

Office  
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 1625 N. French Dr., Hobbs, NM 88240  
 District II – (575) 748-1283  
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 District III – (505) 334-6178  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 District IV – (505) 476-3460  
 1220 S. St. Francis Dr., Santa Fe, NM  
 87505

State of New Mexico  
 Energy, Minerals and Natural Resources

Form C-103  
 Revised July 18, 2013

OIL CONSERVATION DIVISION  
 1220 South St. Francis Dr.  
 Santa Fe, NM 87505

WELL API NO. 30-025-54109
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Grayling 14 Fed Com
8. Well Number 604H
9. OGRID Number 330396
10. Pool name or Wildcat LUSK; BONE SPRING, EAST (41442)
4. Well Location Unit Letter <u>O</u> : <u>833</u> feet from the <u>S</u> line and <u>1592</u> feet from the <u>E</u> line Section <u>14</u> Township <u>19S</u> Range <u>32E</u> NMPM County <u>Lea</u>
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3628 GL

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
 TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
 PULL OR ALTER CASING ☒ MULTIPLE COMPL ☐  
 DOWNHOLE COMMINGLE ☐  
 CLOSED-LOOP SYSTEM ☐  
 OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
 COMMENCE DRILLING OPNS. ☐ P AND A ☐  
 CASING/CEMENT JOB ☐  
 OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Avant Operating, LLC is requesting to move the intermediate casing set depth down 400' to depth of 5,875' for the Grayling 14 Fed Com 604H well. The current 9-5/8" intermediate casing set depth is short of where we would like to be able to effectively isolate the Capitan reef before drilling the vertical section into the hydrocarbon formations. The Delaware formation top is 5,875' TVD, which is where we would like to update the casing set point. Verbal approval for this work was given by Long Vo on 12/20/2024, please see attached email correspondence as well as revised wellbore schematic and cement proposal.

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE  TITLE Contract Regulatory Analyst DATE 12/23/2024

Type or print name Meghan Twele E-mail address: mtwele@outlook.com PHONE: 720-339-6880

**For State Use Only**

APPROVED BY: \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

Conditions of Approval (if any):

**mtwele@outlook.com**

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**From:** Vo, Long T <lvo@blm.gov>  
**Sent:** Friday, December 20, 2024 3:21 PM  
**To:** Sarah Ferreyros; Ryan Harris  
**Cc:** Meghan Twele  
**Subject:** Re: [EXTERNAL] Grayling 604H, 605H, 606H - Intermediate Casing Set Point

Yes, just the email. No need for the cementing update, cement per COA and adjust to surface based on volume calculations.

Regards,

Long Vo

Petroleum Engineer  
Carlsbad Field Office  
Land and Minerals  
Bureau of Land Management  
Department of Interior  
575-988-5402 Cell

"Be the change that you wish to see in the world"-Gandhi

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**From:** Sarah Ferreyros <sarah@avantnr.com>  
**Sent:** Friday, December 20, 2024 2:04 PM  
**To:** Vo, Long T <lvo@blm.gov>; Ryan Harris <ryan@avantnr.com>  
**Cc:** Meghan Twele <Mtwele@outlook.com>  
**Subject:** RE: [EXTERNAL] Grayling 604H, 605H, 606H - Intermediate Casing Set Point

Hi Long,

We will need to submit a sundry with this approval, correct? Will we need to attach the updated cement proposals?

Thank you!  
Sarah

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**From:** Vo, Long T <lvo@blm.gov>  
**Sent:** Friday, December 20, 2024 9:50 AM  
**To:** Ryan Harris <ryan@avantnr.com>  
**Cc:** Sarah Ferreyros <sarah@avantnr.com>; Meghan Twele <Mtwele@outlook.com>  
**Subject:** Re: [EXTERNAL] Grayling 604H, 605H, 606H - Intermediate Casing Set Point

Ryan,

You are approved to proceed, please adjust cement per COA requirements. All previous COAs still apply.

Regards,

Long Vo

Petroleum Engineer  
Carlsbad Field Office  
Land and Minerals  
Bureau of Land Management  
Department of Interior  
575-988-5402 Cell

"Be the change that you wish to see in the world"-Gandhi

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**From:** Ryan Harris <[ryan@avantnr.com](mailto:ryan@avantnr.com)>  
**Sent:** Friday, December 20, 2024 9:37 AM  
**To:** Vo, Long T <[lvo@blm.gov](mailto:lvo@blm.gov)>  
**Cc:** Sarah Ferreyros <[sarah@avantnr.com](mailto:sarah@avantnr.com)>; Meghan Twele <[Mtwele@outlook.com](mailto:Mtwele@outlook.com)>  
**Subject:** [EXTERNAL] Grayling 604H, 605H, 606H - Intermediate Casing Set Point

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Good morning Long,

I noticed on the APD's for the mentioned wells that the 9-5/8" intermediate casing set depth is short of where we would like to be able to effectively isolate the capitan reef before drilling the vertical section into the hydrocarbon formations. The Delaware formation top is 5,875' TVD, which is where we would like to update the casing set point. Our rig move date to this location is set for the end of next week. Please reply if we are approved to move forward with this plan to move the intermediate casing set depth down 400' to 5,875' to be consistent with the previously approved Grayling 601H, 602H, 603H wells in the same section.

Thank you,  
Ryan Harris  
Drilling & Completions Engineer  
C: 406.853.6490



API: 30-025-54109

REGULATORY: BLM

PERMIT #



Grayling 14 Fed Com #604H

Bone Spring

Lea County, NM

AFE: NM0231

RIG: H&P 255

KB: 3653.5 (25.5')

GL: 3628'

WELLHEAD

13-3/8" x 9-5/8" x 5-1/2"

MNDS

SHL:

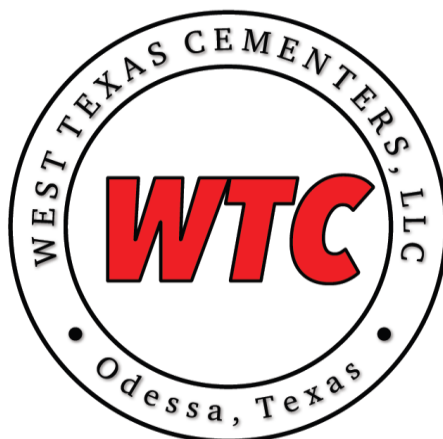
Sec. 14, T-19S, R-32E; 833 FSL, 1592 FEL

Lat: 32.655392, Long: -103.733474 (NAD83)

HOLE SIZE	MD	FORMATION	TVD	MUD	CASING	CEMENT	SPECIAL INSTRUCTIONS
SURFACE 17 1/2"	120	20" Conductor	120	SPUD MW 8.4 ppg	13 3/8 " 54.5# J-55 BTC +/- 10 Bowsprings	LEAD: 12.8 PPG Top of Lead: 0 50% Excess	Circ cement to surface is a NMOCD requirement
	1,127	Rustler	1,127	FRESH TD MW 10.1 ppg	1 20' pup jt 1 joint shoe track, prebucked	TAIL: 14.8 PPG Top of Tail: 852' 20% Excess	Casing must be set 25' into the Rustler
	1,152	SURF CSG PT	1,152				MUD: Fresh water only
INTRM 12 1/4"	1,430	Solado	1,430	DRLOUT MW 10 ppg	SPLIT STRING 9 5/8 " 40# J-55 BTC 0' - 4000'	LEAD: 12.8 PPG Top of Lead: 0' 50% Excess	Circ cement to surface is a NMOCD requirement
	2,800	Yates	2,800		+/- 24 Bowsprings 40# L-80 HC BTC 4000' - TD	TAIL: 14.8 PPG Top of Tail: 4703' 20% Excess	
	3,550	Capitan Reef	3,550	BRINE TD MW 10.5 ppg	+/- 15 Bowsprings 1 20' pup jt 1 joint shoe track, prebucked		
VERTICAL 8 3/4"	5,889	INTRM CSG PT	5,875				
	5,889	Cherry Canyon	5,875				
	6,478	Brushy Canyon	6,457				
CURVE 8 3/4"	7,554	Bone Spring	7,500	DRLOUT MW 9.2 ppg	5 1/2 " 20# P-110 HC Intrepid SP		
	8,774	1st BS Sand	8,683	CUT BRINE KOP MW 9.5 ppg	1 15' pup jt 2 20' Marker Jts +/- 60 Bowsprings +/- 28 Doublebows +/- 232 Solid Bodies		
	9,539	2nd BS Sand	9,427	EOC CUT BRINE MW 9.5 ppg	Lat MW 9.5 ppg	TD MW 9.8 ppg	
LATERAL 8 3/4"	10,239	KOP	10,172				20,920 ' MD
	10,365	3rd BS Sand	10,228				9,632 ' VS
	10,994	EOC	10,650				10,546 ' TVD
DIRECTIONAL PLAN				Annotations and Well Path Data			
MD	INC	INC	TVD	ANNOTATION			
12°/ 100'				EOC VS = -293' Lat. Azi = VS Azi. = 359.62° Est BHST = 182°F, Est BHCT = 165°F BHL: 100 FNL, 2178 FEL			
DIRECTIONS TO LOCAITON:				Well Completion Details			
				LEAD: 10.7 PPG Top of Lead: 0 50% OH Excess		Expected Btm Hole Pressure 5062.08 psi	
				TAIL: 14.5 PPG Top of Tail (KOP): 10239' 20% Excess			
				All aqueous fluids (spacer and disp) left inside or outside of pipe must have biocide & corrosion inhibitor			

PRELIMINARY

PROPOSAL#: 240126164842-C



## CEMENT PROCEDURE & PROPOSAL

**PREPARED FOR:**

Mr. Braden Harris

EMAIL: braden@avantnr.com

PHONE NUMBER: 406-600-3310

## Avant Natural Resources

### Grayling 14 Fed Com #604H

Lea County, NM

Rig: H&P 255

API Number: 30-025-54109

AFE Number: NM0231

**Service Point**

Odessa

1400 S JBS Parkway Odessa, TX 79766

432-701-8955

**Technical Writer**

Jonathan Smith

jonathan@wtcementers.com

432-701-3719

**WTC Representative**

Jon Reynolds

jon@wtcementers.com

432-257-1234

**.Disclaimer Notice:**

**The ability of West Texas Cementers to complete this work is subject to the availability of the raw materials required to complete the job.**

This information is presented in good faith, but no warranty is given by and West Texas Cementers LLC assumes no liability for advice or recommendations made concerning results to be obtained from the use of any product or service. The results given are estimates based on calculations produced by a computer model including various assumptions on the well, reservoir and treatment. The results depend on input data provided by the Operator and estimates as to unknown data and can be no more accurate than the model, the assumptions and such input data. The information presented is WTC LLC best estimate of the actual results that may be achieved and should be used for comparison purposes rather than absolute values. The quality of input data, and hence results, may be improved through the use of certain tests and procedures which West Texas Cementers LLC can assist in selecting. The Operator has superior knowledge of the well, the reservoir, the field and conditions affecting them. If the Operator is aware of any conditions whereby a neighboring well or wells might be affected by the treatment proposed herein it is the Operator's responsibility to notify the owner or owners of the well or wells accordingly. Prices quoted are estimates only and are good for 30 days from the date of issue. Actual charges may vary depending upon time, equipment, and material ultimately required to perform these services. Freedom from infringement of patents of West Texas Cementers LLC or others is not to be inferred.

PRINTED

12/23/2024 9:29

VERSION: v0.29

Avant Natural Resources  
 Grayling 14 Fed Com #604H  
 Lea County, NM  
 Rig: H&P 255

## Surface



PROPOSAL#: 240126164842-C

WELL INFORMATION						
MUD	8.4# Fresh Water					
PREVIOUS PIPE	20" 94# CSG to 120					
OPEN HOLE	17.5" OH to 1152					
CASING/INJECTION	13.375" 54.5# J-55/BTC to 1152					
MD	1152					
EST BHST/BHCT	90-F / 82-F (0.8-F/100-FT)					
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	120	19.124	13.375		0.1815	21.8
Lead	732	17.5	13.375	50%	0.1856	135.8
Tail	300	17.5	13.375	20%	0.1485	44.5
SHOE JOINT	40	13.375	12.615		0.1546	6.2
FLUIDS						
SPACER						
Fresh Water						
VOLUME	20-bbl					
Lead						
35% M_Poz+65% Class C+4% Gel+5% SALT+0.1% SMS+0.25PPS Pol-E-Flake+0.005GPS NoFoam V1A						
VOLUME	505-SX					158.3-bbls
DENSITY	12.8-ppg					
YIELD	1.76-cf/sx					
MIX WATER	9.16-gps					
TOP OF CEMENT	Surface					
EXCESS	50%					

Avant Natural Resources  
Grayling 14 Fed Com #604H  
Lea County, NM  
Rig: H&P 255

Surface



PROPOSAL#: 240126164842-C

Tail		
	100% Class C+1% CaCl2+0.005GPS NoFoam V1A	
VOLUME	215-SX	50.9-bbls
DENSITY	14.8-ppg	
YIELD	1.33-cf/sx	
MIX WATER	6.34-gps	
TOP OF CEMENT	852-ft	
EXCESS	20%	
DISPLACEMENT		
	Displacement	
VOLUME	171.9-bbl	

Avant Natural Resources  
 Grayling 14 Fed Com #604H  
 Lea County, NM  
 Rig: H&P 255

## Intermediate



PROPOSAL#: 240126164842-C

WELL INFORMATION						
MUD	10.5# Brine					
PREVIOUS PIPE	13.375" 54.5# CSG to 1152					
OPEN HOLE	12.25" OH to 5889					
CASING/INJECTION	9.625" 40# J55/L80 HC/BTC to 5889					
MD	5889					
TVD	5875					
EST BHST/BHCT	127-F / 111-F (0.8-F/100-FT)					
NOTES	Standby charges start after WTC has been on location for more than 4-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	1152	12.615	9.625		0.0646	74.4
Lead	3551	12.25	9.625	50%	0.0837	297.1
Tail	1186	12.25	9.625	20%	0.0669	79.4
SHOE JOINT	40	9.625	8.835		0.0758	3.0
FLUIDS						
SPACER						
Fresh Water						
VOLUME	25-bbl					
Lead						
35% M_Poz+65% Class C+4% Gel+5% SALT+0.1% SMS+0.15% R-1300+0.25PPS Pol-E-Flake+0.005GPS NoFoam V1A						
VOLUME	1190-SX					
DENSITY	12.8-ppg					
YIELD	1.76-cf/sx					
MIX WATER	9.16-gps					
TOP OF CEMENT	Surface					
EXCESS	50%					
						373-bbls



Avant Natural Resources  
Grayling 14 Fed Com #604H  
Lea County, NM  
Rig: H&P 255

Intermediate



PROPOSAL#: 240126164842-C

Tail		
100% Class C+5% SALT+0.4% FR-5+0.005GPS NoFoam V1A		
VOLUME	340-SX	83-bbls
DENSITY	14.8-ppg	
YIELD	1.37-cf/sx	
MIX WATER	6.49-gps	
TOP OF CEMENT	4703-ft	
EXCESS	20%	
DISPLACEMENT		
Displacement		
VOLUME	443.5-bbl	

Avant Natural Resources  
 Grayling 14 Fed Com #604H  
 Lea County, NM  
 Rig: H&P 255

# Production



PROPOSAL#: 240126164842-C

WELL INFORMATION						
MUD	9.8# OBM					
PREVIOUS PIPE	9.625" 40# CSG to 5889					
OPEN HOLE	8.75" OH to 20920					
CASING/INJECTION	5.5" 20# P-110-HC/GBCD to 20920					
MD	20920					
TVD	10546					
EST BHST/BHCT	182-F / 182-F (0.96-F/100-FT)					
KOP	10239					
NOTES	Standby charges start after WTC has been on location for more than 8-hrs.					
VOLUMES						
FLUID NAME	LENGTH (ft)	OD (in.)	ID (in.)	XS (%)	FACTOR (bbl/ft)	VOLUME (bbl)
Lead	5889	8.835	5.5		0.0464	273.5
Lead	4350	8.75	5.5	50%	0.0675	293.5
Tail	10681	8.75	5.5	20%	0.0540	576.6
SHOE JOINT	80	5.5	4.778		0.0222	1.8
FLUIDS						
SPACER						
Wt. Spacer 37.04GPB Water+8PPB PolyScrub 4320+106.59PPB Barite+1GPB HoleScrub 4311+1PPB R-1300						
VOLUME	40-bbl					
DENSITY	10.3-ppg					
Lead						
100% ProLiteM+5PPS Plexcrete STE+2% SMS+0.65% R-1300+0.2% FL-24+3PPS Gilsonite+0.005GPS NoFoam V1A						
VOLUME	975-SX					
DENSITY	10.7-ppg					
YIELD	3.28-cf/sx					
MIX WATER	20.11-gps					
TOP OF CEMENT	Surface					
EXCESS	50%					
	569.6-bbls					

569.6-bbls

Avant Natural Resources  
Grayling 14 Fed Com #604H  
Lea County, NM  
Rig: H&P 255

Production



PROPOSAL#: 240126164842-C

Tail		
50% M_Poz+50% Class H+5% SALT+0.75% FR-5+0.5% FL-24+0.005GPS NoFoam V1A		
VOLUME	2945-SX	577-bbls
DENSITY	14.5-ppg	
YIELD	1.1-cf/sx	
MIX WATER	4.42-gps	
TOP OF CEMENT	10239-ft	
EXCESS	20%	
DISPLACEMENT		
Fresh Water+ 0.25GPT Plexicide 24L+1GPT Corplex		
VOLUME	462.1-bbl	
DENSITY	8.34-ppg	

CHEMICAL DESCRIPTIONS		
CHEMICAL NAME	CODE	DESCRIPTION
B_Poz	WTC228	Poz - Fly Ash, Extender
Class H	WTC101	API Cement
Class C	WTC100	API Cement
M_Poz	WTC280	Poz - Fly Ash, Extender
ProLiteM		Blended Based Cement
Plexcrete SFA	WTC129	Cement Strength Enhancer
Gel	WTC102	Extender
Micro Crystal	WTC212	Cement Strength Enhancer
Micro Shell	WTC209	Cement Strength Enhancer
WTC1	WTC250	Extender
Plexcrete STE	WTC127	Cement Strength Enhancer
FAR-2	WTC260	Cement Strength Enhancer
Gypsum	WTC111	Free Water Control, Extender
CaCl2	WTC112	Accelerator
SMS	WTC115	Free Water Control, Extender
RCKCAS-100	WTC276	Free Water Control, Anti-Settling Agent
SA-1	WTC264	Free Water Control, Extender
R-33	WTC243	Lignosulfonate Retarder
R-1300	WTC201	Low Temperature Retarder
R-1201	WTC253	Lignosulfonate Retarder
FR-5	WTC258	Lignosulfonate Retarder
C-37	WTC224	Dispersant, Friction Reducer
FL-24	WTC277	Fluid Loss (polymers/copolymers - 300-F max)
EC-10	WTC120	Expanding Agent
Gas Bond	WTC126	Gas Migration Control (Hydrogen Generating)
Gilsonite	WTC003	Premium Lost Circulation Material, Free Water Control
Pol-E-Flake	WTC106	Lost Circulation Material
Web Seal	WTC133	Premium Fiber Lost Circulation Material
Zone Seal	WTC207	Premium Lost Circulation Material
NoFoam V1A	WTC105	Liquid Defoamer
Water		Fresh Water
PolyScrub 4320	WTC232	Spacer Gelling Agent
Barite	WTC116	Weighting Agent
HoleScrub 4311	WTC281	Surfactant
HoleScrub 4305	WTC213	Surfactant
HoleScrub 4308	WTC215	Surfactant
Soda Ash	WTC164	pH Control
R-1300	WTC201	Low Temperature Retarder
SuspendaCem 6302	WTC005	Free Water Control, Anti-Settling Agent
Sugar	WTC119	Retarder
AI-1, Acid Inhibitor	WTC015	Corrosion Inhibitor
Plexcide 24L	WTC166	Biocide
Corplex	WTC134	Corrosion Inhibitor
Clay Max	WTC096	KCL Substitute
Zone Seal	WTC207	Premium Lost Circulation Material

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

CONDITIONS

Action 414777

CONDITIONS

Operator: Avant Operating, LLC 1515 Wynkoop Street Denver, CO 80202	OGRID: 330396
	Action Number: 414777
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	If cement is not circulated to surface during cementing operations, a Cement Bond Log (CBL) is required.	12/27/2024
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing.	12/27/2024