Form 3160-5 (June 2019)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

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

DORI	EAU OF LAND MANAGEMENT	NMNM108503					
Do not use this f	OTICES AND REPORTS ON Worm for proposals to drill or to Jse Form 3160-3 (APD) for suc	6. If Indian, Allottee or	r Tribe Name				
SUBMIT IN 1	FRIPLICATE - Other instructions on pag	7. If Unit of CA/Agreement, Name and/or No.					
1. Type of Well							
Oil Well Gas W	—		8. Well Name and No.	ANTERO 14 FED COM/745H			
2. Name of Operator EOG RESOURC	CES INCORPORATED		9. API Well No.	0-025-51627			
3a. Address 1111 BAGBY SKY LOB	BY 2, HOUSTON, TX 77(3b. Phone No. (713) 651-70			10. Field and Pool or Exploratory Area RED HILLS; LOWER BONE SPRING			
4. Location of Well (Footage, Sec., T.,R SEC 14/T25S/R33E/NMP	.,M., or Survey Description)	11. Country or Parish, LEA/NM	State				
12. CHE	CK THE APPROPRIATE BOX(ES) TO INI	DICATE NATURE OF NOTI	ICE, REPORT OR OTH	IER DATA			
TYPE OF SUBMISSION		TYPE OF AC	TION				
Notice of Intent Subsequent Report	Casing Repair New	raulic Fracturing Recl	amation omplete porarily Abandon	Water Shut-Off Well Integrity Other			
Final Abandonment Notice		=	er Disposal				
completion of the involved operation completed. Final Abandonment Not is ready for final inspection.) Antero 14 Fed Com 412H (FK/LEOG respectfully requests and the following changes: Change name from Antero 14 Change BHL from T-25-S, R-3 to T-25-S, R-33-E, Sec 11, 100 Change target formation to Security Continued on page 3 additional	amendment to our approved APD for things and the second sec	is well to reflect	new interval, a Form 31	160-4 must be filed once testing has been			
14. I hereby certify that the foregoing is	, , , , , , , , , , , , , , , , , , , ,	Regulatory Speciali	et				
STAR HARRELL / Ph: (432) 848-9	161	Title Title	51				
Signature		Date	06/19/2023				
	THE SPACE FOR FED	ERAL OR STATE OF	ICE USE				
Approved by							
CHRISTOPHER WALLS / Ph: (575	s) 234-2234 / Approved	Petroleum Eng		06/23/2023 Date			
	ned. Approval of this notice does not warran quitable title to those rights in the subject leduct operations thereon.	t or	,				
	B U.S.C Section 1212, make it a crime for arents or representations as to any matter with		Ifully to make to any de	partment or agency of the United States			

(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, 3162.3-4.

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

Additional Remarks

Update casing and cement program to current design.

Update the Pool as reflected in the C-102.

Location of Well

0. SHL: TR I / 2638 FSL / 593 FEL / TWSP: 25S / RANGE: 33E / SECTION: 14 / LAT: 32.1305399 / LONG: -103.536521 (TVD: 0 feet, MD: 0 feet) PPP: TR P / 0 FSL / 793 FEL / TWSP: 25S / RANGE: 33E / SECTION: 11 / LAT: 32.1378029 / LONG: -103.5371702 (TVD: 12950 feet, MD: 15338 feet) PPP: TR I / 2540 FNL / 793 FEL / TWSP: 25S / RANGE: 33E / SECTION: 14 / LAT: 32.1308222 / LONG: -103.5371677 (TVD: 12875 feet, MD: 12917 feet) BHL: TR A / 100 FNL / 793 FEL / TWSP: 25S / RANGE: 33E / SECTION: 11 / LAT: 32.1520451 / LONG: -103.5371752 (TVD: 12950 feet, MD: 20519 feet)

DISTRICT I

1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-0161 Fax: (575) 393-0720

DISTRICT II

81 I S. First St., Artesin, NM 88210
Phone: (575) 748-9720

DISTRICT III

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

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

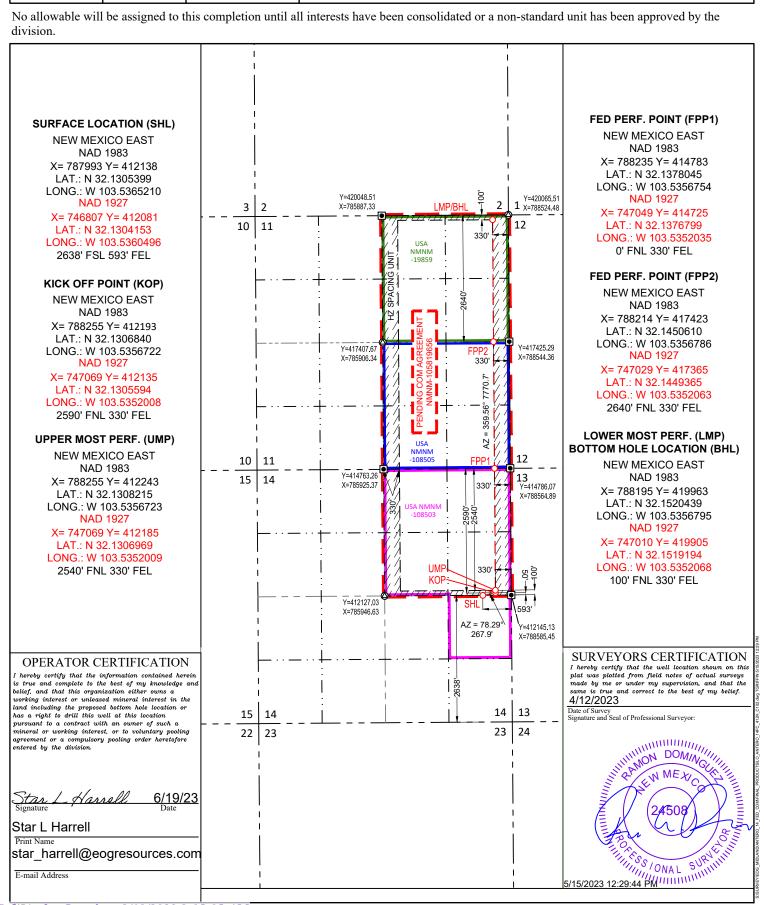
State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

				Pool Code 51020						
Property Code Property Name 326481 ANTERO 14 FED COM						D COM	Well Number			
						D COM		41	2H	
OGRID N	lo.				Operator Name			Elevation		
7377	,			E	OG RESOURCI	ES, INC.		33	55'	
	Surface Location									
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County	
1	14	25-S	33-E	-	2638'	SOUTH	593'	EAST	LEA	
		•	Bott	om Hole	Location If Diffe	erent From Surfac	ee			
UL or lot no.	Section	Township	Range Lot I		Feet from the	North/South line	Feet from the	East/West line	County	
Α	11	25-S	33-E -		100'	NORTH	NORTH 330'		LEA	
Dedicated Acres	Joint or	Infill	Consolidated Cod	de Oro	ler No.	-	-	-		
480.00			PENDING COM AGREEMENT NMNM-105819656							





Revised Permit Information 04/18/2023:

Well Name: Antero 14 Fed Com 412H

Location: SHL: 2638' FSL & 593' FEL, Section 14, T-25-S, R-33-E, Lea Co., N.M.

BHL: 100' FNL & 330' FEL, Section 11, 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	1,250	0	1,250	13-3/8"	54.5#	J-55	STC
11"	0	4,006	0	4,000	9-5/8"	40#	J-55	LTC
11"	4,006	4,996	4,000	4,990	9-5/8"	40#	HCK-55	LTC
6-3/4"	0	18,191	0	10,620	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:

		Wt.	Yld	Chuma Description
Depth	No. Sacks	ppg	Ft3/sk	Slurry Description
1,250' 13-3/8"	380	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	100	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1,050')
4,990' 9-5/8"	480	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	170	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 3,990')
18,191' 5-1/2"	350	10.5	3.21	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,490')
	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 @ 10150')



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:

Depth (TVD)	Type	Weight (ppg)	Viscosity	Water Loss
0 – 1,250'	Fresh - Gel	8.6-8.8	28-34	N/c
1,250' – 4,990'	Brine	8.6-8.8	28-34	N/c
4,990' – 18,191'	Oil Base	8.8-9.5	58-68	N/c - 6

Wellhead & Offline Cementing:

EOG Resources Inc. (EOG) respectfully requests a variance from the minimum standards for well control equipment testing of Onshore Order No. 2 (item III.A.2.a.i) 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 per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- 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.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"



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."

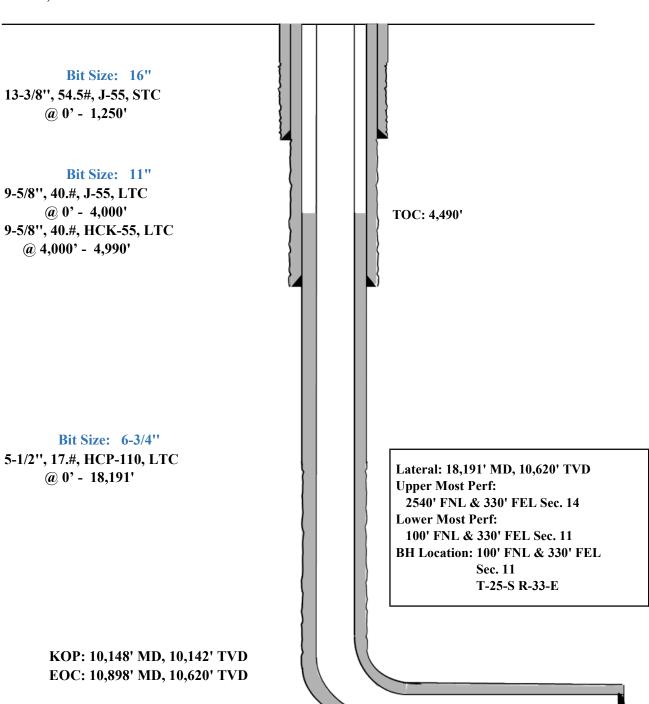
With horizontal flowing and gas lifted wells an end of tubing depth placed at or slightly above KOP is a conservative way to ensure the tubing stays clean from debris, plugging, and allows for fewer well interventions post offset completion. The deeper the tubulars are run into the curve, the higher 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.



2638' FSL Revised Wellbore A: KB: 3380' 593' FEL GL: 3355'

Section 14

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





Revised Permit Information 04/18/2023:

Well Name: Antero 14 Fed Com 412H

Location: SHL: 2638' FSL & 593' FEL, Section 14, T-25-S, R-33-E, Lea Co., N.M.

BHL: 100' FNL & 330' FEL, Section 11, T-25-S, R-33-E, Lea Co., N.M.

Casing Program B:

Hole	Interval MD		Interval TVD		Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13-1/2"	0	1,250	0	1,250	10-3/4"	40.5#	J-55	STC
9-7/8"	0	4,006	0	4,000	8-5/8"	32#	J-55	BTC-SC
9-7/8"	4,006	4,996	4,000	4,990	8-5/8"	32#	P110-EC	BTC-SC
6-3/4"	0	18,191	0	10,620	5-1/2"	17#	HCP-110	LTC

Cementing Program:

Depth	No. Sacks	Wt.	Yld Ft3/sk	Slurry Description
1,250' 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 @ 1,050')
4,990' 8-5/8''	340	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	160	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 3,990')
18,191' 5-1/2''	560	10.5	3.21	Lead: Class H + 0.4% Halad-344 + 0.35% HR-601 + 3% Microbond (TOC @ 4,490')
	590	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 @ 10150')



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.
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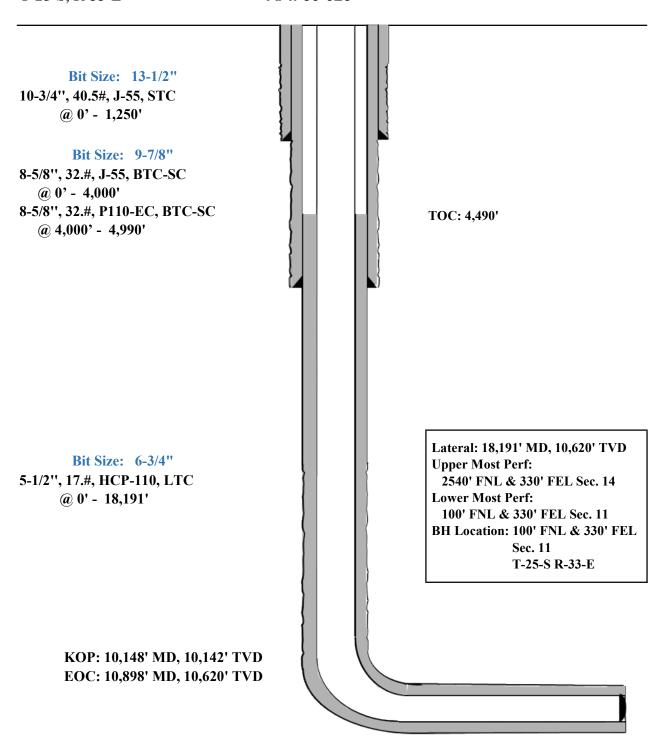
- Full BOPE test at first installation on the pad.
- Full BOPE test every 21 days per Onshore Order No. 2.
- Function test BOP elements per Onshore Order No. 2.
- Break testing BOP and BOPE coupled with batch drilling operations and option to offline cement and/or remediate (if needed) any surface or 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.
- See attached "EOG BLM Variance 3a -Offline Cement Intermediate Operational Procedure"



2638' Revised Wellbore B: KB: 3380' 593' GL: 3355'

Section 14

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





GEOLOGIC NAME OF SURFACE FORMATION:

Permian

ESTIMATED TOPS OF IMPORTANT GEOLOGICAL MARKERS:

Rustler	1,155'
Tamarisk Anhydrite	1,225'
Top of Salt	1,505'
Base of Salt	4,890'
Lamar	5,110'
Bell Canyon	5,140'
Cherry Canyon	6,195'
Brushy Canyon	7,685'
Bone Spring Lime	9,260'
Leonard (Avalon) Shale	9,310'
1st Bone Spring Sand	10,240'
2nd Bone Spring Shale	10,451'
2nd Bone Spring Sand	10,800'
TD	10,620'

ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL OR GAS:

Upper Permian Sands	0- 400'	Fresh Wate
Bell Canyon	5,140'	Oil
Cherry Canyon	6,195'	Oil
Brushy Canyon	7,685'	Oil
Leonard (Avalon) Shale	9,310'	Oil
1st Bone Spring Sand	10,240'	Oil
2nd Bone Spring Shale	10,451'	Oil
2nd Bone Spring Sand	10,800'	Oil



Midland

Lea County, NM (NAD 83 NME) Antero 14 Fed Com #412H

OH

Plan: Plan #0.1 RT

Standard Planning Report

17 May, 2023



Planning Report

Database: Company: PEDM Midland

Lea County, NM (NAD 83 NME)

Project: Site:

Well: Wellbore: Antero 14 Fed Com

#412H ОН Plan #0.1 RT Design:

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

Minimum Curvature

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

Antero 14 Fed Com Site

Site Position: From:

Мар

Northing: Easting:

412,174.00 usft 783,931.00 usft

Latitude: Longitude:

32° 7' 50.590 N 103° 32' 58.705 W

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

Well #412H

Well Position

+N/-S +E/-W 0.0 usft 0.0 usft 0.0 usft

0.42°

Northing: Easting:

Wellhead Elevation:

412,138.00 usft 787,993.00 usft

usft

Latitude: Longitude: **Ground Level:**

32° 7' 49.939 N 103° 32' 11.472 W

3,355.0 usft

Wellbore

Position Uncertainty

Grid Convergence:

ОН

Declination Magnetics **Model Name** Sample Date Dip Angle Field Strength (°) (°) (nT) 47,242.40435674 IGRF2020 5/17/2023 6.30 59.76

(usft)

0.0

Design

Audit Notes:

Vertical Section:

Version:

Phase: Depth From (TVD)

(usft)

0.0

PLAN

+N/-S

Tie On Depth: +E/-W

Remarks

(usft)

0.0

0.0 Direction

(°) 1.48

Plan Survey Tool Program

Date 5/17/2023

Depth From (usft)

0.0

Depth To (usft)

18,191.1

Plan #0.1 RT

Survey (Wellbore) Plan #0.1 RT (OH)

Tool Name

EOG MWD+IFR1

MWD + IFR1

5/17/2023 3:40:32PM



Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antero 14 Fed Com

Well: #412H Wellbore: OH

Design: Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference:

Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,626.5	2.53	78.14	1,626.5	0.6	2.7	2.00	2.00	0.00	78.14	
7,564.4	2.53	78.14	7,558.5	54.4	259.3	0.00	0.00	0.00	0.00	
7,690.9	0.00	0.00	7,685.0	55.0	262.0	2.00	-2.00	0.00	180.00	
10,148.4	0.00	0.00	10,142.5	55.0	262.0	0.00	0.00	0.00	0.00	KOP(Antero 14 Fed C
10,368.8	26.46	0.00	10,355.2	105.0	262.0	12.00	12.00	0.00	0.00	FTP(Antero 14 Fed C
10,898.3	90.00	359.52	10,619.9	532.4	259.5	12.00	12.00	-0.09	-0.53	
13,011.0	90.00	359.52	10,620.0	2,645.0	242.0	0.00	0.00	0.00	0.00	Fed Perf 1(Antero 14
15,651.1	90.00	359.56	10,620.0	5,285.0	221.0	0.00	0.00	0.00	85.88	Fed Perf 2(Antero 14
18,191.1	90.00	359.58	10,620.0	7,825.0	202.0	0.00	0.00	0.00	101.49	PBHL(Antero 14 Fed

beog resources

Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antero 14 Fed Com

 Well:
 #412H

 Wellbore:
 OH

 Design:
 Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

esign:	Plan #0.1 R1								
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
1,000.0			,					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
4 500 0	0.00	0.00	4 500 0	2.2	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	2.00	78.14	1,600.0	0.4	1.7	0.4	2.00	2.00	0.00
1,626.5	2.53	78.14	1,626.5	0.6	2.7	0.6	2.00	2.00	0.00
1,700.0	2.53	78.14	1,699.9	1.2	5.9	1.4	0.00	0.00	0.00
1,800.0	2.53	78.14	1,799.8	2.1	10.2	2.4	0.00	0.00	0.00
1,900.0	2.53	78.14	1,899.7	3.1	14.5	3.4	0.00	0.00	0.00
2,000.0	2.53	78.14	1,999.6	4.0	18.9	4.4	0.00	0.00	0.00
2,100.0	2.53	78.14	2,099.5	4.9	23.2	5.5	0.00	0.00	0.00
2,200.0	2.53	78.14	2,199.4	5.8	27.5	6.5	0.00	0.00	0.00
2,300.0	2.53	78.14	2,299.3	6.7	31.8	7.5	0.00	0.00	0.00
2,400.0	2.53	78.14	2,399.2	7.6	36.2	8.5	0.00	0.00	0.00
2,500.0	2.53	78.14	2,499.1	8.5	40.5	9.5	0.00	0.00	0.00
2,600.0	2.53	78.14	2,599.0	9.4	44.8	10.6	0.00	0.00	0.00
2,700.0	2.53	78.14	2,698.9	10.3	49.1	11.6	0.00	0.00	0.00
			,						
2,800.0	2.53	78.14	2,798.8	11.2	53.4	12.6	0.00	0.00	0.00
2,900.0	2.53	78.14	2,898.7	12.1	57.8	13.6	0.00	0.00	0.00
3,000.0	2.53	78.14	2,998.6	13.0	62.1	14.6	0.00	0.00	0.00
3,100.0	2.53	78.14	3,098.5	13.9	66.4	15.6	0.00	0.00	0.00
3,200.0	2.53	78.14	3,198.4	14.8	70.7	16.7	0.00	0.00	0.00
3,300.0	2.53	78.14	3,298.3	15.8	75.0	17.7	0.00	0.00	0.00
3,400.0	2.53	78.14	3,398.2	16.7	79.4	18.7	0.00	0.00	0.00
3,500.0	2.53	78.14	3,498.1	17.6	83.7	19.7	0.00	0.00	0.00
3,600.0	2.53	78.14 78.14	3,598.0	18.5	88.0	20.7	0.00	0.00	0.00
,			,						
3,700.0	2.53	78.14	3,697.9	19.4	92.3	21.8	0.00	0.00	0.00
3,800.0	2.53	78.14	3,797.8	20.3	96.6	22.8	0.00	0.00	0.00
3,900.0	2.53	78.14	3,897.7	21.2	101.0	23.8	0.00	0.00	0.00
4,000.0	2.53	78.14	3,997.6	22.1	105.3	24.8	0.00	0.00	0.00
4,100.0	2.53	78.14	4,097.5	23.0	109.6	25.8	0.00	0.00	0.00
4,200.0	2.53	78.14	4,197.5	23.9	113.9	26.8	0.00	0.00	0.00
4,300.0	2.53	78.14	4,297.4	24.8	118.2	27.9	0.00	0.00	0.00
4,400.0	2.53	78.14	4,397.3	25.7	122.6	28.9	0.00	0.00	0.00
4,500.0	2.53	78.14	4,497.2	26.6	126.9	29.9	0.00	0.00	0.00
4,600.0	2.53	78.14	4,597.1	27.5	131.2	30.9	0.00	0.00	0.00
4,700.0	2.53	78.14	4,697.0	28.4	135.5	31.9	0.00	0.00	0.00
4,800.0	2.53	78.14	4,796.9	29.4	139.8	33.0	0.00	0.00	0.00
4,900.0	2.53	78.14	4,896.8	30.3	144.2	34.0	0.00	0.00	0.00
5,000.0	2.53	78.14	4,996.7	31.2	148.5	35.0	0.00	0.00	0.00
5,100.0	2.53	78.14	5,096.6	32.1	152.8	36.0	0.00	0.00	0.00
5,200.0	2.53	78.14	5,196.5	33.0	157.1	37.0	0.00	0.00	0.00

eog resources

Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antero 14 Fed Com

 Well:
 #412H

 Wellbore:
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 Design:
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Local Co-ordinate Reference:

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Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

nned 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	2.53	78.14	5,296.4	33.9	161.4	38.0	0.00	0.00	0.00
5,400.0	2.53	78.14	5,396.3	34.8	165.8	39.1	0.00	0.00	0.00
5,500.0	2.53	78.14	5,496.2	35.7	170.1	40.1	0.00	0.00	0.00
5,600.0	2.53	78.14	5,596.1	36.6	174.4	41.1	0.00	0.00	0.00
5,700.0	2.53	78.14	5,696.0	37.5	178.7	42.1	0.00	0.00	0.00
5,800.0	2.53	78.14	5,795.9	38.4	183.0	43.1	0.00	0.00	0.00
5,900.0	2.53	78.14	5,895.8	39.3	187.4	44.2	0.00	0.00	0.00
6,000.0	2.53	78.14	5,995.7	40.2	191.7	45.2	0.00	0.00	0.00
6,100.0	2.53	78.14	6,095.6	41.1	196.0	46.2	0.00	0.00	0.00
6,200.0	2.53	78.14	6,195.5	42.1	200.3	47.2	0.00	0.00	0.00
6,300.0	2.53	78.14	6,295.4	43.0	204.6	48.2	0.00	0.00	0.00
6,400.0	2.53	78.14	6,395.3	43.9	209.0	49.2	0.00	0.00	0.00
6,500.0	2.53	78.14	6,495.2	44.8	213.3	50.3	0.00	0.00	0.00
6,600.0	2.53	78.14	6,595.1	45.7	217.6	51.3	0.00	0.00	0.00
6,700.0	2.53	78.14	6,695.0	46.6	221.9	52.3	0.00	0.00	0.00
6,800.0	2.53	78.14	6,794.9	47.5	226.2	53.3	0.00	0.00	0.00
6,900.0	2.53	78.14	6,894.8	48.4	230.6	54.3	0.00	0.00	0.00
7,000.0	2.53	78.14	6,994.7	49.3	234.9	55.4	0.00	0.00	0.00
7,100.0	2.53	78.14	7,094.6	50.2	239.2	56.4	0.00	0.00	0.00
7,200.0	2.53	78.14	7,194.5	51.1	243.5	57.4	0.00	0.00	0.00
7,300.0	2.53	78.14	7,294.4	52.0	247.8	58.4	0.00	0.00	0.00
7,400.0	2.53	78.14	7,394.3	52.9	252.2	59.4	0.00	0.00	0.00
7,500.0	2.53	78.14	7,494.2	53.8	256.5	60.4	0.00	0.00	0.00
7,564.4	2.53	78.14	7,558.5	54.4	259.3	61.1	0.00	0.00	0.00
7,600.0	1.82	78.14	7,594.1	54.7	260.6	61.4	2.00	-2.00	0.00
7,690.9	0.00	0.00	7,685.0	55.0	262.0	61.7	2.00	-2.00	0.00
7,700.0	0.00	0.00	7,694.1	55.0	262.0	61.7	0.00	0.00	0.00
7,800.0	0.00	0.00	7,794.1	55.0	262.0	61.7	0.00	0.00	0.00
7,900.0	0.00	0.00	7,894.1	55.0	262.0	61.7	0.00	0.00	0.00
8,000.0	0.00	0.00	7,994.1	55.0	262.0	61.7	0.00	0.00	0.00
8,100.0	0.00	0.00	8,094.1	55.0	262.0	61.7	0.00	0.00	0.00
8,200.0	0.00	0.00	8,194.1	55.0	262.0	61.7	0.00	0.00	0.00
8,300.0	0.00	0.00	8,294.1	55.0	262.0	61.7	0.00	0.00	0.00
8,400.0	0.00	0.00	8,394.1	55.0	262.0	61.7	0.00	0.00	0.00
8,500.0	0.00	0.00	8,494.1	55.0	262.0	61.7	0.00	0.00	0.00
8,600.0	0.00	0.00	8,594.1	55.0	262.0	61.7	0.00	0.00	0.00
8,700.0	0.00	0.00	8,694.1	55.0	262.0	61.7	0.00	0.00	0.00
8,800.0	0.00	0.00	8,794.1	55.0	262.0	61.7	0.00	0.00	0.00
8,900.0	0.00	0.00	8,894.1	55.0	262.0	61.7	0.00	0.00	0.00
9,000.0	0.00	0.00	8,994.1	55.0	262.0	61.7	0.00	0.00	0.00
9,100.0	0.00	0.00	9,094.1	55.0	262.0	61.7	0.00	0.00	0.00
9,200.0	0.00	0.00	9,194.1	55.0	262.0	61.7	0.00	0.00	0.00
9,300.0	0.00	0.00	9,294.1	55.0	262.0	61.7	0.00	0.00	0.00
9,400.0	0.00	0.00	9,394.1	55.0	262.0	61.7	0.00	0.00	0.00
9,500.0	0.00	0.00	9,494.1	55.0	262.0	61.7	0.00	0.00	0.00
9,600.0	0.00	0.00	9,594.1	55.0	262.0	61.7	0.00	0.00	0.00
9,700.0	0.00	0.00	9,694.1	55.0	262.0	61.7	0.00	0.00	0.00
9,800.0	0.00	0.00	9,794.1	55.0	262.0	61.7	0.00	0.00	0.00
9,900.0	0.00	0.00	9,894.1	55.0	262.0	61.7	0.00	0.00	0.00
10,000.0	0.00	0.00	9,994.1	55.0	262.0	61.7	0.00	0.00	0.00
10,100.0	0.00	0.00	10,094.1	55.0	262.0	61.7	0.00	0.00	0.00
. 5, . 55.5		0.00	10,142.5	55.0	262.0	61.7	0.00	0.00	0.00
10,148.4	0.00								

beog resources

Planning Report

Database: PEDM Company: Midland

Project: Lea County, NM (NAD 83 NME)

Site: Antero 14 Fed Com

 Well:
 #412H

 Wellbore:
 OH

 Design:
 Plan #0.1 RT

Local Co-ordinate Reference:

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North Reference:

Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

anned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,150.0	0.20	0.00	10,144.1	55.0	262.0	61.7	12.00	12.00	0.00
10,175.0	3.20	0.00	10,169.1	55.7	262.0	62.5	12.00	12.00	0.00
10,200.0	6.20	0.00	10,194.0	57.8	262.0	64.5	12.00	12.00	0.00
10,225.0	9.20	0.00	10,218.8	61.1	262.0	67.9	12.00	12.00	0.00
10,250.0	12.20	0.00	10,243.4	65.8	262.0	72.5	12.00	12.00	0.00
10,275.0	15.20	0.00	10,267.6	71.7	262.0	72.3 78.4	12.00	12.00	0.00
10,300.0	18.20	0.00	10,291.6	71.7 78.9	262.0	85.6	12.00	12.00	0.00
10,325.0	21.20	0.00	10,315.1	87.3	262.0	94.0	12.00	12.00	0.00
10,350.0	24.20	0.00	10,338.2	96.9	262.0	103.7	12.00	12.00	0.00
10,368.8	26.46	0.00	10,355.2	105.0	262.0	111.7	12.00	12.00	0.00
	14 Fed Com #41								
10,375.0	27.20	359.98	10,360.7	107.8	262.0	114.5	12.00	12.00	-0.24
10,400.0	30.20	359.93	10,382.6	119.8	262.0	126.5	12.00	12.00	-0.22
10,425.0	33.20	359.89	10,403.9	132.9	262.0	139.6	12.00	12.00	-0.18
10,450.0	36.20	359.85	10,424.5	147.2	261.9	153.9	12.00	12.00	-0.15
10,475.0	39.20	359.81	10,444.2	162.4	261.9	169.1	12.00	12.00	-0.13
10,500.0	42.20	359.79	10,463.2	178.7	261.8	185.4	12.00	12.00	-0.12
10,525.0	45.20	359.76	10,481.3	196.0	261.8	202.7	12.00	12.00	-0.10
10,550.0	48.20	359.74	10,498.4	214.2	261.7	220.9	12.00	12.00	-0.09
10,575.0	51.20	359.71	10,514.6	233.3	261.6	239.9	12.00	12.00	-0.09
10,600.0	54.20	359.69	10,529.7	253.1	261.5	259.8	12.00	12.00	-0.08
10,625.0	57.20	359.68	10,543.8	273.8	261.4	280.5	12.00	12.00	-0.07
10,650.0	60.20	359.66	10,556.8	295.2	261.3	301.8	12.00	12.00	-0.07
10,675.0	63.20	359.64	10,568.7	317.2	261.1	323.8	12.00	12.00	-0.06
10,700.0	66.20	359.63	10,579.3	339.8	261.0	346.4	12.00	12.00	-0.06
10,725.0	69.20	359.61	10,588.8	362.9	260.8	369.5	12.00	12.00	-0.06
10,750.0	72.20	359.60	10,597.1	386.5	260.7	393.1	12.00	12.00	-0.06
				410.5	260.5				
10,775.0	75.20	359.59	10,604.1			417.1	12.00	12.00	-0.05
10,800.0	78.20	359.57	10,609.9	434.8	260.3	441.4	12.00	12.00	-0.05
10,825.0	81.20	359.56	10,614.3	459.4	260.1	466.0	12.00	12.00	-0.05
10,850.0	84.20	359.55	10,617.5	484.2	259.9	490.7	12.00	12.00	-0.05
10,875.0	87.20	359.54	10,619.4	509.1	259.7	515.6	12.00	12.00	-0.05
10,898.3	90.00	359.52	10,619.9	532.4	259.5	539.0	12.00	12.00	-0.05
10,900.0	90.00	359.52	10,619.9	534.1	259.5	540.6	0.00	0.00	0.00
11,000.0	90.00	359.52	10,619.9	634.1	258.7	640.6	0.00	0.00	0.00
11,100.0	90.00	359.52	10,620.0	734.1	257.9	740.5	0.00	0.00	0.00
11,200.0	90.00	359.52	10,620.0	834.1	257.0	840.4	0.00	0.00	0.00
11,300.0	90.00	359.52	10,620.0	934.1	256.2	940.4	0.00	0.00	0.00
11,400.0	90.00	359.52	10,620.0	1,034.1	255.4	1,040.3	0.00	0.00	0.00
11,500.0	90.00	359.52	10,620.0	1,134.1	254.5	1,140.3	0.00	0.00	0.00
11,600.0	90.00	359.52	10,620.0	1,234.1	253.7	1,240.2	0.00	0.00	0.00
11,700.0	90.00	359.52	10,620.0	1,334.1	252.9	1,340.2	0.00	0.00	0.00
11,800.0	90.00	359.52	10,620.0	1,434.1	252.1	1,440.1	0.00	0.00	0.00
11,900.0	90.00	359.52	10,620.0	1,534.1	251.2	1,540.0	0.00	0.00	0.00
12,000.0	90.00	359.52	10,620.0	1,634.1	250.4	1,640.0	0.00	0.00	0.00
	90.00	308.02			200.4			0.00	
12,100.0	90.00	359.52	10,620.0	1,734.1	249.6	1,739.9	0.00	0.00	0.00
12,200.0	90.00	359.52	10,620.0	1,834.1	248.7	1,839.9	0.00	0.00	0.00
12,300.0	90.00	359.52	10,620.0	1,934.1	247.9	1,939.8	0.00	0.00	0.00
12,400.0	90.00	359.52	10,620.0	2,034.1	247.1	2,039.7	0.00	0.00	0.00
12,500.0	90.00	359.52	10,620.0	2,134.0	246.2	2,139.7	0.00	0.00	0.00
12,600.0	90.00	359.52	10,620.0	2,234.0	245.4	2,239.6	0.00	0.00	0.00
12,700.0	90.00	359.52	10,620.0	2,334.0	244.6	2,339.6	0.00	0.00	0.00
12,800.0	90.00	359.52	10,620.0	2,434.0	243.8	2,439.5	0.00	0.00	0.00
12,900.0	90.00	359.52	10,620.0	2,534.0	242.9	2,539.5	0.00	0.00	0.00



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Project:

PEDM Midland

Lea County, NM (NAD 83 NME)

Antero 14 Fed Com Site:

Well: #412H ОН Wellbore: Design:

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Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

Design:	Plan #0.1 RT								
Planned Survey									
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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)
13,000.0	90.00	359.52	10,620.0	2,634.0	242.1	2,639.4	0.00	0.00	0.00
13,011.0	90.00	359.52	10,620.0	2,645.0	242.0	2,650.4	0.00	0.00	0.00
	tero 14 Fed Co								
13,100.0	90.00	359.53	10,620.0	2,734.0	241.3	2,739.3	0.00	0.00	0.00
13,200.0 13,300.0	90.00 90.00	359.53 359.53	10,620.0 10.620.0	2,834.0 2,934.0	240.4 239.6	2,839.3 2,939.2	0.00 0.00	0.00 0.00	0.00 0.00
13,400.0	90.00	359.53	10,620.0	3,034.0	238.8	3,039.2	0.00	0.00	0.00
13,500.0	90.00	359.53	10,620.0	3,134.0	238.0	3,139.1	0.00	0.00	0.00
13,600.0	90.00	359.53	10,620.0	3,234.0	237.2	3,139.1	0.00	0.00	0.00
13,700.0	90.00	359.53	10,620.0	3,334.0	236.3	3,339.0	0.00	0.00	0.00
13,800.0	90.00	359.54	10,620.0	3,434.0	235.5	3,438.9	0.00	0.00	0.00
13,900.0	90.00	359.54	10,620.0	3,534.0	234.7	3,538.9	0.00	0.00	0.00
14,000.0	90.00	359.54	10,620.0	3,634.0	233.9	3,638.8	0.00	0.00	0.00
14,100.0	90.00	359.54	10,620.0	3,734.0	233.1	3,738.8	0.00	0.00	0.00
14,200.0	90.00	359.54	10,620.0	3,834.0	232.3	3,838.7	0.00	0.00	0.00
14,300.0	90.00	359.54	10,620.0	3,934.0	231.5	3,938.7	0.00	0.00	0.00
14,400.0	90.00	359.55	10,620.0	4,034.0	230.7	4,038.6	0.00	0.00	0.00
14,500.0	90.00	359.55	10,620.0	4,134.0	229.9	4,138.5	0.00	0.00	0.00
14,600.0	90.00	359.55	10,620.0	4,234.0	229.1	4,238.5	0.00	0.00	0.00
14,700.0	90.00	359.55	10,620.0	4,334.0	228.4	4,338.4	0.00	0.00	0.00
14,800.0	90.00	359.55	10,620.0	4,434.0	227.6	4,438.4	0.00	0.00	0.00
14,900.0	90.00	359.55	10,620.0	4,534.0	226.8	4,538.3	0.00	0.00	0.00
15,000.0	90.00	359.55	10,620.0	4,634.0	226.0	4,638.3	0.00	0.00	0.00
15,100.0	90.00	359.56	10,620.0	4,734.0	225.2	4,738.2	0.00	0.00	0.00
15,200.0 15,300.0	90.00 90.00	359.56 359.56	10,620.0 10,620.0	4,834.0 4,934.0	224.5 223.7	4,838.1 4,938.1	0.00 0.00	0.00 0.00	0.00 0.00
15,400.0	90.00	359.56	10,620.0	5,034.0	222.9	5,038.0	0.00	0.00	0.00
15,500.0	90.00	359.56	10,620.0	5,134.0	222.2	5,138.0	0.00	0.00	0.00
15,600.0	90.00	359.56	10,620.0	5,233.9	221.4	5,237.9	0.00	0.00	0.00
15,651.1	90.00	359.56	10,620.0	5,285.0	221.0	5,288.9	0.00	0.00	0.00
Fed Perf 2(An	tero 14 Fed Co	m #412H)							
15,700.0	90.00	359.56	10,620.0	5,333.9	220.6	5,337.9	0.00	0.00	0.00
15,800.0	90.00	359.57	10,620.0	5,433.9	219.9	5,437.8	0.00	0.00	0.00
15,900.0	90.00	359.57	10,620.0	5,533.9	219.1	5,537.8	0.00	0.00	0.00
16,000.0	90.00	359.57	10,620.0	5,633.9	218.4	5,637.7	0.00	0.00	0.00
16,100.0	90.00	359.57	10,620.0	5,733.9	217.6	5,737.6	0.00	0.00	0.00
16,200.0 16,300.0	90.00 90.00	359.57 359.57	10,620.0 10,620.0	5,833.9 5,933.9	216.8 216.1	5,837.6 5,937.5	0.00 0.00	0.00 0.00	0.00 0.00
16,400.0	90.00	359.57	10,620.0	6,033.9	215.3	6,037.5	0.00	0.00	0.00
16,500.0	90.00	359.57	10,620.0	6,133.9	214.6	6,137.4	0.00	0.00	0.00
16,600.0 16,700.0	90.00 90.00	359.57 359.57	10,620.0 10,620.0	6,233.9 6,333.9	213.8 213.1	6,237.4 6,337.3	0.00 0.00	0.00 0.00	0.00 0.00
16,700.0	90.00	359.57 359.57	10,620.0	6,433.9	213.1	6,337.3 6,437.2	0.00	0.00	0.00
16,900.0	90.00	359.57	10,620.0	6,533.9	211.6	6,537.2	0.00	0.00	0.00
17,000.0	90.00	359.57 359.57	10,620.0	6,633.9 6,633.9	210.8	6,637.2 6,637.1	0.00	0.00	0.00
17,100.0	90.00	359.57	10,620.0	6,733.9	210.0	6,737.1	0.00	0.00	0.00
17,200.0	90.00	359.57	10,620.0	6,833.9	209.3	6,837.0	0.00	0.00	0.00
17,300.0	90.00	359.57	10,620.0	6,933.9	208.6	6,937.0	0.00	0.00	0.00
17,400.0	90.00	359.57	10,620.0	7,033.9	207.9	7,036.9	0.00	0.00	0.00
17,500.0	90.00	359.57	10,620.0	7,133.9	207.1	7,136.9	0.00	0.00	0.00
17,600.0	90.00	359.58	10,620.0	7,233.9	206.4	7,236.8	0.00	0.00	0.00
17,700.0	90.00	359.58	10,620.0	7,333.9	205.6	7,336.8	0.00	0.00	0.00
17,800.0	90.00	359.58	10,620.0	7,433.9	204.9	7,436.7	0.00	0.00	0.00



Planning Report

Database: Company:

Project:

PEDM Midland

Lea County, NM (NAD 83 NME)

Site: Antero 14 Fed Com

 Well:
 #412H

 Wellbore:
 OH

 Design:
 Plan #0.1 RT

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Survey Calculation Method:

Well #412H

kb=26' @ 3381.0usft kb=26' @ 3381.0usft

Grid

Planned Survey										
Measurd Depth (usft)	Inc	lination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,90	0.0	90.00	359.58	10,620.0	7,533.9	204.1	7,536.6	0.00	0.00	0.00
18,00	0.00	90.00	359.58	10,620.0	7,633.9	203.4	7,636.6	0.00	0.00	0.00
18,10	0.00	90.00	359.58	10,620.0	7,733.9	202.7	7,736.5	0.00	0.00	0.00
18,19	91.1	90.00	359.58	10,620.0	7,825.0	202.0	7,827.6	0.00	0.00	0.00
PBHL(/	PBHL(Antero 14 Fed Com #412H)									

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(Antero 14 Fed Con - plan hits target cent - Point	0.00 er	0.00	10,142.5	55.0	262.0	412,193.00	788,255.00	32° 7′ 50.464 N	103° 32' 8.421 W
FTP(Antero 14 Fed Com - plan hits target cent - Point	0.00 er	0.00	10,355.2	105.0	262.0	412,243.00	788,255.00	32° 7' 50.959 N	103° 32' 8.416 W
Fed Perf 1(Antero 14 Fe - plan hits target cent - Point	0.00 er	0.00	10,620.0	2,645.0	242.0	414,783.00	788,235.00	32° 8' 16.094 N	103° 32' 8.430 W
PBHL(Antero 14 Fed Co - plan hits target cent - Point	0.00 er	0.00	10,620.0	7,825.0	202.0	419,963.00	788,195.00	32° 9' 7.354 N	103° 32' 8.449 W
Fed Perf 2(Antero 14 Fe - plan hits target cent - Point	0.00 er	0.01	10,620.0	5,285.0	221.0	417,423.00	788,214.00	32° 8' 42.219 N	103° 32' 8.447 W



1050-

1400-

2450-

2800-

3150-

3500

3850

4200-

4550-

4900-

5950-

6300-

6650

7000-

7350

7700

8050-

8400-

8750-

9100

9450

10150-

10500-

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T M

Azimuths to Grid North True North: -0.42° Magnetic North: 5.87°

Magnetic Field Strength: 47242.4nT Dip Angle: 59.76° Date: 5/17/2023 Model: IGRF2020

To convert a Magnetic Direction to a Grid Direction, Add 5.87°
To convert a Magnetic Direction to a True Direction, Add 6.30° East
To convert a True Direction to a Grid Direction, Subtract 0.42°

Lea County, NM (NAD 83 NME)

Antero 14 Fed Com #412H

Plan #0.1 RT

PROJECT DETAILS: Lea County, NM (NAD 83 NME)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980

Zone: New Mexico Eastern Zone System Datum: Mean Sea Level

WELL DETAILS: #412H

3355.0

Longitude 103° 32' 11.472 W

kb=26' @ 3381.0usft

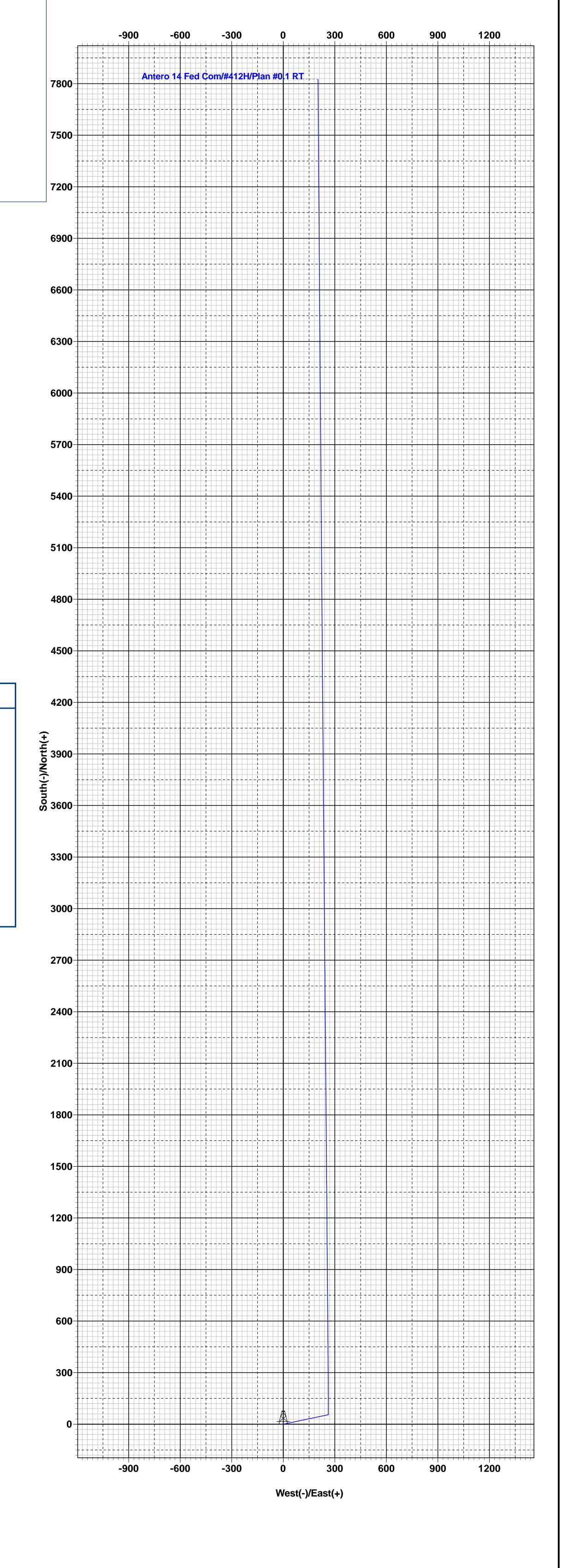
Northing Easting Latittude 412138.00 787993.00 32° 7' 49.939 N

SECTION DETAILS +E/-W TVD +N/-S **VSect Target** Sec **TFace** Inc Azi 0.00 0.00 0.00 0.00 1500.0 1500.0 0.00 1626.5 2.53 78.14 1626.5 2.00 78.14 0.6 259.3 7564.4 2.53 78.14 7558.5 61.1 0.00 0.00 55.0 262.0 61.7 7690.9 7685.0 2.00 180.00 262.0 0.00 10142.5 KOP(Antero 14 Fed Com #412H) 10148.4 0.00 0.00 26.46 10355.2 262.0 111.7 FTP(Antero 14 Fed Com #412H) 10368.8 105.0 12.00 0.00 259.5 539.0 359.52 10619.9 532.4 12.00 -0.53 242.0 2650.4 Fed Perf 1(Antero 14 Fed Com #412H) 359.52 10620.0 2645.0 0.00 Fed Perf 2(Antero 14 Fed Com #412H) 10620.0 5285.0 221.0 85.88 5288.9 PBHL(Antero 14 Fed Com #412H) 10620.0 7825.0 202.0 0.00 7827.6 101.49

CASING DETAILS

No casing data is available

WELLBORE TARGET DETAILS (MAP CO-ORDINATES) TVD +N/-S +E/-W Northing **Easting KOP(Antero 14 Fed Com #412H)** 412193.00 788255.00 10142.5 10355.2 105.0 412243.00 788255.00 FTP(Antero 14 Fed Com #412H) Fed Perf 1(Antero 14 Fed Com #412H) 2645.0 242.0 414783.00 10620.0 788235.00 Fed Perf 2(Antero 14 Fed Com #412H) 10620.0 5285.0 417423.00 788214.00 PBHL(Antero 14 Fed Com #412H) 7825.0 10620.0 419963.00 788195.00 West(-)/East(+)



30 700 1050 1400 1750 2100 2450 2800 3150 3500 3850 4200 4550 4900 5250 5600 5950 6300 6650 7000 7350 7700

Vertical Section at 1.48°

Lea County, NM (NAD 83 NME) Antero 14 Fed Com #412H OH Plan #0.1 RT 15:40, May 17 2023



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.



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.



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

General Procedure While Cementing

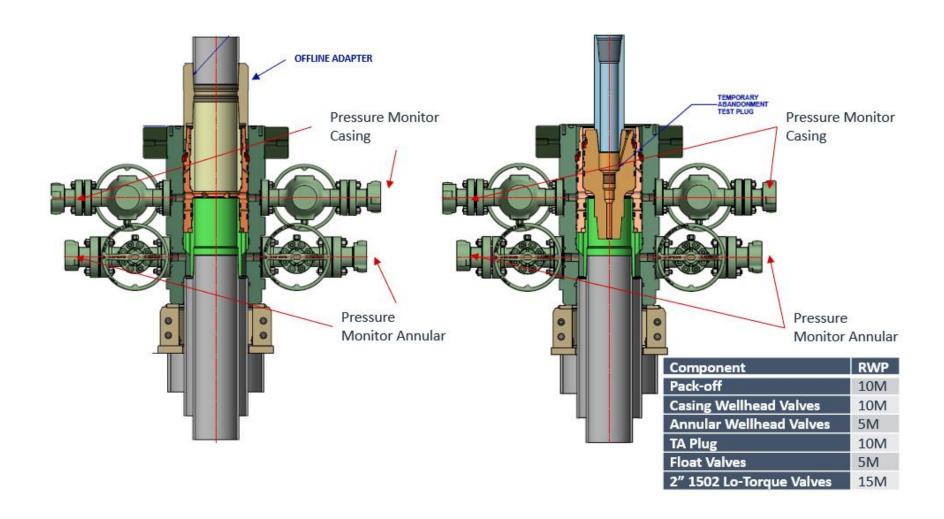
- 1. Sound alarm (alert crew).
- 2. Shut down pumps.
- 3. Shut-in Well (close valves to rig pits and open valve to rig choke line. Rig choke will already be in the closed position).
- 4. Confirm shut-in.
- 5. Notify tool pusher/company representative.
- 6. Open rig choke and begin pumping again taking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

General Procedure After Cementing

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



Figure 1: Cameron TA Plug and Offline Adapter Schematic

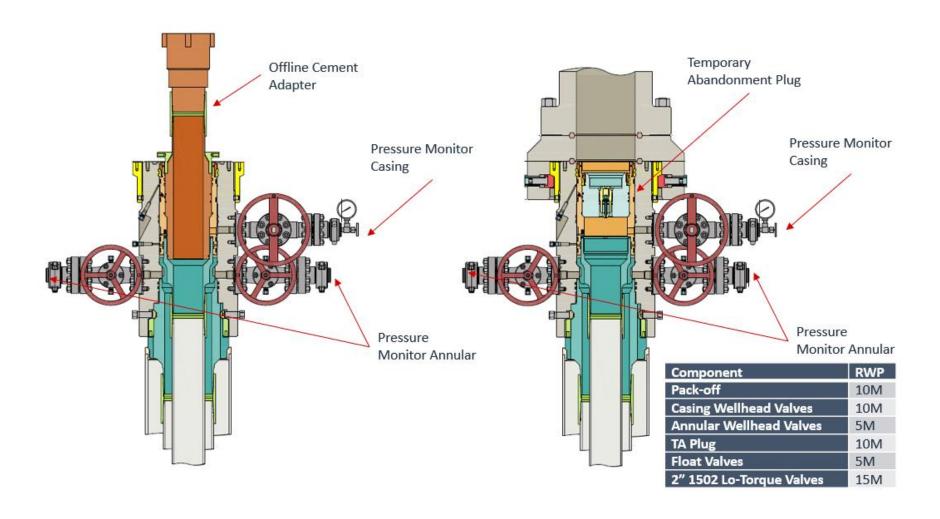


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Figure 2: Cactus TA Plug and Offline Adapter Schematic

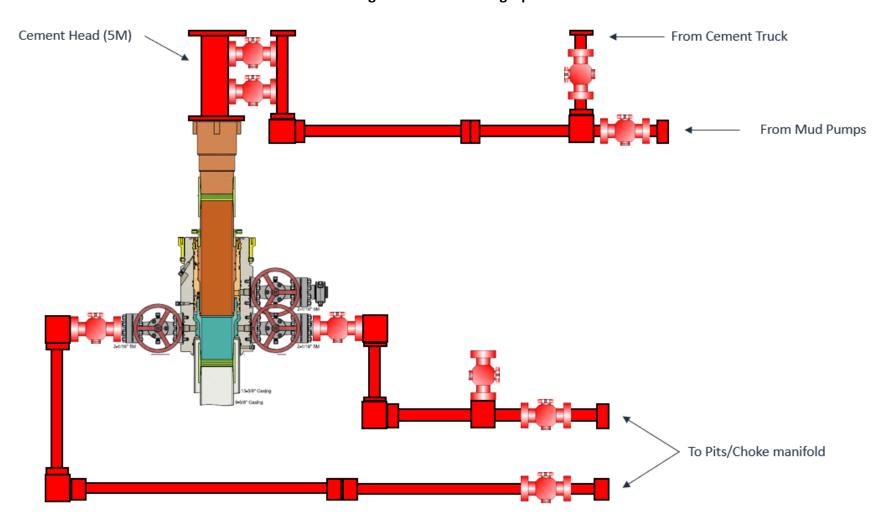


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Figure 3: Back Yard Rig Up



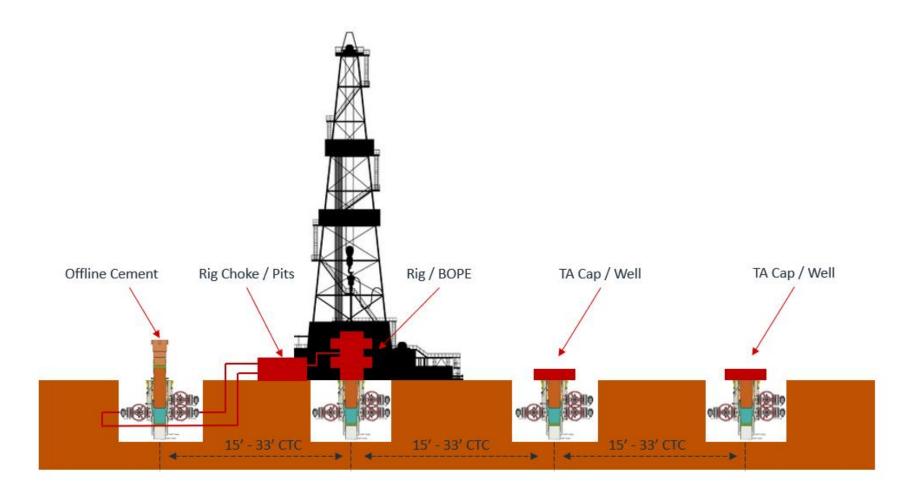
*** All Lines 10M rated working pressure

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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

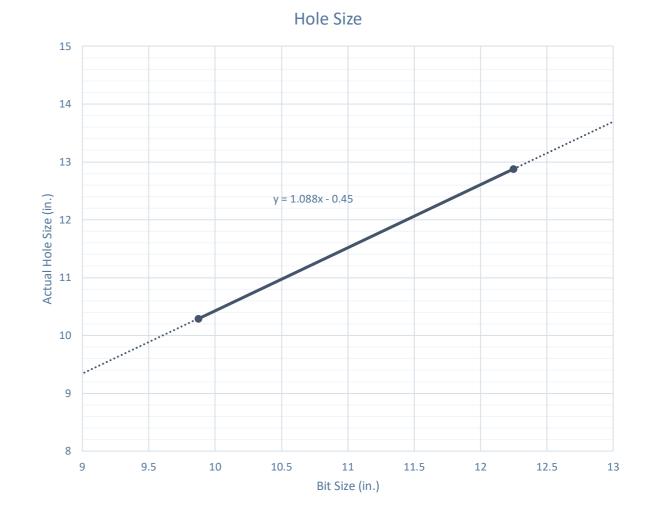
Volumetric Hole Size Calculation

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

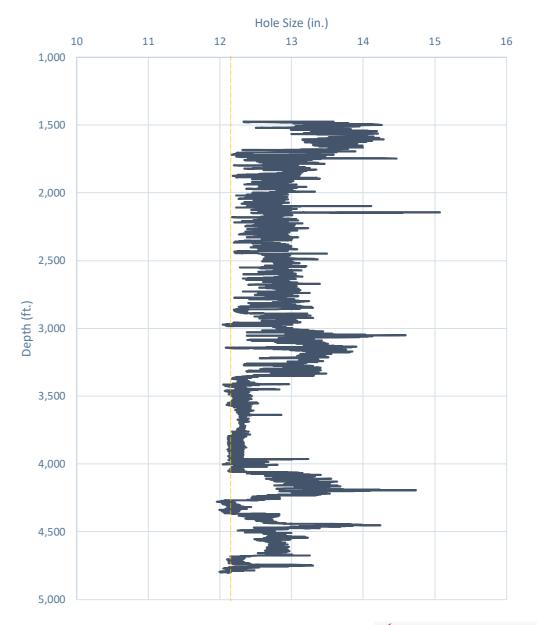


Modelo 10 Fed Com #501H

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

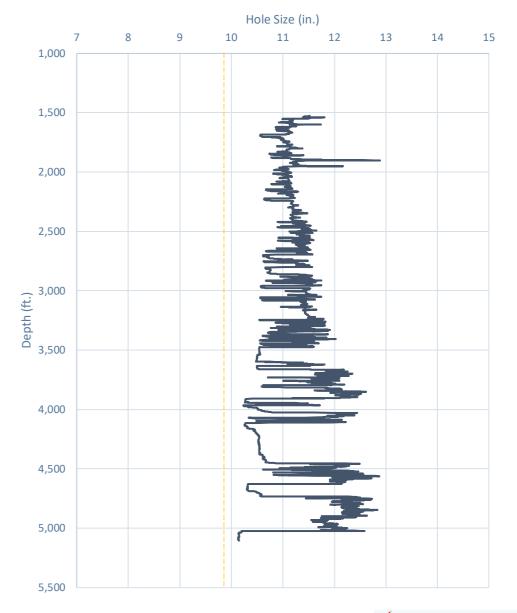


Caliper Hole Size (9.875")

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

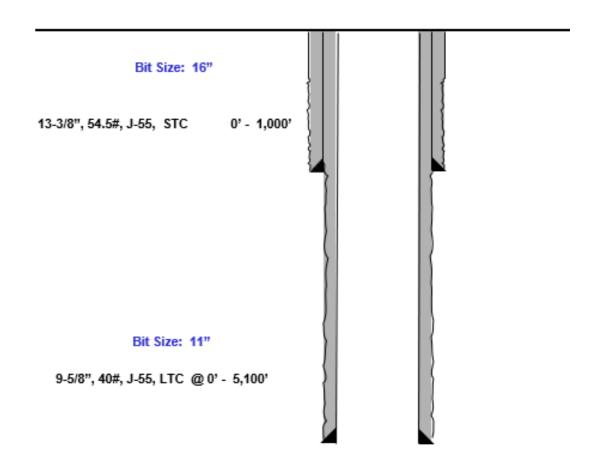
$$=\frac{11.52-9.625}{2}$$

• 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

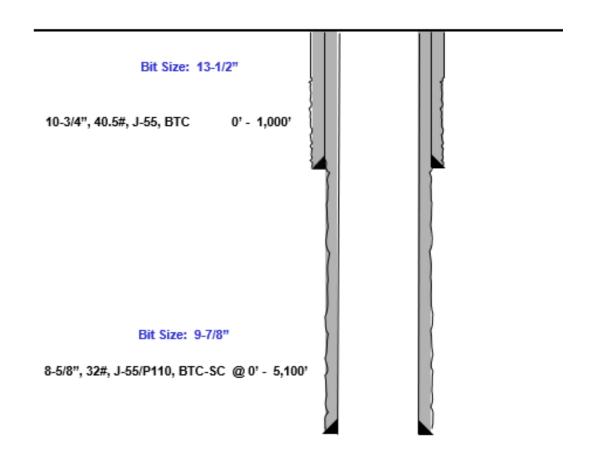
$$=\frac{10.295-8.625}{2}$$

• 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			1

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 i)



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	Pipe	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,860	ff-lbs
Maximum Make-Up Torque	-	-	-	6,430	ff-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

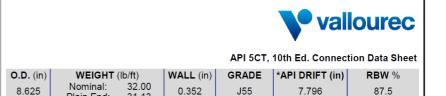
New Search >>

USC Metric

6/8/2015 10:14:05 AM

Mechanical Properties Pipe BTC LTC STC

6/8/2015 10:14:05 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	10.750	11.750	-	11.750	in.
Wall Thickness	0.350	-	-	-	in.
Inside Diameter	10.050	10.050	-	10.050	in.
Standard Drift	9.894	9.894	-	9.894	in.
Alternate Drift	-	-	-	-	in.
Nominal Linear Weight, T&C	40.50	-	-	-	lbs/ft
Plain End Weight	38.91	-	-	-	lbs/ft
Performance	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
Minimum Pipe Body Yield Strength	629.00	-	-	-	1000 lbs
Joint Strength	-	700	-	420	1000 lbs
Reference Length	-	11,522	-	6,915	ft
Make-Up Data	Ptpe	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,150	ft-lbs
Maximum Make-Up Torque	-	-	-	5,250	ft-lbs



Material Properties (PE)								
55 ksi								
80 ksi								
75 ksi								
55 ksi								
80 ksi								
75 ksi								

MADE IN USA

#Od

M/O# SLN

DA

S

Plain End: 31.13

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

Coupling OD: 9.625"				
STC Performance				
STC Internal Pressure:	3,930	psi		
STC Joint Strength:	372	kips		
LTC Performance				
LTC Internal Pressure:	3,930	psi		
LTC Joint Strength:	417	kips		
SC-BTC Performance - Cplg OD = 9.125"				
BTC Internal Pressure:	3,930	psi		
BTC Joint Strength:	503	kips		

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

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

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

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

CONDITIONS

Action 232572

CONDITIONS

Operator:	OGRID:
EOG RESOURCES INC	7377
P.O. Box 2267	Action Number:
Midland, TX 79702	232572
	Action Type:
	[C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By		Condition Date
pkautz	IN ADDITION TO PRVIOUS COA, IF ON ANY STRING CEMENT DOES NOT CIRCULATE, A CBL MUST BE RUN ON THAT STRING OF CASING.	8/10/2023