set at approximately 1,270 feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and 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 will be a minimum of **8** hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - 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.
- 2. The **9-5/8** inch surface casing shall be set at approximately **5,050** feet TVD. Clearance in salt interval OK based on washout data. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

#### **Option 1 (Single Stage):**

Cement to surface. If cement does not circulate see B.1.a, c-d above.
 Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

#### Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
    - Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
- 3. The **5-1/2** inch surface casing shall be set at approximately **17,412** feet. The minimum required fill of cement behind the **5-1/2** inch production casing is:

#### **Option 1 (Single Stage):**

• Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

#### **Option 2:**

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

#### **Alternate Casing Design B:**

- 1. The **10-3/4** inch surface casing shall be set at approximately **1,270** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and 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 will be a minimum of **8** hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - 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.
- 2. The **8-3/4** inch termediate casing shall be set at approximately **5,050** feet TVD. The minimum required fill of cement behind the **8-3/4** inch intermediate casing is:

#### **Option 1 (Single Stage):**

• Cement to surface. If cement does not circulate see B.1.a, c-d above. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

#### Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate, contact the appropriate BLM office.
    - Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
- 3. The 5-1/2 inch production casing shall be set at approximately 17,412 feet. **KEEP HOLE FULL FOR TENSILE SF.** The minimum required fill of cement behind the 5-1/2 inch production casing is:

#### **BOPE Break Testing Variance (Note: For 5M BOPE or less)**

- BOPE Break Testing is ONLY permitted for 5M BOPE or less.
- BOPE Break Testing is NOT permitted to drilling the production hole section.
- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer prior to the commencement of any BOPE Break Testing operations.
- A full BOPE test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOPE test will be required.
- The BLM is to be contacted (575-689-5981 Lea County) 4 hours prior to BOPE tests.
- As a minimum, a full BOPE test shall be performed at 21-day intervals.
- In the event any repairs or replacement of the BOPE is required, the BOPE shall test as per Onshore Oil and Gas Order No. 2.

OFFLINE CEMENTING AND BREAK TESTING IS APPROVED FOR THE SURFACE AND INTERMEDIATE SECTIONS.

#### GENERAL 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)
  - ☐ Eddy County
    Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

(575) 361-2822

- ✓ Lea CountyCall the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)689-5981
- 1. 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.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
- 2. 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 are located, this does not include the dog house or stairway area.
- 3. 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.

#### A. CASING

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

- 2. Wait on cement (WOC) for Potash Areas: 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 for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
- 3. 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
- 4. 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.
- 5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
- 6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
- 7. 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.
- 8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

#### B. PRESSURE CONTROL

- 1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- 2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. 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.

- 3. 5M or higher 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. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- 5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. 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.

#### C. 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.

#### D. 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.

KPI - 12/21/2022



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

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

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

Blind Rams

Roadside Kill

Test plug

### **Break Test Diagram (HCR valve)**

HCR

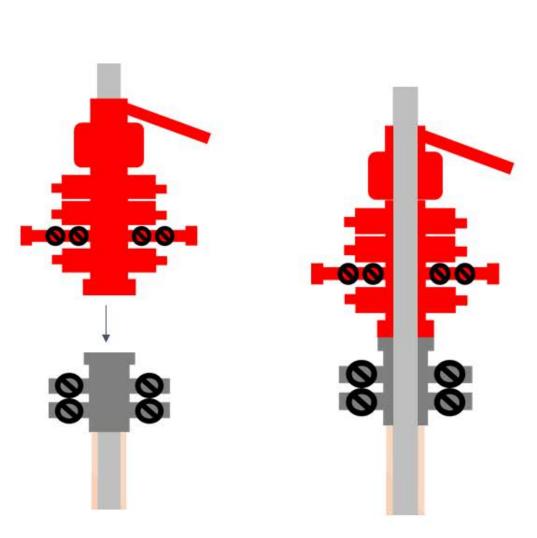
Testing this break

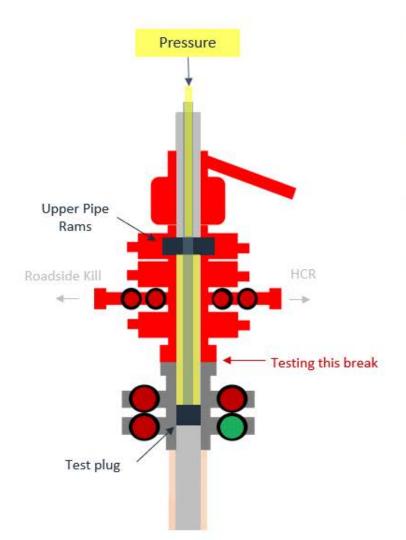
#### Steps

Pressure

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

### **Break Test Diagram (Test Joint)**





#### Steps

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



Offline Intermediate Cementing Procedure

2/24/2022

#### **Cement Program**

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

#### **Summarized Operational Procedure for Intermediate Casing**

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



Offline Intermediate Cementing Procedure

2/24/2022

- e. Diagram for rig positioning relative to offline cementing can be seen in Figure 4.
- 9. Rig up return lines to take returns from wellhead to pits and rig choke.
  - a. Test all connections and lines from wellhead to choke manifold to 5,000 psi high for 10 min.
  - b. If either test fails, perform corrections and retest before proceeding.
  - c. Return line schematics can be seen in Figure 3.
- 10. Remove TA Plug from the casing.
- 11. Install offline cement tool.
  - a. Current offline cement tool schematics can be seen in Figure 1 (Cameron) and Figure 2 (Cactus).
- 12. Rig up cement head and cementing lines.
  - a. Pressure test cement lines against cement head to 80% of casing burst for 10 min.
- 13. Break circulation on well to confirm no restrictions.
  - a. If gas is present on circulation, well will be shut in and returns rerouted through gas buster.
  - b. Max anticipated time before circulating with cement truck is 6 hrs.
- 14. Pump cement job as per plan.
  - a. At plug bump, test casing to 0.22 psi/ft or 1500 psi, whichever is greater.
  - b. If plug does not bump on calculated, shut down and wait 8 hrs or 500 psi compressive strength, whichever is greater before testing casing.
- 15. Confirm well is static and floats are holding after cement job.
  - a. With floats holding and backside static:
    - i. Remove cement head.
  - b. If floats are leaking:
    - i. Shut-in well and WOC (Wait on Cement) until tail slurry reaches 500 psi compressive strength and the casing is static prior to removing cement head.
  - c. If there is flow on the backside:
    - i. Shut in well and WOC until tail slurry reaches 500 psi compressive strength. Ensure that the casing is static prior to removing cement head.
- 16. Remove offline cement tool.
- 17. Install night cap with pressure gauge for monitoring.
- 18. Test night cap to 5,000 psi for 10 min.



Offline Intermediate Cementing Procedure

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#### **Example Well Control Plan Content**

#### A. Well Control Component Table

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

Intermediate hole section, 5M requirement

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

#### **B.** Well Control Procedures

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

#### General Procedure While Circulating

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

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Offline Intermediate Cementing Procedure

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

#### **General Procedure While Cementing**

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

#### **General Procedure After Cementing**

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



Offline Intermediate Cementing Procedure 2/24/2022

Figure 1: Cameron TA Plug and Offline Adapter Schematic



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Offline Intermediate Cementing Procedure 2/24/2022

Figure 2: Cactus TA Plug and Offline Adapter Schematic



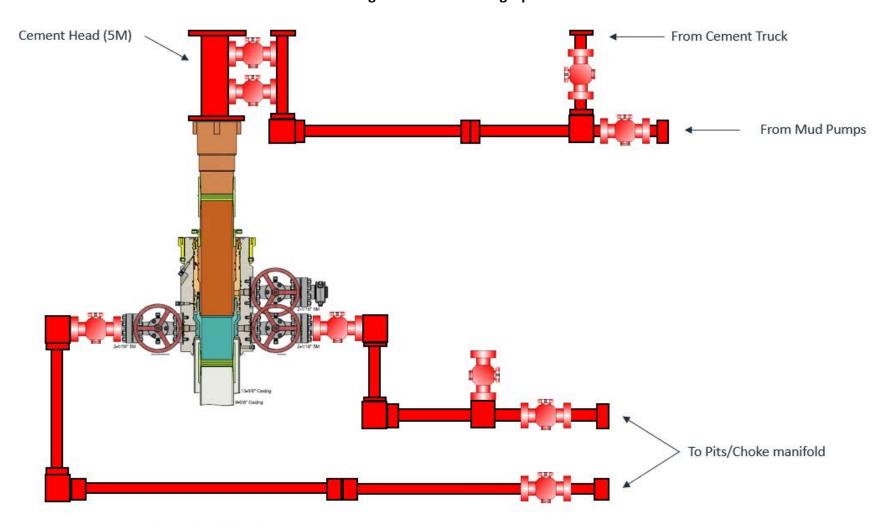
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Offline Intermediate Cementing Procedure

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Figure 3: Back Yard Rig Up



\*\*\* All Lines 10M rated working pressure

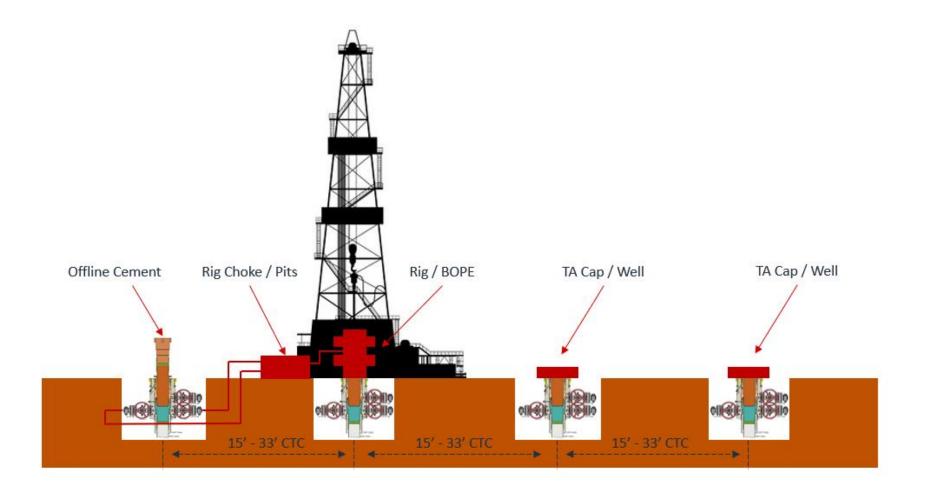
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Offline Intermediate Cementing Procedure

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Figure 4: Rig Placement Diagram



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# Salt Section Annular Clearance Variance Request

**Daniel Moose** 

# **Current Design (Salt Strings)**

#### **0.422"** Annular clearance requirement

- Casing collars shall have a minimum clearance of 0.422 inches on all sides in the hole/casing annulus, with recognition that variances can be granted for justified exceptions.
- 12.25" Hole x 9.625"40# J55/HCK55 LTC Casing
  - 1.3125" Clearance to casing OD
  - 0.8125" Clearance to coupling OD
- 9.875" Hole x 8.75" 38.5# P110 Sprint-SF Casing
  - 0.5625" Clearance to casing OD
  - 0.433" Clearance to coupling OD

## **Annular Clearance Variance Request**

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

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

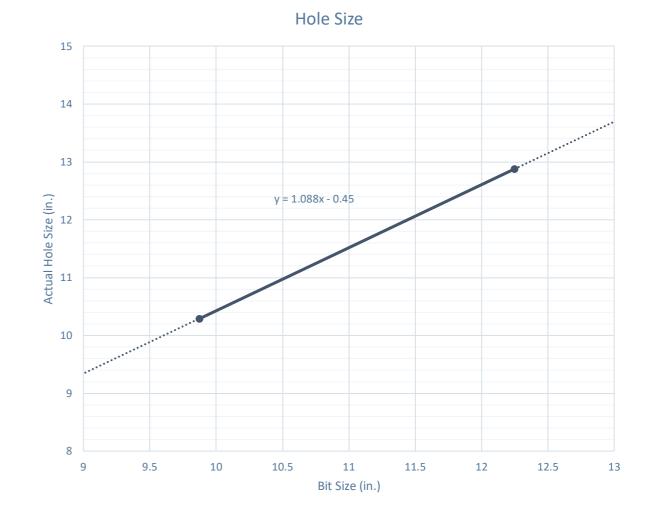
### **Volumetric Hole Size Calculation**

#### **Hole Size Calculations Off Cement Volumes**

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

#### **Average Hole Size**

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

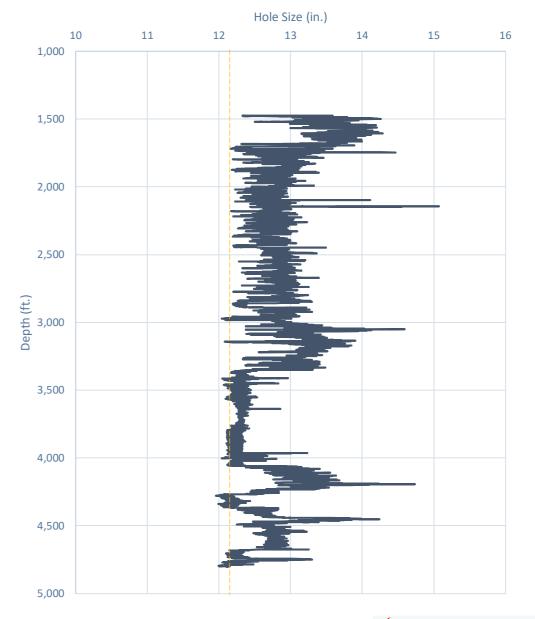


#### Modelo 10 Fed Com #501H

# Caliper Hole Size (12.25")

#### **Average Hole Size**

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

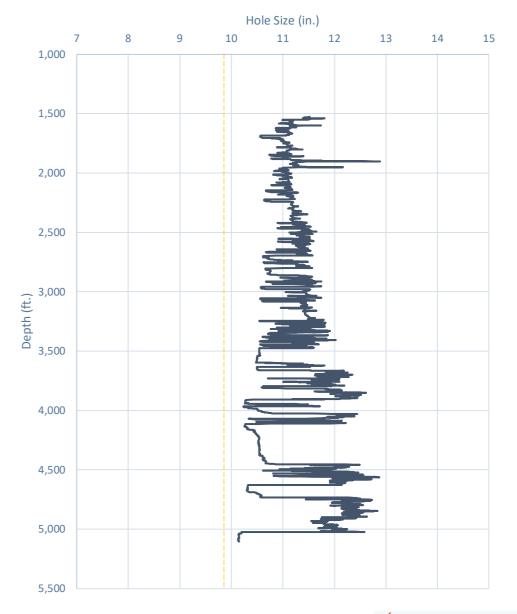


# Caliper Hole Size (9.875")

#### **Average Hole Size**

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

#### Whirling Wind 11 Fed Com #744H



# **Design A**

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

- 11" Bit + 0.52" Average hole enlargement = 11.52" Hole Size
  - 0.9475" Clearance to casing OD

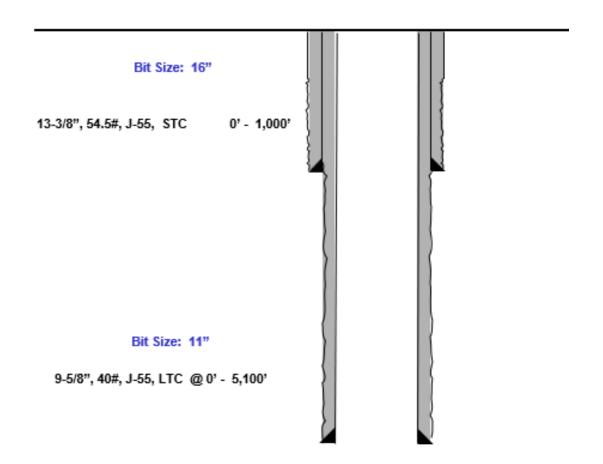
$$=\frac{11.52-9.625}{2}$$

• 0.4475" Clearance to coupling OD

$$=\frac{11.52-10.625}{2}$$

- Previous Shoe 13.375" 54.5# J55 STC
  - 0.995" Clearance to coupling OD (~1,200' overlap)

$$=\frac{12.615-10.625}{2}$$



# **Design B**

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

- 9.875" Bit + 0.42" Average hole enlargement = 10.295" Hole Size
  - 0.835" Clearance to casing OD

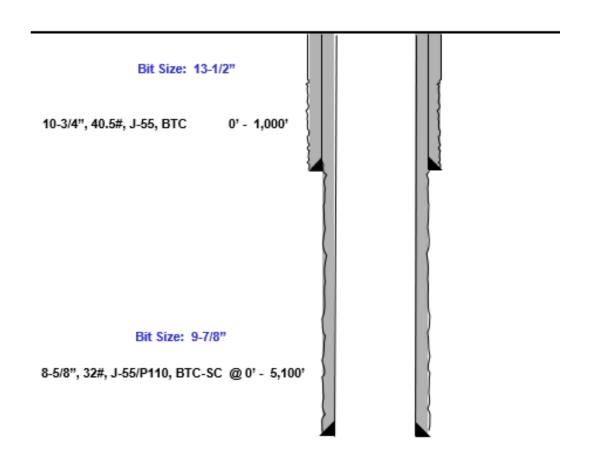
$$=\frac{10.295-8.625}{2}$$

• 0.585" Clearance to coupling OD

$$=\frac{10.295-9.125}{2}$$

- Previous Shoe 10.75" 40.5# J55 STC
  - 0.4625" Clearance to coupling OD (~1,200' overlap)

$$=\frac{10.05-9.125}{2}$$



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# **Casing Spec Sheets**

#### PERFORMANCE DATA

API LTC 9.625 in 40.00 lbs/ft K55 HC Technical Data Sheet

Tubular Parameters					
Size	9.625	in	Minimum Yield	55	ksi
Nominal Weight	40.00	lbs/ft	Minimum Tensile	95	ksi
Grade	K55 HC		Yield Load	629	kips
PE Weight	38.94	lbs/ft	Tensile Load	1088	kips
Wall Thickness	0.395	in	Min. Internal Yield Pressure	3,950	psi
Nominal ID	8.835	in	Collapse Pressure	3600	psi
Drift Diameter	8.750	in		'	'

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

11.454

#### Pipe Body and API Connections Performance Data

13.375 54.50/0.380 J55 PDF

New Search »

USC	

« Back to Previous List

6/8/2015 10:04:37 AM					
Mechanical Properties	Ptpe	втс	LTC	STC	
Minimum Yield Strength	55,000	-	-	-	psi
Maximum Yield Strength	80,000	-	-	-	psi
Minimum Tensile Strength	75,000	-	-	-	psi
Dimensions	Ptpe	втс	LTC	STC	
Outside Diameter	13.375	14.375	-	14.375	in.
Wall Thickness	0.380	-	-	-	in.
Inside Diameter	12.615	12.615	-	12.615	in.
Standard Drift	12.459	12.459	-	12.459	in.
Alternate Drift	-	-	-	-	in.
Nominal Linear Weight, T&C	54.50	-	-	-	lbs/ft
Plain End Weight	52.79	-	-	-	lbs/ft
Performance	Pipe	втс	LTC	STC	
Minimum Collapse Pressure	1,130	1,130	-	1,130	psi
Minimum Internal Yield Pressure	2,740	2,740	-	2,740	psi
Minimum Pipe Body Yield Strength	853.00	-	-	-	1000 lbs
Joint Strength		909	-	514	1000 lbs
Reference Length	-	11,125	-	6,290	ft
Make-Up Data	Ptpe	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,860	ft-lbs
Maximum Make-Up Torque	-	-	-	6,430	ft-lbs

Nom. Pipe Body Area

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## **Casing Spec Sheets**

#### Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55 PDF

New Search » « Back to Previous List USC Metric 6/8/2015 10:14:05 AM BTC Ptpe **Mechanical Properties** Minimum Yield Strength 55,000 psi Maximum Yield Strength 80,000 Minimum Tensile Strength 75,000 psi BTC LTC Pipe STC 11.750 11.750 Outside Diameter 10.750

Wall Thickness	0.350	-	-	-	in.
Inside Diameter	10.050	10.050	-	10.050	in.
Standard Drift	9.894	9.894	-	9.894	in.
Alternate Drift	-	-	-	-	in.
Nominal Linear Weight, T&C	40.50	-			lbs/ft
Plain End Weight	38.91	_	-	-	lbs/ft

Plain End Weight	38.91	-	-	-	lbs/ft
Performance	Ptpe	втс	LTC	STC	
Minimum Collapse Pressure	1,580	1,580	-	1,580	psi
Minimum Internal Yield Pressure	3,130	3,130	-	3,130	psi

Joint Strength		700	-	420	1000 lbs
Reference Length	-	11,522	-	6,915	ft
Make-Up Data	Ptpe	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.

MADE IN USA

#0d

# NTS

#0/M

DA 7.875

S

STAR 8.625

VALLOUREC 8

ft-lbs

ft-lbs

**vallourec** 

API 5CT, 10th Ed. Connection Data Sheet

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

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

Pipe Body Data (PE)					
Geometry					
Nominal ID:	7.92 inch				
Nominal Area:	9.149 in <sup>2</sup>				
*Special/Alt. Drift:	7.875 inch				
Performanc	е				
Pipe Body Yield Strength:	503 kips				
Collapse Resistance:	2,530 psi				
Internal Yield Pressure: (API Historical)	3,930 psi				

API Connection Data Coupling OD: 9.625"						
STC Performan	STC Performance					
STC Internal Pressure:	3,930	psi				
STC Joint Strength: LTC Performan		kips				
LTC Internal Pressure:	3,930	psi				
LTC Joint Strength: SC-BTC Performance - Cplg		kips <b>9.125</b> "				
BTC Internal Pressure:	3,930	psi				
BTC Joint Strength:	503	kips				

	AP	I Conne	ction To	rque	
	5	STC Tor	que (ft-lk	os)	
Min:	2,793	Opti:	3,724	Max:	4,655
LTC Torque (ft-lbs)					
Min:	3,130	Opti:	4,174	Max:	5,217
	_		/fr 11		
		SIC For	que (ft-lk	)S)	
follow API guidelines regarding positional make up					

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

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

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Minimum Pipe Body Yield Strength

Minimum Make-Up Torque

Maximum Make-Up Torque

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District III 1000 Rio Brazos Rd., Aztec, NM 87410 Phone:(505) 334-6178 Fax:(505) 334-6170

1220 S. St Francis Dr., Santa Fe, NM 87505 Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 297211

#### **CONDITIONS**

Operator:	OGRID:
EOG RESOURCES INC	7377
5509 Champions Drive	Action Number:
Midland, TX 79706	297211
	Action Type:
	[C-103] NOI Change of Plans (C-103A)

#### CONDITIONS

Created By		Condition Date
pkautz	None	2/1/2024