District I 1625 N. French Dr., Hobbs, NM 88240 Phone:(575) 393-6161 Fax:(575) 393-0720 District II

811 S. First St., Artesia, NM 88210 Phone:(575) 748-1283 Fax:(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) 476-3470 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

.

Form C-101 August 1, 2011 Permit 369589

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

EO0 550	me and Address G RESOURCES INC 9 Champions Drive land, TX 79706												RID Number 7377 I Number 30-025	-53213		
4. Property Cod 3964			5. Property I D	Name DRAGON 3	36 STA	TE						6. We	II No. 201H			
						7. Surf	face Locatio	on								
UL - Lot	Section	Township	Rar	nge		Lot Idn	Feet From	•	N/S Line	•	Feet Fro	m	E/W Lin	е	County	
N	36	24	4S	33E	E	N		1166		S		2448		W		Lea
						8. Proposed B	Bottom Hole	Loca	tion							
UL - Lot	Section	Township	Ra	ange		Lot Idn	Feet From		N/S Line	e	Feet Fre	om	E/W Line	1	County	
D	36	24	4S	33	E	D		100		Ν		755		W	-	Lea
							ol Informatio	n								
RED HILLS;U	JPPER BONE SPRI	NG SHALE												9790	0	
						A dditi a mal	Mall Inform							1		
11. Work Type		12. Well Typ	<u>.</u>	r	13 Cal	Additional ble/Rotary	I Well Inforn	nation	14. Lease Typ	10	1	5 Ground	Level Elevati	on		
2.	v Well		DIL		10. 04.	Jie/i total y			Sta				481	011		
16. Multiple		17. Proposed			18. For	rmation			19. Contractor	r	2	0. Spud Da	ate			
N		1	5179			Bone Spring	-						/16/2024			
Depth to Groun	Depth to Ground water Distance from nearest fres				sh water well				0	istance to r	nearest surfac	e water				
We will be u	using a closed-loop	evetom in li	ou of lined	nite												
	Ising a closed loop	system in m	eu or inica	pita												
Trees		Orain	0:			Proposed Casi				1	0 a alva	(0			- Constant Tr	
Type Surf	Hole Size 13	Casing 10	g Size .75			g Weight/ft 40.5		Setting 13				of Cement 390		1	Estimated To 0	50
Int1	9.875	8.6	-			40.5 32		1310 5686		740				0		
Prod	7.875	6.0	-			24.5		10183			1650				0	
Prod	6.75	5.				20		15179		1650			0			
					Casin	ng/Cement Prog	aram: Addit	ional (Commonte							
	fully requests the op be notified of EOG's			ind cemer						anned br	adenhe	ad squee	ze on the p	roductio	on string. T	ſhe
						Proposed Blov		ntion F	Program							
[Туре		Т			Pressure	Vouri ievei			t Pressure				Manuf	acturer	
	Double Ram		1			000				3000						
	ertify that the inform	nation given a	bove is true	and com	plete to	o the best of my	/			OIL	CONSE	RVATION	DIVISION			
knowledge ar					1/20 40	15 14 0 (D) NM										
, if applicab	ify I have complied ble.	WITH 19.15.14	1.9 (A) NIVIA		/or 19.	15.14.9 (D) NIVIA	AC									
Signature:																
Printed Name:	Electronically	y filed by Patr	icia Donald	i			Approve	ed By:	Paul F	⁼ Kautz						
Title:	Regulatory S	Specialist					Title:		Geolo	ogist						
Email Address:	Patricia_Dor	nald@eogres	ources.con	n			Approve	Approved Date: 7/18/2024 Expiration Date: 7/18/2026								
Date:	7/11/2024		Phone: 432-488-7684				Conditi	Conditions of Approval Attached								

Received by OCD: 7/11/2024 8:47:05 AM

DISTRICT I 1625 N. French Dr., Hobbs, NM 88240 Phone: (575) 393-6161 Fax: (575) 393-0720 Phone: (373) 359-0101 Fax. (375) 359-0101 Fax. DISTRICT II 811 S. First St., Artesia, NM 88210 Phone: (575) 748-1283 Fax: (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

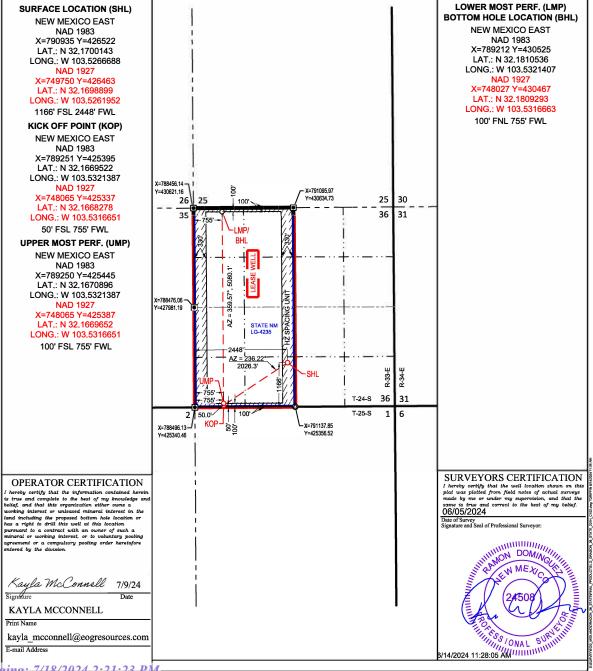
Form C-102 Revised August 1, 2011 Submit one copy to appropriate District Office

□ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number Pool Code Pool Name								Pool Name			
3	0-025-		97	7900	R	ED HI	LLS;Ul	PPER BONI	E SPRING	SHALE	
Property Co	Property Code								Well Number		
39643					DRAGON	B6 STATE	Ξ		20	201H	
OGRID N	ю.				Operator	Name			Elevati	on	
7377	,			E	OG RESOU	RCES, II	NC.		34	81'	
	Surface Location							19.			
UL or lot no.	Section	Township	Range	Lot Idn	Feet from th	ie No	orth/South line	Feet from the	East/West line	County	
N	36	24-S	33-E		1166'		SOUTH	2448'	WEST	LEA	
ā			Bott	om Hole	Location If	Different	From Surfa	ice	~		
UL or lot no.	Section	Township	Range	Lot Idn	Feet from th	e No	orth/South line	Feet from the	East/West line	County	
D	36	24-S	33-E	33-E - 100' NORTH 755'			WEST	LEA			
Dedicated Acres	Joint or	Infill	Consolidated Code Order No.								
320.00			LEASE WELL								

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division



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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

PERMIT CONDITIONS OF APPROVAL

Operator	Name and Address:	API Number:					
	EOG RESOURCES INC [7377]	30-025-53213					
	5509 Champions Drive	Well:					
	Midland, TX 79706	DRAGON 36 STATE #201H					
OCD	Condition						
Reviewer							
pkautz	Notify OCD 24 hours prior to casing & cement						
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104						
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the	operator shall drill without interruption through the fresh					
	water zone or zones and shall immediately set in cement the water protection string						
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system						
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing						
pkautz	z If cement does not circulate on any string, a CBL is required for that string of casing						
pkautz	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud						

Form APD Conditions

Permit 369589

Page 3 of 108

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State of New Mexico	
Energy, Minerals and Natural Resources	Department

Submit Electronically Via E-permitting

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description Effective May 25, 2021

I. Operator: ____EOG Resources, Inc._____OGRID: ____7377_____ Date: 7/9/2024

II. **Type:** \square Original \square Amendment due to \square 19.15.27.9.D(6)(a) NMAC \square 19.15.27.9.D(6)(b) NMAC \square Other.

If Other, please describe:

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
DRAGON 36 STATE 201H		N-36-24S-33E	1166' FSL & 2448' FWL	+/- 1000	+/- 3500	+/- 3000

IV. Central Delivery Point Name: DRAGON 36 STATE CTB [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
DRAGON 36 STATE 201H		07/16/24	07/30/24	10/30/24	11/01/24	12/01/24

VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: 🛛 Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

 \overline{X} Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. \Box Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system \Box will \Box will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator \Box does \Box does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

□ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: \Box Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

<u>Section 3 - Certifications</u> <u>Effective May 25, 2021</u>

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

 \boxtimes Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

 \Box Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. *If Operator checks this box, Operator will select one of the following:*

Well Shut-In. \Box Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. \Box Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (**h**) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: Kayla McConnell Printed Name: Kayla McConnell Title: Regulatory Specialist E-mail Address: kayla_mcconnell@eogresources.com Date: 7/09/2024 Phone: (432) 265-6804 **OIL CONSERVATION DIVISION** (Only applicable when submitted as a standalone form) Approved By: Title: Approval Date: Conditions of Approval:

Natural Gas Management Plan Items VI-VIII

VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release gas from the well.

VII. Operational Practices: Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F 19.15.27.8 NMAC.

Drilling Operations

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

Completions/Recompletions Operations

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

Production Operations

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All plunger lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.

Performance Standards

- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 Mcfd.

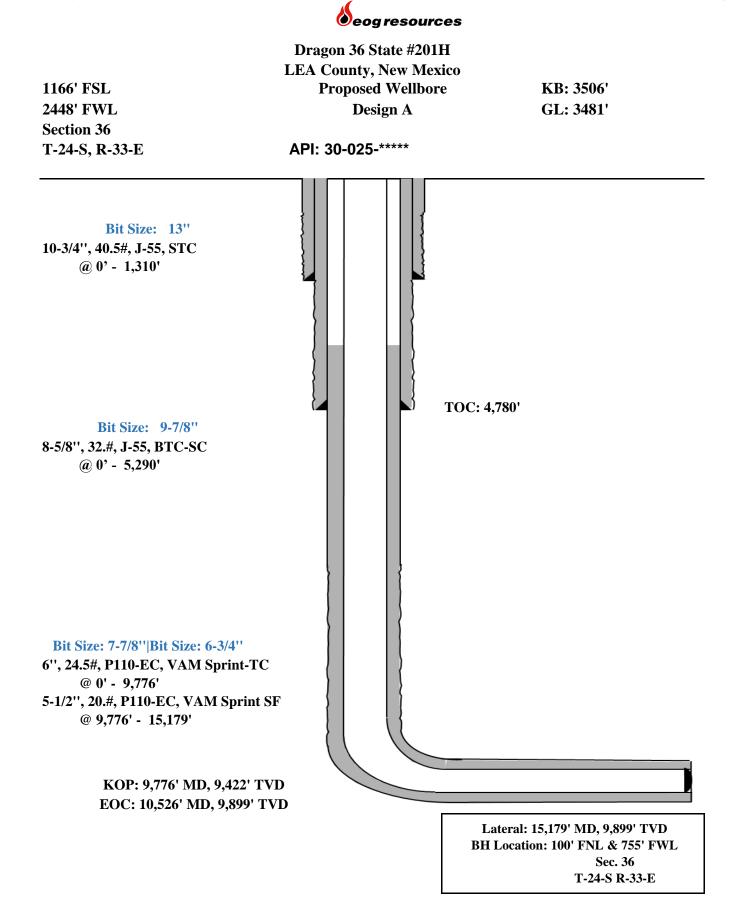
Measurement & Estimation

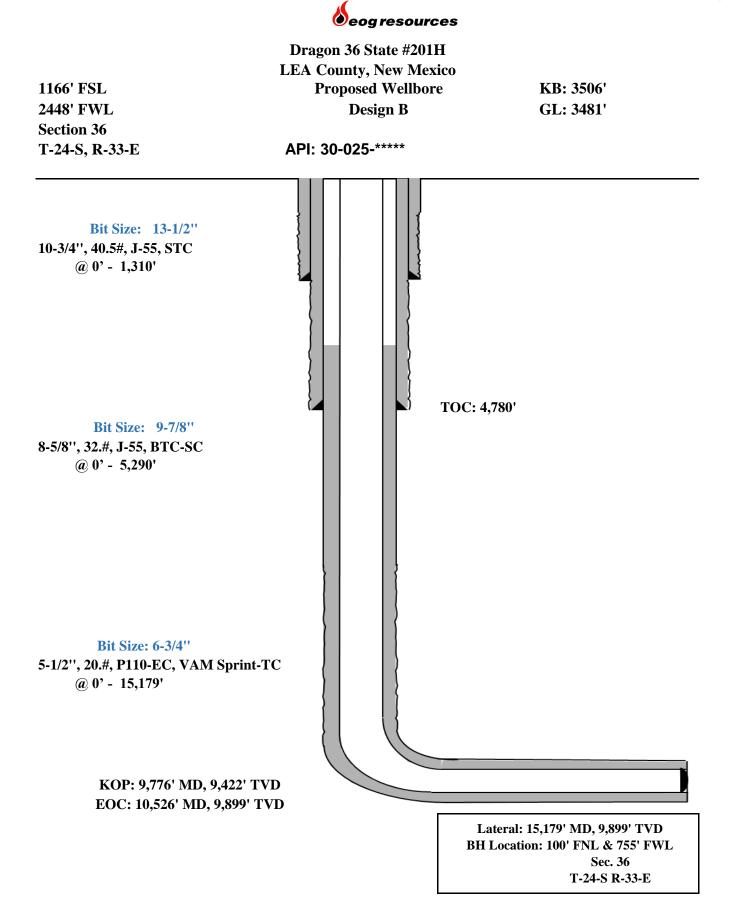
- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses with be installed.

• When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

- During downhole well maintenance, EOG will use best management practices to vent as minimally as possible.
- Prior to the commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
 All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, the equipment will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.







Dragon 36 State #201H

Permit Information:

Well Name: Dragon 36 State #201H

Location:

SHL: 1166' FSL & 2448' FWL, Section 36, T-24-S, R-33-E, LEA Co., N.M.
BHL: 100' FNL & 755' FWL, Section 36, T-24-S, R-33-E, LEA Co., N.M.

Design A

Casing Program:

Hole	Interv	al MD	Interva	l TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13"	0	1,310	0	1,310	10-3/4"	40.5#	J-55	STC
9-7/8"	0	5,686	0	5,280	8-5/8"	32#	J-55	BTC-SC
7-7/8"	0	10,183	0	9,422	6"	24.5#	P110-EC	VAM Sprint-TC
6-3/4"	10,183	15,179	9,422	9,899	5-1/2"	20#	P110-EC	VAM Sprint SF

Cement Program:

		Wt.	Yld	
Depth	No. Sacks	ppg	Ft3/sk	Slurry Description
1,310'	290	13.5	1.73	Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
1,310	100	14.8	1.34	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
5 (00)	440	12.7	1.11	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
5,690'	300	14.8	1.5	Tail: Class C + 3% CaCl2 + 3% Microbond (TOC @ 4,225')
	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
15,179'	650	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

Mud Program:

Depth	Туре	Wt (ppg)	Viscosity	Water Loss
0-1,310'	Fresh - Gel	8.6-8.8	28-34	N/c
1,310' - 5,280'	Brine	8.6-8.8	28-34	N/c
5,280' – 15,179' Lateral	Oil Base	8.8-9.5	58-68	N/c - 6



Dragon 36 State #201H

<u>Design B</u>

CASING PROGRAM

Hole	Interva	al MD	Interval TVD		Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13-1/2"	0	1,310	0	1,310	10-3/4"	40.5#	J-55	STC
9-7/8"	0	5,686	0	5,280	8-5/8"	32#	J-55	BTC-SC
6-3/4"	0	15,179	0	9,899	5-1/2"	20#	P110-EC	DWC/C IS MS

Cementing Program:

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sturry Description
1,310'	360	13.5	1.73	Class C + 4.0% Bentonite + 0.6% CD-32 + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
1,510	70	14.8	1.34	Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate
5,690'	540	12.7	1.11	Tail: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
5,090	1000	14.8	1.5	Lead: Class C + 3% CaCl2 + 3% Microbond (TOC @ 4,225')
	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
15,179'	390	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

Mud Program:

Depth	Туре	Veight (pp	Viscosity	Water Loss
0 – 1,310'	Fresh - Gel	8.6-8.8	28-34	N/c
1,310' - 5,280'	Brine	9.0-10.5	28-34	N/c
5,280' – 15,179' Lateral	Oil Base	8.8-9.5	58-68	N/c - 6



Dragon 36 State 201H

EOG requests variance from minimum standards to pump a two stage cement job on the 6" and 5-1/2" production casing strings with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon (7,793') and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 400 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (1.32 yld, 14.8 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

Bradenhead will be the primary option for production cementing. EOG also requests to have the conventional option in place to accommodate for logistical or wellbore conditions. The tie back requirements will be met if the cement is pumped conventionally, and cement volumes will be adjusted accordingly. TOC will be verified by CBL.

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.



Dragon 36 State #201H

Hydrogen Sulfide Plan Summary

- A. All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a.
- B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.
- C. Required Emergency Equipment:
 - Well control equipment
 - a. Flare line 150' from wellhead to be ignited by flare gun.
 - b. Choke manifold with a remotely operated choke.
 - c. Mud/gas separator
 - Protective equipment for essential personnel.
 - Breathing apparatus:
 - a. Rescue Packs (SCBA) 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
 - b. Work/Escape packs —4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
 - c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

Auxiliary Rescue Equipment:

- a. Stretcher
- b. Two OSHA full body harness
- c. 100 ft 5/8 inch OSHA approved rope
- d. 1-20# class ABC fire extinguisher
- H2S detection and monitoring equipment:

The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.

(Gas sample tubes will be stored in the safety trailer)

■ Visual warning systems.

- a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
- b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
- c. Two wind socks will be placed in strategic locations, visible from all angles.



Dragon 36 State #201H

■ Mud program:

The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

■ Metallurgy:

All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

■ Communication:

Communication will be via cell phones and land lines where available.

Seog resources

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Dragon 36 State #201H Emergency Assistance Telephone List

PUBLIC SAFETY:		911 o
Lea County Sheriff's Department		(575) 396-3611
Rod Coffman		
Fire Department:		
Carlsbad		(575) 885-3125
Artesia		(575) 746-5050
Hospitals:		
Carlsbad		(575) 887-4121
Artesia		(575) 748-3333
Hobbs		(575) 392-1979
Dept. of Public Safety/Carlsbad		(575) 748-9718
Highway Department		(575) 885-3281
New Mexico Oil Conservation		(575) 476-3440
NMOCD Inspection Group - South		(575) 626-0830
U.S. Dept. of Labor		(575) 887-1174
EOG Resources, Inc.		
EOG / Midland	Office	(432) 686-3600
Company Drilling Consultants:		
David Dominque	Cell	(985) 518-5839
Mike Vann	Cell	(817) 980-5507
Drilling Engineer		
Stephen Davis	Cell	(432) 235-9789
Matt Day	Cell	(432) 296-4456
Drilling Manager		
Branden Keener	Office	(432) 686-3752
	Cell	(210) 294-3729
Drilling Superintendent		
Steve Kelly	Office	(432) 686-3706
	Cell	(210) 416-7894
H&P Drilling		
H&P Drilling	Office	(432) 563-5757
H&P 651 Drilling Rig	Rig	(903) 509-7131
	C	
Tool Pusher:		
Johnathan Craig	Cell	(817) 760-6374
Brad Garrett		
Safety:		
Brian Chandler (HSE Manager)	Office	(432) 686-3695
	Cell	(817) 239-0251



Midland

Lea County, NM (NAD 83 NME) Dragon 36 State #201H

OH

Plan: Plan #0.1 RT

Standard Planning Report

19 June, 2024



	504100						
Database: Company: Project: Site: Well: Wellbore: Design:	PEDMB Midland Lea County, NM Dragon 36 State #201H OH Plan #0.1 RT	•	ME)	Local Co-ordin TVD Reference MD Reference North Reference Survey Calcula	: ce:	Well #201H kb = 26' @ 3507. kb = 26' @ 3507. Grid Minimum Curvate	Ousft
Project	Lea County, NM	(NAD 83 NM	1E)				
Geo Datum:	US State Plane 19 North American Da New Mexico Easte	atum 1983		System Datum:		Mean Sea Level	
Site	Dragon 36 State						
Site Position: From: Position Uncertainty:	Мар	0.0 usft	Northing: Easting: Slot Radius:	426,079.0 793,102.0 13-3/*	0 usft Longitud		32° 10' 7.510 N 103° 31' 10.836 W
Well	#201H						
Well Position	+N/-S +E/-W	0.0 usft 0.0 usft 0.0 usft	Northing: Easting: Wellhead Elev	79	26,522.00 usft 90,935.00 usft usft	Latitude: Longitude: Ground Level:	32° 10' 12.055 N 103° 31' 36.007 W 3,481.0 usft
Grid Convergence:	ОН	0.43 °					
Wellbore Magnetics	Model Name	•	Sample Date	Declination (°)		Dip Angle (°)	Field Strength (nT)
	IGRF2	2020	6/19/2024		6.17	59.75	47,151.92310451
Design	Plan #0.1 RT						
Audit Notes: Version:			Phase:	PLAN	Tie On Depti	h: (0.0
Vertical Section:		(u	rom (TVD) Isft)).0	+N/-S (usft) 0.0	+E/-W (usft) 0.0	(ction °) 3.71
				0.0	0.0		
Plan Survey Tool Pro Depth From (usft)	Depth To	Date 6/19/2 urvey (Wellb		Tool Name	Remar	ke	
1 0.0	15,179.1 Pla			EOG MWD+IFR1 MWD + IFR1	Neilla	NJ	

Database:	PEDMB	Local Co-ordinate Reference:	Well #201H
Company:	Midland	TVD Reference:	kb = 26' @ 3507.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	kb = 26' @ 3507.0usft
Site:	Dragon 36 State	North Reference:	Grid
Well:	#201H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ОН		
Design:	Plan #0.1 RT		

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	
2,560.8	21.22	236.21	2,536.7	-108.0	-161.4	2.00	2.00	0.00	236.21	
7,087.1	21.22	236.21	6,756.3	-1,019.0	-1,522.6	0.00	0.00	0.00	0.00	
8,147.9	0.00	0.00	7,793.0	-1,127.0	-1,684.0	2.00	-2.00	0.00	180.00	
9,776.4	0.00	0.00	9,421.5	-1,127.0	-1,684.0	0.00	0.00	0.00	0.00	KOP(Dragon 36 State
9,996.9	26.46	358.85	9,634.2	-1,077.0	-1,685.0	12.00	12.00	-0.52	358.85	FTP(Dragon 36 State
10,526.4	90.00	359.59	9,898.9	-649.6	-1,689.7	12.00	12.00	0.14	0.82	
15,179.1	90.00	359.59	9,899.0	4,003.0	-1,723.0	0.00	0.00	0.00	0.00	PBHL(Dragon 36 Stat



Database:	PEDMB	Local Co-ordinate Reference:	Well #201H
Company:	Midland	TVD Reference:	kb = 26' @ 3507.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	kb = 26' @ 3507.0usft
Site:	Dragon 36 State	North Reference:	Grid
Well:	#201H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ОН		
Design:	Plan #0.1 RT		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	2.00	236.21	1,600.0	-1.0	-1.5	-0.3	2.00	2.00	0.00
1,700.0	4.00	236.21	1,699.8	-3.9	-5.8	-1.3	2.00	2.00	0.00
1,800.0	6.00	236.21	1,799.5	-8.7	-13.0	-2.9	2.00	2.00	0.00
1,900.0	8.00	236.21	1,898.7	-15.5	-23.2	-5.1	2.00	2.00	0.00
2,000.0	10.00	236.21	1,997.5	-24.2	-36.2	-7.9	2.00	2.00	0.00
2,100.0	12.00	236.21	2,095.6	-34.8	-52.0	-11.4	2.00	2.00	0.00
2,200.0	14.00	236.21	2,193.1	-47.3	-70.7	-15.5	2.00	2.00	0.00
2,300.0	16.00	236.21	2,289.6	-61.7	-92.2	-20.2	2.00	2.00	0.00
2,400.0	18.00	236.21	2,385.3	-78.0	-116.5	-25.6	2.00	2.00	0.00
2,500.0	20.00	236.21	2,479.8	-96.1	-143.6	-31.5	2.00	2.00	0.00
2,560.8	21.22	236.21	2,536.7	-108.0	-161.4	-35.4	2.00	2.00	0.00
2,600.0	21.22	236.21	2,573.3	-115.9	-173.2	-38.0	0.00	0.00	0.00
2,700.0	21.22	236.21	2,666.5	-136.0	-203.2	-44.6	0.00	0.00	0.00
2,800.0	21.22	236.21	2,759.7	-156.1	-233.3	-51.2	0.00	0.00	0.00
2,900.0	21.22	236.21	2,852.9	-176.3	-263.4	-57.8	0.00	0.00	0.00
3,000.0	21.22	236.21	2,946.2	-196.4	-293.5	-64.4	0.00	0.00	0.00
3,100.0	21.22	236.21	3,039.4	-216.5	-323.5	-71.0	0.00	0.00	0.00
3,200.0	21.22	236.21	3,132.6	-236.6	-353.6	-77.6	0.00	0.00	0.00
3,300.0	21.22	236.21	3,225.8	-256.8	-383.7	-84.2	0.00	0.00	0.00
3,400.0	21.22	236.21	3,319.0	-276.9	-413.8	-90.8	0.00	0.00	0.00
3,500.0	21.22	236.21	3,412.3	-297.0	-443.8	-97.4	0.00	0.00	0.00
3,600.0	21.22	236.21	3,505.5	-317.2	-473.9	-104.0	0.00	0.00	0.00
3,700.0	21.22	236.21	3,598.7	-337.3	-504.0	-110.5	0.00	0.00	0.00
3,800.0	21.22	236.21	3,691.9	-357.4	-534.0	-117.1	0.00	0.00	0.00
3,900.0	21.22	236.21	3,785.2	-377.5	-564.1	-123.7	0.00	0.00	0.00
4,000.0	21.22	236.21	3,878.4	-397.7	-594.2	-130.3	0.00	0.00	0.00
4,100.0	21.22	236.21	3,971.6	-417.8	-624.3	-136.9	0.00	0.00	0.00
4,200.0	21.22	236.21	4,064.8	-437.9	-654.3	-143.5	0.00	0.00	0.00
4,300.0	21.22	236.21	4,158.0	-458.0	-684.4	-150.1	0.00	0.00	0.00
4,400.0	21.22	236.21	4,251.3	-478.2	-714.5	-156.7	0.00	0.00	0.00
4,500.0	21.22	236.21	4,344.5	-498.3	-744.6	-163.3	0.00	0.00	0.00
4,600.0	21.22	236.21	4,437.7	-518.4	-774.6	-169.9	0.00	0.00	0.00
4,700.0	21.22	236.21	4,530.9	-538.5	-804.7	-176.5	0.00	0.00	0.00
4,800.0	21.22	236.21	4,624.2	-558.7	-834.8	-183.1	0.00	0.00	0.00
4,900.0	21.22	236.21	4,717.4	-578.8	-864.9	-189.7	0.00	0.00	0.00
5,000.0	21.22	236.21	4,810.6	-598.9	-894.9	-196.3	0.00	0.00	0.00
5,100.0	21.22	236.21	4,903.8	-619.1	-925.0	-202.9	0.00	0.00	0.00
5,200.0	21.22	236.21	4,997.1	-639.2	-955.1	-209.5	0.00	0.00	0.00

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COMPASS 5000.16 Build 100



Database:	PEDMB	Local Co-ordinate Reference:	Well #201H
Company:	Midland	TVD Reference:	kb = 26' @ 3507.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	kb = 26' @ 3507.0usft
Site:	Dragon 36 State	North Reference:	Grid
Well:	#201H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #0.1 RT		

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	21.22	236.21	5,090.3	-659.3	-985.2	-216.1	0.00	0.00	0.00
5,400.0	21.22	236.21	5,183.5	-679.4	-1,015.2	-222.7	0.00	0.00	0.00
5,500.0	21.22	236.21	5,276.7	-699.6	-1,045.3	-229.3	0.00	0.00	0.00
5,600.0	21.22	236.21	5,369.9	-719.7	-1,075.4	-235.9	0.00	0.00	0.00
5,700.0	21.22	236.21	5,463.2	-739.8	-1,105.5	-242.5	0.00	0.00	0.00
5,800.0	21.22	236.21	5,556.4	-759.9	-1,135.5	-249.1	0.00	0.00	0.00
	21.22	200.21			-1,100.0	-243.1		0.00	
5,900.0	21.22	236.21	5,649.6	-780.1	-1,165.6	-255.7	0.00	0.00	0.00
6,000.0	21.22	236.21	5,742.8	-800.2	-1,195.7	-262.3	0.00	0.00	0.00
6,100.0	21.22	236.21	5,836.1	-820.3	-1,225.8	-268.9	0.00	0.00	0.00
6,200.0	21.22	236.21	5,929.3	-840.5	-1,255.8	-275.5	0.00	0.00	0.00
6,300.0	21.22	236.21	6,022.5	-860.6	-1,285.9	-282.1	0.00	0.00	0.00
6,400.0	21.22	236.21	6,115.7	-880.7	-1,316.0	-288.7	0.00	0.00	0.00
6,500.0	21.22	236.21	6,208.9	-900.8	-1,346.1	-200.7	0.00	0.00	0.00
		236.21		-900.8			0.00		0.00
6,600.0 6,700.0	21.22 21.22	236.21	6,302.2		-1,376.1	-301.9 -308.5	0.00	0.00 0.00	0.00
6,700.0			6,395.4	-941.1	-1,406.2				
6,800.0	21.22	236.21	6,488.6	-961.2	-1,436.3	-315.1	0.00	0.00	0.00
6,900.0	21.22	236.21	6,581.8	-981.3	-1,466.4	-321.7	0.00	0.00	0.00
7,000.0	21.22	236.21	6,675.1	-1,001.5	-1,496.4	-328.3	0.00	0.00	0.00
7,087.1	21.22	236.21	6,756.3	-1,019.0	-1,522.6	-334.0	0.00	0.00	0.00
7,100.0	20.96	236.21	6,768.3	-1,021.6	-1,526.5	-334.8	2.00	-2.00	0.00
7,200.0	18.96	236.21	6,862.3	-1,040.6	-1,554.9	-341.1	2.00	-2.00	0.00
7,300.0	16.96	236.21	6,957.4	-1,057.7	-1,580.5	-346.7	2.00	-2.00	0.00
7,400.0	14.96	236.21	7,053.5	-1,073.0	-1,603.3	-351.7	2.00	-2.00	0.00
7,500.0	12.96	236.21	7,150.6	-1,086.4	-1,623.4	-356.1	2.00	-2.00	0.00
7,600.0	10.96	236.21	7,248.4	-1,097.9	-1,640.6	-359.9	2.00	-2.00	0.00
7,700.0	8.96	236.21	7,346.9	-1,107.6	-1,655.0	-363.0	2.00	-2.00	0.00
7 900 0	6.06	006.04	7 445 0	1 115 2	1 666 F	265 5	2.00	2.00	0.00
7,800.0	6.96	236.21	7,445.9	-1,115.3	-1,666.5	-365.5	2.00	-2.00	0.00
7,900.0	4.96	236.21	7,545.4	-1,121.0	-1,675.1	-367.4	2.00	-2.00	0.00
8,000.0	2.96	236.21	7,645.1	-1,124.9	-1,680.8	-368.7	2.00	-2.00	0.00
8,100.0	0.96	236.21	7,745.1	-1,126.8	-1,683.7	-369.3	2.00	-2.00	0.00
8,147.9	0.00	0.00	7,793.0	-1,127.0	-1,684.0	-369.4	2.00	-2.00	0.00
8,200.0	0.00	0.00	7,845.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,300.0	0.00	0.00	7,945.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,400.0	0.00	0.00	8,045.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,500.0	0.00	0.00	8,145.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,600.0	0.00	0.00	8,245.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,700.0	0.00	0.00	8,345.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,800.0	0.00	0.00	8,445.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
8,900.0	0.00	0.00	8,545.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,000.0	0.00	0.00	8,645.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,100.0	0.00	0.00	8,745.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,200.0	0.00	0.00	8,845.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,200.0	0.00	0.00	8,945.1 8,945.1	-1,127.0	-1,684.0 -1,684.0	-369.4 -369.4	0.00	0.00	0.00
9,300.0	0.00			-1,127.0		-369.4 -369.4		0.00	0.00
	0.00	0.00	9,045.1		-1,684.0	-369.4 -369.4	0.00		
9,500.0		0.00	9,145.1	-1,127.0	-1,684.0		0.00	0.00	0.00
9,600.0	0.00	0.00	9,245.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,700.0	0.00	0.00	9,345.1	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,776.4	0.00	0.00	9,421.5	-1,127.0	-1,684.0	-369.4	0.00	0.00	0.00
9,800.0	2.83	358.85	9,445.1	-1,126.4	-1,684.0	-368.9	12.00	12.00	0.00
9,825.0	5.83	358.85	9,470.0	-1,124.5	-1,684.0	-367.1	12.00	12.00	0.00
9,850.0	8.83	358.85	9,494.8	-1,121.3	-1,684.1	-364.2	12.00	12.00	0.00
9,875.0	11.83	358.85	9,519.4	-1,116.9	-1,684.2	-360.0	12.00	12.00	0.00
9,900.0	14.83	358.85	9,543.7	-1,111.1	-1,684.3	-354.7	12.00	12.00	0.00
9,925.0	17.83	358.85	9,567.7	-1,104.1	-1,684.5	-348.2	12.00	12.00	0.00

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COMPASS 5000.16 Build 100

.



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)
9,950.0	20.83	358.85	9,591.3	-1,095.8	-1,684.6	-340.5	12.00	12.00	0.00
9,975.0	23.84	358.85	9,614.4	-1,086.3	-1,684.8	-331.7	12.00	12.00	0.00
	20.04			-1,000.0	-1,004.0	-001.7	12.00		
9,996.9	26.46	358.85	9,634.2	-1,077.0	-1,685.0	-323.1	12.00	12.00	0.00
10,000.0	26.84	358.87	9,637.0	-1,075.6	-1,685.0	-321.8	12.00	12.00	0.38
10,025.0	29.84	358.95	9,659.0	-1,063.7	-1,685.3	-310.8	12.00	12.00	0.34
10,050.0	32.84	359.02	9,680.3	-1,050.7	-1,685.5	-298.8	12.00	12.00	0.28
10,075.0	35.84	359.08	9,701.0	-1,036.6	-1,685.7	-285.7	12.00	12.00	0.24
10,100.0	38.84	359.14	9,720.9	-1,021.5	-1,686.0	-271.7	12.00	12.00	0.21
10,125.0	41.84	359.18	9,739.9	-1,005.3	-1,686.2	-256.8	12.00	12.00	0.18
10,150.0	44.84	359.22	9,758.1	-988.2	-1,686.4	-240.9	12.00	12.00	0.16
10,175.0	47.84	359.26	9,775.4	-970.1	-1,686.7	-224.2	12.00	12.00	0.15
10,200.0	50.84	359.29	9,791.6	-951.1	-1,686.9	-206.7	12.00	12.00	0.13
10,225.0	53.84	359.32	9,806.9	-931.3	-1,687.1	-188.4	12.00	12.00	0.12
10,250.0	56.83	359.35	9,821.1	-910.8	-1,687.4	-169.4	12.00	12.00	0.11
10,275.0	59.83	359.38	9,834.3	-889.5	-1,687.6	-149.8	12.00	12.00	0.11
10,300.0	62.83	359.40	9,846.2	-867.6	-1,687.9	-129.6	12.00	12.00	0.10
10,325.0	65.83	359.43	9,857.1	-845.0	-1,688.1	-108.8	12.00	12.00	0.09
10,350.0	68.83	359.45	9,866.7	-822.0	-1,688.3	-87.5	12.00	12.00	0.09
10,375.0	71.83	359.43	9,875.1	-798.4	-1,688.5	-65.8	12.00	12.00	0.09
,									
10,400.0	74.83	359.49	9,882.3	-774.5	-1,688.7	-43.7	12.00	12.00	0.08
10,425.0	77.83	359.51	9,888.2	-750.2	-1,689.0	-21.3	12.00	12.00	0.08
10,450.0	80.83	359.53	9,892.8	-725.6	-1,689.2	1.3	12.00	12.00	0.08
10,475.0	83.83	359.55	9.896.2	-700.9	-1,689.4	24.2	12.00	12.00	0.08
10,500.0	86.83	359.57	9,898.2	-675.9	-1,689.6	47.1	12.00	12.00	0.08
10,526.4		359.59	,	-649.6	-1,689.7	71.4		12.00	0.08
	90.00		9,898.9				12.00		
10,600.0	90.00	359.59	9,898.9	-576.0	-1,690.3	139.2	0.00	0.00	0.00
10,700.0	90.00	359.59	9,898.9	-476.0	-1,691.0	231.4	0.00	0.00	0.00
10,800.0	90.00	359.59	9,898.9	-376.0	-1,691.7	323.5	0.00	0.00	0.00
10,900.0	90.00	359.59	9,898.9	-276.0	-1,692.4	415.6	0.00	0.00	0.00
11,000.0	90.00	359.59	9,898.9	-176.0	-1,693.1	507.8	0.00	0.00	0.00
11,100.0	90.00	359.59	9,898.9	-76.0	-1,693.8	599.9	0.00	0.00	0.00
11,200.0	90.00	359.59	9,898.9	24.0	-1,694.6	692.0	0.00	0.00	0.00
11,200.0	90.00	359.59	9,090.9	24.0	-1,094.0	092.0	0.00	0.00	0.00
11,300.0	90.00	359.59	9,898.9	124.0	-1,695.3	784.2	0.00	0.00	0.00
11,400.0	90.00	359.59	9,898.9	224.0	-1,696.0	876.3	0.00	0.00	0.00
11,500.0	90.00	359.59	9,898.9	324.0	-1,696.7	968.4	0.00	0.00	0.00
11,600.0	90.00	359.59	9,898.9	424.0	-1,697.4	1,060.6	0.00	0.00	0.00
11,700.0	90.00	359.59	9,898.9	524.0	-1,698.1	1,152.7	0.00	0.00	0.00
11,800.0	90.00	359.59	9,898.9	624.0	-1,698.9	1,244.8	0.00	0.00	0.00
11,900.0	90.00	359.59	9,898.9	724.0	-1,699.6	1,337.0	0.00	0.00	0.00
12,000.0	90.00	359.59	9,898.9	824.0	-1,700.3	1,429.1	0.00	0.00	0.00
12,100.0	90.00	359.59	9,898.9	924.0	-1,701.0	1,521.2	0.00	0.00	0.00
12,200.0	90.00	359.59	9,898.9	1,024.0	-1,701.7	1,613.4	0.00	0.00	0.00
12,300.0	90.00	359.59	9,898.9	1,124.0	-1,702.4	1,705.5	0.00	0.00	0.00
12,400.0	90.00	359.59	9,898.9	1,224.0	-1,703.1	1,797.6	0.00	0.00	0.00
12,500.0	90.00	359.59	9,899.0	1,324.0	-1,703.9	1,889.8	0.00	0.00	0.00
12,600.0	90.00	359.59	9,899.0	1,424.0	-1,704.6	1,981.9	0.00	0.00	0.00
12,700.0	90.00	359.59	9,899.0	1,524.0	-1,705.3	2,074.0	0.00	0.00	0.00
12,800.0	90.00	359.59	9,899.0	1,624.0	-1,706.0	2,166.2	0.00	0.00	0.00
12,900.0	90.00	359.59	9,899.0	1,724.0	-1,706.7	2,258.3	0.00	0.00	0.00
13,000.0	90.00	359.59	9,899.0	1,824.0	-1,707.4	2,350.4	0.00	0.00	0.00
13,100.0	90.00	359.59	9,899.0	1,924.0	-1,708.1	2,442.6	0.00	0.00	0.00
13,200.0	90.00	359.59	9,899.0	2,024.0	-1,708.9	2,534.7	0.00	0.00	0.00
13,300.0	90.00	359.59	9,899.0	2,124.0	-1,709.6	2,626.8	0.00	0.00	0.00
13.300.0									

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COMPASS 5000.16 Build 100

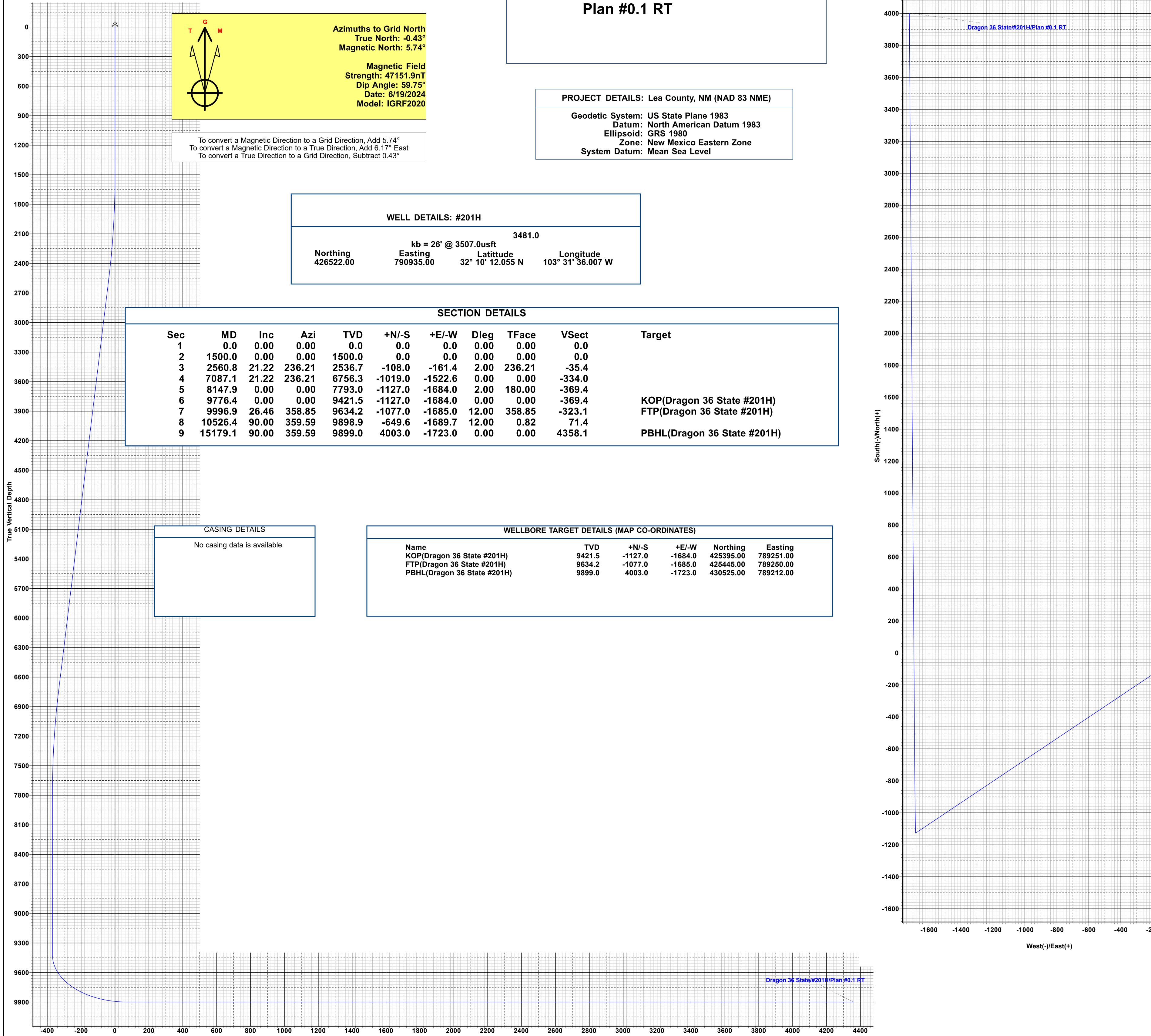


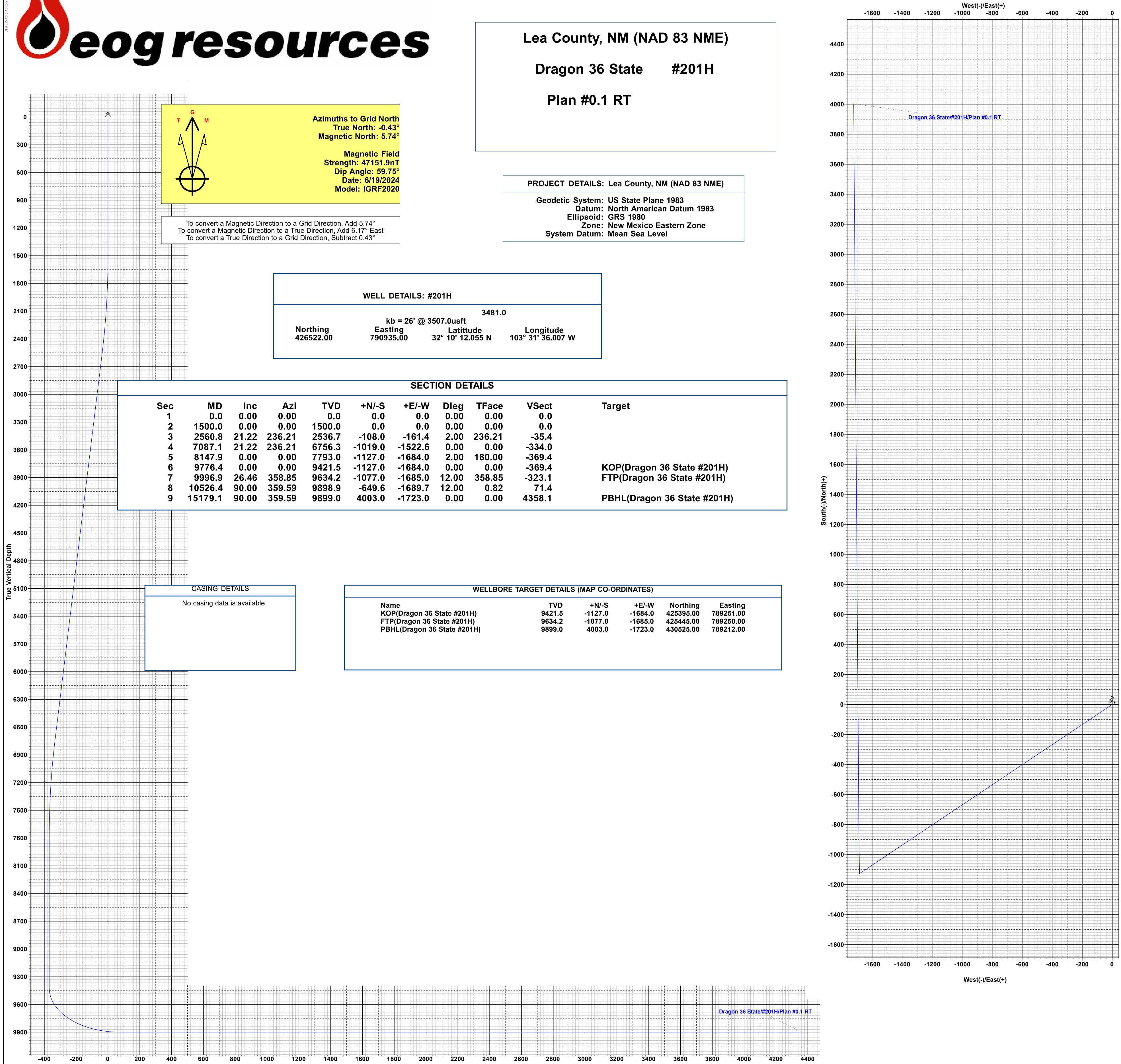
Database:	PEDMB	Local Co-ordinate Reference:	Well #201H
Company:	Midland	TVD Reference:	kb = 26' @ 3507.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	kb = 26' @ 3507.0usft
Site:	Dragon 36 State	North Reference:	Grid
Well:	#201H	Survey Calculation Method:	Minimum Curvature
Wellbore:	ОН		
Desian:	Plan #0.1 RT		

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)
13,500.0	90.00	359.59	9,899.0	2,324.0	-1,711.0	2,811.1	0.00	0.00	0.00
13,600.0	90.00	359.59	9,899.0	2,424.0	-1,711.7	2,903.2	0.00	0.00	0.00
13,700.0	90.00	359.59	9,899.0	2,524.0	-1,712.4	2,995.4	0.00	0.00	0.00
13,800.0	90.00	359.59	9,899.0	2,624.0	-1,713.1	3,087.5	0.00	0.00	0.00
13,900.0	90.00	359.59	9,899.0	2,724.0	-1,713.9	3,179.6	0.00	0.00	0.00
14,000.0	90.00	359.59	9,899.0	2,824.0	-1,714.6	3,271.8	0.00	0.00	0.00
14,100.0	90.00	359.59	9,899.0	2,924.0	-1,715.3	3,363.9	0.00	0.00	0.00
14,200.0	90.00	359.59	9,899.0	3,024.0	-1,716.0	3,456.0	0.00	0.00	0.00
14,300.0	90.00	359.59	9,899.0	3,123.9	-1,716.7	3,548.1	0.00	0.00	0.00
14,400.0	90.00	359.59	9,899.0	3,223.9	-1,717.4	3,640.3	0.00	0.00	0.00
14,500.0	90.00	359.59	9,899.0	3,323.9	-1,718.1	3,732.4	0.00	0.00	0.00
14,600.0	90.00	359.59	9,899.0	3,423.9	-1,718.9	3,824.5	0.00	0.00	0.00
14,700.0	90.00	359.59	9,899.0	3,523.9	-1,719.6	3,916.7	0.00	0.00	0.00
14,800.0	90.00	359.59	9,899.0	3,623.9	-1,720.3	4,008.8	0.00	0.00	0.00
14,900.0	90.00	359.59	9,899.0	3,723.9	-1,721.0	4,100.9	0.00	0.00	0.00
15,000.0	90.00	359.59	9,899.0	3,823.9	-1,721.7	4,193.1	0.00	0.00	0.00
15,100.0	90.00	359.59	9,899.0	3,923.9	-1,722.4	4,285.2	0.00	0.00	0.00
15,179.1	90.00	359.59	9,899.0	4,003.0	-1,723.0	4,358.1	0.00	0.00	0.00

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(Dragon 36 State #2 - plan hits target cer - Point		0.00	9,421.5	-1,127.0	-1,684.0	425,395.00	789,251.00	32° 10' 1.027 N	103° 31' 55.696 W
FTP(Dragon 36 State #2 - plan hits target cer - Point		0.00	9,634.2	-1,077.0	-1,685.0	425,445.00	789,250.00	32° 10' 1.522 N	103° 31' 55.703 W
PBHL(Dragon 36 State # - plan hits target cer - Point		0.00	9,899.0	4,003.0	-1,723.0	430,525.00	789,212.00	32° 10' 51.792 N	103° 31' 55.705 W





Vertical Section at 336.71°





Dragon 36 State 201H API #: 30-025-**** Variances

EOG respectfully requests the below variances to be applied to the above well:

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

- Variance is also requested to waive the centralizer requirements for the production casing in the production hole. An expansion additive will be utilized, in the cement slurry, for the entire length of the production interval to maximize cement bond and zonal isolation.

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

- Variance is requested to use a 5,000 psi annular BOP with the 10,000 psi BOP stack.

- EOG Resources requests the option to contract a Surface Rig to drill, set surface casing, and Cement on the subject well. After WOC 8 hours or 500 psi compressive strength (whichever is greater), the Surface Rig will move off so the wellhead can be installed. A welder will cut the casing to the proper height and weld on the wellhead (both "A" and "B" sections). The weld will be tested to 1,500 psi. All valves will be closed and a wellhead cap will be installed (diagram attached). If the timing between rigs is such that EOG Resources would not be able to preset the surface, the Primary Rig will MIRU and drill the well in its entirety per the APD.

EOG requests the additional variance(s) in the attached document(s):

- EOG BLM Variance 2a Inermediate Bradenhead Cement
- EOG BLM Variance 3a_b BOP Break-test and Offline Intermediate Cement
- EOG BLM Variance 4a Salt Section Annular Clearance
- EOG BLM Variance 5a Alternate Shallow Casing Designs



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

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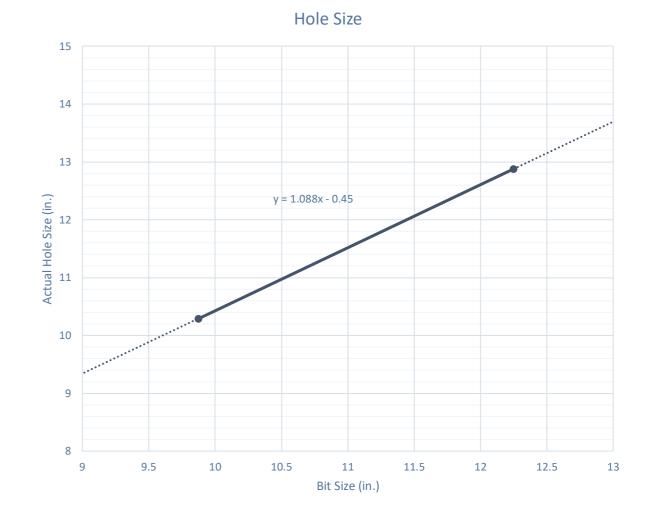
Volumetric Hole Size Calculation

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

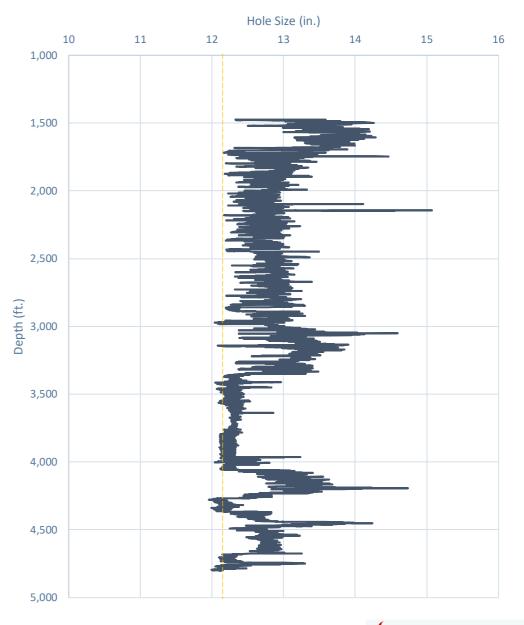


Modelo 10 Fed Com #501H

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

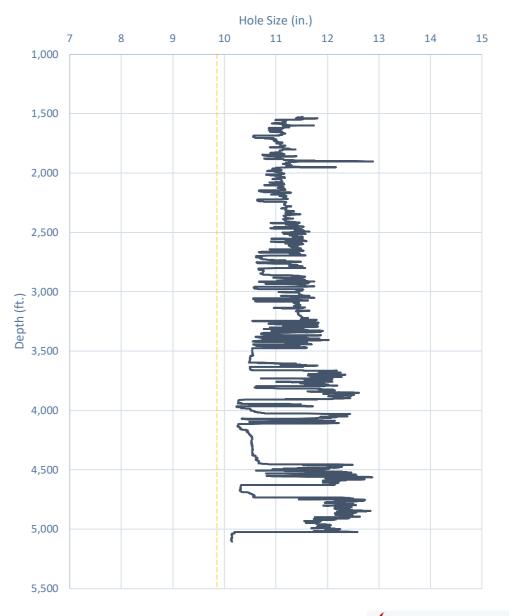


Caliper Hole Size (9.875")

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







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

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

475" Clearance to

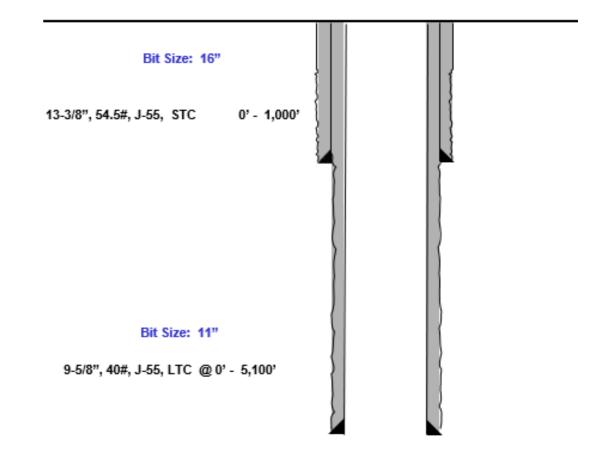
 0.4475" Clearance to coupling OD 11.52 - 10.625

$$\frac{1.52 - 10}{2}$$

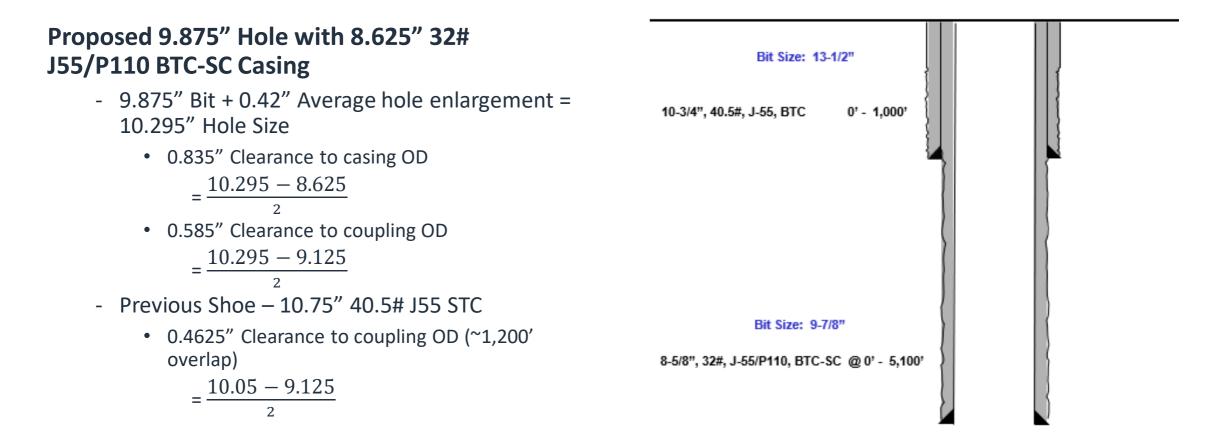
= -

- 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





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Casing Spec Sheets

PERFORMANCE DATA

API LTC		
Technical	Data	Sheet

9.625 in 40.00 lbs/ft

K55 HC

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			·
Nom. Pipe Body Area	11.454	in²			
	•	•			

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

Pipe Body and API Connections Performance Data

13.375	54.50/0.380	J55

New Search »

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USC O Metric

PDF

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Mechanical Properties	Pipe	BTC	LTC	STC	
Minimum Yield Strength	55,000	-	-	-	psi
Maximum Yield Strength	80,000	-	-	-	psi
Minimum Tensile Strength	75,000	-	-	-	psi
Dimensions	Ptpe	BTC	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	-	-	-	libs/ft
Plain End Weight	52.79	-	-	-	lbs/ft
Performance	Pipe	BTC	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	BTC	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,860	ft-Ibs
Maximum Make-Up Torque	-	-	-	6,430	ft-lbs

Casing Spec Sheets

Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55					Pl
New Search »					« Back to Previous
					USC 🔵 Me
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Mechanical Properties	Ptpe	BTC	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	Pipe	BTC	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	Pipe	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Vinimum Make-Up Torque	-	-	-	3,150	ft-lbs
Maximum Make-Up Torque	-	-	-	5,250	ft-lbs

				AF	ч 5ст , 1	10th Ed. Co	onnect	ion Data	Shee
O.D. (in) 8.625	WEIGHT (I Nominal: Plain End:	b/ft) 32.00 31.13	WALL (ir 0.352	1 I I I I I I I I I I I I I I I I I I I	ADE 155	* API DRIF 7.796	· · /	RBW 87.	
	Material Propert	ties (PE)			l	Pipe Body	Data (I	PE)	
	Pipe					Geom	netry		
	Yield Strength:	55	ksi		nal ID:			7.92 i	
	Yield Strength:		ksi		nal Area		9.149 in ²		
Minimum ⁻	Tensile Strength:		ksi	*Spe	cial/Alt. [7.875 i	nch
	Coupling	,	1	Di	Performance Pipe Body Yield Strength: 503 kip				
	Yield Strength:		ksi		•	•	า:		•
	Yield Strength:		ksi		pse Res al Yield Pr	2,530 p			
Vinimum	Tensile Strength:	/5	ksi	(API H	listorical)			3,930 p	DSI
	API Connectio				A	PI Connect	ion To	rque	
	STC Perform					STC Torqu	ue (ft-lk	os)	
STC Interr	nal Pressure:	3,930	psi	Min:	2,793	Opti:	3,724	Max:	4,655
STC Joint	Strength:	372	kips						
	LTC Perform					LTC Torqu	•		
	al Pressure:	3,930		Min:	3,130	Opti:	4,174	Max:	5,217
LTC Joint	Strength: Performance - C		kips						
SC-BICI	enormance - C	pig 00 -	9.125			BTC Torqu	ue (ft-lk	os)	
BTC Interr	nal Pressure:	3,930	psi	foll	ow API gu	idelines rega	rding pos	sitional ma	ke up
BTC Joint	Strength:	503	kips						
		*Alt. Drift will							
	f above API connec	tions do not	100% of p			m connection	s are ava	allable up t	10
AND ON AN "A MERCHANTABIL ONLY AND IS BAS INCIDENTAL, PU	IN IS PROVIDED BY VALLOUREC AS IS" BASIS WITHOUT WARRAI UTY, FITNESS FOR PURPOSE, AG SED ON ESTIMATES THAT HAVE NITIVE, EXEMPLARY OR CONSE OFIT) HOWEVER CAUSED OR AI	NTY OR REPRESENT CURACY OR COMP NOT BEEN VERIFIE QUENTIAL LOSS OF	ATION OF ANY KIN PLETENESS. THE INF 2D OR TESTED. IN N R DAMAGE (INCLUI THER SUCH LOSSES	ID, WHETHER E FORMATION CO IO EVENT SHAL DING WITHOUT	XPRESS OR IMP INTAINED IN TH L VALLOUREC O LIMITATION, L WERE FORESEE	PLIED, INCLUDING WI HIS DOCUMENT IS PR DR ITS AFFILIATES BE LOSS OF USE, LOSS OF	THOUT LIMIT OVIDED FOR RESPONSIBLE F BARGAIN, L	TATION ANY WAI INFORMATIONA FOR ANY INDIR OSS OF REVENUE	RRANTY OF L PURPOSE ECT, SPECIA E, PROFIT O

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EOG BLANKET CASING DESIGN VARIANCE

EOG respectfully requests the drill plans in the attached document 'EOG Alternate Casing Designs – BLM APPROVED' be added to the COA's for this well. These designs have been approved by the BLM down to the TVDs listed below and will allow EOG to run alternate casing designs for this well if necessary.

The designs and associated details listed are the "worst case scenario" boundaries for design safety factors. Location and lithology have NOT been accounted for in these designs. The specific well details will be based on the APD/Sundry package and the information listed in the COA.

The mud program will not change from the original design for this well. Summary of the mud programs for both shallow and deep targets are listed at the end of this document. If the target is changing, a sundry will be filed to update the casing design and mud/cement programs.

Cement volumes listed in this document are for reference only. The cement volumes for the specific well will be adjusted to ensure cement tops meet BLM requirements as listed in the COA and to allow bradenhead cementing when applicable.

This blanket document only applies to wells with three string designs outside of Potash and Capitan Reef boundaries.

Sł	nallow Desig	n Boundary (Conditions	5
	Deepest	Deepest	Max Inc	Max DLS
	MD (ft)	TVD (ft)	(deg)	(°/100usft)
Surface	2030	2030	0	0
Intermediate	7793	5650	40	8
Production	28578	12000	90	25

Shallow Design A

 (NUGNA	IVI.					
Hole	Interv	al MD	Interva	l TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC
6-3/4"	0	29,353	0	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{5-1/2''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	1480	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 @ Top of Brushy)

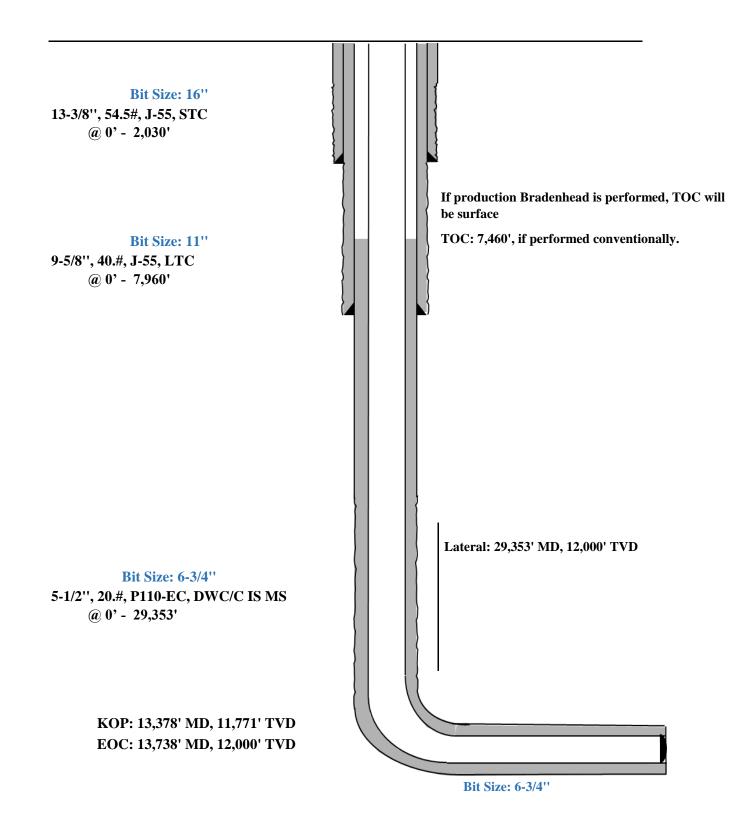
5. CEMENTING PROGRAM:

Seog resources

Shallow Design A

Proposed Wellbore

KB: 3558' GL: 3533'



File Edit Wellbore Tubular View Composer Tools Window Help

▼ ← → 95/8" Intermediate Casing ▼

	Results	Axial F	orce (lbf)				Absolute S	afety Eactor			Pressure	(nsi)		
	Depth (MD) (usft)	Apparent (w/Bending)	Actual (w/o Bending)	Equivalent Axial Load (lbf)	Bending Stress at OD (psi)	Triaxial	Burst	Collapse (V)	Axial	Temperature (°F)	Internal	External	Addt'l Pickup To Prevent Buck. (lbf)	Buckled Length (usft)
t	0	252987	228954	253140	2098.2	1.69	1.58	N/A	2.82 F	70.00	2500.00	0.00	N/A	N/A
	100	247735	223702	248466	2098.2	1.69	1.58	N/A	2.88 F	71.10	2543.63	43.63		
	100	234996	223701	235716	986.2	1.71	1.58	N/A	3.04 F	71.10	2543.64	43.64		
	1700	341565	139667	352253	17627.2	1.53	1.57	N/A	2.09 F	88.70	3241.64	741.64		
	1700	312979	139666	323488	15131.5	1.58	1.57	N/A	2.28 F	88.70	3241.65	741.65		
	1850	336881	132027	348440	17885.2	1.51	1.57	N/A	2.12 F	90.29	3305.05	805.05		
	1850	318549	132027	329984	16284.8	1.54	1.57	N/A	2.24 F	90.29	3305.06	805.06		
	1950	320468	127243	332475	16869.9	1.52	1.57	N/A	2.23 F	91.30	3344.87	844.87		
	1950	312802	127243	324756	16200.7	1.53	1.57	N/A	2.28 F	91.30	3344.87	844.87		
	2050	307858	122773	320295	16159.3	1.52	1.57	N/A	2.32 F	92.23	3381.89	881.89		
	2050	303560	122772	315965	15784.1	1.53	1.57	N/A	2.35 F	92.23	3381.89	881.89		
	2300	151294	112633	163658	3375.4	1.71	1.57	N/A	4.72 F	94.35	3466.13	966.13		
	2300	132741	112633	144956	1755.6	1.72	1.57	N/A	5.38 F	94.35	3466.14	966.14		
	2370	129966	109858	142452	1755.6	1.72	1.57	N/A	5.49 F	94.94	3489.28	989.28		
Ĩ	2370	127909	107800	140922	1755.6	1.75	1.60	N/A	5.58 F	94.94	3489.29	1036.40		
	2700	105515	94232	119785	985.1	1.75	1.60	N/A	6.77 F	97.73	3599.97	1152.35		
	2700	111680	94231	126006	1523.4	1.75	1.60	N/A	6.39 F	97.73	3599.97	1152.35		
	3100	110766	77783	126839	2879.6	1.71	1.60	N/A	6.44 F	101.11	3734.23	1293.00		
	3100	97392	77783	113331	1712.1	1.73	1.60	N/A	7.33 F	101.11	3734.23	1293.01		
	3700	71565	53303	89806	1594.4	1.70	1.61	N/A	9.97 F	106.15	3934.24	1502.54		
	3700	60887	53302	79004	662.3	1.71	1.61	N/A	11.72 F	106.16	3934.25	1502.55		
	4650	34671	14219	56495	1785.6	1.64	1.61	N/A	20.59 F	114.20	4253.37	1836.86		
	4900	44595	4828	67626	3472.0	1.59	1.61	N/A	16.01 F	116.32	4337.37	1924.87		
	4900	28975	4828	51775	2108.2	1.62	1.61	N/A	24.64 F	116.32	4337.38	1924.87		
	5029	22103	34	45340	1926.8	1.61	1.61	N/A	32.30 F	117.40	4380.40	1969.94		
	5029	22102	33	45339	1926.8	1.61	1.61	N/A	32.30 F	117.40	4380.41	1969.95		
	5600	-45329	-21341	-20805	2094.3	1.57	1.62	N/A	(13.67)	122.23	4572.11	2170.78		
	5650	-40465	-23210	-15657	1506.5	1.58	1.62	N/A	(15.31)	122.66	4588.87	2188.34		
		Conn Fracture												
		Compression												
	(V) V	ector Collapse Safety	/ Factor											

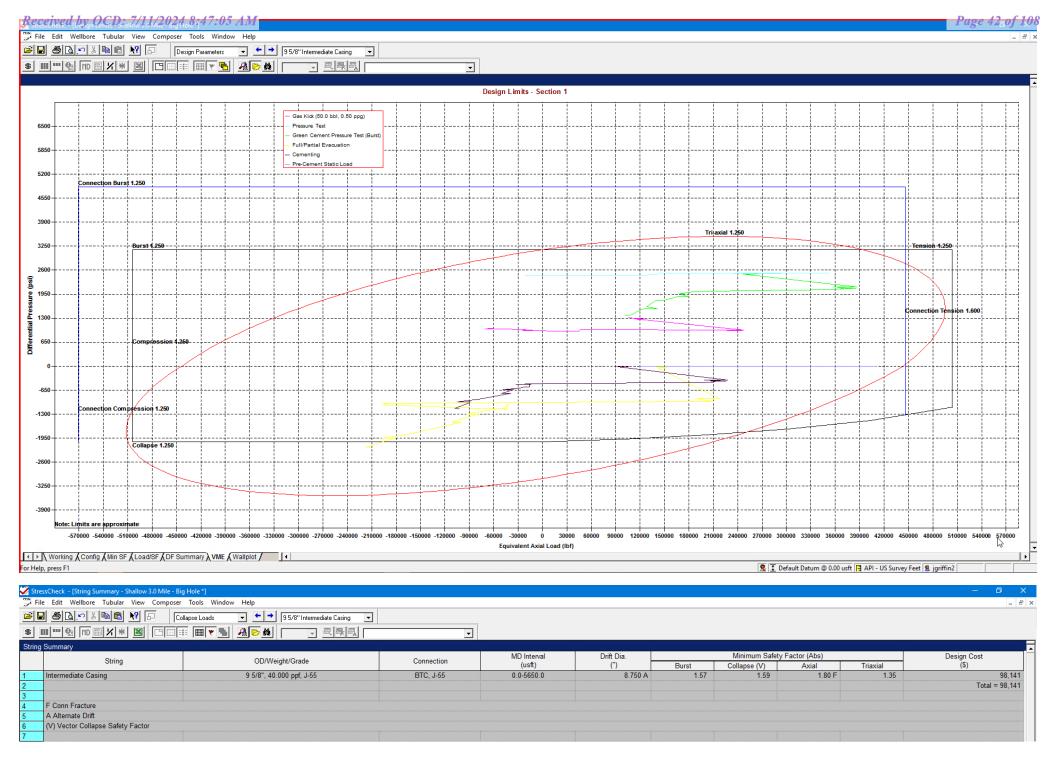
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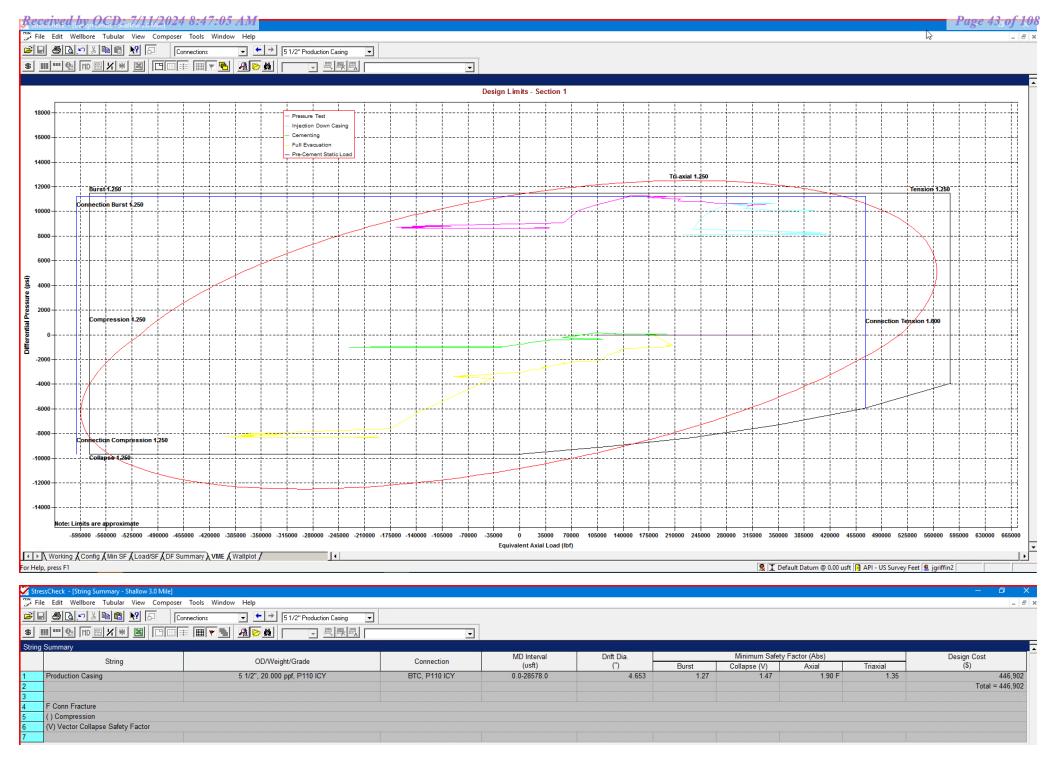
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9-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

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Shallow Design B

 (NUGNA	IVI					
Hole	Interv	al MD	Interva	al TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13-1/2"	0	2,161	0	2,030	10-3/4"	40.5#	J-55	STC
9-7/8"	0	7,951	0	5,650	8-5/8"	32#	J-55	BTC-SC
6-3/4"	0	29,353	0	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidny Description
2,030' 10-3/4''	530	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
	140	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830')
8,050' _{8-5/8''}	470	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	210	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{5-1/2''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	1480	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 @ Top of Brushy)

5. CEMENTING PROGRAM:

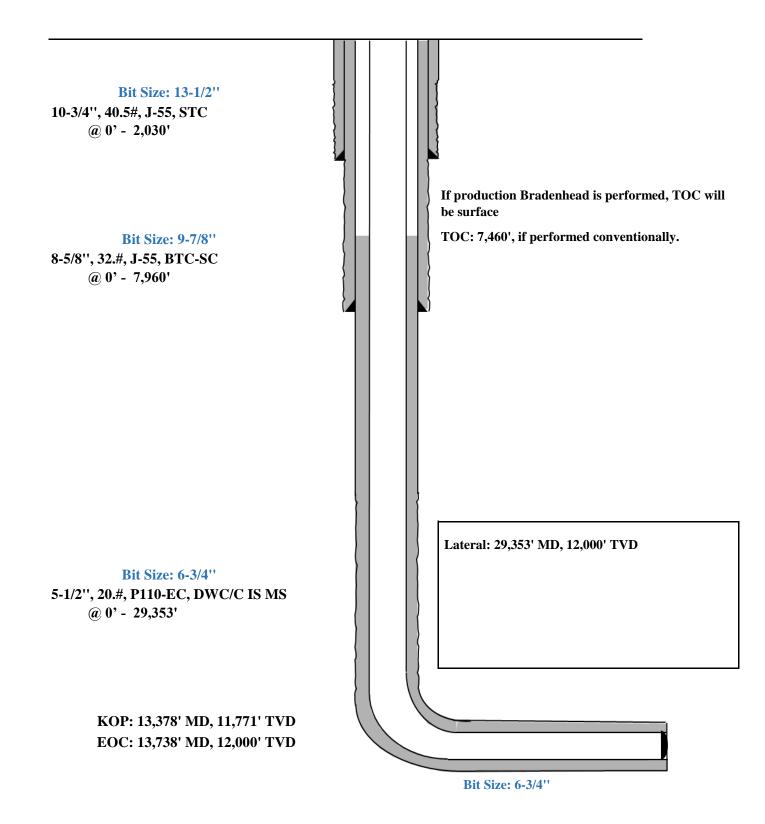
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Seog resources

Shallow Casing Design B

Proposed Wellbore KB: 3558'

GL: 3533'



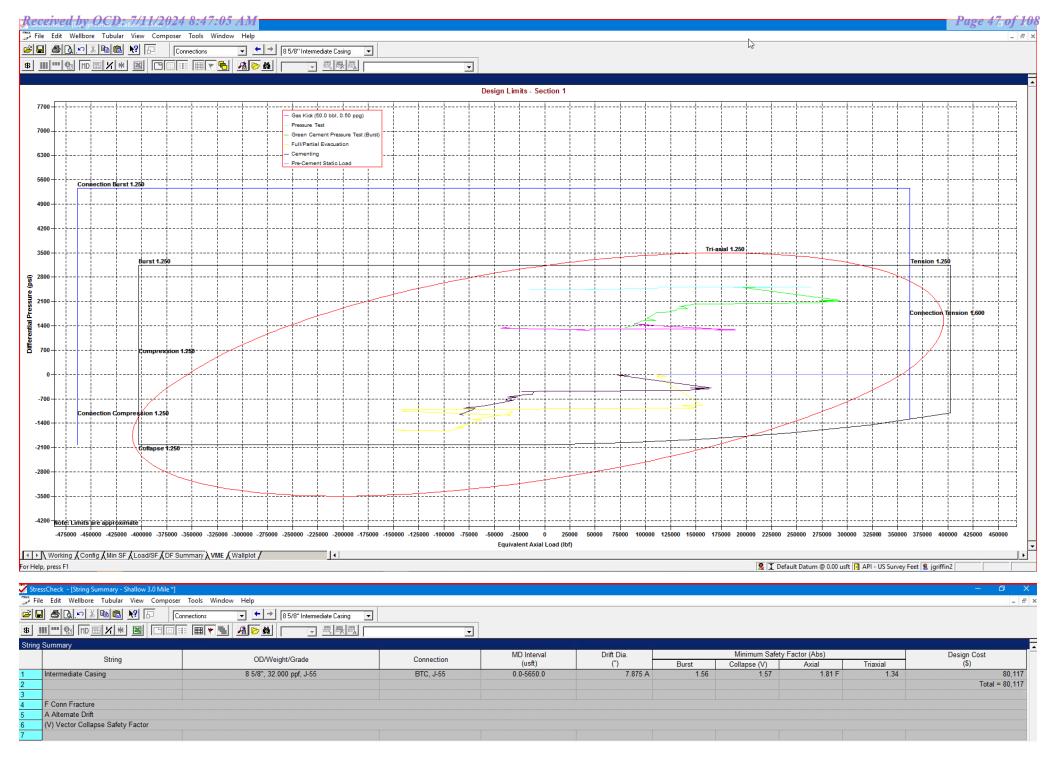
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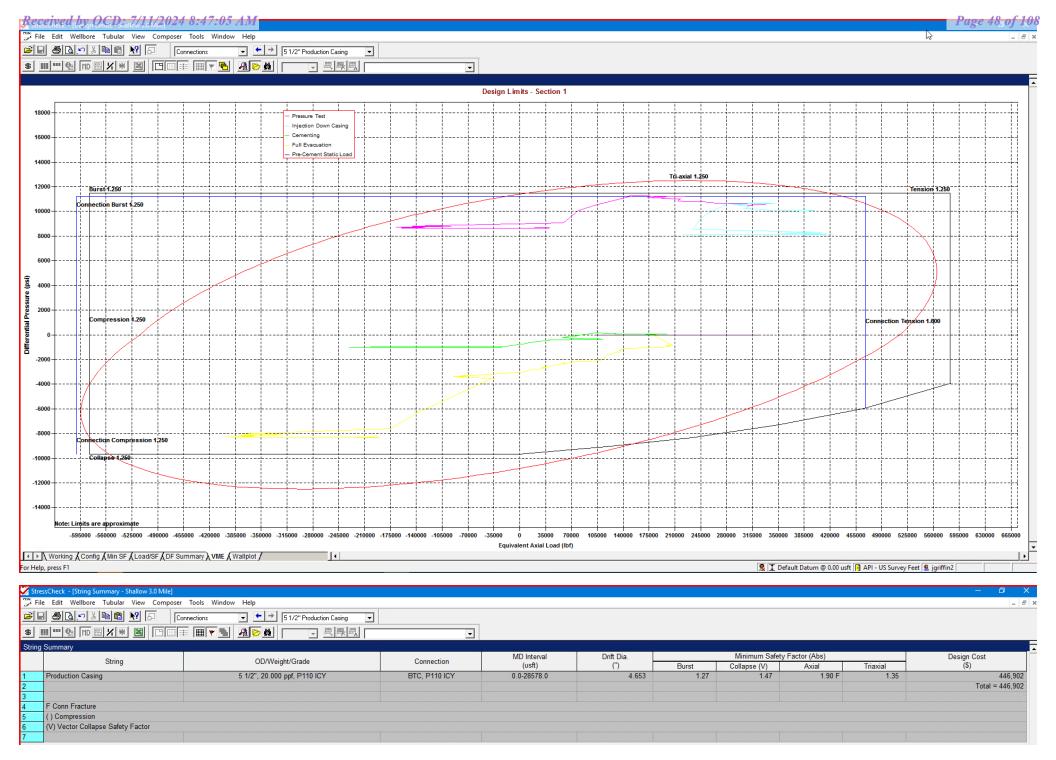
	Axial F	orce (lbf)				Absolute S	afety Factor		_	Pressure	e (psi)		
Depth (MD) (usft)	Apparent (w/Bending)	Actual (w/o Bending)	Equivalent Axial Load (Ibf)	Bending Stress at OD (psi)	Triaxial	Burst	Collapse (V)	Axial	Temperature (°F)	Internal	External	Addt'l Pickup To Prevent Buck. (Ibf)	Buckled Length (usf
0	200426	183224	200546	1880.2	1.68	1.57	N/A	2.89 F	70.00	2500.00	0.00	N/A	N/A
100	196229	179028	196812	1880.2	1.69	1.57	N/A	2.95 F	71.10	2543.63	43.63		
100	187111	179027	187686	883.7	1.70	1.57	N/A	3.10 F	71.10	2543.64	43.64		
1700	256401	111891	264835	15795.8	1.56	1.56	N/A	2.26 F	88.70	3241.64	741.64		
1700	235940	111891	244247	13559.4	1.60	1.56	N/A	2.45 F	88.70	3241.65	741.65		
1850	252413	105788	261533	16027.0	1.54	1.56	N/A	2.29 F	90.29	3305.05	805.05		
1850	239292	105787	248323	14592.9	1.56	1.56	N/A	2.42 F	90.29	3305.06	805.06		
1950	240267	101966	249748	15117.2	1.54	1.56	N/A	2.41 F	91.30	3344.87	844.87		
1950	234781	101965	244223	14517.5	1.56	1.56	N/A	2.47 F	91.30	3344.87	844.87		
2050	230871	98395	240694	14480.4	1.55	1.56	N/A	2.51 F	92.23	3381.89	881.89		
2050	227794	98394	237594	14144.2	1.55	1.56	N/A	2.54 F	92.23	3381.89	881.89		
2300	117966	90294	127818	3024.7	1.70	1.56	N/A	4.91 F	94.35	3466.13	966.13		
2300	104686	90293	114432	1573.2	1.71	1.56	N/A	5.53 F	94.35	3466.14	966.14		
2370	102469	88077	112431	1573.2	1.71	1.56	N/A	5.65 F	94.94	3489.28	989.28		
2370	100817	86424	111200	1573.2	1.75	1.59	N/A	5.75 F	94.94	3489.29	1036.40		
2700	83660	75583	95052	882.8	1.74	1.59	N/A	6.92 F	97.73	3599.97	1152.35		
2700	88072	75583	99504	1365.1	1.74	1.59	N/A	6.58 F	97.73	3599.97	1152.35		
3100	86049	62442	98863	2580.4	1.71	1.59	N/A	6.73 F	101.11	3734.23	1293.00		
3100	76477	62441	89195	1534.2	1.72	1.59	N/A	7.57 F	101.11	3734.23	1293.01		
3700	55953	42882	70509	1428.8	1.69	1.60	N/A	10.35 F	106.15	3934.24	1502.54		
3700	48311	42881	62778	593.5	1.71	1.60	N/A	11.99 F	106.16	3934.25	1502.55		
4000	41458	33043	56865	919.9	1.69	1.60	N/A	13.97 F	108.69	4034.82	1607.91		
4650	26293	11655	43706	1600.1	1.63	1.60	N/A	22.03 F	114.20	4253.37	1836.86		
4900	32619	4156	50970	3111.2	1.59	1.60	N/A	17.76 F	116.32	4337.37	1924.87		
4900	21439	4155	39625	1889.2	1.61	1.60	N/A	27.02 F	116.32	4337.38	1924.87		
5039	15822	26	34389	1726.6	1.61	1.61	N/A	36.61 F	117.49	4383.77	1973.48		
5039	15822	26	34388	1726.6	1.61	1.61	N/A	36.61 F	117.49	4383.78	1973.49		
5600	-33912	-16743	-14286	1876.7	1.57	1.61	N/A	(14.60)	122.23	4572.11	2170.78		
5650	-30585	-18235	-10742	1350.0	1.58	1.61	N/A	(16.18)	122.66	4588.87	2188.34		
F	Conn Fracture												
	Compression												
	Vector Collapse Safety	Eactor											
(•)	vector conapse Salet	racion											

8-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 8-5/8" 32# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

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Shallow Design C

		noom						
Hole	Interv	al MD	Interva	al TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC
7-7/8"	0	29,353	0	12,000	6"	24.5#	P110-EC	VAM Sprint-SF

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 6" casing in the 7-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 7-7/8" 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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{6''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	2500	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 @ Top of Brushy)

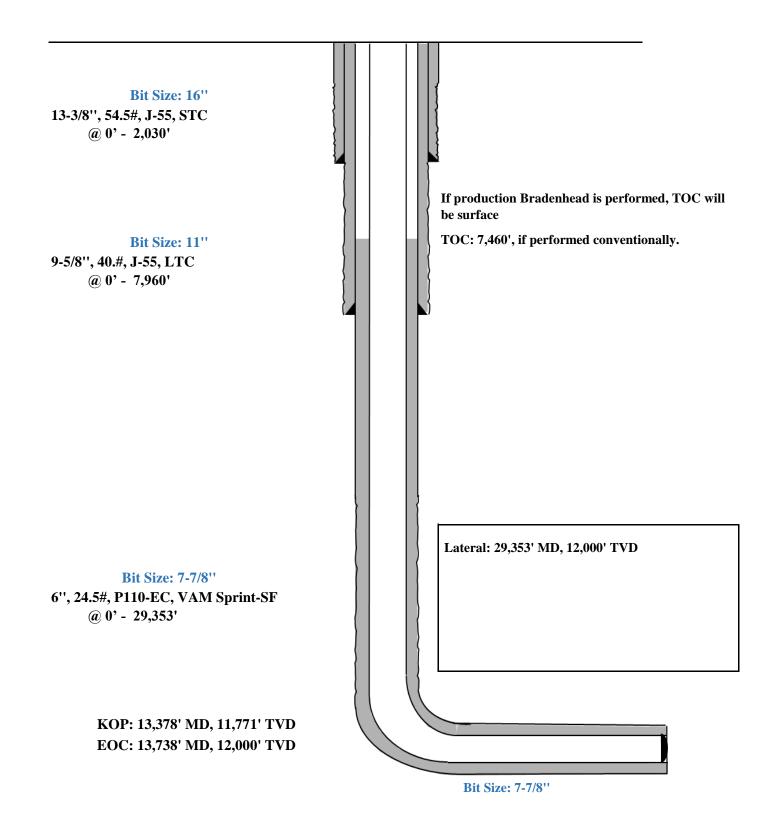
5. CEMENTING PROGRAM:

Seog resources

Shallow Design C

Proposed Wellbore

KB: 3558' GL: 3533'



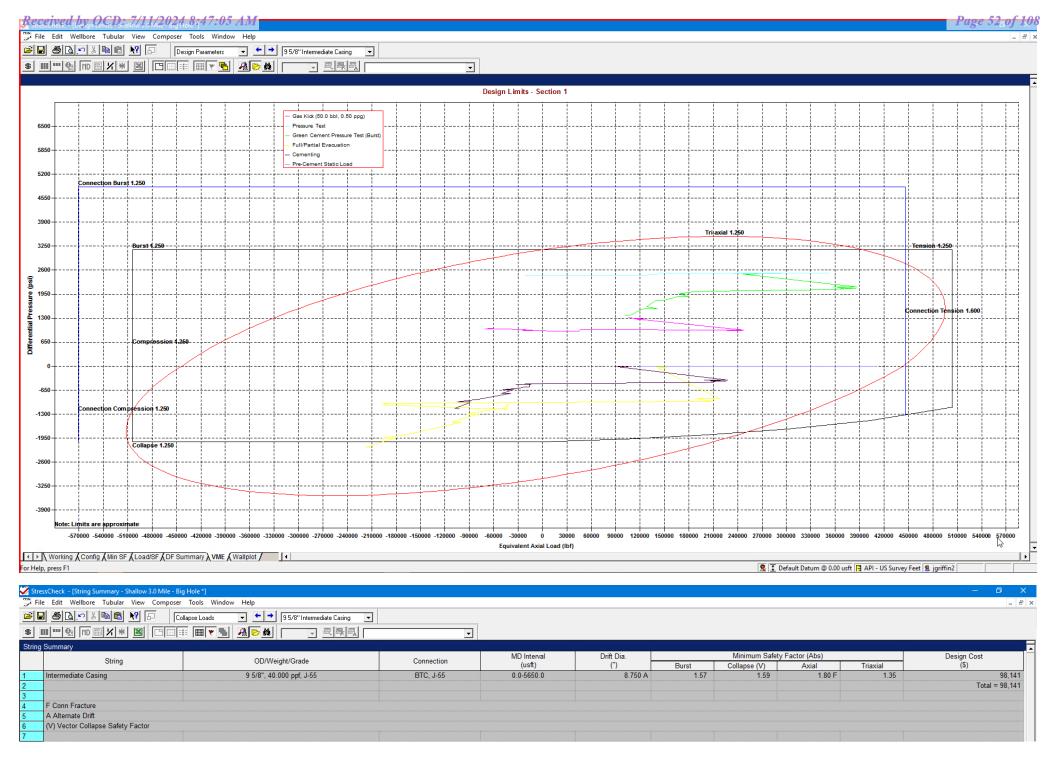
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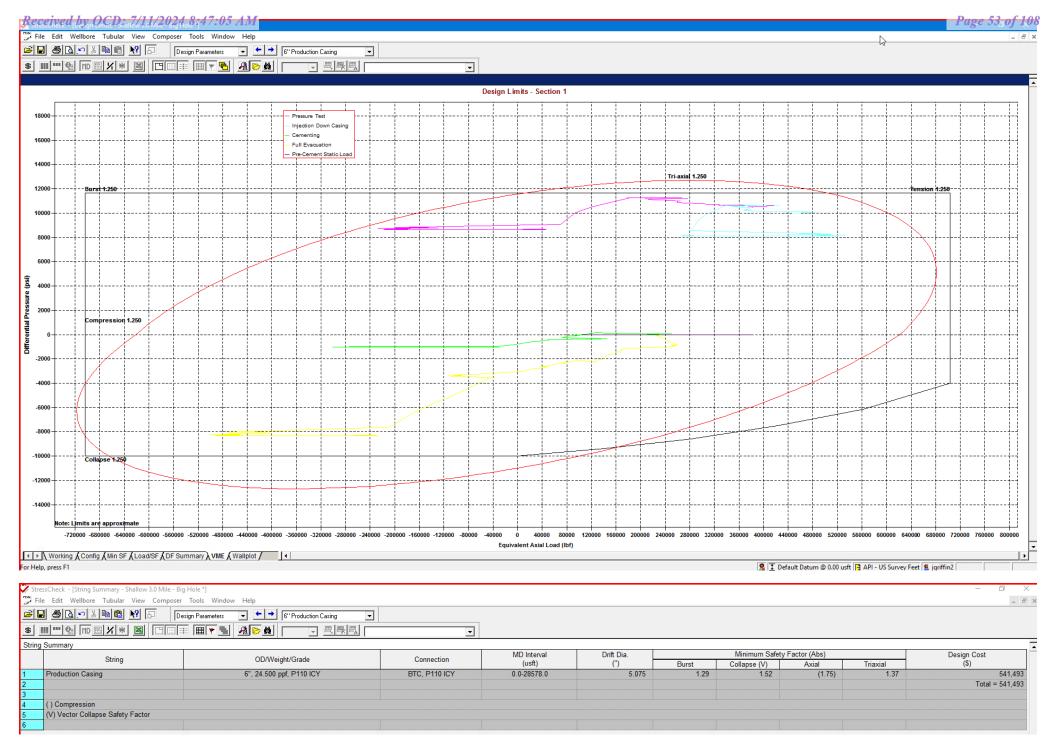
Dont	th (MD)		orce (lbf)	Equivalent	Bending Stress		Absolute S	afety Factor		Temperature	Pressure	(psi)	Addt'l Pickup To	Buckled
(u	usft)	Apparent (w/Bending)	Actual (w/o Bending)	Axial Load (lbf)	at OD (psi)	Triaxial	Burst	Collapse (V)	Axial	(°F)	Internal	External	Prevent Buck. (lbf)	Length (us
	0	252987	228954	253140	2098.2	1.69	1.58	N/A	2.82 F	70.00	2500.00	0.00	N/A	N/A
	100	247735	223702	248466	2098.2	1.69	1.58	N/A	2.88 F	71.10	2543.63	43.63		
	100	234996	223701	235716	986.2	1.71	1.58	N/A	3.04 F	71.10	2543.64	43.64		
	1700	341565	139667	352253	17627.2	1.53	1.57	N/A	2.09 F	88.70	3241.64	741.64		
	1700	312979	139666	323488	15131.5	1.58	1.57	N/A	2.28 F	88.70	3241.65	741.65		
	1850	336881	132027	348440	17885.2	1.51	1.57	N/A	2.12 F	90.29	3305.05	805.05		
	1850	318549	132027	329984	16284.8	1.54	1.57	N/A	2.24 F	90.29	3305.06	805.06		
	1950	320468	127243	332475	16869.9	1.52	1.57	N/A	2.23 F	91.30	3344.87	844.87		
	1950	312802	127243	324756	16200.7	1.53	1.57	N/A	2.28 F	91.30	3344.87	844.87		
	2050	307858	122773	320295	16159.3	1.52	1.57	N/A	2.32 F	92.23	3381.89	881.89		
	2050	303560	122772	315965	15784.1	1.53	1.57	N/A	2.35 F	92.23	3381.89	881.89		
	2300	151294	112633	163658	3375.4	1.71	1.57	N/A	4.72 F	94.35	3466.13	966.13		
	2300	132741	112633	144956	1755.6	1.72	1.57	N/A	5.38 F	94.35	3466.14	966.14		
	2370	129966	109858	142452	1755.6	1.72	1.57	N/A	5.49 F	94.94	3489.28	989.28		
	2370	127909	107800	140922	1755.6	1.75	1.60	N/A	5.58 F	94.94	3489.29	1036.40		
	2700	105515	94232	119785	985.1	1.75	1.60	N/A	6.77 F	97.73	3599.97	1152.35		
	2700	111680	94231	126006	1523.4	1.75	1.60	N/A	6.39 F	97.73	3599.97	1152.35		
	3100	110766	77783	126839	2879.6	1.71	1.60	N/A	6.44 F	101.11	3734.23	1293.00		
	3100	97392	77783	113331	1712.1	1.73	1.60	N/A	7.33 F	101.11	3734.23	1293.01		
	3700	71565	53303	89806	1594.4	1.70	1.61	N/A	9.97 F	106.15	3934.24	1502.54		
	3700	60887	53302	79004	662.3	1.71	1.61	N/A	11.72 F	106.16	3934.25	1502.55		
	4650	34671	14219	56495	1785.6	1.64	1.61	N/A	20.59 F	114.20	4253.37	1836.86		
	4900 4900	44595 28975	4828 4828	67626 51775	3472.0 2108.2	1.59 1.62	1.61 1.61	N/A N/A	16.01 F 24.64 F	116.32 116.32	4337.37 4337.38	1924.87 1924.87		
	4900 5029	28975	34	45340	1926.8	1.62	1.61	N/A	24.64 F 32.30 F	116.32	4337.38	1924.87		
	5029	22103	33	45339	1926.8	1.61	1.61	N/A	32.30 F	117.40	4380.40	1969.94		
	5029	-45329	-21341	-20805	2094.3	1.57	1.61	N/A	(13.67)	122.23	4572.11	2170.78		
	5650	-40465	-21341	-20005	1506.5	1.57	1.62	N/A	(15.87)	122.25	4572.11	2170.78		
	UCOC	-40405	-23210	- 10007	C.00C1	1.00	1.02	IN/A	(15.51)	122.00	4300.07	2100.34		
	F	Conn Fracture												
		Compression												
			Castas											
		Vector Collapse Safety												

9-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.



*Modelling done with 6" Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

Shallow Design D

<u> C</u>									
Hole	Interv	al MD	Interval TVD		Csg				
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn	
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC	
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC	
7-7/8"	0	13,278	0	11,671	6"	22.3#	P110-EC	DWC/C IS	
6-3/4"	13,278	29,353	11,671	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS	

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 6" and 5-1/2" casings in the 7-7/8" and 6-3/4" hole sizes. An expansion additive will be utilized in the cement slurry for the entire length of the 7-7/8" and 6-3/4" hole intervals 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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidiny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{6''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	2500	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 @ Top of Brushy)

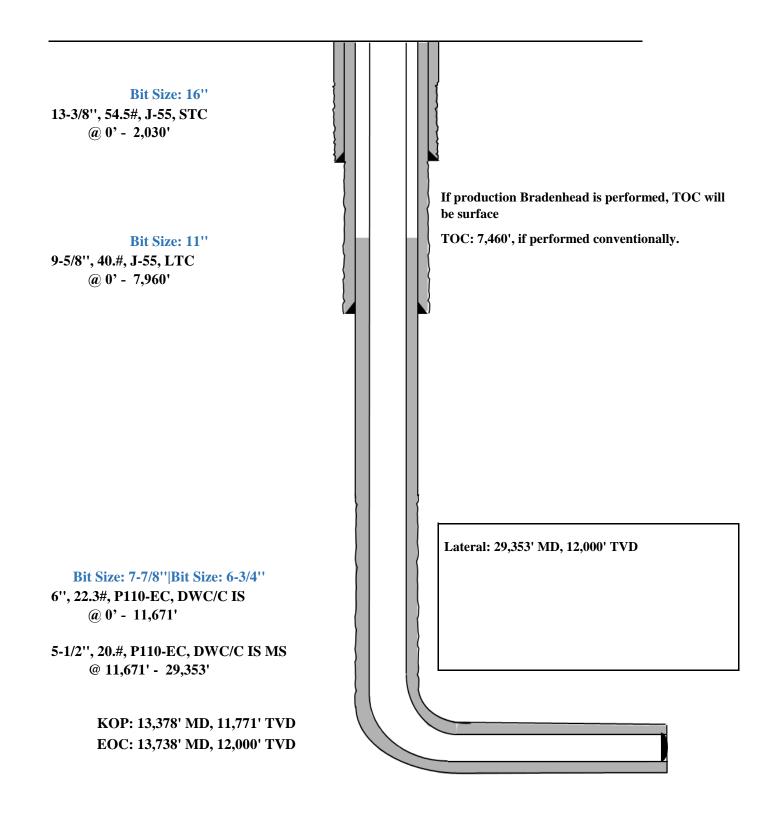
5. CEMENTING PROGRAM:

Seog resources

Shallow Design D

Proposed Wellbore

KB: 3558' GL: 3533'



File Edit Wellbore Tubular View Composer Tools Window Help

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▼ ← → 95/8" Intermediate Casing ▼

Depth (MD)	Axial F	orce (lbf)	Equivalent	Bending Stress		Absolute S	afety Factor		Temperature	Pressure	e (psi)	Addt'l Pickup To	Buckle
(usft)	Apparent (w/Bending)	Actual (w/o Bending)	Axial Load (lbf)	at OD (psi)	Triaxial	Burst	Collapse (V)	Axial	(°F)	Internal	External	Prevent Buck. (lbf)	Length (u
0	252987	228954	253140	2098.2	1.69	1.58	N/A	2.82 F	70.00	2500.00	0.00	N/A	N/A
100	247735	223702	248466	2098.2	1.69	1.58	N/A	2.88 F	71.10	2543.63	43.63		
100	234996	223701	235716	986.2	1.71	1.58	N/A	3.04 F	71.10	2543.64	43.64		
1700	341565	139667	352253	17627.2	1.53	1.57	N/A	2.09 F	88.70	3241.64	741.64		
1700	312979	139666	323488	15131.5	1.58	1.57	N/A	2.28 F	88.70	3241.65	741.65		
1850	336881	132027	348440	17885.2	1.51	1.57	N/A	2.12 F	90.29	3305.05	805.05		
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1950	320468	127243	332475	16869.9	1.52	1.57	N/A	2.23 F	91.30	3344.87	844.87		
1950	312802	127243	324756	16200.7	1.53	1.57	N/A	2.28 F	91.30	3344.87	844.87		
2050	307858	122773	320295	16159.3	1.52	1.57	N/A	2.32 F	92.23	3381.89	881.89		
2050	303560	122772	315965	15784.1	1.53	1.57	N/A	2.35 F	92.23	3381.89	881.89		
2300	151294	112633	163658	3375.4	1.71	1.57	N/A	4.72 F	94.35	3466.13	966.13		
2300	132741	112633	144956	1755.6	1.72	1.57	N/A	5.38 F	94.35	3466.14	966.14		
2370	129966	109858	142452	1755.6	1.72	1.57	N/A	5.49 F	94.94	3489.28	989.28		
2370	127909	107800	140922	1755.6	1.75	1.60	N/A	5.58 F	94.94	3489.29	1036.40		
2700	105515	94232	119785	985.1	1.75	1.60	N/A	6.77 F	97.73	3599.97	1152.35		
2700	111680	94231	126006	1523.4	1.75	1.60	N/A	6.39 F	97.73	3599.97	1152.35		
3100	110766	77783	126839	2879.6	1.71	1.60	N/A	6.44 F	101.11	3734.23	1293.00		
3100	97392	77783	113331	1712.1	1.73	1.60	N/A	7.33 F 9.97 F	101.11	3734.23	1293.01		
3700	71565	53303	89806	1594.4	1.70	1.61	N/A		106.15	3934.24	1502.54		
3700 4650	60887 34671	53302 14219	79004	662.3	1.71	1.61	N/A	11.72 F	106.16	3934.25	1502.55		
	44595		56495	1785.6	1.64	1.61	N/A	20.59 F	114.20	4253.37	1836.86		
4900 4900	28975	4828 4828	67626 51775	3472.0 2108.2	1.59	1.61 1.61	N/A	16.01 F 24.64 F	116.32 116.32	4337.37 4337.38	1924.87 1924.87		
	28975	4626		1926.8	1.62	1.61	N/A N/A	24.64 F 32.30 F	116.32	4337.38	1924.87		
5029 5029	22103	33	45340 45339	1926.8	1.61	1.61	N/A N/A	32.30 F	117.40	4380.40	1969.94		
5600	-45329	-21341	-20805	2094.3	1.57	1.61	N/A N/A		122.23	4572.11	2170.78		
5650	-40465	-21341 -23210	-20005 -15657	1506.5	1.57	1.62	N/A N/A	(13.67) (15.31)	122.23	4572.11	2170.78		
UCOC	-40405	-23210	- 10007	100.0	1.00	1.02	IN/A	(15.51)	122.00	4300.07	2100.34		
F	Conn Fracture												
	Compression												
	Vector Collapse Safety	Eactor											
0.0	vector conapse calety	Tactor											

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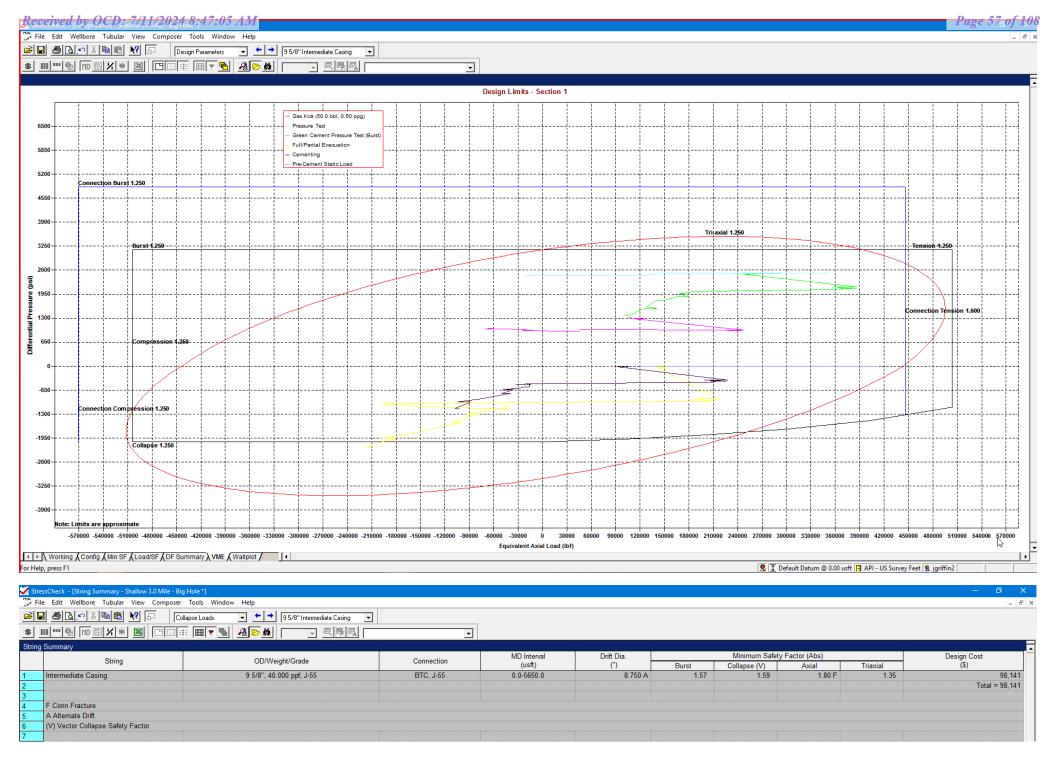
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🙎 👤 Default Datum @ 0.00 usft 📑 API - US Survey Feet 🙎 jgriffin2

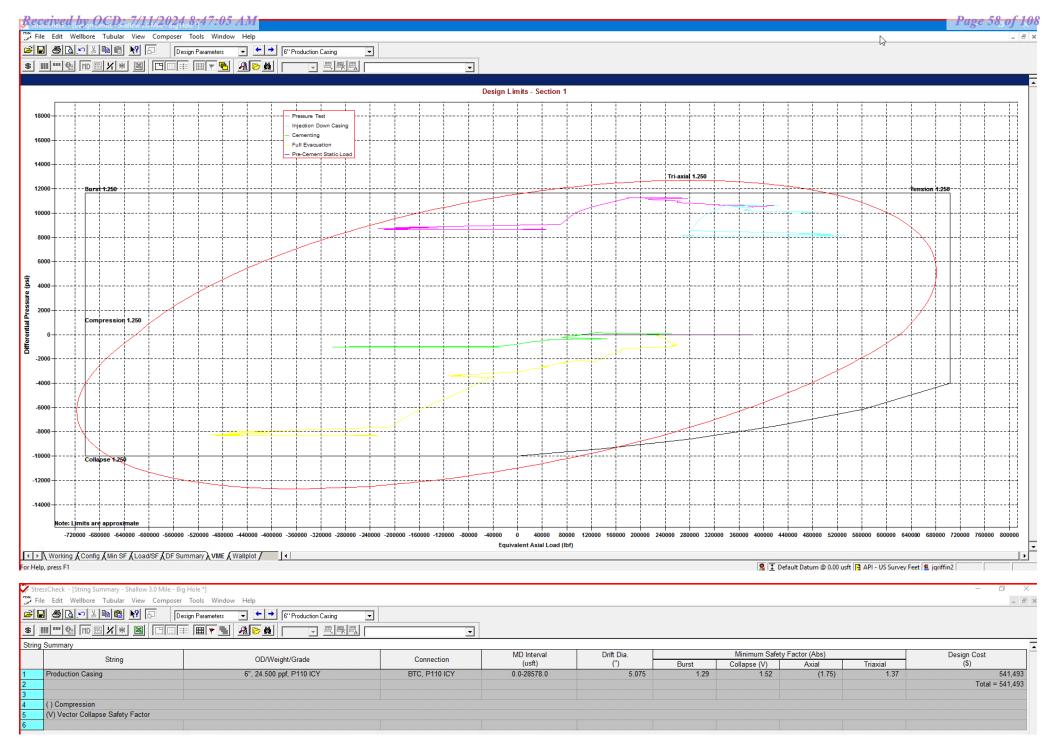
9-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi

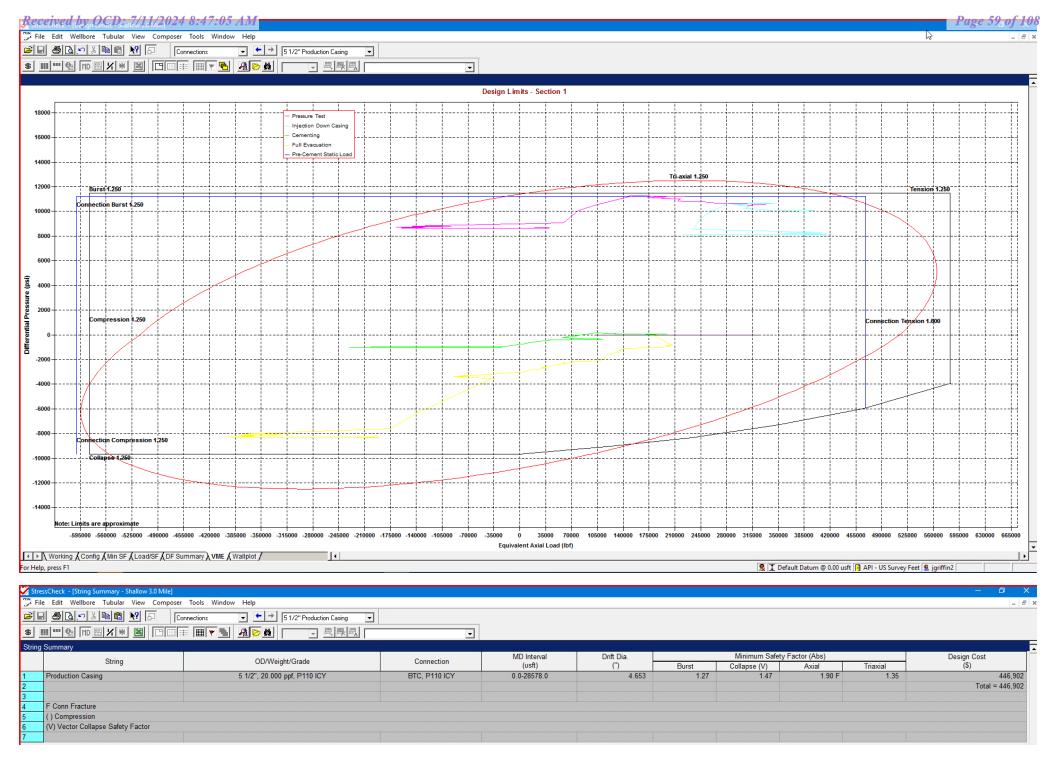
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*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.



*Modelling done with 6" Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM

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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

Shallow Casing Design 501H

Cement integrity tests will be performed immediately following plug bump.

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.

EOG requests variance from minimum standards to pump a two stage cement job on the production casing string with the first stage being pumped conventionally with the calculated top of cement at the top of the Brushy Canyon and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 400 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (1.32 yld, 14.8 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

Bradenhead will be the primary option for production cementing. EOG also requests to have the conventional option in place to accommodate for logistical or wellbore conditions. The tie back requirements will be met if the cement is pumped conventionally, and cement volumes will be adjusted accordingly. TOC will be verified by CBL.



MUD PROGRAM:

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal. The applicable depths and properties of the drilling fluid systems are as follows:

Measured Depth	Туре	Weight (ppg)	Viscosity	Water Loss
0 – 2,030'	Fresh - Gel	8.6-8.8	28-34	N/c
2,030' – 7,793'	Brine	9-10.5	28-34	N/c
5,450' – 28,578' Lateral	Oil Base	8.8-9.5	58-68	N/c - 6

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

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



Appendix A - Spec Sheets

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Pipe Body and API Connections Performance Data Received by OCD: 7/11/2024 8:47:05 AM 13.375 54.50/0.380 J55

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New Search »

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USC O Metric

6/8/2015 10:04:37 AM								
Mechanical Properties	Ptpe	втс	LTC	STC				
Minimum Yield Strength	<mark>55,000</mark>	-	-	-	psi			
Maximum Yield Strength	80,000		1-14		psi			
Minimum Tensile Strength	75,000		-		psi			
Dimensions	Ріре	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	100	12.459	in.			
Alternate Drift	-	-	-	-	in.			
Nominal Linear Weight, T&C	54.50	-		1 - -1	lbs/ft			
Plain End Weight	52.79	· · · · · · · · · · · · · · · · · · ·		-	lbs/ft			
Performance	Pipe	втс	LTC	STC				
Minimum Collapse Pressure	1,130	1, <mark>1</mark> 30		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	1775	514	1000 lbs			
Reference Length	-	11,125	-	6,290	n			
Make-Up Data	Ріре	втс	LTC	STC				
Make-Up Loss	-	4.81	-	3.50	in.			
Minimum Make-Up Torque	-	-	 8	3,860	ft-Ibs			
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	-	6,430	ft-lbs			

Pipe Body and API Connections Performance Data Received by OCD: 7/11/2024 8:47:05 AM 9.625 40.00/0.395 J55

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USC O Metric

6/8/2015 10:23:27 AM					
Mechanical Properties	Pipe	втс	LTC	STC	
Minimum Yield Strength	55,000	-		-	psi
Maximum Yield Strength	80,000	-	-		psi
Minimum Tensile Strength	75,000				psi
Dimensions	Pipe	втс	LTC	STC	
Outside Diameter	9.625	10.625	10.625	10.625	in.
Wall Thickness	0.395	π	57. V		in.
Inside Diameter	8.835	8.835	8.835	8.835	in.
Standard Drift	8.679	8.679	8.679	8.679	in.
Alternate Drift	8.750	8.750	8.750	8.750	in.
Nominal Linear Weight, T&C	40.00	-	-		lbs/ft
Plain End Weight	38.97	-		-	lbs/ft
Performance	Pipe	втс	LTC	STC	
Minimum Collapse Pressure	2,570	2,570	2,570	2,570	psi
Minimum Internal Yield Pressure	3,950	3,950	3,950	3,950	psi
Minimum Pipe Body Yield Strength	630.00		÷ :	-	1000 lbs
Joint Strength		714	520	452	1000 lbs
Reference Length		11,898	8,665	7,529	ft
Make_Up Data	Pipe	втс	LTC	STC	
Make-Up Loss		4.81	4.75	3.38	in.
Minimum Make-Up Torque			3,900	3,390	ft-lbs
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	6,500	5,650	ft-lbs

USA	17	LL	IG//C-/S	ILME]
			Connectio	on Data S	hee
OD (in.) WEIGHT (lbs./ft.) WALL (in.) 5.500 Nominal: 20.00 0.361 Plain End: 19.83		RADE	API DRIFT (in.) RBW% 4.653 87.5	CONNECTIO DWC/C-IS M	
PIPE PROPERTIES			CONNECTION PROF	PERTIES	
Outside Diameter	5.500	in.	Connection Type	Semi-Pren	nium T
Inside Diameter	4.778	in.	Connection O.D. (nom)	6.115	
Nominal Area	5.828	sq.in.	Connection I.D. (nom)	4.778	
Grade Type	API 5CT		Make-Up Loss	4.125	
Min. Yield Strength	125	ksi	Coupling Length	9.250	
Max. Yield Strength	140	ksi	Critical Cross Section	5.828	so
Min. Tensile Strength	135	ksi	Tension Efficiency	100.0%	of p
Yield Strength	729	klb	Compression Efficiency	100.0%	of p
Ultimate Strength	787	klb	Internal Pressure Efficiency	100.0%	of p
Min. Internal Yield	14,360	psi	External Pressure Efficiency	100.0%	of p
Collapse	12,090	psi			
CONNECTION PERFORMA	NCES		FIELD END TORQUE	VALUES	
Yield Strength	729	klb	Min. Make-up torque	16,100	1
Parting Load	787	klb	Opti. Make-up torque	17,350	
Compression Rating	729	klb	Max. Make-up torque	18,600	1
Min. Internal Yield	14,360	psi	Min. Shoulder Torque	1,610	1
External Pressure	12,090	psi	Max. Shoulder Torque	12,880	1
Maximum Uniaxial Bend Rating	104.2	°/100 ft	Min. Delta Turn	-	Tu
Reference String Length w 1.4 Design Factor	26,040	ft	Max. Delta Turn	0.200	Tu
			Maximum Operational Torque	21,100	f

Need Help? Contact: <u>tech.support@vam-usa.com</u> Reference Drawing: 8136PP Rev.01 & 8136BP Rev.01 Date: 12/03/2019 Time: 06:19:27 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).

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

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DWC Connection Data Sheet Notes:

1. DWC connections are available with a seal ring (SR) option.

2. All standard DWC/C connections are interchangeable for a given pipe OD. DWC connections are interchangeable with DWC/C-SR connections of the same OD and wall.

Connection performance properties are based on nominal pipe body and connection dimensions.
 DWC connection internal and external pressure resistance is calculated using the API rating for buttress connections. API Internal pressure resistance is calculated from formulas 31, 32, and 35 in the API Bulletin 5C3.
 DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.

6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.

7. Bending efficiency is equal to the compression efficiency.

8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.

9. Connection yield torque is not to be exceeded.

10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.

11. DWC connections will accommodate API standard drift diameters.

12. DWC/C family of connections are compatible with API Buttress BTC connections. Please contact tech.support@vam-usa.com for details on connection ratings and make-up.

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

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Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55

New Search »
« Back to Previous List

USC 🔵 Metric

6/8/2015 10	0:14:05	AM		

6/8/2015 10:14:05 AM					
Mechanical Properties	Pipe	втс	LTC	STC	
Minimum Yield Strength	55,000	-	-	-	psi
Maximum Yield Strength	80,000		-	-	psi
Minimum Tensile Strength	75,000	-	-	-	psi
Dimensions	Pipe	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	Pipe	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	Ріре	втс	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,150	ft-Ibs
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	-	5,250	ft-lbs



API 5CT, 10th Ed. Connection Data Sheet

AFT JUT, TUTI LU. CONTECTION Data Shee										
O.D. (in)	WEIGHT (•	WALL	(in)	GR	ADE	*API DRI	FT (in)	RBV	₩%
8.625	Nominal: Plain End:	32.00 31.13	0.352	2	J	55	7.79	96	87	<i>.</i> 5
l	Material Proper	ties (PE)			Pipe Body Data (PE)					
	Pipe						Geo	metry		
Minimum `	Yield Strength:	55	ksi		Nomin	al ID:			7.92	inch
Maximum	Yield Strength:	80	ksi		Nomin	al Area	:		9.149	in ²
Minimum [•]	Tensile Strength:	75	ksi		*Spec	ial/Alt. [Drift:		7.875	inch
	Coupling	3					Perfor	mance		
Minimum `	Yield Strength:	55	ksi		Pipe E	Body Yie	eld Streng	th:	503	kips
Maximum	Yield Strength:	80	ksi		Collap	se Res	istance:		2,530	psi
					Intornal	Yield Pre	essure:			
Minimum	Tensile Strength:	75	ksi			storical)			3,930	psi
Minimum	API Connectio	n Data	ksi			storical)	PI Connec	ction To		psi
Minimum ⁻		n Data 9.625"	ksi			storical) AF			orque	psi
	API Connectio	n Data 9.625"				storical) AF	PI Conneo		orque	
STC Inter	API Connectio Coupling OD: S STC Perform	n Data 9.625" ance	psi		(API Hi	storical) AF	PI Connec STC Torc	ue (ft-ll	orque os)	
STC Inter	API Connection Coupling OD: S STC Perform nal Pressure:	n Data 9.625" ance 3,930 372	psi		(API Hi	storical) AF 2,793	PI Connec STC Torc	j ue (ft-II 3,724	orque os) Max:	
STC Intern	API Connectio Coupling OD: 9 STC Perform nal Pressure: Strength:	n Data 9.625" ance 3,930 372	psi kips		(API Hi	storical) AF 2,793	PI Connec STC Torc Opti:	j ue (ft-II 3,724	orque os) Max:	psi 4,65 5,21
STC Intern	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure:	n Data 0.625" ance 3,930 372 ance 3,930	psi kips		(API Hi	storical) AF 2,793	PI Connect STC Torc Opti: LTC Torc	jue (ft-II 3,724 jue (ft-II	orque os) Max: os)	4,65
STC Intern STC Joint LTC Intern LTC Joint	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure:	n Data 0.625" ance 3,930 372 ance 3,930 417	psi kips psi kips		(API Hi	storical) AF 2,793 3,130	PI Connect STC Torc Opti: LTC Torc	j ue (ft-ll 3,724 j ue (ft-ll 4,174	orque DS) Max: DS) Max:	4,6
STC Intern STC Joint LTC Intern LTC Joint SC-BTC F	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure: Strength:	n Data 0.625" ance 3,930 372 ance 3,930 417	psi kips psi kips 9.125"		(API Hi	storical) AF 2,793 3,130	PI Connect STC Torc Opti: LTC Torc Opti:	jue (ft-ll 3,724 jue (ft-ll 4,174 jue (ft-ll	orque DS) Max: DS) Max:	4,65 5,21

*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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Rev 3, 7/30/2021

S S2L2 DA 7.875 W/O# SLN # PO# MADE IN USA FT LB

VALLOUREC STAR 8.625 32# J55

10/21/2022 15:24



Issued on: 10 Feb. 2021 by Wesley Ott



OD	Weight (lb/ft)	Wall Th.	Grade	API Drift:	Connection
6 in.	Nominal: 24.50	0.400 in.	P110EC	5.075 in.	VAM [®] SPRINT-SF
	Plain End: 23.95				

PI PE PROPERTI ES		
Nominal OD	6.000	in.
Nominal ID	5.200	in.
Nominal Cross Section Area	7.037	sqin.
Grade Type	Hig	jh Yield
Min. Yield Strength	125	ksi
Max. Yield Strength	140	ksi
Min. Ultimate Tensile Strength	135	ksi

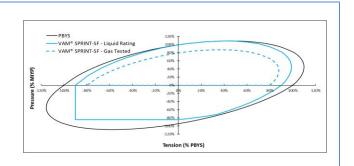
CONNECTI ON PROPERTI		
Connection Type	Integral S	Semi-Flush
Connection OD (nom):	6.277	in.
Connection ID (nom):	5.146	in.
Make-Up Loss	5.386	in.
Critical Cross Section	6.417	sqin.
Tension Efficiency	91.0	% of pipe
Compression Efficiency	91.0	% of pipe
Internal Pressure Efficiency	100	% of pipe
External Pressure Efficiency	100	% of pipe

CONNECTION PERFORMANC	ES	
Tensile Yield Strength	801	klb
Compression Resistance	801	klb
Internal Yield Pressure	14,580	psi
Collapse Resistance	12,500	psi
Max. Structural Bending	83	°/100ft
Max. Bending with ISO/API Sealability	30	°/100ft

TORQUE VALUES		
Min. Make-up torque	21,750	ft.lb
Opt. Make-up torque	24,250	ft.lb
Max. Make-up torque	26,750	ft.lb
Max. Torque with Sealability (MTS)	53,000	ft.lb

* 87.5% RBW

VAM® SPRINT-SF is a semi-flush connection innovatively designed for extreme shale applications. Its high tension rating and ultra high torque capacity make it ideal to run a fill string length as production casing in shale wells with extended horizontal sections and tight clearance requirements.



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

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

china@vamfieldservice.com baku@vamfieldservice.com singapore@vamfieldservice.com australia@vamfieldservice.com



Connection Data Sheet

OD (in.)	WEIGHT (lbs./ft.)	WALL (in.)	GRADE	API DRIFT (in.)	RBW%	CONNECTION
6.000	Nominal: 22.30	0.360	VST P110EC	5.155	92.5	DWC/C-IS
	Plain End: 21 70			•	-	

PIPE PROPE	RTIES	
Nominal OD	6.000	in.
Nominal ID	5.280	in.
Nominal Area	6.379	sq.in.
Grade Type	API 5CT	
Min. Yield Strength	125	ksi
Max. Yield Strength	140	ksi
Min. Tensile Strength	135	ksi
Yield Strength	797	klb
Ultimate Strength	861	klb
Min. Internal Yield Pressure	13,880	psi
Collapse Pressure	9,800	psi

CONNECTION PERFORMA	NCES	
Yield Strength	797	klb
Parting Load	861	klb
Compression Rating	797	klb
Min. Internal Yield	13,880	psi
External Pressure	9,800	psi
Maximum Uniaxial Bend Rating	47.7	°/100 ft
Reference String Length w 1.4 Design Factor	25,530	ft.

CONNECTION PROP	ERTIES	
Connection Type	Semi-Prem	ium T&C
Connection OD (nom)	6.650	in.
Connection ID (nom)	5.280	in.
Make-Up Loss	4.313	in.
Coupling Length	9.625	in.
Critical Cross Section	6.379	sq.in.
Tension Efficiency	100.0%	of pipe
Compression Efficiency	100.0%	of pipe
Internal Pressure Efficiency	100.0%	of pipe
External Pressure Efficiency	100.0%	of pipe

FIELD END TORQUE V	ALUES	
Min. Make-up torque	17,000	ft.lb
Opti. Make-up torque	18,250	ft.lb
Max. Make-up torque	19,500	ft.lb
Min. Shoulder Torque	1,700	ft.lb
Max. Shoulder Torque	13,600	ft.lb
Min. Delta Turn	-	Turns
Max. Delta Turn	0.200	Turns
Maximum Operational Torque	24,200	ft.lb
Maximum Torsional Value (MTV)	26,620	ft.lb

Need Help? Contact: <u>tech.support@vam-usa.com</u> Reference Drawing: 8135PP Rev.02 & 8135BP Rev.02 Date: 07/30/2020

Time: 07:50:47 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).

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

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VAM USA 2107 CityWest Boulevard Suite 1300 Houston, TX 77042 Phone: 713-479-3200 Fax: 713-479-3234 VAM[®] USA Sales E-mail: <u>VAMUSAsales@vam-usa.com</u> Tech Support Email: <u>tech.support@vam-usa.com</u>

DWC Connection Data Sheet Notes:

1. DWC connections are available with a seal ring (SR) option.

2. All standard DWC/C connections are interchangeable for a given pipe OD. DWC connections are interchangeable with DWC/C-SR connections of the same OD and wall.

3. Connection performance properties are based on nominal pipe body and connection dimensions.

4. DWC connection internal and external pressure resistance is calculated using the API rating for buttress connections. API Internal pressure resistance is calculated from formulas 31, 32, and 35 in the API Bulletin 5C3.

5. DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.

6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.

7. Bending efficiency is equal to the compression efficiency.

8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.

9. Connection yield torque is not to be exceeded.

10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.

11. DWC connections will accommodate API standard drift diameters.

12. DWC/C family of connections are compatible with API Buttress BTC connections. Please contact tech.support@vam-usa.com for details on connection ratings and make-up.

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

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EOG BLANKET CASING DESIGN VARIANCE

EOG respectfully requests the drill plans in the attached document 'EOG Alternate Casing Designs – BLM APPROVED' be added to the COA's for this well. These designs have been approved by the BLM down to the TVDs listed below and will allow EOG to run alternate casing designs for this well if necessary.

The designs and associated details listed are the "worst case scenario" boundaries for design safety factors. Location and lithology have NOT been accounted for in these designs. The specific well details will be based on the APD/Sundry package and the information listed in the COA.

The mud program will not change from the original design for this well. Summary of the mud programs for both shallow and deep targets are listed at the end of this document. If the target is changing, a sundry will be filed to update the casing design and mud/cement programs.

Cement volumes listed in this document are for reference only. The cement volumes for the specific well will be adjusted to ensure cement tops meet BLM requirements as listed in the COA and to allow bradenhead cementing when applicable.

This blanket document only applies to wells with three string designs outside of Potash and Capitan Reef boundaries.

Shallow Design Boundary Conditions						
	Deepest	Deepest	Max Inc	Max DLS		
	MD (ft)	TVD (ft)	(deg)	(°/100usft)		
Surface	2030	2030	0	0		
Intermediate	7793	5650	40	8		
Production	28578	12000	90	25		



Shallow Design A

Hole	Interv	al MD	Interva	l TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC
6-3/4"	0	29,353	0	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{5-1/2''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	1480	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 @ Top of Brushy)

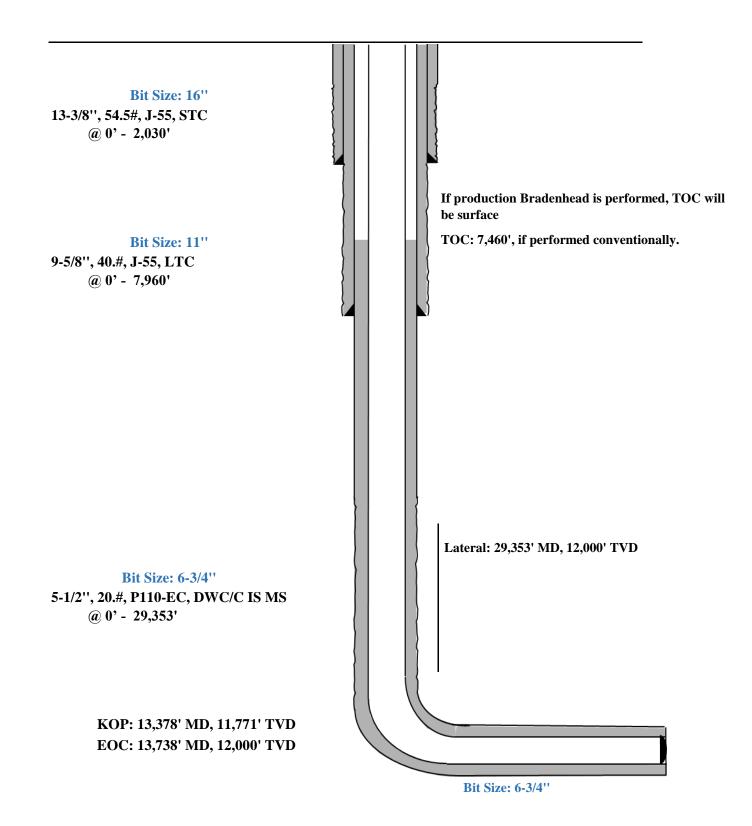
5. CEMENTING PROGRAM:

Seog resources

Shallow Design A

Proposed Wellbore

KB: 3558' GL: 3533'



	🚽 🛨 🕈 95/8''I	ntermediate Casing	•
\$	<u>a</u> 🔊	╶■록■	Pressure Test

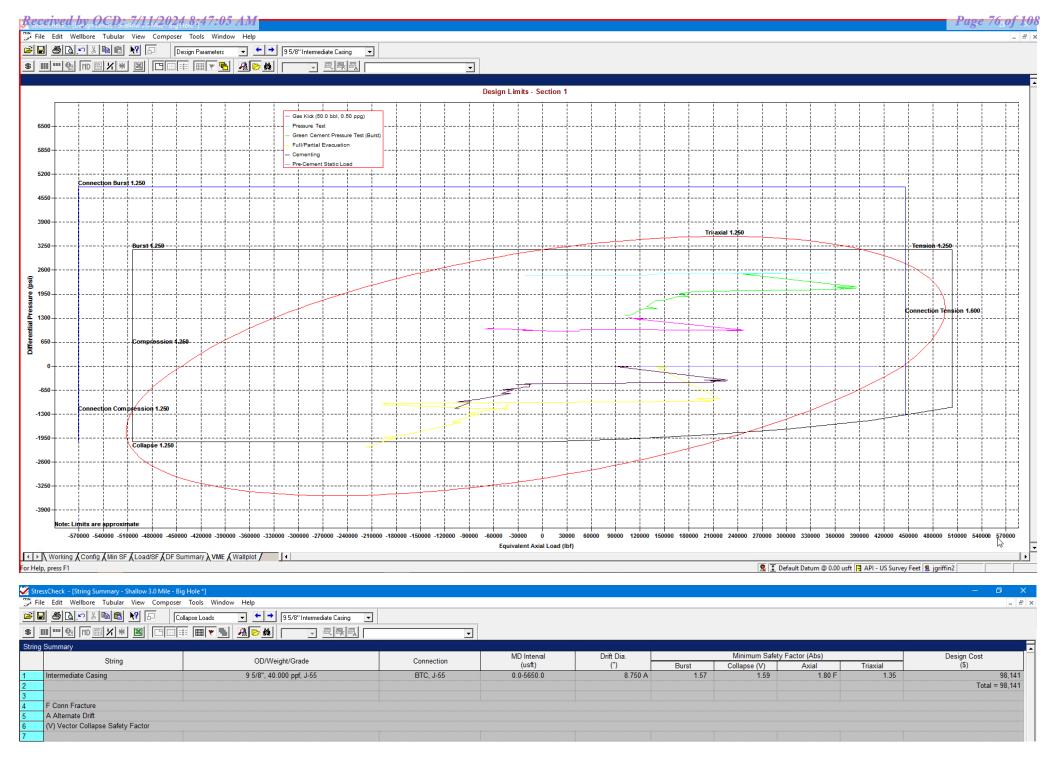
	Actual Bending) 228954 223702 223701 139666 132027 132027 132027 127243 122773 122773	Equivalent Axial Load (lbf) 248466 235716 352253 323488 348440 32984 332475 324756 320295	Bending Stress at OD (psi) 2098.2 9986.2 97627 17627.2 15131.5 17885.2 16284.8 16689.9	Triaxial 1.69 1.71 1.53 1.58 1.51 1.54	Burst 1.58 1.58 1.58 1.57 1.57 1.57 1.57	Collapse (V) N/A N/A N/A N/A N/A	Axial 2.82 F 2.88 F 3.04 F 2.09 F 2.28 F 2.12 F	Temperature (°F) 70.00 71.10 71.10 88.70 88.70 88.70	Internal 2500.00 2543.63 2543.64 3241.64 3241.65	External 0.00 43.63 43.64 741.64 741.65	Addtl Pickup To Prevent Buck. (lbf) N/A	Buckled Length (usft) N/A
247735 234996 341565 312979 336881 318549 320468 312802 307858 303560 151294	223702 223701 139667 139666 132027 132027 127243 127243 122773 122772	248466 235716 352253 323488 348440 329984 332475 324756	2098.2 986.2 17627.2 15131.5 17885.2 16284.8 16869.9	1.69 1.71 1.53 1.58 1.51 1.51	1.58 1.58 1.57 1.57 1.57 1.57	N/A N/A N/A N/A	2.88 F 3.04 F 2.09 F 2.28 F	71.10 71.10 88.70 88.70	2543.63 2543.64 3241.64 3241.65	43.63 43.64 741.64	N/A	N/A
234996 341565 312979 336881 318549 320468 312802 307858 303560 151294	223701 139667 139666 132027 132027 127243 127243 122773 122772	235716 352253 323488 348440 329984 332475 324756	986.2 17627.2 15131.5 17885.2 16284.8 16869.9	1.71 1.53 1.58 1.51 1.54	1.58 1.57 1.57 1.57	N/A N/A N/A	3.04 F 2.09 F 2.28 F	71.10 88.70 88.70	2543.64 3241.64 3241.65	43.64 741.64		
341565 312979 336881 318549 320468 312802 307858 303560 151294	139667 139666 132027 132027 127243 127243 122773 122772	352253 323488 348440 329984 332475 324756	17627.2 15131.5 17885.2 16284.8 16869.9	1.53 1.58 1.51 1.54	1.57 1.57 1.57	N/A N/A	2.09 F 2.28 F	88.70 88.70	3241.64 3241.65	741.64		
312979 336881 318549 320468 312802 307858 303560 151294	139666 132027 132027 127243 127243 122773 122772	323488 348440 329984 332475 324756	15131.5 17885.2 16284.8 16869.9	1.58 1.51 1.54	1.57 1.57	N/A	2.28 F	88.70	3241.65			
336881 318549 320468 312802 307858 303560 151294	132027 132027 127243 127243 122773 122772	348440 329984 332475 324756	17885.2 16284.8 16869.9	1.51 1.54	1.57					741.65		
318549 320468 312802 307858 303560 151294	132027 127243 127243 122773 122773 122772	329984 332475 324756	16284.8 16869.9	1.54		N/A	2 12 =					
320468 312802 307858 303560 151294	127243 127243 122773 122772	332475 324756	16869.9					90.29	3305.05	805.05		
312802 307858 303560 151294	127243 122773 122772	324756			1.57	N/A	2.24 F	90.29	3305.06	805.06		
307858 303560 151294	122773 122772			1.52	1.57	N/A	2.23 F	91.30	3344.87	844.87		
303560 151294	122772	320295	16200.7	1.53	1.57	N/A	2.28 F	91.30	3344.87	844.87		
151294			16159.3	1.52	1.57	N/A	2.32 F	92.23	3381.89	881.89		
		315965	15784.1	1.53	1.57	N/A	2.35 F	92.23	3381.89	881.89		
132741	112633	163658	3375.4	1.71	1.57	N/A	4.72 F	94.35	3466.13	966.13		
	112633	144956	1755.6	1.72	1.57	N/A	5.38 F	94.35	3466.14	966.14		
129966	109858	142452	1755.6	1.72	1.57	N/A	5.49 F	94.94	3489.28	989.28		
127909	107800	140922	1755.6	1.75	1.60	N/A	5.58 F	94.94	3489.29	1036.40		
-40465	-23210	-15657	1506.5	1.58	1.62	N/A	(15.31)	122.66	4588.87	2188.34		
acture												
ssion												
Collapse Safety Factor												
s	sion	111680 94231 110766 77783 97392 77783 71565 53303 60887 53302 34671 14219 44595 4828 28975 4628 22103 34 22102 33 -45329 -21341 -40465 -23210 cture sion	111680 94231 126006 110766 77783 126839 97392 77783 11331 71565 53303 89806 60887 53302 79004 34671 14219 56495 44595 4828 67626 28975 4828 51775 22103 33 45339 -45329 -21341 -20805 -40465 -23210 -15657	111680 94231 126006 1523.4 110766 77783 126839 2879.6 97392 77783 113331 1712.1 71565 53303 89806 1594.4 60887 53302 79004 662.3 34671 14219 56495 1785.6 44595 4828 67626 3472.0 28975 4828 51775 2108.2 22103 34 45340 1926.8 22102 33 45339 1926.8 -40465 -23210 -15657 1506.5 cture	111680 94231 126006 1523.4 1.75 110766 77783 126839 2879.6 1.71 97392 77783 113331 1712.1 1.73 71565 53303 89806 1594.4 1.70 60887 53302 79004 662.3 1.71 34671 14219 56495 1785.6 1.64 44595 4828 67626 3472.0 1.59 28975 4828 51775 2108.2 1.62 22103 34 45340 1926.8 1.61 24529 -21341 -20805 2094.3 1.57 -40465 -23210 -15657 1506.5 1.58	111680 94231 126006 1523.4 1.75 1.60 110766 77783 126839 2879.6 1.71 1.60 97392 77783 113331 1712.1 1.73 1.60 71565 53303 89806 1594.4 1.70 1.61 60887 53302 79004 662.3 1.71 1.61 34671 14219 56495 1785.6 1.64 1.61 44595 4828 67626 3472.0 1.59 1.61 28975 4828 51775 2108.2 1.62 1.61 22103 34 45340 1926.8 1.61 1.61 22102 33 45339 1926.8 1.61 1.61 -40465 -23210 -15657 1506.5 1.58 1.62	111680 94231 126006 1523.4 1.75 1.60 N/A 110766 77783 126839 2879.6 1.71 1.60 N/A 97392 77783 113331 1712.1 1.73 1.60 N/A 60887 53302 79004 662.3 1.71 1.61 N/A 46087 53302 79004 662.3 1.71 1.61 N/A 34671 14219 56495 1785.6 1.64 1.61 N/A 28975 4828 67626 3472.0 1.59 1.61 N/A 22103 34 45340 1926.8 1.61 1.61 N/A 24102 33 45339 1926.8 </td <td>111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 71565 53303 89806 1594.4 1.70 1.61 N/A 9.97 F 60887 53302 79004 662.3 1.71 1.61 N/A 9.97 F 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 34671 1.4219 56495 1785.6 1.64 1.61 N/A 20.59 F 28975 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 28975 4828 51775 2108.2 1.62 1.61 N/A 23.0 F 24102 33 45339 1926.8 1.61 1.61 N/A 32.30 F 24529 -21341 -20805 2094.3 1.57 1.62 N/A (13.67)</td> <td>111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 110766 77783 126839 2875.6 1.71 1.60 N/A 6.44 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 53302 79004 662.3 1.71 1.61 N/A 9.97 F 106.15 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 114.20 44595 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 28975 4828 51775 2108.2 1.62 1.61 N/A 22.</td> <td>111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 101.11 373.423 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 373.423 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 373.423 9786 53302 79004 662.3 1.71 1.61 N/A 9.97 F 106.15 393.424 60887 53302 79004 662.3 1.71 1.61 N/A 10.17 F 106.16 393.425 34671 14219 56495 1785.6 1.64 1.61 N/A 10.17 F 106.16 393.425 34671 4228 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 4337.37 28975 4828 61775 2108.2 1.62 1.61 N/A 32.30 F 117.4</td> <td>111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 1152.35 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 101.11 3734.23 1293.00 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 97392 77783 38906 1594.4 1.70 1.61 N/A 9.97 F 106.15 3934.24 1502.54 60887 53302 79004 662.3 1.71 1.61 N/A 11.72 F 106.16 3934.25 1502.55 34671 14219 56495 1785.6 1.64 1.61 N/A 10.1 F 116.32 4337.37 1924.87 28975 4828 67626 3472.0 1.62 1.61 N/A 24.64 F 116.32 4337.33 1924.87 <</td> <td>111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 1152.35 110766 77783 126839 2875.6 1.71 1.60 N/A 6.44 F 101.11 3734.23 1293.00 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 71565 53303 89806 1594.4 1.70 1.61 N/A 9.97 F 106.15 3934.24 1502.54 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 1142.0 4253.37 1836.66 34671 14219 56495 1785.6 1.64 1.61 N/A 10.11 163.2 4337.37 1924.87 28975 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 4337.37 1924.87 28975 4828 51775 2108.2 1.62 1.61 N/A 23.01 F 117.40 4380.40 1969.94</td>	111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 71565 53303 89806 1594.4 1.70 1.61 N/A 9.97 F 60887 53302 79004 662.3 1.71 1.61 N/A 9.97 F 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 34671 1.4219 56495 1785.6 1.64 1.61 N/A 20.59 F 28975 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 28975 4828 51775 2108.2 1.62 1.61 N/A 23.0 F 24102 33 45339 1926.8 1.61 1.61 N/A 32.30 F 24529 -21341 -20805 2094.3 1.57 1.62 N/A (13.67)	111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 110766 77783 126839 2875.6 1.71 1.60 N/A 6.44 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 97392 53302 79004 662.3 1.71 1.61 N/A 9.97 F 106.15 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 114.20 44595 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 28975 4828 51775 2108.2 1.62 1.61 N/A 22.	111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 101.11 373.423 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 373.423 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 373.423 9786 53302 79004 662.3 1.71 1.61 N/A 9.97 F 106.15 393.424 60887 53302 79004 662.3 1.71 1.61 N/A 10.17 F 106.16 393.425 34671 14219 56495 1785.6 1.64 1.61 N/A 10.17 F 106.16 393.425 34671 4228 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 4337.37 28975 4828 61775 2108.2 1.62 1.61 N/A 32.30 F 117.4	111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 1152.35 110766 77783 126839 2879.6 1.71 1.60 N/A 6.44 F 101.11 3734.23 1293.00 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 97392 77783 38906 1594.4 1.70 1.61 N/A 9.97 F 106.15 3934.24 1502.54 60887 53302 79004 662.3 1.71 1.61 N/A 11.72 F 106.16 3934.25 1502.55 34671 14219 56495 1785.6 1.64 1.61 N/A 10.1 F 116.32 4337.37 1924.87 28975 4828 67626 3472.0 1.62 1.61 N/A 24.64 F 116.32 4337.33 1924.87 <	111680 94231 126006 1523.4 1.75 1.60 N/A 6.39 F 97.73 3599.97 1152.35 110766 77783 126839 2875.6 1.71 1.60 N/A 6.44 F 101.11 3734.23 1293.00 97392 77783 113331 1712.1 1.73 1.60 N/A 7.33 F 101.11 3734.23 1293.01 71565 53303 89806 1594.4 1.70 1.61 N/A 9.97 F 106.15 3934.24 1502.54 60887 53302 79004 662.3 1.71 1.61 N/A 20.59 F 1142.0 4253.37 1836.66 34671 14219 56495 1785.6 1.64 1.61 N/A 10.11 163.2 4337.37 1924.87 28975 4828 67626 3472.0 1.59 1.61 N/A 16.01 F 116.32 4337.37 1924.87 28975 4828 51775 2108.2 1.62 1.61 N/A 23.01 F 117.40 4380.40 1969.94

Working & Config & Min SF Load/SF & DF Summary & VME & Wallplot For Help, press F1

🙎 I Default Datum @ 0.00 usft 🖪 API - US Survey Feet 😫 jgriffin2

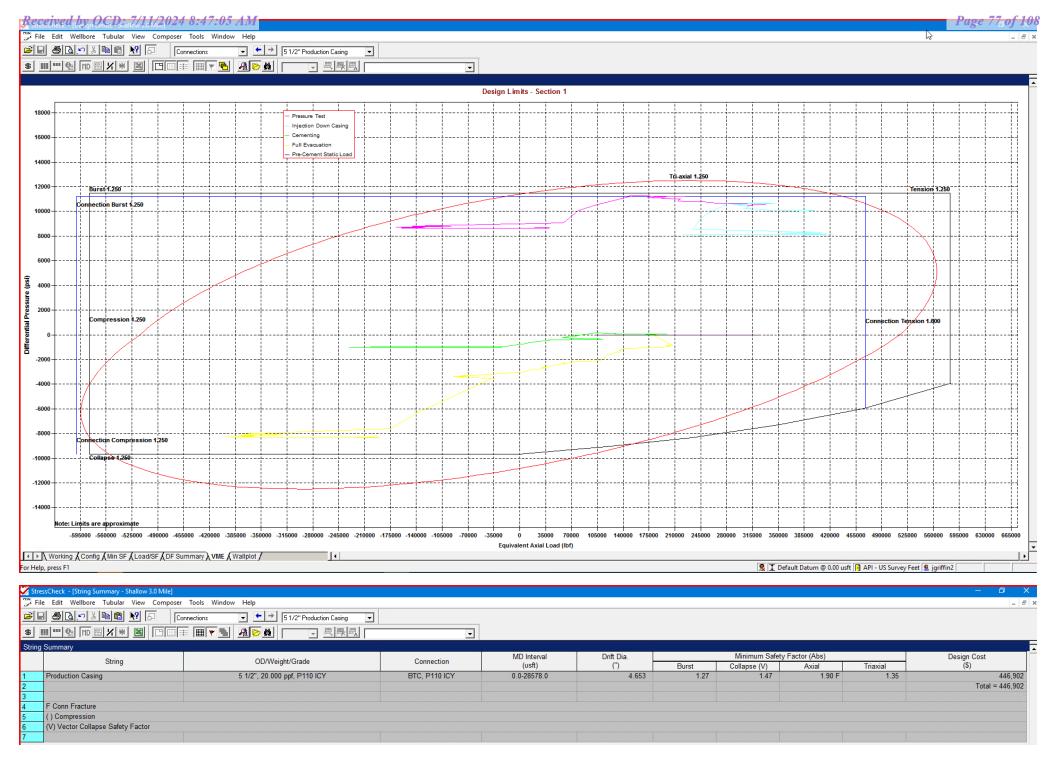
9-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM

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Seog resources

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Shallow Design B

<u> (</u>		NOUNA						
Hole	Interv	al MD	Interva	al TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
13-1/2"	0	2,161	0	2,030	10-3/4"	40.5#	J-55	STC
9-7/8"	0	7,951	0	5,650	8-5/8"	32#	J-55	BTC-SC
6-3/4"	0	29,353	0	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 Title 43 CFR Part 3170 under the following conditions:

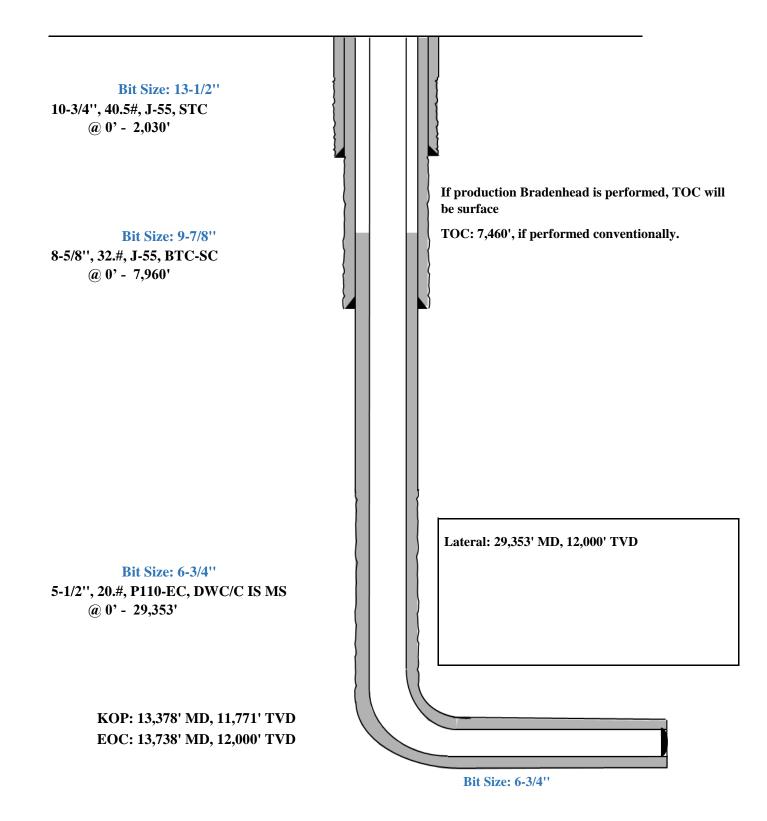
- The variance is not applicable within the Potash Boundaries or Capitan Reef areas.
- Operator takes responsibility to get casing to set point in the event that the clearance causes stuck pipe issues.

		Wt.	Yld	Shume Description
Depth	No. Sacks	ppg	Ft3/sk	Slurry Description
2,030'	530	13.5	1.73	Lead: Class C + 4.0% Bentonite Gel + 0.5% CaCl2 + 0.25 lb/sk Cello-Flake (TOC @ Surface)
10-3/4''	140	14.8	1.34	Tail: Class C + 0.6% FL-62 + 0.25 lb/sk Cello-Flake + 0.2% Sodium Metasilicate (TOC @ 1830')
8,050' ^{8-5/8''}	470	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	210	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{5-1/2''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	1480	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 @ Top of Brushy)

5. CEMENTING PROGRAM:

Shallow Casing Design B

Proposed Wellbore KB: 3558'



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- 8 :

F B B C S B B B C S ▼ ← → 85/8" Intermediate Casing ▼ Burst Design 💌 🖳 🗮 🖳 Pressure Test

D) 0 100 100 1700 1700 1850 1850 1950	Apparent (w/Bending) 200426 196229 187111 256401 235940 252413 239292	Actual (w/o Bending) 183224 179028 179027 111891 111891 105788	Equivalent Axial Load (lbf) 200546 196812 187686 264835 244247 261533	Bending Stress at OD (psi) 1880.2 1880.2 883.7 15795.8 13559.4	Triaxial 1.68 1.69 1.70 1.56	Burst 1.57 1.57 1.57	Collapse (V) N/A N/A	Axial 2.89 F 2.95 F	Temperature (°F) 70.00	Internal 2500.00	External	Addt'l Pickup To Prevent Buck. (lbf)	Buckled Length (usf N/A
100 100 1700 1700 1850 1850	196229 187111 256401 235940 252413	179028 179027 111891 111891 105788	196812 187686 264835 244247	1880.2 883.7 15795.8	1.69 1.70	1.57	N/A			2500.00	0.00	NI/A	N/A
100 1700 1700 1850 1850	187111 256401 235940 252413	179027 111891 111891 105788	187686 264835 244247	883.7 15795.8	1.70			2 95 F				19/75	
1700 1700 1850 1850	256401 235940 252413	111891 111891 105788	264835 244247	15795.8		1.57		2.001	71.10	2543.63	43.63		
1700 1850 1850	235940 252413	111891 105788	244247		1.56		N/A	3.10 F	71.10	2543.64	43.64		
1850 1850	252413	105788		13559 4		1.56	N/A	2.26 F	88.70	3241.64	741.64		
1850			061522	10000.4	1.60	1.56	N/A	2.45 F	88.70	3241.65	741.65		
	239292			16027.0	1.54	1.56	N/A	2.29 F	90.29	3305.05	805.05		
1950		105787	248323	14592.9	1.56	1.56	N/A	2.42 F	90.29	3305.06	805.06		
	240267	101966	249748	15117.2	1.54	1.56	N/A	2.41 F	91.30	3344.87	844.87		
1950	234781	101965	244223	14517.5	1.56	1.56	N/A	2.47 F	91.30	3344.87	844.87		
2050	230871	98395	240694	14480.4	1.55	1.56	N/A	2.51 F	92.23	3381.89	881.89		
							N/A						
5650	-30585	-18235	-10742	1350.0	1.58	1.61	N/A	(16.18)	122.66	4588.87	2188.34		
(V) ⊨ \	vector Collapse Safety	Factor											
	2050 2300 2370 2370 2770 2700 3100 3700 3700 3700 3700 4000 4650 4900 5039 5039 56500 56500 5650	2050 227794 2300 117966 2300 104686 2370 102469 2370 100817 2700 83660 2700 88072 3100 86049 3100 76477 3700 48311 4000 41458 4650 26293 4900 21439 5039 15822 5039 15822 5039 15822 5060 -33912 5650 -30585 F Conn Fracture () Compression	2050 227794 98394 2300 117966 90294 2300 104686 90293 2370 102469 88077 2370 100817 86424 2700 83660 75583 2700 86049 62442 3100 76477 62441 3700 48311 42882 3700 48311 42881 4000 41458 33043 4650 26293 11655 4900 21439 4156 5039 15822 26 5039 15822 26 5040 -33912 -16743 5650 -30585 -18235 F Conn Fracture	2050 227794 98394 237594 2300 117966 90294 127818 2300 104686 90293 114432 2370 102469 88077 112431 2370 100817 86424 111200 2700 83660 75583 95042 3100 86049 62442 98863 3100 76477 62441 81955 3700 48311 42881 62778 4000 41458 33043 56865 4650 26293 11655 43706 4500 21439 4155 39625 5039 15822 26 34388 5039 15822 26 34388 5050 -30585 -18235 -10742 F Conn Fracture	2050 227794 98394 237594 14144.2 2300 117966 90294 127818 3024.7 2300 104686 90293 114432 1573.2 2370 102469 88077 112431 1573.2 2370 100817 86424 111200 1573.2 2370 83660 75583 95052 882.8 2700 83660 75583 99504 1365.1 3100 86049 62442 98663 2580.4 3100 76477 62441 89195 1534.2 3700 55953 42882 70509 1428.8 3700 43311 42881 62778 593.5 4000 41458 33043 56865 919.9 4650 26293 11655 43706 1600.1 4900 32619 4155 39625 1889.2 5039 15822 26 34388 1726.6 5039	2050 227794 98394 237594 14144.2 1.55 2300 117966 90294 127818 3024.7 1.70 2300 104686 90293 114432 1573.2 1.71 2370 102469 88077 112431 1573.2 1.71 2370 100817 86424 111200 1573.2 1.75 2700 83660 75583 95052 882.8 1.74 2700 83660 75583 9504 1365.1 1.74 3100 86049 62442 98863 2580.4 1.71 3100 76477 62441 89195 1534.2 1.72 3700 55953 42882 70509 1428.8 1.69 3700 43311 42881 62778 633.5 1.71 4000 41458 33043 56865 919.9 1.69 4650 26293 11655 43706 1600.1 1.63	2050 227794 98394 237594 14144.2 1.55 1.56 2300 117966 90294 127818 3024.7 1.70 1.56 2300 104686 90293 114432 1573.2 1.71 1.56 2370 102469 88077 112431 1573.2 1.75 1.59 2370 100817 86424 111200 1573.2 1.74 1.59 2700 83660 75583 99604 3365.1 1.74 1.59 2700 86049 62442 98683 2580.4 1.71 1.59 3100 76477 62441 89195 1534.2 1.72 1.59 3700 55953 42882 70509 1428.8 1.69 1.60 4650 26293 11655 43706 1600.1 1.63 1.60 4650 26293 11655 39625 1889.2 1.61 1.60 5039 15822 2.6	2050 227794 98394 237594 14144.2 1.55 1.56 N/A 2300 117966 90294 127818 3024.7 1.70 1.56 N/A 2300 104686 90293 114432 1573.2 1.71 1.56 N/A 2370 102469 88077 112431 1573.2 1.71 1.56 N/A 2370 100817 86424 111200 1673.2 1.75 1.59 N/A 2700 83660 75583 99504 1365.1 1.74 1.59 N/A 2700 86049 62442 98683 2580.4 1.71 1.59 N/A 3100 76477 62441 89195 1634.2 1.72 1.59 N/A 3700 48311 42881 62778 593.5 1.71 1.60 N/A 4000 41458 33043 65665 919.9 1.69 1.60 N/A 4000 21	2050 227794 98394 237594 14144.2 1.55 1.56 N/A 2.54 F 2300 117966 90294 127818 3024.7 1.70 1.56 N/A 4.91 F 2300 104686 90293 114432 1573.2 1.71 1.56 N/A 5.53 F 2370 102469 88077 112431 1573.2 1.71 1.56 N/A 5.65 F 2370 100817 86424 111200 1573.2 1.75 1.59 N/A 6.52 F 2700 83660 75583 95052 882.8 1.74 1.59 N/A 6.53 F 2700 86049 62442 98663 2580.4 1.71 1.59 N/A 6.75 F 3100 76477 62441 89195 153.4 1.71 1.59 N/A 7.57 F 3700 453953 42882 70509 1428.8 1.69 1.60 N/A 1.93 F 4000 </td <td>2050 227794 98394 237594 14144.2 1.55 1.56 N/A 2.54 F 92.23 2300 117966 90294 127818 3024.7 1.70 1.56 N/A 4.91 F 94.35 2300 104666 90293 114432 1573.2 1.71 1.56 N/A 5.53 F 94.35 2370 100467 86077 112431 1573.2 1.71 1.56 N/A 5.55 F 94.94 2370 100817 86424 111200 1573.2 1.75 1.59 N/A 6.92 F 97.73 2700 83660 75583 99504 1365.1 1.74 1.59 N/A 6.92 F 97.73 3100 86049 62442 98663 2580.4 1.71 1.59 N/A 6.73 F 101.11 3100 76477 62441 89195 1534.2 1.72 1.59 N/A 10.35 F 106.15 3700 43311</td> <td>2050 227794 98394 237594 14144.2 1.55 1.56 N/A 2.54 F 92.23 3381.89 2300 117966 90294 127818 30247 1.70 1.56 N/A 4.91 F 94.35 3466.13 2300 104666 90293 114132 1573.2 1.71 1.56 N/A 5.53 F 94.35 3466.13 2370 102469 88077 112431 1573.2 1.71 1.56 N/A 5.65 F 94.94 3489.28 2370 100817 86424 111200 1573.2 1.75 1.59 N/A 6.92 F 97.73 3599.92 2700 38607 75583 99504 1365.1 1.74 1.59 N/A 6.58 F 97.73 3599.97 3100 86049 62442 9863 2580.4 1.71 1.59 N/A 6.73 F 101.11 3734.23 3700 55953 42882 70509 1428.8 1</td> <td>2050 227794 98394 237594 141442 1.55 1.56 N/A 2.64 F 92.23 3381.89 881.89 2300 117966 90294 12718 3042.7 1.70 1.56 N/A 4.91 F 94.35 3466.13 996.13 2300 104666 90293 114432 1573.2 1.71 1.56 N/A 5.55 F 94.94 3489.28 989.28 2370 102469 88077 112431 1573.2 1.75 1.59 N/A 5.65 F 94.94 3489.28 989.28 2370 0.0817 86424 111200 1573.2 1.75 1.59 N/A 6.56 F 94.94 3489.29 1056.40 2700 88072 75583 99504 1365.1 1.74 1.59 N/A 6.58 F 97.73 3599.97 1152.35 3100 76477 62441 98163 2580.4 1.71 1.59 N/A 6.73 F 101.11 3734.23</td> <td>205 22794 98394 22754 14144 2 1.55 1.56 NA 2.54 9.223 3331.89 881.89 2300 11796 90294 127818 3024.7 1.70 1.56 NA 4.91 F 94.35 3466.13 966.13 2300 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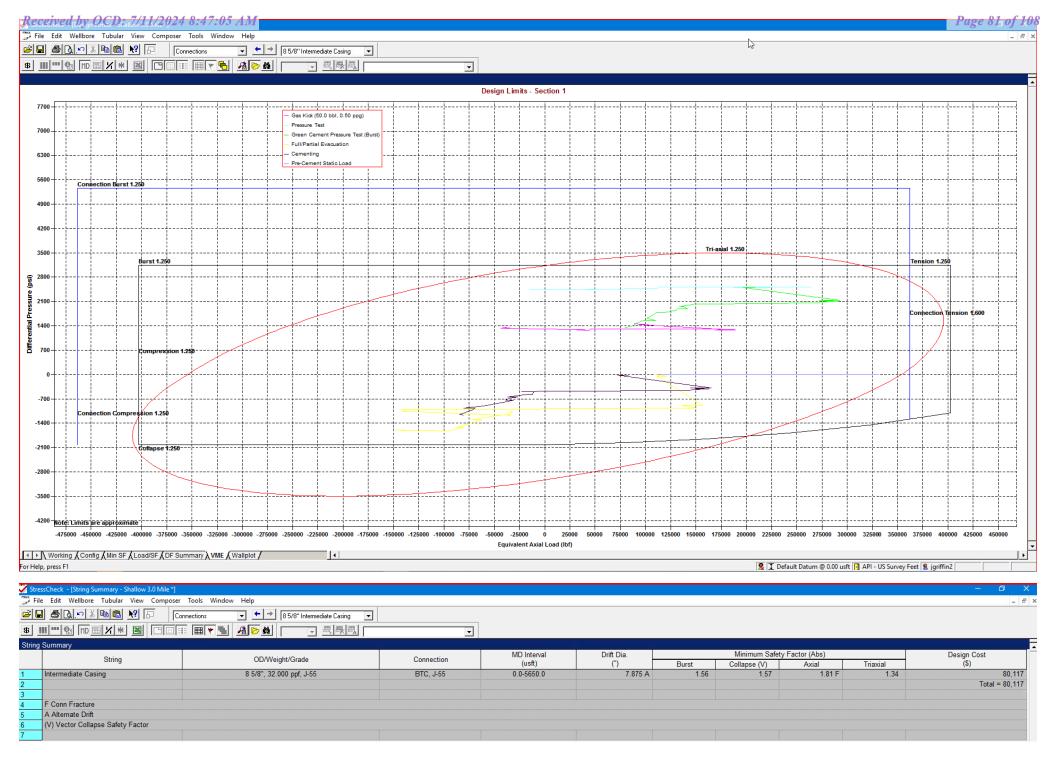
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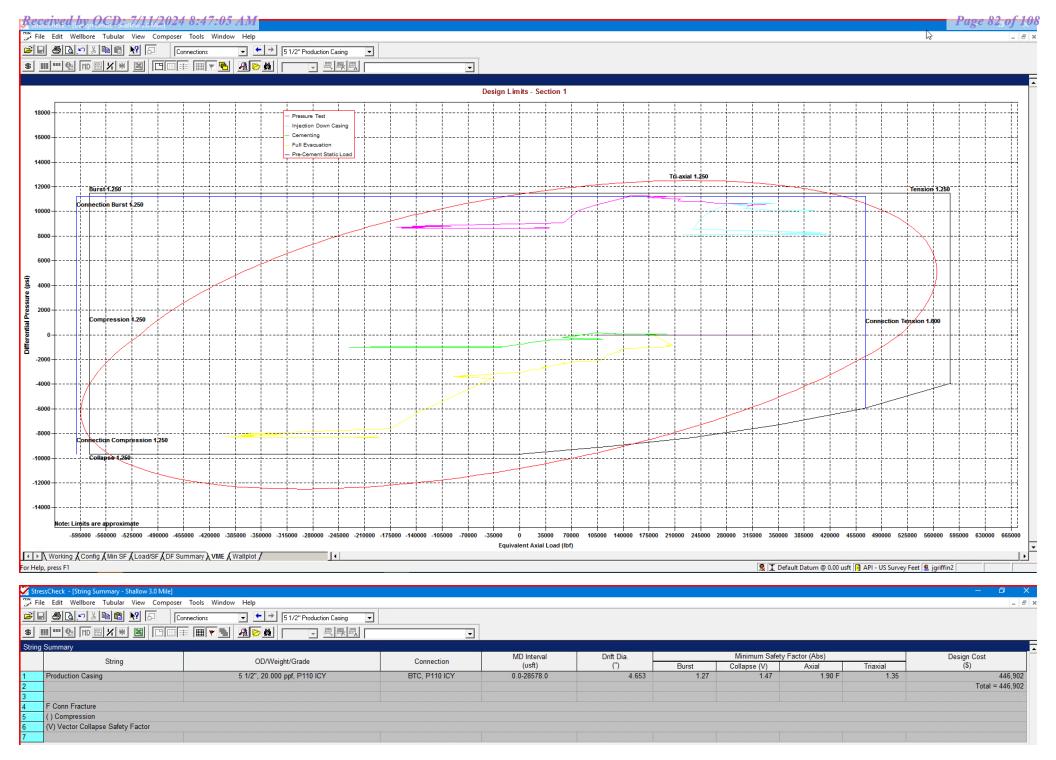
8-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 8-5/8" 32# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

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Shallow Design C

		noonn						
Hole	Interv	al MD	Interva	al TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC
7-7/8"	0	29,353	0	12,000	6"	24.5#	P110-EC	VAM Sprint-SF

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 6" casing in the 7-7/8" hole size. An expansion additive will be utilized, in the cement slurry, for the entire length of the 7-7/8" 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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{6''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	2500	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 @ Top of Brushy)

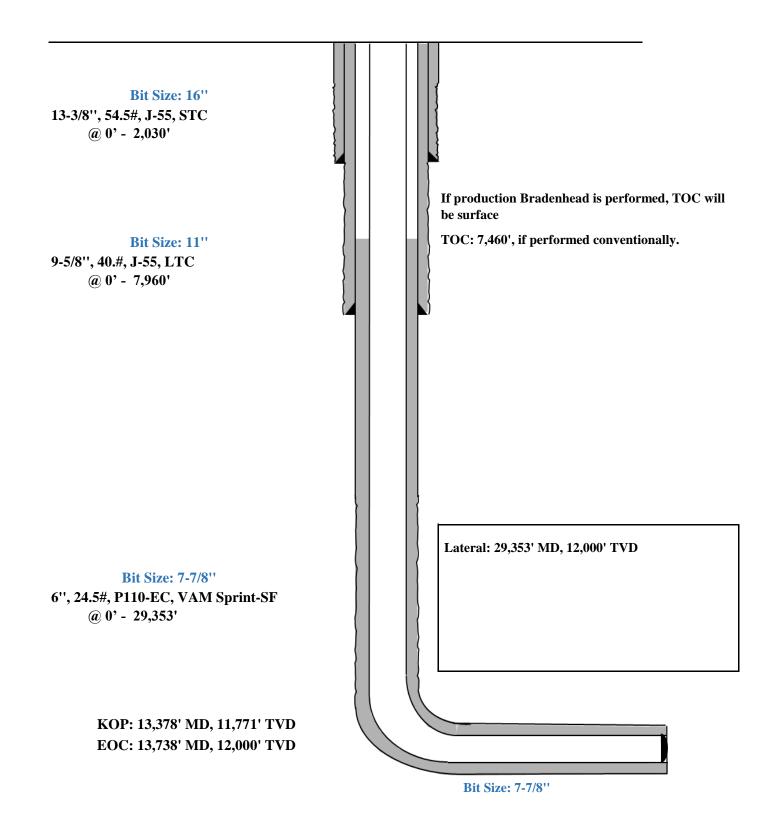
5. CEMENTING PROGRAM:

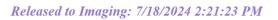
Seog resources

Shallow Design C

Proposed Wellbore

KB: 3558' GL: 3533'





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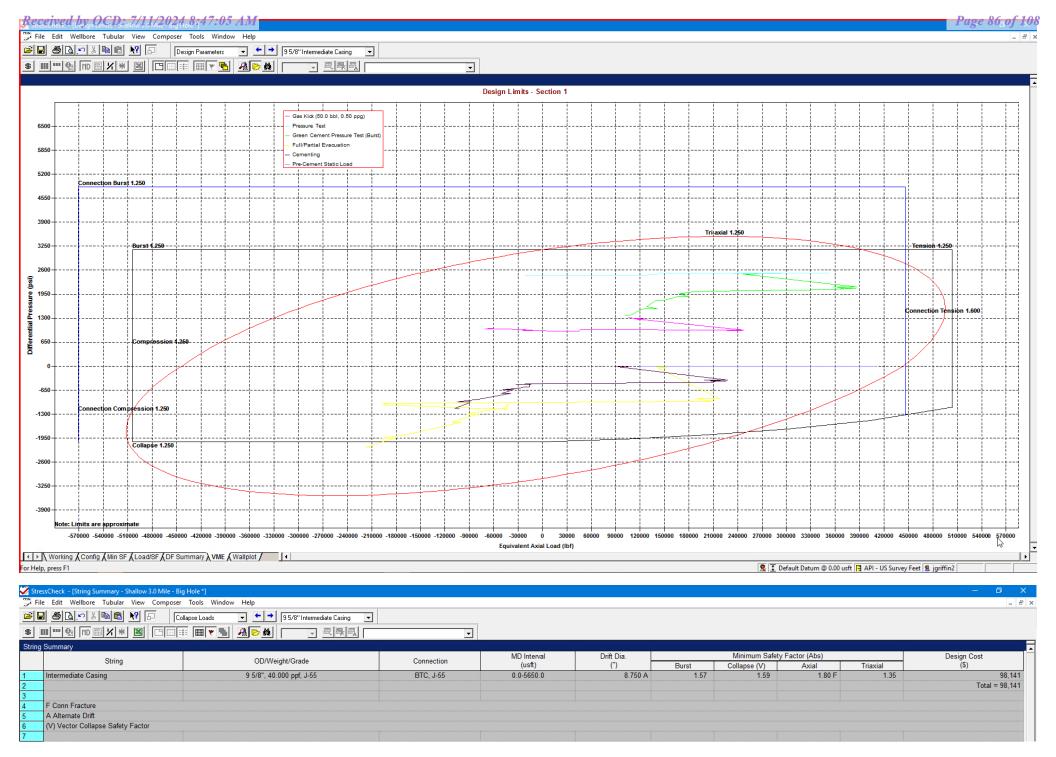
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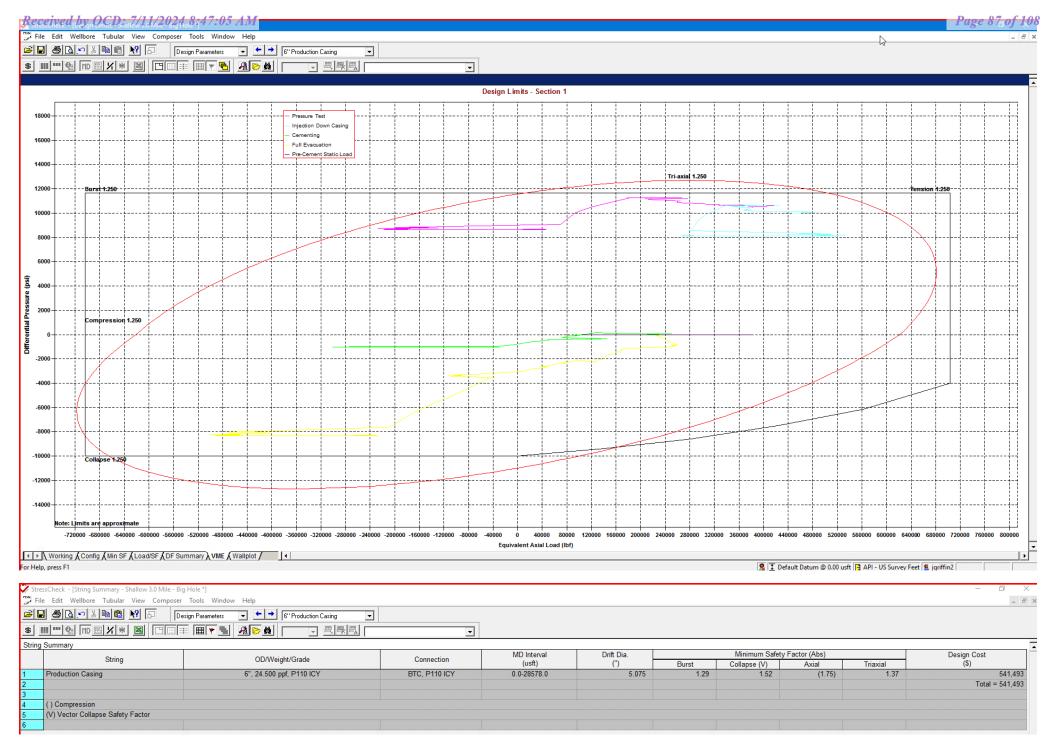
9-5/8" Intermediate Casing Pressure Test:

Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi



*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

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*Modelling done with 6" Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

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Shallow Design D

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Hole	Interv	al MD	Interva	l TVD	Csg			
Size	From (ft)	To (ft)	From (ft)	To (ft)	OD	Weight	Grade	Conn
16"	0	2,161	0	2,030	13-3/8"	54.5#	J-55	STC
11"	0	7,951	0	5,650	9-5/8"	40#	J-55	LTC
7-7/8"	0	13,278	0	11,671	6"	22.3#	P110-EC	DWC/C IS
6-3/4"	13,278	29,353	11,671	12,000	5-1/2"	20#	P110-EC	DWC/C IS MS

4. CASING PROGRAM

Hole will be full during casing run for well control and tensile SF factor. Casing will be kept at least half full during run for this design to meet BLM collapse SF requirement. External pressure will be reviewed prior to conducting casing pressure tests to ensure that 70% of the yield is not exceeded.

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 6" and 5-1/2" casings in the 7-7/8" and 6-3/4" hole sizes. An expansion additive will be utilized in the cement slurry for the entire length of the 7-7/8" and 6-3/4" hole intervals 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 Title 43 CFR Part 3170 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.

		Wt.	Yld	Slurry Description
Depth	No. Sacks	ppg	Ft3/sk	Sidiny Description
2,030' 13-3/8''	570	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 @ 1830')
8,050' 9-5/8''	760	12.7	2.22	Lead: Class C + 10% NaCl + 6% Bentonite Gel + 3% MagOx (TOC @ Surface)
	250	14.8	1.32	Tail: Class C + 10% NaCL + 3% MagOx (TOC @ 6360')
29,353' _{6''}	1000	14.8	1.32	Bradenhead squeeze: Class C + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (TOC @ surface)
	2500	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 @ Top of Brushy)

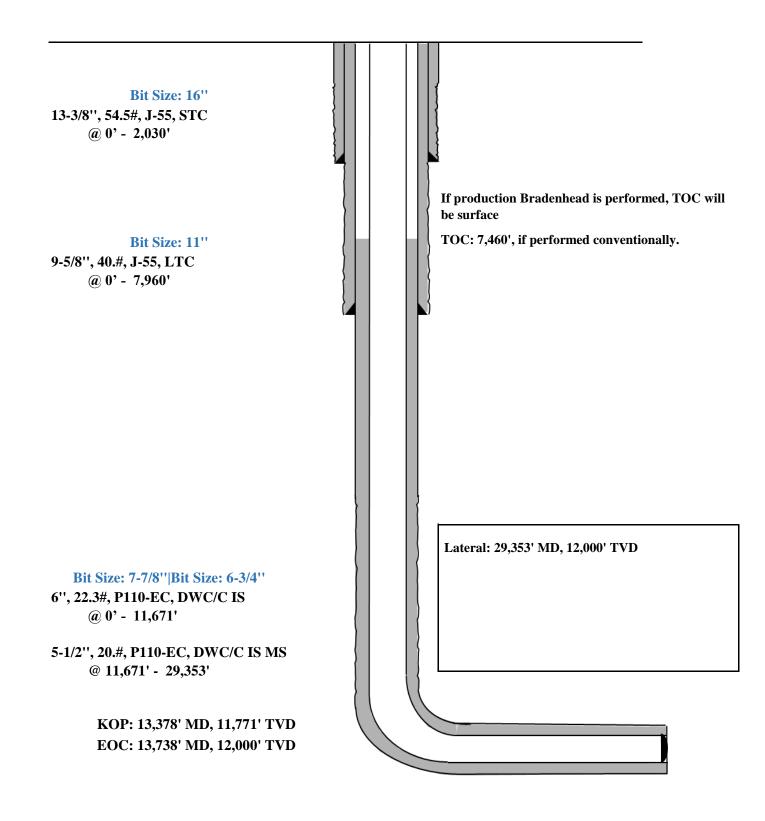
5. CEMENTING PROGRAM:

Seog resources

Shallow Design D

Proposed Wellbore

KB: 3558' GL: 3533'



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▼ ← → 95/8" Intermediate Casing ▼

252987 247735 234996 341565 312979 336681 318549 320468 312802 307858 303560 151294 132741 122741 122769 127909 105515	Actual (w/o Bending) 228954 223702 223701 139667 139667 132027 132027 132027 132027 132027 127243 122773 122773 122773 122773 122773 122773 122773 122773 122773 122773	Equivalent Axial Load (lbf) 248466 235716 352253 323488 332475 324756 324756 320295 315965 163658 144956 142456	Bending Stress at OD (psi) 2098.2 2098.2 986.2 17627.2 15131.5 17885.2 16284.8 16669.9 16200.7 16159.3 15784.1 3375.4 1755.6	Triaxial 1.69 1.69 1.71 1.53 1.58 1.51 1.54 1.52 1.53 1.52 1.53 1.52 1.53 1.52 1.53 1.52 1.53 1.71	Burst 1.58 1.59 1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57	Collapse (V) N/A N/A N/A N/A N/A N/A N/A N/A N/A	Axial 2.82 F 2.88 F 2.09 F 2.28 F 2.12 F 2.24 F 2.23 F 2.28 F 2.22 F	Temperature (°F) 70.00 71.10 88.70 88.70 90.29 90.29 91.30 91.30 91.30	Internal 2500.00 2543.63 22543.64 3241.64 3241.65 3305.05 3305.05 3305.06 3344.87 3344.87 3381.89	External 0.00 43.63 43.64 741.64 741.65 805.05 805.06 844.87 844.87	Addt! Pickup To Prevent Buck. (lbf) N/A	Buckler Length (u: N/A
247735 234996 341565 312979 336681 318549 320468 312802 307858 303560 151294 132741 122966 127909 105515	223702 223701 139667 139666 132027 132027 127243 127743 122773 122773 122772 112633 112633 112633	248466 235716 352253 323488 348440 329984 3324756 324756 320295 315965 163658 163658 144956	2098.2 986.2 17627.2 15131.5 17885.2 16284.8 16869.9 16200.7 16159.3 15784.1 3375.4	1.69 1.71 1.53 1.58 1.51 1.54 1.52 1.53 1.52 1.53	1.58 1.58 1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57	N/A N/A N/A N/A N/A N/A N/A N/A	2.88 F 3.04 F 2.09 F 2.28 F 2.12 F 2.24 F 2.23 F 2.28 F	71.10 71.10 88.70 90.29 90.29 91.30 91.30	2543.63 2543.64 3241.64 3241.65 3305.05 3305.06 3304.87 3344.87	43.63 43.64 741.64 741.65 805.05 805.06 844.87 844.87	N/A	N/A
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312979 336681 318549 320468 312802 307858 303560 151294 132741 132741 132741 129966 127909 105515	139666 132027 132027 127243 127743 122773 122773 122772 112633 112633 112633	323488 348440 329984 3324756 320295 315965 163658 144956	15131.5 17885.2 16284.8 16869.9 16200.7 16159.3 15784.1 3375.4	1.58 1.51 1.54 1.52 1.53 1.52 1.53	1.57 1.57 1.57 1.57 1.57 1.57 1.57	N/A N/A N/A N/A N/A	2.28 F 2.12 F 2.24 F 2.23 F 2.28 F	88.70 90.29 90.29 91.30 91.30	3241.65 3305.05 3305.06 3344.87 3344.87	741.65 805.05 805.06 844.87 844.87		
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127909 105515				1.72	1.57	N/A	5.38 F	94.35	3466.14	966.14		
105515	107800		1755.6	1.72	1.57	N/A	5.49 F	94.94	3489.28	989.28		
		140922	1755.6	1.75	1.60	N/A	5.58 F	94.94	3489.29	1036.40		
	94232	119785	985.1	1.75	1.60	N/A	6.77 F	97.73	3599.97	1152.35		
111680	94231	126006	1523.4	1.75	1.60	N/A	6.39 F	97.73	3599.97	1152.35		
110766	77783	126839	2879.6	1.71	1.60	N/A	6.44 F	101.11	3734.23	1293.00		
97392	77783	113331	1712.1	1.73	1.60	N/A	7.33 F	101.11	3734.23	1293.01		
-40465	-23210	-15657	1506.5	1.58	1.62	N/A	(15.31)	122.66	4588.87	2188.34		
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or Collapse Safety Fac	ator											
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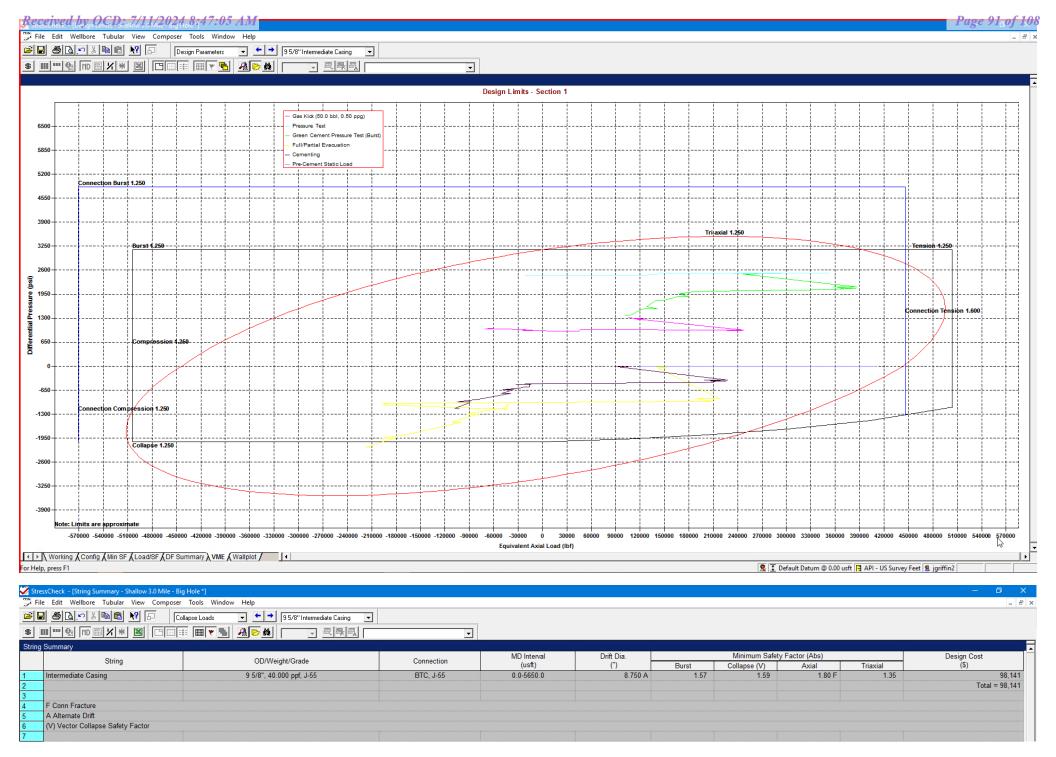
For Help, press F1

🙎 👤 Default Datum @ 0.00 usft 📑 API - US Survey Feet 🙎 jgriffin2

9-5/8" Intermediate Casing Pressure Test:

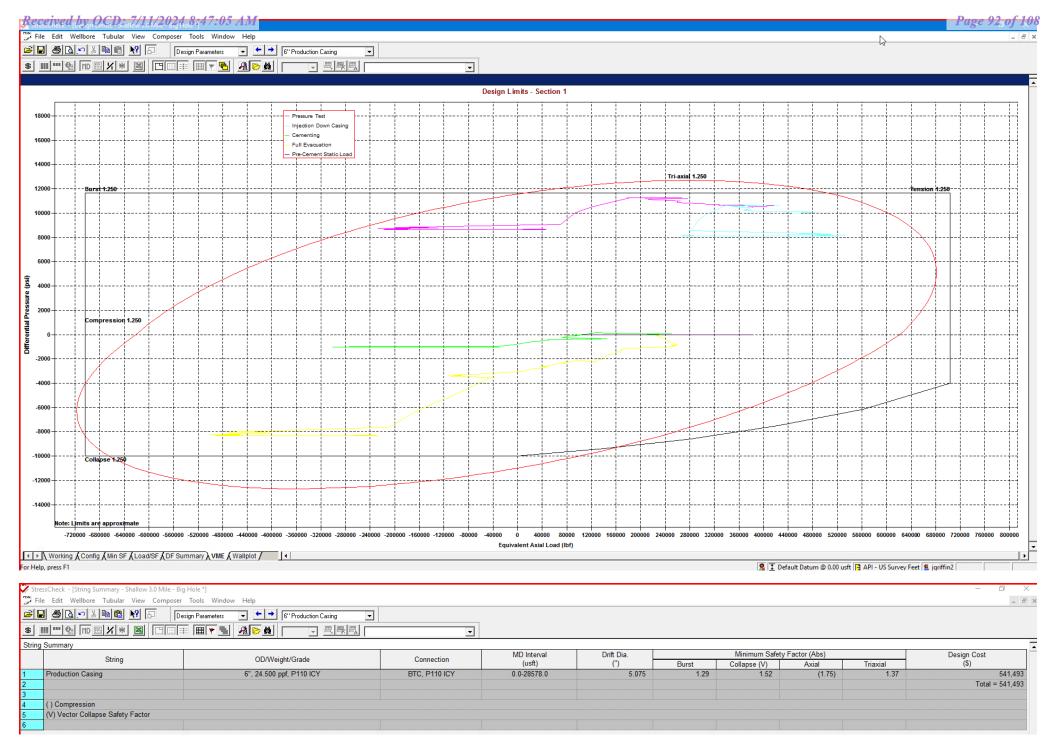
Internal Profile based off Surface Pressure + Hydrostatic: 4589 psi External Profile based off Pore Pressure: 2188 psi

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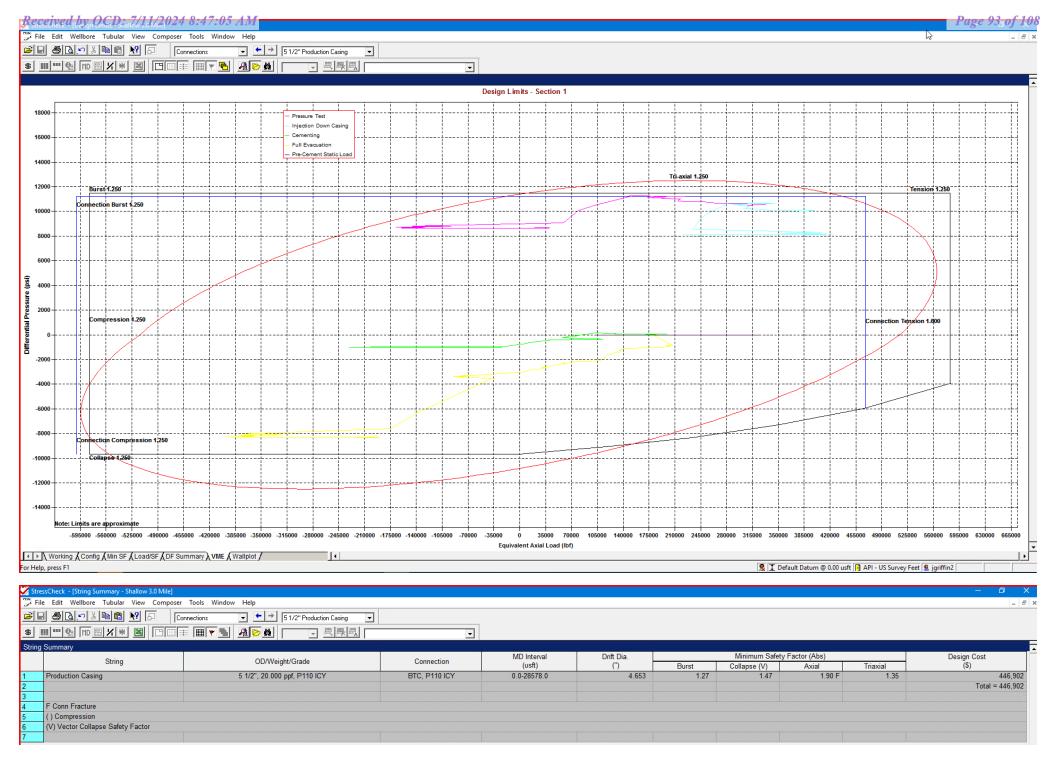
*Modelling done with 9-5/8" 40# Intermediate Casing. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM



*Modelling done with 6" Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM



*Modelling done with 5-1/2" 20# Production Casing with a 125ksi Control Yield. Passes all Burst, Collapse and Tensile design criteria.

Released to Imaging: 7/18/2024 2:21:23 PM

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Shallow Casing Design 501H

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

Cement integrity tests will be performed immediately following plug bump.

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.

EOG requests variance from minimum standards to pump a two stage cement job on the production casing string with the first stage being pumped conventionally with the calculated top of cement at the top of the Brushy Canyon and the second stage performed as a 1000 sack bradenhead squeeze with planned cement from the Brushy Canyon to surface. If necessary, a top out consisting of 400 sacks of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (1.32 yld, 14.8 ppg) will be executed as a contingency. Top will be verified by Echo-meter.

Bradenhead will be the primary option for production cementing. EOG also requests to have the conventional option in place to accommodate for logistical or wellbore conditions. The tie back requirements will be met if the cement is pumped conventionally, and cement volumes will be adjusted accordingly. TOC will be verified by CBL.



MUD PROGRAM:

During this procedure we plan to use a Closed-Loop System and haul contents to the required disposal. The applicable depths and properties of the drilling fluid systems are as follows:

Measured Depth	Туре	Weight (ppg)	Viscosity	Water Loss
0 – 2,030'	Fresh - Gel	8.6-8.8	28-34	N/c
2,030' – 7,793'	Brine	9-10.5	28-34	N/c
5,450' – 28,578' Lateral	Oil Base	8.8-9.5	58-68	N/c - 6

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

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



Appendix A - Spec Sheets

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Pipe Body and API Connections Performance Data Received by OCD: 7/11/2024 8:47:05 AM 13.375 54.50/0.380 J55

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USC O Metric

6/8/2015 10:04:37 AM		2		2	
Mechanical Properties	Ptpe	BTC	LTC	STC	
Minimum Yield Strength	55,000				psi
Maximum Yield Strength	80,000	₩.		-	psi
Minimum Tensile Strength	75,000				psi
Dimensions	Pipe	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	ft-lbs
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	-	6,430	ft-lbs

Pipe Body and API Connections Performance Data Received by OCD: 7/11/2024 8:47:05 AM 9.625 40.00/0.395 J55

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New Search »

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USC O Metric

6/8/2015 10:23:27 AM					
Mechanical Properties	Pipe	втс	LTC	STC	
Minimum Yield Strength	55,000	-		-	psi
Maximum Yield Strength	80,000	-	-	-	psi
Minimum Tensile Strength	75,000			-	psi
Dimensions	Pipe	втс	LTC	STC	
Outside Diameter	9.625	10.625	10.625	10.625	in.
Wall Thickness	0.395	-	57.)		in.
Inside Diameter	8.835	8.835	8.835	8.835	in.
Standard Drift	8.679	8.679	8.679	8.679	in.
Alternate Drift	8.750	8.750	8.750	8.750	in.
Nominal Linear Weight, T&C	40.00	-	-		lbs/ft
Plain End Weight	38.97	-		-	lbs/ft
Performance	Pipe	втс	LTC	STC	
Minimum Collapse Pressure	2,570	2,570	2,570	2,570	psi
Minimum Internal Yield Pressure	3,950	3,950	3,950	3,950	psi
Minimum Pipe Body Yield Strength	630.00			-	1000 lbs
Joint Strength		714	520	452	1000 lbs
Reference Length		11,898	8,665	7,529	ft
Make-Up Data	Pipe	втс	LTC	STC	
Make-Up Loss		4.81	4.75	3.38	in.
Minimum Make-Up Torque	12	-	3,900	3,390	ft-lbs
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	6,500	5,650	ft-lbs

USA	17	LL	IG//C-/S	ILME]
			Connectio	on Data S	hee
OD (in.) WEIGHT (lbs./ft.) WALL (in.) 5.500 Nominal: 20.00 0.361 Plain End: 19.83		GRADE	API DRIFT (in.) RBW% 4.653 87.5	CONNECTIO DWC/C-IS M	
PIPE PROPERTIES			CONNECTION PROF	PERTIES	
Outside Diameter	5.500	in.	Connection Type	Semi-Pren	nium T
Inside Diameter	4.778	in.	Connection O.D. (nom)	6.115	
Nominal Area	5.828	sq.in.	Connection I.D. (nom)	4.778	
Grade Type	API 5CT		Make-Up Loss	4.125	
Min. Yield Strength	125	ksi	Coupling Length	9.250	
Max. Yield Strength	140	ksi	Critical Cross Section	5.828	so
Min. Tensile Strength	135	ksi	Tension Efficiency	100.0%	of p
Yield Strength	729	klb	Compression Efficiency	100.0%	of p
Ultimate Strength	787	klb	Internal Pressure Efficiency	100.0%	of p
Min. Internal Yield	14,360	psi	External Pressure Efficiency	100.0%	of p
Collapse	12,090	psi			
CONNECTION PERFORMA	NCES		FIELD END TORQUE	VALUES	
Yield Strength	729	klb	Min. Make-up torque	16,100	1
Parting Load	787	klb	Opti. Make-up torque	17,350	
Compression Rating	729	klb	Max. Make-up torque	18,600	1
Min. Internal Yield	14,360	psi	Min. Shoulder Torque	1,610	1
External Pressure	12,090	psi	Max. Shoulder Torque	12,880	1
Maximum Uniaxial Bend Rating	104.2	°/100 ft	Min. Delta Turn	-	Tu
Reference String Length w 1.4 Design Factor	26,040	ft	Max. Delta Turn	0.200	Tu
			Maximum Operational Torque	21,100	f

Need Help? Contact: <u>tech.support@vam-usa.com</u> Reference Drawing: 8136PP Rev.01 & 8136BP Rev.01 Date: 12/03/2019 Time: 06:19:27 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).

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

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DWC Connection Data Sheet Notes:

1. DWC connections are available with a seal ring (SR) option.

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Connection performance properties are based on nominal pipe body and connection dimensions.
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 DWC joint strength is the minimum pipe body yield strength multiplied by the connection critical area.

6. API joint strength is for reference only. It is calculated from formulas 42 and 43 in the API Bulletin 5C3.

7. Bending efficiency is equal to the compression efficiency.

8. The torque values listed are recommended. The actual torque required may be affected by field conditions such as temperature, thread compound, speed of make-up, weather conditions, etc.

9. Connection yield torque is not to be exceeded.

10. Reference string length is calculated by dividing the joint strength by both the nominal weight in air and a design factor (DF) of 1.4. These values are offered for reference only and do not include load factors such as bending, buoyancy, temperature, load dynamics, etc.

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Pipe Body and API Connections Performance Data

10.750 40.50/0.350 J55

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USC 🔵 Metric

6/8/2015 10:14:05 AM					
Mechanical Properties	Ptpe	BTC	LTC	STC	
Minimum Yield Strength	55,000	-	-		psi
Maximum Yield Strength	80,000	-	-		psi
Minimum Tensile Strength	75,000	-	-		psi
Dimensions	Ptpe	BTC	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	Pipe	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	BTC	LTC	STC	
Make-Up Loss	-	4.81	-	3.50	in.
Minimum Make-Up Torque	-	-	-	3,150	ft-Ibs
Released to Imaging: 7/18/2024 2:21:23 PM Maximum Make-Up Torque	-	-	-	5,250	ft-lbs

Б

MADE IN USA FT

S S2L2 DA 7.875 W/O# SLN # PO#

VALLOUREC STAR 8.625 32# J55



API 5CT, 10th Ed. Connection Data Sheet

O.D. (in)	WEIGHT (,	WALL	(in)	GR	ADE	*API DR	IFT (in)	RBV	₩%
8.625	Nominal: Plain End:	32.00 31.13	0.352	2	J	55	7.79	96	87	<i>.</i> 5
Material Properties (PE)						F	Pipe Bod	y Data (PE)	
	Pipe						Geo	metry		
Minimum `	Yield Strength:	55	ksi		Nomir	nal ID:			7.92	inch
Maximum	Yield Strength:	80	ksi		Nomir	nal Area	:		9.149	in ²
Minimum ⁻	Tensile Strength:	75	ksi		*Spec	ial/Alt. [Drift:		7.875	inch
	Coupling	3					Perfo	rmance		
Minimum `	Yield Strength:	55	ksi		Pipe E	Body Yie	eld Streng	gth:	503	kips
Maximum	Yield Strength:	80	ksi		Collap	se Res	istance:		2,530	psi
					Internal	I Yield Pre	essure:		0 000	
Minimum ⁻	Tensile Strength:	75	ksi			istorical)			3,930	psi
Minimum ⁻	API Connectio	n Data	ksi			,	PI Conne	ction To		psi
Minimum ⁻		n Data 9.625"	ksi			AF			orque	psi
	API Connectio	n Data 9.625"				AF	PI Conne		orque	psi 4,68
STC Interr	API Connectio Coupling OD: S STC Perform	n Data 9.625" ance	psi		(API Hi	AF	PI Conne STC Tore	que (ft-ll	orque os)	
STC Interr	API Connection Coupling OD: 9 STC Perform nal Pressure:	n Data 9.625" ance 3,930 372	psi		(API Hi	AF 2,793	PI Conne STC Tore	que (ft-II 3,724	orque os) Max:	
STC Interr STC Joint	API Connectio Coupling OD: S STC Perform nal Pressure: Strength:	n Data 9.625" ance 3,930 372	psi kips		(API Hi	AF 2,793	PI Conne STC Tore Opti:	que (ft-II 3,724	orque os) Max:	
STC Interr STC Joint	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure:	n Data 0.625" ance 3,930 372 ance 3,930	psi kips		(API Hi	AF 2,793	PI Conne STC Tore Opti: LTC Tore	que (ft-II 3,724 que (ft-II	orque os) Max: os)	4,6
STC Interr STC Joint LTC Interr LTC Joint	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure:	n Data 0.625" ance 3,930 372 ance 3,930 417	psi kips psi kips		(API Hi	AF 2,793 3,130	PI Conne STC Tore Opti: LTC Tore Opti:	que (ft-ll 3,724 que (ft-ll 4,174	orque os) Max: os) Max:	4,65
STC Interr STC Joint LTC Interr LTC Joint SC-BTC F	API Connection Coupling OD: 9 STC Perform nal Pressure: Strength: LTC Perform nal Pressure: Strength:	n Data 0.625" ance 3,930 372 ance 3,930 417	psi kips psi kips 9.125"		(API Hi	AF 2,793 3,130	PI Conne STC Tore Opti: LTC Tore	que (ft-II 3,724 que (ft-II 4,174 que (ft-II	orque DS) Max: DS) Max:	4,65 5,2

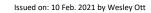
*Alt. Drift will be used unless API Drift is specified on order.

**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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Rev 3, 7/30/2021

10/21/2022 15:24





OD	Weight (lb/ft)	Wall Th.	Grade	API Drift:	Connection
6 in.	Nominal: 24.50 Plain End: 23.95	0.400 in.	P110EC	5.075 in.	VAM [®] SPRINT-SF

PI PE PROPERTI ES		
Nominal OD	6.000	in.
Nominal ID	5.200	in.
Nominal Cross Section Area	7.037	sqin.
Grade Type	Hig	jh Yield
Min. Yield Strength	125	ksi
Max. Yield Strength	140	ksi
Min. Ultimate Tensile Strength	135	ksi

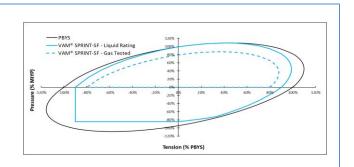
CONNECTION PROPERTIES		
Connection Type	Integral	Semi-Flush
Connection OD (nom):	6.277	in.
Connection ID (nom):	5.146	in.
Make-Up Loss	5.386	in.
Critical Cross Section	6.417	sqin.
Tension Efficiency	91.0	% of pipe
Compression Efficiency	91.0	% of pipe
Internal Pressure Efficiency	100	% of pipe
External Pressure Efficiency	100	% of pipe

CONNECTION PERFORMANCES			
Tensile Yield Strength	801	klb	
Compression Resistance	801	klb	
Internal Yield Pressure	14,580	psi	
Collapse Resistance	12,500	psi	
Max. Structural Bending	83	°/100ft	
Max. Bending with ISO/API Sealability	30	°/100ft	

TORQUE VALUES			
Min. Make-up torque	21,750	ft.lb	
Opt. Make-up torque	24,250	ft.lb	
Max. Make-up torque	26,750	ft.lb	
Max. Torque with Sealability (MTS)	53,000	ft.lb	

* 87.5% RBW

VAM® SPRINT-SF is a semi-flush connection innovatively designed for extreme shale applications. Its high tension rating and ultra high torque capacity make it ideal to run a fill string length as production casing in shale wells with extended horizontal sections and tight clearance requirements.



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

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

china@vamfieldservice.com baku@vamfieldservice.com singapore@vamfieldservice.com australia@vamfieldservice.com

Page 104 of 108

Connection Data Sheet

OD (in.)	WEIGHT (lbs./ft.)	WALL (in.)	GRADE	API DRIFT (in.)	RBW%	CONNECTION
6.000	Nominal: 22.30	0.360	VST P110EC	5.155	92.5	DWC/C-IS
	Plain End: 21 70					•

PIPE PROPERTIES		
Nominal OD	6.000	in.
Nominal ID	5.280	in.
Nominal Area	6.379	sq.in.
Grade Type	API 5CT	
Min. Yield Strength	125	ksi
Max. Yield Strength	140	ksi
Min. Tensile Strength	135	ksi
Yield Strength	797	klb
Ultimate Strength	861	klb
Min. Internal Yield Pressure	13,880	psi
Collapse Pressure	9,800	psi

CONNECTION PERFORMAN	NCES	
Yield Strength	797	klb
Parting Load	861	klb
Compression Rating	797	klb
Min. Internal Yield	13,880	psi
External Pressure	9,800	psi
Maximum Uniaxial Bend Rating	47.7	°/100 ft
Reference String Length w 1.4 Design Factor	25,530	ft.

CONNECTION PRO	PERTIES	
Connection Type	Semi-Prem	nium T&C
Connection OD (nom)	6.650	in.
Connection ID (nom)	5.280	in.
Make-Up Loss	4.313	in.
Coupling Length	9.625	in.
Critical Cross Section	6.379	sq.in.
Tension Efficiency	100.0%	of pipe
Compression Efficiency	100.0%	of pipe
Internal Pressure Efficiency	100.0%	of pipe
External Pressure Efficiency	100.0%	of pipe

FIELD END TORQUE VALUES			
Min. Make-up torque	17,000	ft.lb	
Opti. Make-up torque	18,250	ft.lb	
Max. Make-up torque	19,500	ft.lb	
Min. Shoulder Torque	1,700	ft.lb	
Max. Shoulder Torque	13,600	ft.lb	
Min. Delta Turn	-	Turns	
Max. Delta Turn	0.200	Turns	
Maximum Operational Torque	24,200	ft.lb	
Maximum Torsional Value (MTV)	26,620	ft.lb	

Need Help? Contact: <u>tech.support@vam-usa.com</u> Reference Drawing: 8135PP Rev.02 & 8135BP Rev.02 Date: 07/30/2020

Time: 07:50:47 PM

For detailed information on performance properties, refer to DWC Connection Data Notes on following page(s).

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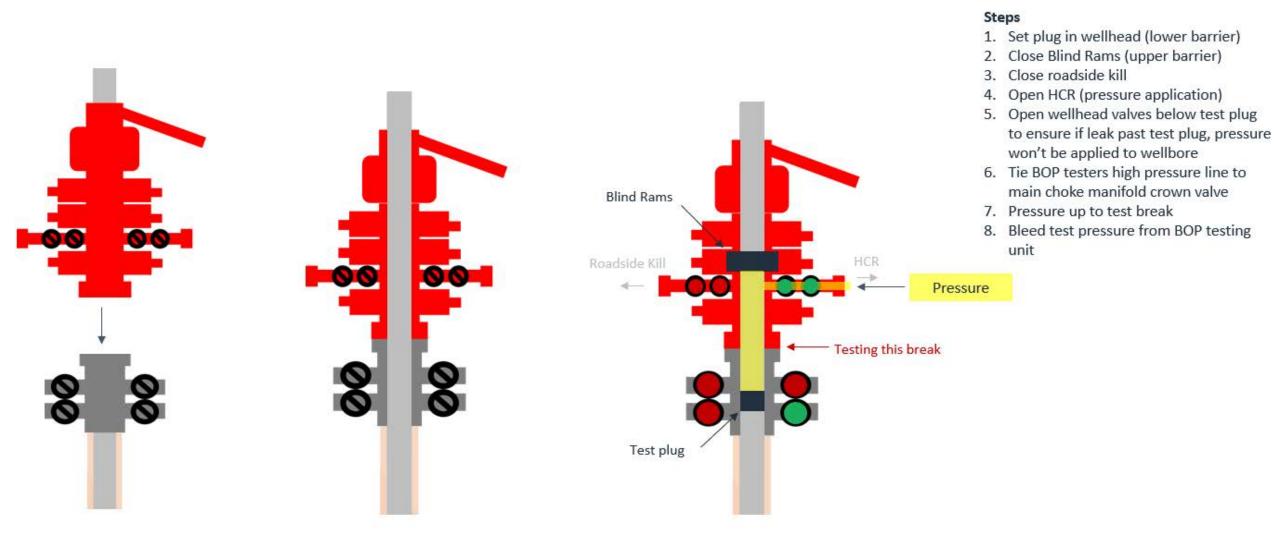


Break-test BOP & Offline Cementing:

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:

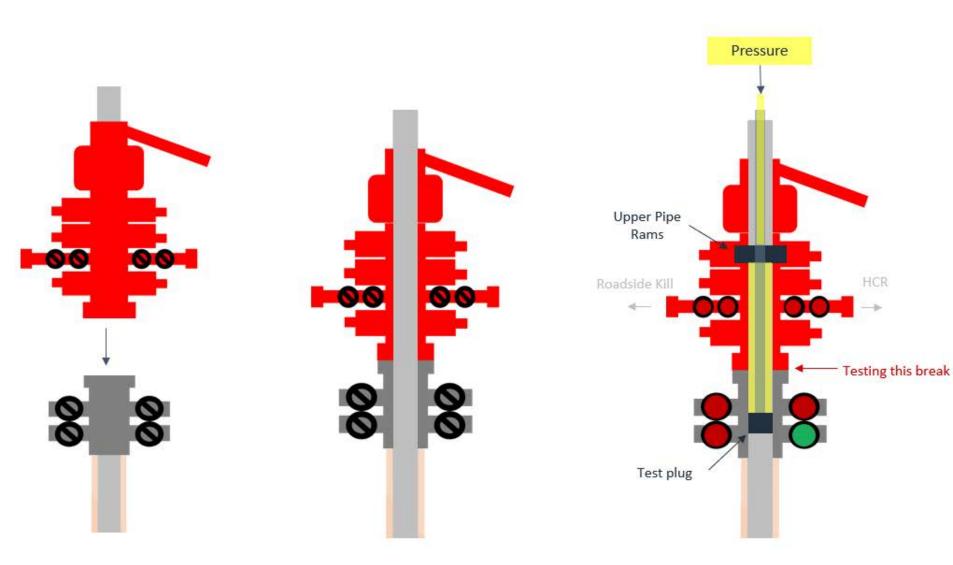
- Full BOPE test at first installation on the pad.
- Full BOPE test every 30 days.
- This test will be conducted for 5M rated hole intervals only.
- Each rig requesting the break-test variance is capable of picking up the BOP without damaging components using winches, following API Standard 53, Well 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.

Break Test Diagram (HCR valve)





Break Test Diagram (Test Joint)



Steps

- 1. Set plug in with test joint wellhead (lower barrier)
- 2. Close Upper Pipe Rams (upper barrier)
- 3. Close roadside kill
- 4. Close HCR
- 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 top of test joint
- 7. Pressure up to test break
- 8. Bleed test pressure from BOP testing unit