Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE *- Other instructions on page 2*

5. Lease Serial No. NMNM39880

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No.

1. Type of Well
☑ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No. GHOST RIDER 22 15 FEDERAL CC

2. Name of Operator APACHE CORPORATION

9. API Well No. 3002549361 **#405H**

3a. Address 303 VETERANS AIRPARK LANE SUITE 3000, M

3b. Phone No. *(include area code)* (432) 818-1000

10. Field and Pool or Exploratory Area Russell/TRISTE DRAW BONE SPRING

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)* SEC 15/T24S/R32E/NMP

11. Country or Parish, State LEA/NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be perfonned or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

Apache respectfully requests a variance for the Ghost Rider 22 15 Federal Com 405H (30-025-49361) as follows: Set intermediate csg shallower than originally planned (before transitioning to 1st BS). Apache would then proceed to drill 8-3/4" OH and set a 7-5/8 liner at original csg depth (3rd BS Carbonate). The outcome of this well could determine sequence needed for the following wells. This would provide a safer operation for all parties involved. Variance request, Drilling Plan and Csg data sheets attached for review.

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)* SORINA FLORES / Ph: (432) 818-1167

Title Supv of Drilling Services

Signature

Date 10/18/2022

THE SPACE FOR FEDERAL OR STATE OFICE USE

Approved by AJIBOLA OLABODE / Ph: (575) 234-2231 / Approved

Title Engineer

Date 10/18/2022

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office CARLSBAD

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

(Instructions on page 2)

GENERAL INSTRUCTIONS

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

SPECIFIC INSTRUCTIONS

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

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

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.
PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c)and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.
ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.
EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.
Response to this request is mandatory.
The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

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

Additional Information

Location of Well

0. SHL: NESW / 2357 FSL / 2616 FWL / TWSP: 24S / RANGE: 32E / SECTION: 15 / LAT: 32.216798 / LONG: -103.6625946 (TVD: 0 feet, MD: 0 feet)

PPP: NESW / 2537 FSL / 2266 FWL / TWSP: 24S / RANGE: 32E / SECTION: 15 / LAT: 32.2172893 / LONG: -103.6637246 (TVD: 9159 feet, MD: 9190 feet)

PPP: NESW / 1317 FSL / 2246 FWL / TWSP: 24S / RANGE: 32E / SECTION: 15 / LAT: 32.2139377 / LONG: -103.6637935 (TVD: 9430 feet, MD: 10516 feet)

PPP: SESW / 0 FSL / 2225 FWL / TWSP: 24S / RANGE: 32E / SECTION: 15 / LAT: 32.2103162 / LONG: -103.663868 (TVD: 9430 feet, MD: 11834 feet)

BHL: SESW / 50 FSL / 1700 FWL / TWSP: 24S / RANGE: 32E / SECTION: 22 / LAT: 32.1959298 / LONG: -103.6655736 (TVD: 9430 feet, MD: 17068 feet)

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 Road, 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, NM 87505

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

XX AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-025-49361	96603	TRISTE DRAW; BONE SPRING

4 Property Code	5 Property Name	6 Well Number
320516	GHOST RIDER 22 15 FEDERAL COM	405H

7 OGRID NO.	8 Operator Name	9 Elevation
873	APACHE CORPORATION	3596'

10 Surface Location

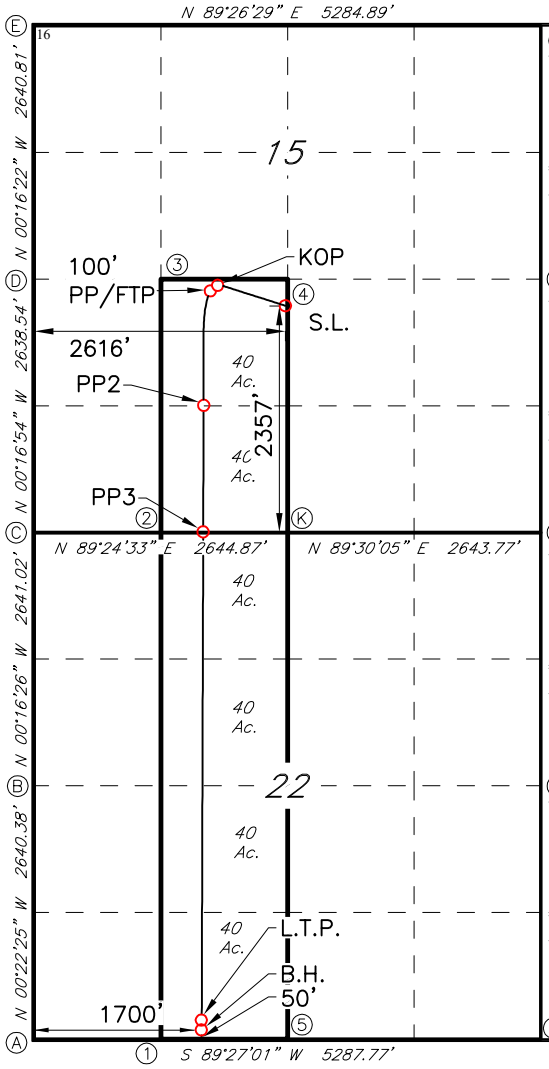
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
K	15	24S	32E		2357	SOUTH	2616	WEST	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	22	24S	32E		50	SOUTH	1700	WEST	LEA

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
240			

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



GEODETIC DATA
NAD 83 GRID – NM EAST

SURFACE LOCATION (S.L.)
N 443252.4 – E 748769.8
LAT: 32.2167980° N
LONG: 103.6625946° W

KICK OFF POINT (KOP)
2586'FSL – 1917'FWL (SEC.15)
N 443474.7 – E 748069.8
LAT: 32.2174211° N
LONG: 103.6648536° W
MD: 11795.9 – TVD: 11735.0

PENETRATION POINT/FIRST TAKE POINT (PP/FTP)
2537'FSL – 1844'FWL (SEC.15)
N 443424.8 – E 747997.5
LAT: 32.2172852 N
LONG: 103.6650882° W
MD: 12125.0 – TVD: 12047.2

PENETRATION POINT (PP2)
1318.'FSL – 1756'FWL (SEC.15)
N 442204.8 – E 747915.9
LAT: 32.2139331° N
LONG: 103.6653768° W
MD: 13445.2 – TVD: 12310.8

PENETRATION POINT (PP3)
0'FSL – 1746'FWL (SEC.15)
N 440887.0 – E 747911.8
LAT: 32.2103108° N
LONG: 103.6654164° W
MD: 14759.2 – TVD: 12318.7

LAST TAKE POINT (L.T.P.)
100'FSL – 1701'FWL (SEC.22)
N 435705.0 – E 747895.9
LAT: 32.1960674° N
LONG: 103.6655720° W
MD: 19941.4 – TVD: 12359.5

BOTTOM HOLE (B.H.)
N 435655.0 – E 747895.7
LAT: 32.1959298° N
LONG: 103.6655736° W
MD:19991.4 – TVD:12360.0

CORNER DATA
NAD 83 GRID – NM EAST

A: FOUND BRASS CAP "1916"
N 435588.7 – E 746196.0
B: FOUND BRASS CAP "1916"
N 438228.5 – E 746178.8
C: FOUND BRASS CAP "1916"
N: 440869.0 – E: 746166.1
D: FOUND BRASS CAP "1916"
N 443506.9 – E 746153.2
E: FOUND BRASS CAP "1916"
N 446147.2 – E 746140.6
F: CALCULATED CORNER
N: 446198.7 – E: 751424.1
G: FOUND BRASS CAP "1916"
N 443558.2 – E 751437.1
H: FOUND BRASS CAP "1916"
N 440919.2 – E 751453.4
I: FOUND BRASS CAP "1916"
N 438277.2 – E 751468.7
J: FOUND BRASS CAP "1916"
N 435639.5 – E 751482.4
K: FOUND BRASS CAP "1916"
N 440896.2 – E 748810.3

CALCULATED POINTS
1: N 435601.4 – E 747517.6
2: N 440882.6 – E 747488.2
3: N 443519.8 – E 747474.9
4: N 443545.4 – E 750117.6
5: N 442224.1 – E 750125.8
6: N 442213.3 – E 748803.3
7: N 435614.1 – E 748839.2

17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Sorina L Flores 10.18.22
Signature Date

Sorina L Flores
Printed Name

sorina.flores@apachecorp.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

08-08-2021
Date of Survey

Signature and Seal of Professional Surveyor:

DALE E. BELL
NEW MEXICO
14400
PROFESSIONAL SURVEYOR
10/18/2022

14400
Certificate Number

KOP/ FTP REVISED 10.18.22

Job No.: LS19030393DP2

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**APACHE CORPORATION**
LEASE NO.:	**NMNM039880**
WELL NAME & NO.:	GHOST RIDER 22 15 FEDERAL COM 405H
SURFACE HOLE FOOTAGE:	2357'/S & 2616'/W
BOTTOM HOLE FOOTAGE	50'/S & 1700'/W **30-025-49361**
LOCATION:	Section 15, T.24 S., R.32 E., NMP
COUNTY:	Lea County, New Mexico

COA

H2S	(•) Yes	( ) No	
Potash	(•) None	( ) Secretary	( ) R-111-P
Cave/Karst Potential	(•) Low	( ) Medium	( ) High
Cave/Karst Potential	( ) Critical		
Variance	( ) None	(•) Flex Hose	( ) Other
Wellhead	( ) Conventional	( ) Multibowl	(•) Both
Other	[ ] 4 String Area	[ ] Capitan Reef	[ ] WIPP
Other	[ ] Fluid Filled	[x] Cement Squeeze	[ ] Pilot Hole
Special Requirements	[ ] Water Disposal	[x] COM	[ ] Unit

All Previous COAs Still Apply.

NOTE: Approved for 10M BOP / BOPE and testing accordance to OO#2 requirements.
Flex hose variance is approved.
Break Testing is NOT approved.
May batch drill.

A. CASING

Casing Design:

1. The **13-3/8** inch surface casing shall be set at approximately **1052** feet (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The **9-5/8** inch first intermediate casing shall be set at approximately **9,778** feet. The minimum required fill of cement behind the **9-5/8** inch first intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess cement calculates to -88%, additional cement might be required.**

Option 2:

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

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
Excess cement calculates to -77%, additional cement might be required.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
Excess cement calculates to -76%, additional cement might be required.

3. The **7-5/8** inch second intermediate casing (**Liner**) shall be set at approximately **9,778** feet. The minimum required fill of cement behind the **9-5/8** inch second intermediate casing (**Liner**) is:

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification
Excess cement calculates to -458%, additional cement might be required.

4. The minimum required fill of cement behind the **5-1/2** inch production casing is:

    - Cement should tie-back at least **200 feet** into previous casing string (**the first intermediate casing**). Operator shall provide method of verification.

Operator has proposed to pump down 5-1/2" X 9-5/8" annulus. Operator must run a CBL / Echo-Meter from TD of the 5-1/2" casing to surface. Submit results to BLM.

B. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2.

Option 1:

a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the first intermediate casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the second intermediate casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

Option 2:

1. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

DRILLING PLAN: BLM COMPLIANCE

Ghost Rider 22-15 Federal Com # 405H REV 10.17.22
Projected TD: 20000' MD / 12360' TVD
SHL: 2357' FSL & 2616' FWL , Section 15, T24S, R32E
BHL: 50' FSL & 1700' FWL , Section 22, T24S, R32E
Lea County, NM

30-025-49361

1. Geologic Name of Surface Formation

A. Permian

2. Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	1027'	Water
Salado	1363'	Water
Castile	3280'	Water
Delaware	4791'	Water/Oil/Gas
Cherry Canyon	5589'	Water/Oil/Gas
Brushy Canyon	7454'	Water/Oil/Gas
Bone Spring	8689'	Water/Oil/Gas
Avalon	8846'	Water/Oil/Gas
Lower Avalon C	9637'	Water/Oil/Gas
1st Bone Spring Sand	9865'	Water/Oil/Gas
2nd Bone Spring Carb	10065'	Water/Oil/Gas
2nd Bone Spring Sand	10417'	Water/Oil/Gas
3rd Bone Spring Carb	10970'	Water/Oil/Gas
3rd Bone Spring Sand	11879'	Water/Oil/Gas
Wolfcamp X	12182'	Water/Oil/Gas
Wolfcamp A	12295'	Water/Oil/Gas
Target/Land Curve	12360'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon
*** Groundwater depth 40' (per NM State Engineers Office).

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13-3/8" casing @ 1052' (311' above the salt) and circulating cement back to surface. The 9-5/8" intermediate casing will be set at 9778' and bring TOC back to surface. A 8 3/4 inch hole will be drilled to 11596 and 7-5/8" liner will be set at TD up to top of liner @ 9578 and cemented. Then a 6-3/4 inch curve and lateral hole will be drilled to MD/TD and 5-1/2" casing will be set at TD and cemented back a minimum of 200' into the 9-5/8" casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension (B)
17 1/2"	0' – 1052'	13-3/8"	54.5	BTC	J-55	New	1.23	2.30	14.88
12 1/4"	0' – 2500'	9-5/8"	40	BTC	HCL-80	New	2.00	6.14	9.16
12 1/4"	2500' – 9778'	9-5/8"	40	BTC	J-55	New	1.37	1.14	1.61
8 3/4"	9578' – 11596'	7-5/8"	29.7	LFJM	HP P-110	New	2.15	1.45	1.84
6 3/4"	0' – 11396'	5-1/2"	20	Semi-premium	HC P-110	New	1.05	1.44	1.83
6 3/4"	11396' - 20000'	5-1/2"	20	Semi-flush	CYP-110	New	1.05	1.44	1.83

· Apache Corporation requests to not utilize centralizers in the curve and lateral
· Test on Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less
· 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.
· 7-5/8" Collapse analyzed using 50% evacuation based on regional experience.
· 7-5/8" Liner top will be tested to 500 psi over LOT.
· 5-1/2" Tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35
· 5-1/2" 20 ppf Semi-premium casing will be run from surface to 9578 and crossed over to 5-1/2" 20 ppf Semi-flush casing from 9578 to TD.
· Request to use 5" BTC Float equipment for the the production casing

Wellhead:

Permanent Wellhead – Multibowl System

A. Starting Head: 13-5/8" 10M top flange x 13-3/8" 10M SOW/BTC bottom
B. Tubing Head: 13-5/8" 10M bottom flange x 7-1/16" 10M top flange

· Wellhead will be installed by manufacturer's representatives.
· Manufacturer will monitor welding process to ensure appropriate temperature of seal.
· Operator will test the 13-3/8" casing per BLM Onshore Order 2
· Operator will test the 9-5/8" casing per BLM Onshore Order 2

· Operator will test the 7-5/8" casing per BLM Onshore Order 2
· Wellhead Manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, BTC casing to be set at +/- 1052'

Lead: 490 sxs Class - C + 1% CaCl (mixed at 12.4 ppg, 2.12 ft3/sx, 11.97 gal/sx water)
TOC: Surface
Tail: 170 sxs Class-C + 1% CaCl (mixed at 14.8 ppg, 1.36 ft3/sx, 6.59 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Intermediate Casing: 9-5/8", 40 New HCL-80, BTC casing to be set at +/- 0' – 2500', 9-5/8", 40 New J-55, BTC casing to be set at +/- 2500' – 9778"

ECP/DV Tool to be set at 4656' DV tool depth(s) will be adjusted on hole conditions & cement volumes will be adjusted proportionally.

DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi

TOC: Surface
Tail: 260 sxs Class - C (mixed at 11.0 ppg, 1.42 ft3/sx, 6.39 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150psi
TOC: Brushy Canyon 7454'
2nd Stage
Tail: 260 sxs Class - C (mixed at 13.2 ppg, 1.414 ft3/sx, 5.29 gal/sx water)
Compressives: 12-hr = 900 psi 24 hr = 1150 psi
TOC: Surface

Per meeting on 4/7/2022, Apache requests to pump a two-stage cement job on the intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon and the second stage performed as a bradenhead squeeze with planned cement from the Brushy Canyon to surface. The final cement top after the second stage job will be verified by an Echometer. If necessary, a top out Job will be executed as a contingency to meet regulatory requirements. If cement is still not meeting the objective, then another Echometer will be performed for the cement top verification.

Apache will include the Echometer verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

Apache will report to the BLM the volume of fluid (limited to 5 bbl.) used to flush intermediate casing valves following the backside cementing procedures.

Apache requests to pump an Optional Lead if well conditions dictate to bring cement to surface on the first stage. If cement is brought to surface, the BLM will be notified and the second stage bradenhead squeeze and subsequent TOC verification will be negated.

In in the event cement is not circulate to surface on the first stage, whether intentionally or unintentionally, Apache requests the option to conduct the bradenhead squeeze and TOC verification offline as per standard approval from BLM when unplanned remediate is needed and batch drilling is approved. In the event the bradenhead is conducted, we will ensure first stage cement job is cemented properly and the well is static with floats holding and no pressure on the casing annulus as with all other casing strings where batch drilling operations occur before moving off the rig. The TA cap will also be installed per wellhead manufacture procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling operations.

Liner Casing: 7-5/8", 29.7 New HP P-110, casing set at +/- 9578' - 11596'
Lead: 100 sxs Class - C (mixed at 11.0 ppg, 2.95 ft3/sx, 18.31 gal/sx water)
TOC 9478
Tail: 1750 sxs Class - H (mixed at 13.2 ppg, 1.38 ft3/sx, 6.23 gal/sx water)
Compressives 12-hr = 800 psi 24 hr = 1500 psi

Production Casing: 5-1/2", 20 New CYP-110, casing to be set at +/- 20000'
Due to possible lost circulation during the production cement jobs, Apache proposes a contingency bradenhead squeeze 4 hours after bumping the plug on the primary stage. A CBL will be ran after 7-10 days and will be submitted to the BLM.

Lead: 426 sxs Class - TXI (mixed at 13.2 ppg, 1.38 ft3/sx, 6.23 gal/sx water)
TOC inside the previous shoe by: 200'

Tail: 580 sxs Class - TXI (mixed at 13.2 ppg, 1.38 ft3/sx, 6.23 gal/sx water)
Compressives 12-hr = 800 psi 24 hr = 1500 psi

5. Pressure Control Equipment

Once the permanent WH is installed on the 13-3/8" casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 3M Hydril and a 13-5/8" minimum 10M 3-Ram BOP. MASP should not exceed 2876 psi. In any instance where 10M BOP is required by BLM, Apache requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M). Also a variance is requested to test the 5M annular to 70% of working pressure at 3500 psi.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12 1/4"	13-5/8"	5M	Annular	x	70% of working pressure
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram	x	
8 3/4"	13-5/8"	5M	Annular	x	70% of working pressure
			Blind Ram	x	5M
			Pipe Ram	x	
			Double Ram	x	
6 3/4"	13-5/8"	10M	Annular	x	70% of working pressure
			Blind Ram	x	10M
			Pipe Ram	x	
			Double Ram	x	

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 70% of the working pressure. When nippling up on the 13-3/8", 10M bradenhead and flange, the BOP test will be limited to 10000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 10M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested at a minimum every 7 days.

Equipment will consist of rotating head, mud gas separator, blowdown pit (panic line) and flare line just to name a few.

A variance is requested to allow use of a flex hose as the choke line from the BOP to the Choke Manifold. If this hose is used, a copy of the manufacturer's certification and pressure test chart will be kept on the rig. The manufacture does not require anchors.

Per meeting on 4/7/2022, Apache requests a variance to be able to batch drill this well if necessary. In doing so, Apache will set each casing string and ensure that the well is cemented properly and the well is static. With floats holding, no pressure on the csg annulus, and the installation of a TA cap as per wellhead recommendations, Apache will contact the BLM on each rig skid on the pad. Once surface and intermediate strings are all completed, Apache will start preparing for the next production hole on each of the wells but will avoid drilling new formation while performing offline cementing simultaneously. Complete offline cementing on one well before embarking on drilling new formation on the next well on the same pad.

Per meeting on 4/7/2022, A variance is requested to **ONLY** test broken pressure seals on the BOP equipment when moving from wellhead to wellhead which is in compliance with API Standard 53. API standard 53 states, that for pad drilling operation, moving from one wellhead to another within 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken.
We will also function test BOP equipment after each nipple up. A full BOP test will be required prior to drilling the 1st production hole and every 21 day after.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 1052'	17 1/2"	FW / Native (Spud mud)	8.3 - 9.5	35-40	NC
1052' - 11596'	12 1/4" - 8 3/4"	Brine / Cut Brine / Direct	7.9 - 9.1	30-32	NC
11596' to 20000'	6 3/4"	Cut Brine / WBM / OBM	11.3 - 12.5	32-36	NC

The necessary mud products for weight addition and fluid loss control will be on location at all times.
The mud system type will be; **Closed**
Will an air gas system be used; **No**

Spud with fresh water/native mud and set 13-3/8" surface casing, isolating the fresh water aquifer. Drill out from under 13-3/8" surface casing with a brine/oil direct emulsion mud system. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

7. Auxiliary Well Control and Monitoring Equipment

A. An upper kelly valve will be used for the drill string at all times.
B. A full opening drill pipe stabbing valve having appropriate connections will be on the rig floor at all times.
C. H2S monitors will be on location when drilling below the 13-3/8" casing.

8. Logging, Coring and Testing Program

Mud Logger: Mud Logging Unit (2 man) below intermediate casing.

Will run GR/CNL from TD to surf (horizontal well - vertical portion of hole). Stated logs run will be in the completion report & submitted to BLM.

Open & cased hole logs run in well:

☐ CALIPER	☐ CEMENT BOND LOG	☐ CNL (Neutron log) /FDC (Formation Density log)
☐ COMPENSATED DENSILOG	☐ COMPENSATED NEUTRON LOG	☐ COMPUTER GENERATED LOG
☐ DIP METER LOG	☐ DIRECTIONAL SURVEY	☐ DUAL INDUCTION/MICRO-RESISTIVITY
☐ DUAL LATERAL LOG/MICRO-SPHERICALLY FOCUSED	☐ ELECTRIC LOG	☐ FORMATION DENSITY COMPENSATED LOG
☑ GAMMA RAY LOG	☑ MEASUREMENT WHILE DRILLING	☑ MUD LOG/GEOLOGIC LITHOLOGY LOG
☐ OTHER	☐ POROSITY-RESISTIVITY LOG	☐ SIDEWALL NEUTRON LOG
☐ SONIC LOG	☐ SPONTANEOUS POTENTIAL LOG	☐ TEMPERATURE LOG

9. Abnormal Pressures and Temperatures / Potential Hazards

BHT of 135 to 155 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. Lost circulation could occur but is not expected to be a serious problem in this area and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid. Lost circulation during production cement job can occur in which the primary production cement job will be pumped as planned. If lift pressures do not indicate tieback, then a contingency bradenhead squeeze will be pumped 4 hours after primary job to achieve cement tieback into intermediate casing. A CBL will be ran afterwards and submitted to the BLM. The maximum anticipated bottom hole pressure for this well during the production section is 7713 psi.

10. Anticipated Starting Date and Duration of Operations

Road and location construction will begin after BLM have approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 45 days. If production casing is run, an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

C. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

OTA10182022

Apache

Lea County, NM (NAD83 NME)
GHOST RIDER 22-15 FED COM PAD (N West) NEW
Ghost Rider 22-15 Fed Com 405H

OH

Plan: Plan 2

Standard Planning Report

02 October, 2022

Scientific Drilling

www.scientificdrilling.com

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Ghost Rider 22-15 Fed Com 405H
Company:	Apache	**TVD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Project:	Lea County, NM (NAD83 NME)	**MD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Site:	GHOST RIDER 22-15 FED COM PAD (N West) NEW	**North Reference:**	Grid
Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Project Lea County, NM (NAD83 NME)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site GHOST RIDER 22-15 FED COM PAD (N West) NEW

Site Position:		**Northing:**	443,250.91 usft	**Latitude:**	32.216795
From:	Map	**Easting:**	748,708.40 usft	**Longitude:**	-103.662794
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.36 °

Well Ghost Rider 22-15 Fed Com 405H

Well Position	**+N/-S**	1.49 usft	**Northing:**	443,252.40 usft	**Latitude:**	32.216798
	+E/-W	61.40 usft	**Easting:**	748,769.80 usft	**Longitude:**	-103.662595
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,595.99 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2022	7/25/2019	6.63	59.90	47,873.40000000

Design Plan 2

Audit Notes:

Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	186.56

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,666.66	10.00	287.62	2,663.28	17.56	-55.31	1.50	1.50	0.00	287.62	
6,227.83	10.00	287.62	6,170.35	204.74	-644.69	0.00	0.00	0.00	0.00	
6,894.49	0.00	0.00	6,833.63	222.30	-700.00	1.50	-1.50	0.00	180.00	
11,795.86	0.00	0.00	11,735.00	222.30	-700.00	0.00	0.00	0.00	0.00	
11,938.70	17.14	258.62	11,875.72	218.12	-720.79	12.00	12.00	0.00	258.62	
12,657.63	89.66	180.18	12,305.93	-255.29	-851.46	12.00	10.09	-10.91	-79.04	
14,825.18	89.66	180.18	12,318.98	-2,422.79	-858.15	0.00	0.00	0.00	0.00	T2 Ghost Rider 22-15
14,836.85	89.42	180.18	12,319.07	-2,434.46	-858.19	2.00	-2.00	0.00	-179.93	
17,106.46	89.42	180.18	12,341.98	-4,703.94	-865.18	0.00	0.00	0.00	0.00	T3 Ghost Rider 22-15
17,117.57	89.64	180.18	12,342.07	-4,715.05	-865.21	2.00	2.00	0.00	0.02	
19,999.99	89.64	180.18	12,359.98	-7,597.40	-874.10	0.00	0.00	0.00	0.00	BHL Ghost Rider 22-1

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Ghost Rider 22-15 Fed Com 405H
Company:	Apache	**TVD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Project:	Lea County, NM (NAD83 NME)	**MD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Site:	GHOST RIDER 22-15 FED COM PAD (N West) NEW	**North Reference:**	Grid
Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	1.50	287.62	2,099.99	0.40	-1.25	-0.25	1.50	1.50	0.00
2,200.00	3.00	287.62	2,199.91	1.58	-4.99	-1.00	1.50	1.50	0.00
2,300.00	4.50	287.62	2,299.69	3.56	-11.22	-2.26	1.50	1.50	0.00
2,400.00	6.00	287.62	2,399.27	6.33	-19.94	-4.01	1.50	1.50	0.00
2,500.00	7.50	287.62	2,498.57	9.89	-31.15	-6.27	1.50	1.50	0.00
2,600.00	9.00	287.62	2,597.54	14.23	-44.82	-9.02	1.50	1.50	0.00
2,666.66	10.00	287.62	2,663.28	17.56	-55.31	-11.13	1.50	1.50	0.00
2,700.00	10.00	287.62	2,696.11	19.32	-60.83	-12.24	0.00	0.00	0.00
2,800.00	10.00	287.62	2,794.59	24.57	-77.38	-15.57	0.00	0.00	0.00
2,900.00	10.00	287.62	2,893.08	29.83	-93.93	-18.90	0.00	0.00	0.00
3,000.00	10.00	287.62	2,991.56	35.08	-110.48	-22.23	0.00	0.00	0.00
3,100.00	10.00	287.62	3,090.04	40.34	-127.03	-25.56	0.00	0.00	0.00
3,200.00	10.00	287.62	3,188.52	45.60	-143.58	-28.89	0.00	0.00	0.00
3,300.00	10.00	287.62	3,287.00	50.85	-160.13	-32.22	0.00	0.00	0.00
3,400.00	10.00	287.62	3,385.48	56.11	-176.68	-35.55	0.00	0.00	0.00
3,500.00	10.00	287.62	3,483.96	61.36	-193.23	-38.88	0.00	0.00	0.00
3,600.00	10.00	287.62	3,582.44	66.62	-209.78	-42.21	0.00	0.00	0.00
3,700.00	10.00	287.62	3,680.92	71.88	-226.33	-45.54	0.00	0.00	0.00
3,800.00	10.00	287.62	3,779.40	77.13	-242.88	-48.87	0.00	0.00	0.00
3,900.00	10.00	287.62	3,877.88	82.39	-259.43	-52.20	0.00	0.00	0.00
4,000.00	10.00	287.62	3,976.36	87.64	-275.98	-55.52	0.00	0.00	0.00
4,100.00	10.00	287.62	4,074.84	92.90	-292.53	-58.85	0.00	0.00	0.00
4,200.00	10.00	287.62	4,173.33	98.16	-309.08	-62.18	0.00	0.00	0.00
4,300.00	10.00	287.62	4,271.81	103.41	-325.63	-65.51	0.00	0.00	0.00
4,400.00	10.00	287.62	4,370.29	108.67	-342.18	-68.84	0.00	0.00	0.00
4,500.00	10.00	287.62	4,468.77	113.92	-358.73	-72.17	0.00	0.00	0.00
4,600.00	10.00	287.62	4,567.25	119.18	-375.28	-75.50	0.00	0.00	0.00
4,700.00	10.00	287.62	4,665.73	124.43	-391.83	-78.83	0.00	0.00	0.00
4,800.00	10.00	287.62	4,764.21	129.69	-408.38	-82.16	0.00	0.00	0.00
4,900.00	10.00	287.62	4,862.69	134.95	-424.93	-85.49	0.00	0.00	0.00
5,000.00	10.00	287.62	4,961.17	140.20	-441.48	-88.82	0.00	0.00	0.00
5,100.00	10.00	287.62	5,059.65	145.46	-458.03	-92.15	0.00	0.00	0.00

Planning Report

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Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.00	10.00	287.62	5,158.13	150.71	-474.58	-95.48	0.00	0.00	0.00
5,300.00	10.00	287.62	5,256.61	155.97	-491.13	-98.81	0.00	0.00	0.00
5,400.00	10.00	287.62	5,355.10	161.23	-507.68	-102.14	0.00	0.00	0.00
5,500.00	10.00	287.62	5,453.58	166.48	-524.23	-105.47	0.00	0.00	0.00
5,600.00	10.00	287.62	5,552.06	171.74	-540.78	-108.80	0.00	0.00	0.00
5,700.00	10.00	287.62	5,650.54	176.99	-557.33	-112.13	0.00	0.00	0.00
5,800.00	10.00	287.62	5,749.02	182.25	-573.88	-115.46	0.00	0.00	0.00
5,900.00	10.00	287.62	5,847.50	187.51	-590.44	-118.79	0.00	0.00	0.00
6,000.00	10.00	287.62	5,945.98	192.76	-606.99	-122.12	0.00	0.00	0.00
6,100.00	10.00	287.62	6,044.46	198.02	-623.54	-125.45	0.00	0.00	0.00
6,200.00	10.00	287.62	6,142.94	203.27	-640.09	-128.78	0.00	0.00	0.00
6,227.83	10.00	287.62	6,170.35	204.74	-644.69	-129.71	0.00	0.00	0.00
6,300.00	8.92	287.62	6,241.54	208.33	-656.00	-131.98	1.50	-1.50	0.00
6,400.00	7.42	287.62	6,340.52	212.63	-669.54	-134.71	1.50	-1.50	0.00
6,500.00	5.92	287.62	6,439.84	216.14	-680.60	-136.93	1.50	-1.50	0.00
6,600.00	4.42	287.62	6,539.43	218.87	-689.19	-138.66	1.50	-1.50	0.00
6,700.00	2.92	287.62	6,639.22	220.80	-695.28	-139.88	1.50	-1.50	0.00
6,800.00	1.42	287.62	6,739.15	221.95	-698.89	-140.61	1.50	-1.50	0.00
6,894.49	0.00	0.00	6,833.63	222.30	-700.00	-140.83	1.50	-1.50	0.00
6,900.00	0.00	0.00	6,839.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,000.00	0.00	0.00	6,939.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,100.00	0.00	0.00	7,039.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,200.00	0.00	0.00	7,139.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,300.00	0.00	0.00	7,239.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,400.00	0.00	0.00	7,339.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,500.00	0.00	0.00	7,439.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,600.00	0.00	0.00	7,539.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,700.00	0.00	0.00	7,639.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,800.00	0.00	0.00	7,739.14	222.30	-700.00	-140.83	0.00	0.00	0.00
7,900.00	0.00	0.00	7,839.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,000.00	0.00	0.00	7,939.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,100.00	0.00	0.00	8,039.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,200.00	0.00	0.00	8,139.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,300.00	0.00	0.00	8,239.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,400.00	0.00	0.00	8,339.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,500.00	0.00	0.00	8,439.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,600.00	0.00	0.00	8,539.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,700.00	0.00	0.00	8,639.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,800.00	0.00	0.00	8,739.14	222.30	-700.00	-140.83	0.00	0.00	0.00
8,900.00	0.00	0.00	8,839.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,000.00	0.00	0.00	8,939.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,100.00	0.00	0.00	9,039.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,200.00	0.00	0.00	9,139.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,300.00	0.00	0.00	9,239.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,400.00	0.00	0.00	9,339.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,500.00	0.00	0.00	9,439.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,600.00	0.00	0.00	9,539.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,700.00	0.00	0.00	9,639.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,800.00	0.00	0.00	9,739.14	222.30	-700.00	-140.83	0.00	0.00	0.00
9,900.00	0.00	0.00	9,839.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,000.00	0.00	0.00	9,939.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,100.00	0.00	0.00	10,039.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,200.00	0.00	0.00	10,139.14	222.30	-700.00	-140.83	0.00	0.00	0.00

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Ghost Rider 22-15 Fed Com 405H
Company:	Apache	**TVD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Project:	Lea County, NM (NAD83 NME)	**MD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Site:	GHOST RIDER 22-15 FED COM PAD (N West) NEW	**North Reference:**	Grid
Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,300.00	0.00	0.00	10,239.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,400.00	0.00	0.00	10,339.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,500.00	0.00	0.00	10,439.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,600.00	0.00	0.00	10,539.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,700.00	0.00	0.00	10,639.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,800.00	0.00	0.00	10,739.14	222.30	-700.00	-140.83	0.00	0.00	0.00
10,900.00	0.00	0.00	10,839.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,000.00	0.00	0.00	10,939.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,100.00	0.00	0.00	11,039.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,200.00	0.00	0.00	11,139.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,300.00	0.00	0.00	11,239.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,400.00	0.00	0.00	11,339.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,500.00	0.00	0.00	11,439.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,600.00	0.00	0.00	11,539.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,700.00	0.00	0.00	11,639.14	222.30	-700.00	-140.83	0.00	0.00	0.00
11,795.86	0.00	0.00	11,735.00	222.30	-700.00	-140.83	0.00	0.00	0.00
11,800.00	0.50	258.62	11,739.14	222.30	-700.02	-140.83	12.00	12.00	0.00
11,900.00	12.50	258.62	11,838.32	220.07	-711.09	-137.35	12.00	12.00	0.00
11,938.70	17.14	258.62	11,875.72	218.12	-720.79	-134.30	12.00	12.00	0.00
12,000.00	19.86	236.90	11,933.91	210.64	-738.40	-124.86	12.00	4.43	-35.43
12,100.00	28.00	214.73	12,025.42	181.97	-766.10	-93.21	12.00	8.14	-22.17
12,200.00	38.11	202.74	12,109.22	134.04	-791.49	-42.70	12.00	10.11	-11.99
12,300.00	48.98	195.32	12,181.64	68.96	-813.47	24.47	12.00	10.87	-7.42
12,400.00	60.20	190.04	12,239.51	-10.44	-831.07	105.36	12.00	11.21	-5.27
12,500.00	71.58	185.85	12,280.31	-100.68	-843.52	196.44	12.00	11.38	-4.19
12,600.00	83.04	182.19	12,302.26	-197.83	-850.28	293.71	12.00	11.46	-3.66
12,657.63	89.66	180.18	12,305.93	-255.29	-851.46	350.94	12.00	11.49	-3.49
12,700.00	89.66	180.18	12,306.19	-297.66	-851.59	393.04	0.00	0.00	0.00
12,800.00	89.66	180.18	12,306.79	-397.66	-851.90	492.42	0.00	0.00	0.00
12,900.00	89.66	180.18	12,307.39	-497.66	-852.21	591.80	0.00	0.00	0.00
13,000.00	89.66	180.18	12,307.99	-597.65	-852.52	691.18	0.00	0.00	0.00
13,100.00	89.66	180.18	12,308.59	-697.65	-852.83	790.56	0.00	0.00	0.00
13,200.00	89.66	180.18	12,309.19	-797.65	-853.13	889.93	0.00	0.00	0.00
13,300.00	89.66	180.18	12,309.80	-897.65	-853.44	989.31	0.00	0.00	0.00
13,400.00	89.66	180.18	12,310.40	-997.64	-853.75	1,088.69	0.00	0.00	0.00
13,500.00	89.66	180.18	12,311.00	-1,097.64	-854.06	1,188.07	0.00	0.00	0.00
13,600.00	89.66	180.18	12,311.60	-1,197.64	-854.37	1,287.44	0.00	0.00	0.00
13,700.00	89.66	180.18	12,312.20	-1,297.64	-854.68	1,386.82	0.00	0.00	0.00
13,800.00	89.66	180.18	12,312.81	-1,397.63	-854.99	1,486.20	0.00	0.00	0.00
13,900.00	89.66	180.18	12,313.41	-1,497.63	-855.29	1,585.58	0.00	0.00	0.00
14,000.00	89.66	180.18	12,314.01	-1,597.63	-855.60	1,684.95	0.00	0.00	0.00
14,100.00	89.66	180.18	12,314.61	-1,697.63	-855.91	1,784.33	0.00	0.00	0.00
14,200.00	89.66	180.18	12,315.21	-1,797.63	-856.22	1,883.71	0.00	0.00	0.00
14,300.00	89.66	180.18	12,315.81	-1,897.62	-856.53	1,983.09	0.00	0.00	0.00
14,400.00	89.66	180.18	12,316.42	-1,997.62	-856.84	2,082.46	0.00	0.00	0.00
14,500.00	89.66	180.18	12,317.02	-2,097.62	-857.15	2,181.84	0.00	0.00	0.00
14,600.00	89.66	180.18	12,317.62	-2,197.62	-857.46	2,281.22	0.00	0.00	0.00
14,700.00	89.66	180.18	12,318.22	-2,297.61	-857.76	2,380.60	0.00	0.00	0.00
14,800.00	89.66	180.18	12,318.82	-2,397.61	-858.07	2,479.98	0.00	0.00	0.00
14,825.18	89.66	180.18	12,318.98	-2,422.79	-858.15	2,505.00	0.00	0.00	0.00
14,836.85	89.42	180.18	12,319.07	-2,434.46	-858.19	2,516.60	2.00	-2.00	0.00
14,900.00	89.42	180.18	12,319.71	-2,497.61	-858.38	2,579.35	0.00	0.00	0.00
15,000.00	89.42	180.18	12,320.72	-2,597.60	-858.69	2,678.73	0.00	0.00	0.00

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Ghost Rider 22-15 Fed Com 405H
Company:	Apache	**TVD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Project:	Lea County, NM (NAD83 NME)	**MD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Site:	GHOST RIDER 22-15 FED COM PAD (N West) NEW	**North Reference:**	Grid
Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,100.00	89.42	180.18	12,321.73	-2,697.60	-859.00	2,778.10	0.00	0.00	0.00
15,200.00	89.42	180.18	12,322.73	-2,797.59	-859.31	2,877.47	0.00	0.00	0.00
15,300.00	89.42	180.18	12,323.74	-2,897.59	-859.61	2,976.85	0.00	0.00	0.00
15,400.00	89.42	180.18	12,324.75	-2,997.58	-859.92	3,076.22	0.00	0.00	0.00
15,500.00	89.42	180.18	12,325.76	-3,097.57	-860.23	3,175.60	0.00	0.00	0.00
15,600.00	89.42	180.18	12,326.77	-3,197.57	-860.54	3,274.97	0.00	0.00	0.00
15,700.00	89.42	180.18	12,327.78	-3,297.56	-860.85	3,374.35	0.00	0.00	0.00
15,800.00	89.42	180.18	12,328.79	-3,397.56	-861.15	3,473.72	0.00	0.00	0.00
15,900.00	89.42	180.18	12,329.80	-3,497.55	-861.46	3,573.09	0.00	0.00	0.00
16,000.00	89.42	180.18	12,330.81	-3,597.55	-861.77	3,672.47	0.00	0.00	0.00
16,100.00	89.42	180.18	12,331.82	-3,697.54	-862.08	3,771.84	0.00	0.00	0.00
16,200.00	89.42	180.18	12,332.83	-3,797.54	-862.39	3,871.22	0.00	0.00	0.00
16,300.00	89.42	180.18	12,333.84	-3,897.53	-862.69	3,970.59	0.00	0.00	0.00
16,400.00	89.42	180.18	12,334.85	-3,997.52	-863.00	4,069.97	0.00	0.00	0.00
16,500.00	89.42	180.18	12,335.85	-4,097.52	-863.31	4,169.34	0.00	0.00	0.00
16,600.00	89.42	180.18	12,336.86	-4,197.51	-863.62	4,268.71	0.00	0.00	0.00
16,700.00	89.42	180.18	12,337.87	-4,297.51	-863.93	4,368.09	0.00	0.00	0.00
16,800.00	89.42	180.18	12,338.88	-4,397.50	-864.24	4,467.46	0.00	0.00	0.00
16,900.00	89.42	180.18	12,339.89	-4,497.50	-864.54	4,566.84	0.00	0.00	0.00
17,000.00	89.42	180.18	12,340.90	-4,597.49	-864.85	4,666.21	0.00	0.00	0.00
17,100.00	89.42	180.18	12,341.91	-4,697.49	-865.16	4,765.59	0.00	0.00	0.00
17,106.46	89.42	180.18	12,341.98	-4,703.94	-865.18	4,772.00	0.00	0.00	0.00
17,117.57	89.64	180.18	12,342.07	-4,715.05	-865.21	4,783.05	2.00	2.00	0.00
17,200.00	89.64	180.18	12,342.58	-4,797.48	-865.47	4,864.96	0.00	0.00	0.00
17,300.00	89.64	180.18	12,343.20	-4,897.48	-865.78	4,964.34	0.00	0.00	0.00
17,400.00	89.64	180.18	12,343.82	-4,997.48	-866.08	5,063.72	0.00	0.00	0.00
17,500.00	89.64	180.18	12,344.44	-5,097.48	-866.39	5,163.10	0.00	0.00	0.00
17,600.00	89.64	180.18	12,345.06	-5,197.47	-866.70	5,262.47	0.00	0.00	0.00
17,700.00	89.64	180.18	12,345.69	-5,297.47	-867.01	5,361.85	0.00	0.00	0.00
17,800.00	89.64	180.18	12,346.31	-5,397.47	-867.32	5,461.23	0.00	0.00	0.00
17,900.00	89.64	180.18	12,346.93	-5,497.47	-867.63	5,560.61	0.00	0.00	0.00
18,000.00	89.64	180.18	12,347.55	-5,597.46	-867.93	5,659.98	0.00	0.00	0.00
18,100.00	89.64	180.18	12,348.17	-5,697.46	-868.24	5,759.36	0.00	0.00	0.00
18,200.00	89.64	180.18	12,348.79	-5,797.46	-868.55	5,858.74	0.00	0.00	0.00
18,300.00	89.64	180.18	12,349.41	-5,897.46	-868.86	5,958.12	0.00	0.00	0.00
18,400.00	89.64	180.18	12,350.03	-5,997.45	-869.17	6,057.49	0.00	0.00	0.00
18,500.00	89.64	180.18	12,350.66	-6,097.45	-869.48	6,156.87	0.00	0.00	0.00
18,600.00	89.64	180.18	12,351.28	-6,197.45	-869.78	6,256.25	0.00	0.00	0.00
18,700.00	89.64	180.18	12,351.90	-6,297.45	-870.09	6,355.63	0.00	0.00	0.00
18,800.00	89.64	180.18	12,352.52	-6,397.44	-870.40	6,455.00	0.00	0.00	0.00
18,900.00	89.64	180.18	12,353.14	-6,497.44	-870.71	6,554.38	0.00	0.00	0.00
19,000.00	89.64	180.18	12,353.76	-6,597.44	-871.02	6,653.76	0.00	0.00	0.00
19,100.00	89.64	180.18	12,354.38	-6,697.44	-871.33	6,753.14	0.00	0.00	0.00
19,200.00	89.64	180.18	12,355.00	-6,797.43	-871.63	6,852.51	0.00	0.00	0.00
19,300.00	89.64	180.18	12,355.63	-6,897.43	-871.94	6,951.89	0.00	0.00	0.00
19,400.00	89.64	180.18	12,356.25	-6,997.43	-872.25	7,051.27	0.00	0.00	0.00
19,500.00	89.64	180.18	12,356.87	-7,097.43	-872.56	7,150.65	0.00	0.00	0.00
19,600.00	89.64	180.18	12,357.49	-7,197.42	-872.87	7,250.02	0.00	0.00	0.00
19,700.00	89.64	180.18	12,358.11	-7,297.42	-873.18	7,349.40	0.00	0.00	0.00
19,800.00	89.64	180.18	12,358.73	-7,397.42	-873.48	7,448.78	0.00	0.00	0.00
19,900.00	89.64	180.18	12,359.35	-7,497.42	-873.79	7,548.16	0.00	0.00	0.00
19,999.99	89.64	180.18	12,359.98	-7,597.40	-874.10	7,647.52	0.00	0.00	0.00

Planning Report

Database:	Midland	**Local Co-ordinate Reference:**	Well Ghost Rider 22-15 Fed Com 405H
Company:	Apache	**TVD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Project:	Lea County, NM (NAD83 NME)	**MD Reference:**	WELL @ 3621.99usft (Original Well Elev)
Site:	GHOST RIDER 22-15 FED COM PAD (N West) NEW	**North Reference:**	Grid
Well:	Ghost Rider 22-15 Fed Com 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan 2		

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
T2 Ghost Rider 22-15 Fe - plan hits target center - Point	0.00	0.00	12,318.98	-2,422.79	-858.15	440,829.61	747,911.65	32.210153	-103.665418
T3 Ghost Rider 22-15 Fe - plan hits target center - Point	0.00	0.00	12,341.98	-4,703.94	-865.18	438,548.46	747,904.62	32.203883	-103.665487
BHL Ghost Rider 22-15 I - plan hits target center - Point	0.00	0.00	12,359.98	-7,597.40	-874.10	435,655.00	747,895.70	32.195930	-103.665574

Apache Corporation, Shallow Casing Set + Liner Variance Request

Apache would like to request a variance for the following: set the intermediate casing shallower than originally planned and run a liner to the original casing point on the Ghost Rider 22-15 Federal Com # 405H - APD# 30-025-49361.

A. Original Plan

Apache "Big Bore Design"	
Hole Size	**Casing Size**
17-1/2"	13-5/8"
12-1/4"	9-5/8"
8-1/2"	5-1/2"

fig. 1

Apache's original plan was to drill the first well on the Ghost Rider Fed Com Pad as a "big bore design" (fig. 1) and deep set the intermediate casing string (inside 3rd Bone Carbonate) (fig. 2). This design allows for a contingency liner to be ran as an option in case of any well control or wellbore issues that dictate an additional casing string. As time has progressed, further evaluation has been considered into the existing wells that are on the pad(s) or near the pad(s). These wells in question are our own producing wells see (fig. 3).

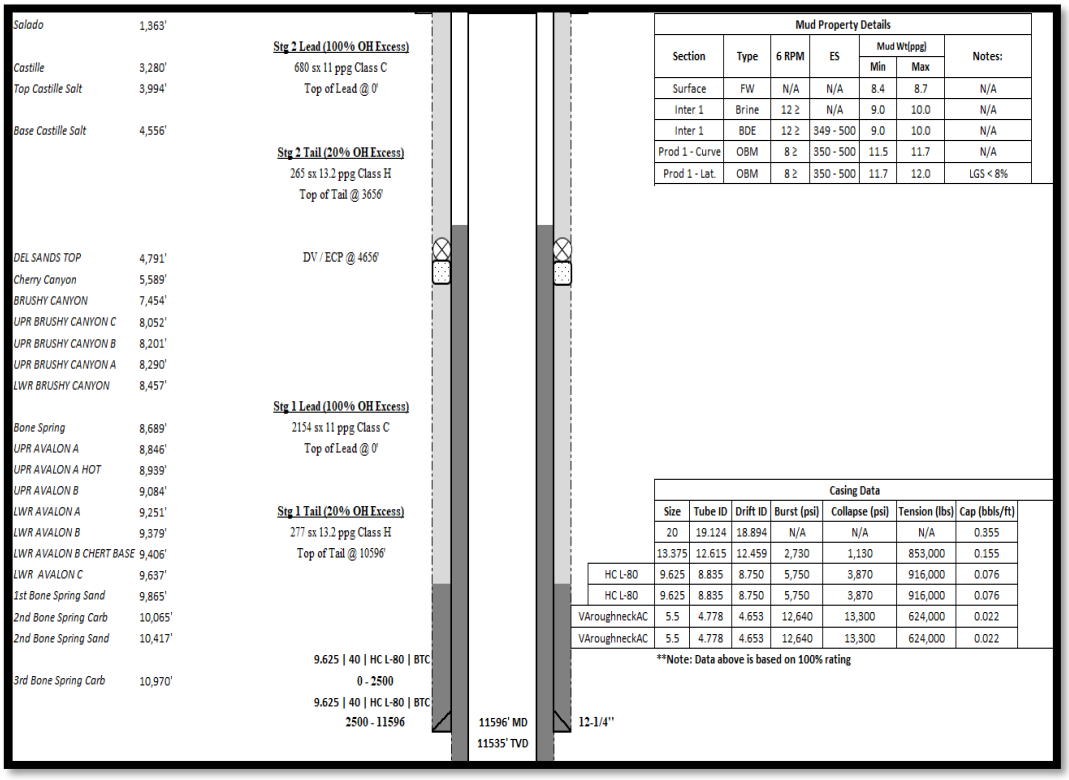

fig. 2

Apache Corporation, Shallow Casing Set + Liner Variance Request

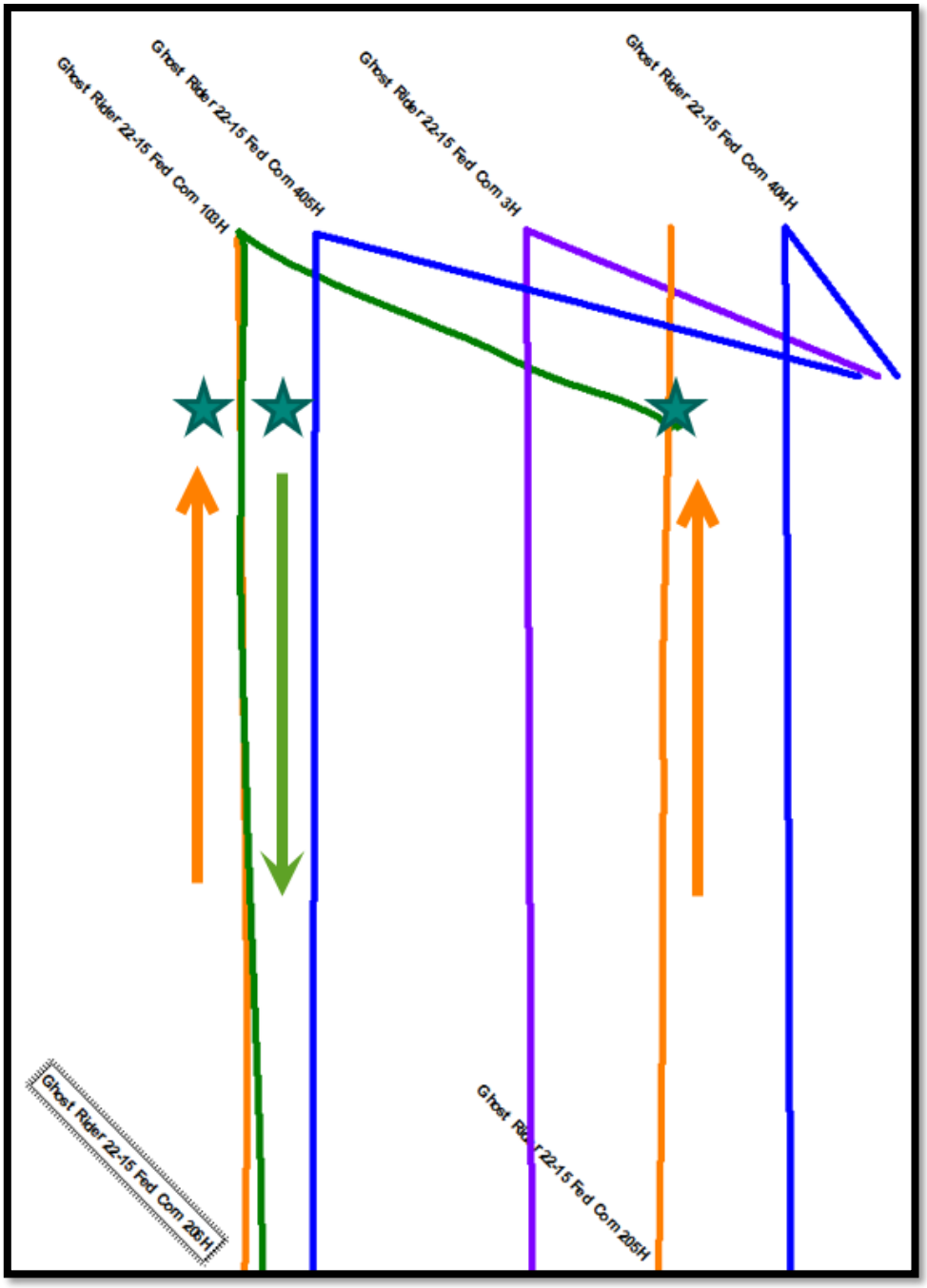

fig. 3

Apache currently has (2) 2nd Bone Spring wells (**orange color**) producing which were drilled from south to the north. They also have (1) 1st Bone Spring well (**green**) drilled from north to south including our current wells planned (**purple** – (1) Avalon, **blue** – (2) Wolfcamp). After further evaluation, it has been brought to our attention that there is a high probability that we could encounter high pressure in the transition from the Avalon to the 1st Bone Spring. Then followed up with losses as we continue to drill through the toe of the 2nd Bone Spring wells. These (2) scenarios in place in the same well could be a "perfect storm" which would compromise the integrity of our well.

Apache Corporation, Shallow Casing Set + Liner Variance Request

B. Revised Plan

Apache would like to request a variance to set intermediate casing shallower (before the transition to the 1st Bone Spring) on this well but also with the possibility of the other 4 Wolfcamp wells, depending on the outcome of this well. Then Apache would proceed to drill an 8-3/4" OH and setting a 7-5/8" liner at the **original** casing setting depth which is the 3rd Bone Spring Carbonate (fig. 4) with the possibility of the other 4 Wolfcamp, depending on the outcome of this well. The outcome of this well could determine the sequence needed for the following wells but this would provide a safer operation for all parties involved.

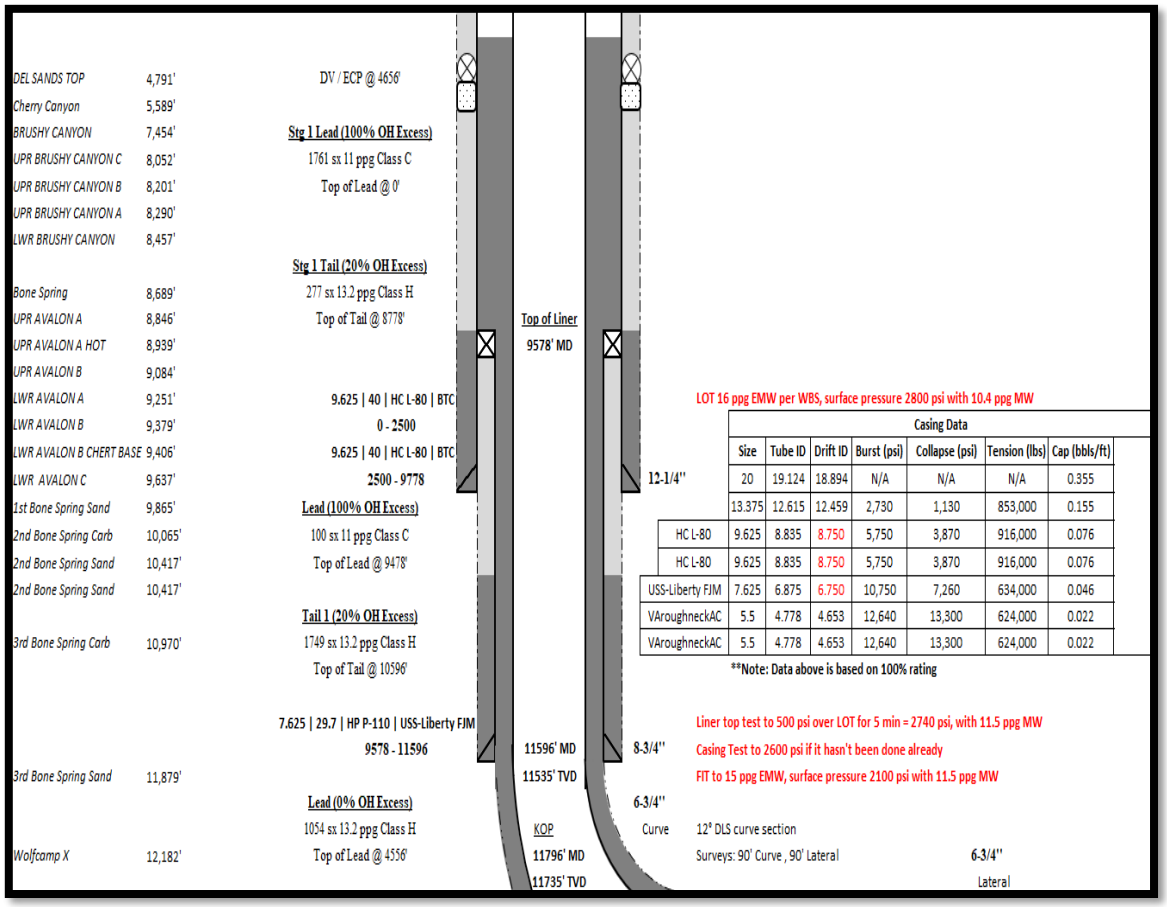

fig. 4

U. S. Steel Tubular Products

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7.625" 29.70lbs/ft (0.375" Wall) P110 HP USS-LIBERTY FJM®

MECHANICAL PROPERTIES	Pipe	USS-LIBERTY FJM®	
Minimum Yield Strength	125,000	--	psi
Maximum Yield Strength	140,000	--	psi
Minimum Tensile Strength	130,000	--	psi
DIMENSIONS	**Pipe**	**USS-LIBERTY FJM®**	
Outside Diameter	7.625	7.625	in.
Wall Thickness	0.375	--	in.
Inside Diameter	6.875	6.789	in.
Standard Drift	6.750	6.750	in.
Alternate Drift	--	--	in.
Nominal Linear Weight, T&C	29.70	--	lbs/ft
Plain End Weight	29.06	--	lbs/ft
SECTION AREA	**Pipe**	**USS-LIBERTY FJM®**	
Critical Area	8.541	5.074	sq. in.
Joint Efficiency	--	59.4	%
PERFORMANCE	**Pipe**	**USS-LIBERTY FJM®**	
Minimum Collapse Pressure	7,260	7,260	psi
Minimum Internal Yield Pressure	10,750	10,750	psi
Minimum Pipe Body Yield Strength	1,068,000	--	lbs
Joint Strength	--	634,000	lbs
Compression Rating	--	634,000	lbs
Reference Length	--	14,555	ft
Maximum Uniaxial Bend Rating	--	44.6	deg/100 ft
MAKE-UP DATA	**Pipe**	**USS-LIBERTY FJM®**	
Make-Up Loss	--	3.92	in.
Minimum Make-Up Torque	--	11,600	ft-lbs
Maximum Make-Up Torque	--	16,700	ft-lbs

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Compressive & Tensile Connection Efficiencies are calculated by dividing the connection critical area by the pipe body area.
3. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
4. USS-LIBERTY FJM™ connections are optimized for each combination of OD and wall thickness and cannot be interchanged.
5. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
6. Reference length is calculated by joint strength divided by nominal plain end weight with 1.5 safety factor.
7. Connection external pressure leak resistance has been verified to 100% API pipe body collapse pressure following the guidelines of API 5C5 Cal III.

U. S. Steel Tubular Products
460 Wildwood Forest Drive, Suite 300S
Spring, Texas 77380

1-877-893-9461
connections@uss.com
www.usstubular.com

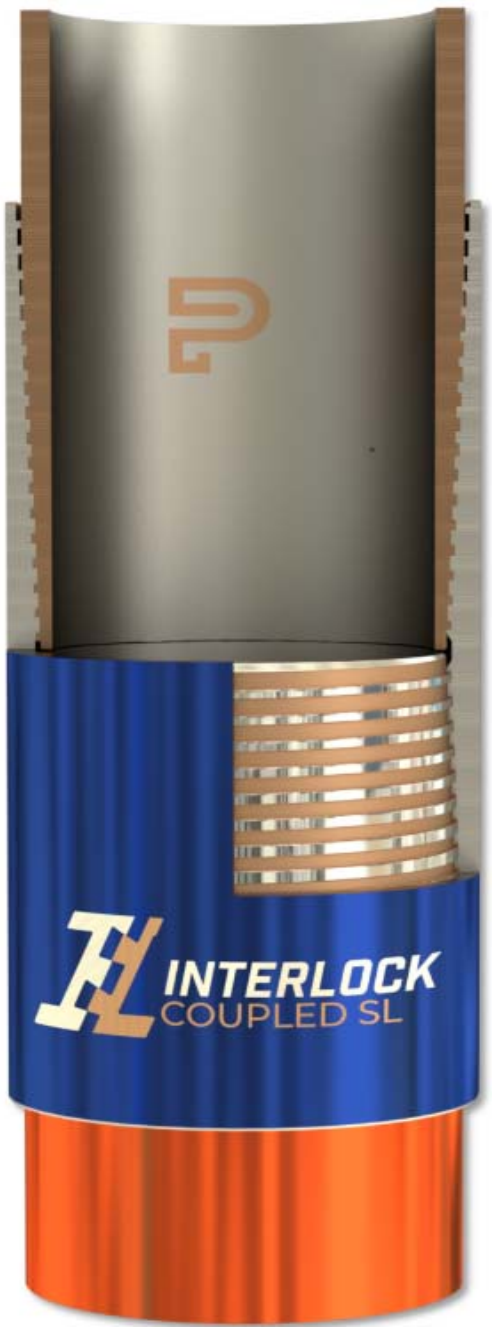
PRECISION

InterLock SlimLine 5.500 in. 20.00 lb/ft P110 CY

Pipe Body		
Nominal OD	5.500	inches
Nominal Weight	20.00	lb/ft
Wall Thickness	0.361	inches
Plain End Weight	19.81	lb/ft
Drift	4.653	inches
Nominal ID	4.778	inches
Grade	P110 CY	
Min Yield	110,000	lbf/in²
Min Tensile	125,000	lbf/in²
Critical Section Area	5.828	in²
Pipe Body Yield Strength	641	kips
Min Internal Yield Pressure	12,640	psi
Collapse Pressure	11,100	psi

Connection		
Coupling OD	5.900	inches
Connection ID	4.778	inches
Coupling Length	10.918	inches
Make Up Loss	5.554	inches
Coupling CSA	6.233	in²
Pin CSA	5.828	in²
Internal Pressure Rating	100%	
External Pressure Rating	100%	
Tension Efficiency	100%	
Connection Strength	641	kips
Compression Efficiency	100%	
Uniaxial Bend Rating	85.5	° / 100 ft

Make-up Values		
Minimum Torque	16,000	ft-lbs
Optimum Torque	18,000	ft-lbs
Maximum Torque	20,000	ft-lbs
Operating Torque	35,700	ft-lbs
Yield Torque	42,000	ft-lbs



U. S. Steel Tubular Products

10/5/2021 10:24:00 AM

5.500" 20.00lb/ft (0.361" Wall) P110 HC USS-CDC HTQ®

MECHANICAL PROPERTIES	Pipe	USS-CDC HTQ®		--
Minimum Yield Strength	110,000	--	psi	--
Maximum Yield Strength	140,000	--	psi	--
Minimum Tensile Strength	125,000	--	psi	--
DIMENSIONS	**Pipe**	**USS-CDC HTQ®**		**--**
Outside Diameter	5.500	6.300	in.	--
Wall Thickness	0.361	--	in.	--
Inside Diameter	4.778	4.778	in.	--
Standard Drift	4.653	4.653	in.	--
Alternate Drift	--	--	in.	--
Nominal Linear Weight, T&C	20.00	--	lb/ft	--
Plain End Weight	19.83	--	lb/ft	--
SECTION AREA	**Pipe**	**USS-CDC HTQ®**		**--**
Critical Area	5.828	5.828	sq. in.	--
Joint Efficiency	--	100.0	%	--
PERFORMANCE	**Pipe**	**USS-CDC HTQ®**		**--**
Minimum Collapse Pressure	12,200	12,200	psi	--
External Pressure Leak Resistance	--	9,760	psi	--
Minimum Internal Yield Pressure	12,640	12,640	psi	--
Minimum Pipe Body Yield Strength	641,000	--	lb	--
Joint Strength	--	667,000	lb	--
Compression Rating	--	400,000	lb	--
Reference Length	--	22,233	ft	--
Maximum Uniaxial Bend Rating	--	57.2	deg/100 ft	--
MAKE-UP DATA	**Pipe**	**USS-CDC HTQ®**		**--**
Make-Up Loss	--	4.63	in.	--
Minimum Make-Up Torque	--	13,000	ft-lb	--
Maximum Make-Up Torque	--	18,500	ft-lb	--
Connection Yield Torque	--	22,900	ft-lb	--

Notes

1. Other than proprietary collapse and connection values, performance properties have been calculated using standard equations defined by API 5C3 and do not incorporate any additional design or safety factors. Calculations assume nominal pipe OD, nominal wall thickness and Specified Minimum Yield Strength (SMYS).
2. Uniaxial bending rating shown is structural only, and equal to compression efficiency.
3. Torques have been calculated assuming a thread compound friction factor of 1.0 and are recommended only. Field make-up torques may require adjustment based on actual field conditions (e.g. make-up speed, temperature, thread compound, etc.).
4. Reference length is calculated by joint strength divided by nominal threaded and coupled weight with 1.5 safety factor.
5. Connection external pressure leak resistance has been verified to 80% API pipe body collapse pressure following the guidelines of API 5C5 Cal II.

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

CONDITIONS

Action 151999

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 151999
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	None	10/20/2022