

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 285344

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

1. Operator Name and Address CAZA OPERATING, LLC 200 N Loraine St Midland, TX 79701		2. OGRID Number 249099
		3. API Number 30-025-47522
4. Property Code 40096	5. Property Name GRAMMA 27 STATE	6. Well No. 010H

7. Surface Location

UL - Lot A	Section 27	Township 21S	Range 34E	Lot Idn A	Feet From 24	N/S Line N	Feet From 1040	E/W Line E	County Lea
---------------	---------------	-----------------	--------------	--------------	-----------------	---------------	-------------------	---------------	---------------

8. Proposed Bottom Hole Location

UL - Lot P	Section 27	Township 21S	Range 34E	Lot Idn P	Feet From 20	N/S Line S	Feet From 490	E/W Line E	County Lea
---------------	---------------	-----------------	--------------	--------------	-----------------	---------------	------------------	---------------	---------------

9. Pool Information

GRAMA RIDGE;BONE SPRING, NE	28435
-----------------------------	-------

Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3690
16. Multiple N	17. Proposed Depth 13972	18. Formation Bone Spring	19. Contractor	20. Spud Date 9/25/2020
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	1900	1400	0
Int1	12.25	9.625	40	5400	1000	0
Prod	8.75	6	24.5	13972	3200	0

Casing/Cement Program: Additional Comments

--

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	5000	Schaffer
Double Ram	5000	5000	Schaffer

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Electronically filed by Steve Morris	Approved By: Paul F Kautz	
Title: Engineer	Title: Geologist	
Email Address: steve.morris@morcoreengineering.com	Approved Date: 8/19/2020	Expiration Date: 8/19/2022
Date: 8/10/2020	Phone: 432-201-3031	Conditions of Approval Attached

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code 28435	³ Pool Name GRAMMA RIDGE; BONE SPRING NORTHEAST
⁴ Property Code	⁵ Property Name GRAMMA 27 STATE	⁶ Well Number 10H
⁷ OGRID No. 249099	⁸ Operator Name CAZA OPERATING LLC	⁹ Elevation 3690'

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
A	27	21S	34E		24	NORTH	1040	EAST	LEA

¹¹ Bottom Hole Location If Different From Surface

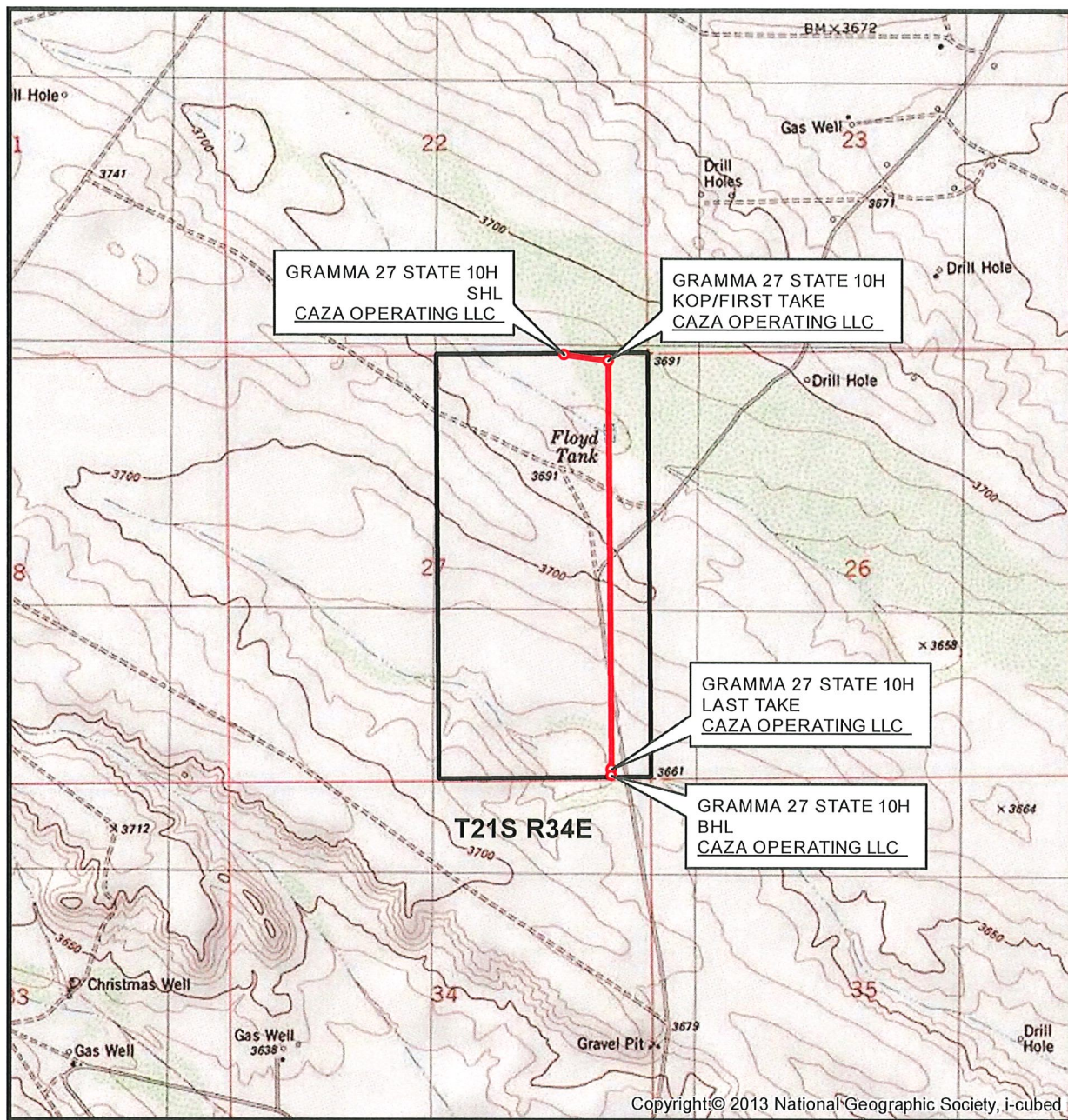
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	27	21S	34E		20	SOUTH	490	EAST	LEA

¹² Dedicated Acres 320.0	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
--	-------------------------------	----------------------------------	-------------------------

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.

	CORNER COORDINATES NAD 83, SPCS NM EAST A - X: 814045.19' / Y: 531191.33' B - X: 814091.77' / Y: 525908.89' C - X: 811451.05' / Y: 525883.30' D - X: 811405.38' / Y: 531163.66' CORNER COORDINATES NAD 27, SPCS NM EAST A - X: 772862.50' / Y: 531129.95' B - X: 772908.97' / Y: 525847.66' C - X: 770268.33' / Y: 525822.08' D - X: 770222.76' / Y: 531102.28' SURFACE HOLE LOCATION 24' FNL 1040' FEL, SECTION 27 NAD 83, SPCS NM EAST X: 813005.46' / Y: 531156.43' LAT: 32.45713256N / LON: 103.45256820W NAD 27, SPCS NM EAST X: 771822.80' / Y: 531095.05' LAT: 32.45700852N / LON: 103.45208647W KICK OFF / FIRST TAKE POINT 100' FNL 490' FEL, SECTION 27 NAD 83, SPCS NM EAST X: 813556.10' / Y: 531086.20' LAT: 32.45692703N / LON: 103.45078505W NAD 27, SPCS NM EAST X: 772373.42' / Y: 531024.82' LAT: 32.45680299N / LON: 103.45030342W LAST TAKE POINT 100' FSL 490' FEL, SECTION 27 NAD 83, SPCS NM EAST X: 813600.92' / Y: 526004.14' LAT: 32.44295807N / LON: 103.45077595W NAD 27, SPCS NM EAST X: 772418.13' / Y: 525942.91' LAT: 32.44283399N / LON: 103.45029473W BOTTOM HOLE LOCATION 20' FSL 490' FEL, SECTION 27 NAD 83, SPCS NM EAST X: 813601.62' / Y: 525924.14' LAT: 32.44273818N / LON: 103.45077581W NAD 27, SPCS NM EAST X: 772418.83' / Y: 525862.92' LAT: 32.44261410N / LON: 103.45029459W	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. Signature: _____ Date: 8/10/2020 Steve Morris Printed Name steve.morris@morcoreengineering.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. FEBRUARY 17, 2020 Date of Survey Signature and Seal of Professional Surveyor: _____ Certificate Number LLOYD P. SHORT 21653	
	SHEET 1 OF 3 JOB No. R4049_002_E REV 1 TCS 2/10/2020	
	Distances/areas relative to NAD 83 Combined Scale Factor: 0.99981911 Convergence Angle: 00°28'17.090004"	

LOCATION VERIFICATION MAP



SEC. 27 TWP. 21-S RGE. 34-E
 SURVEY: N.M.P.M.
 COUNTY: LEA
 OPERATOR: CAZA OPERATING LLC
 DESCRIPTION: 24' FNL & 1040' FEL
 ELEVATION: 3690'
 LEASE: GRAMMA 27 STATE
 U.S.G.S. TOPOGRAPHIC MAP: SAN SIMON RANCH, NM.

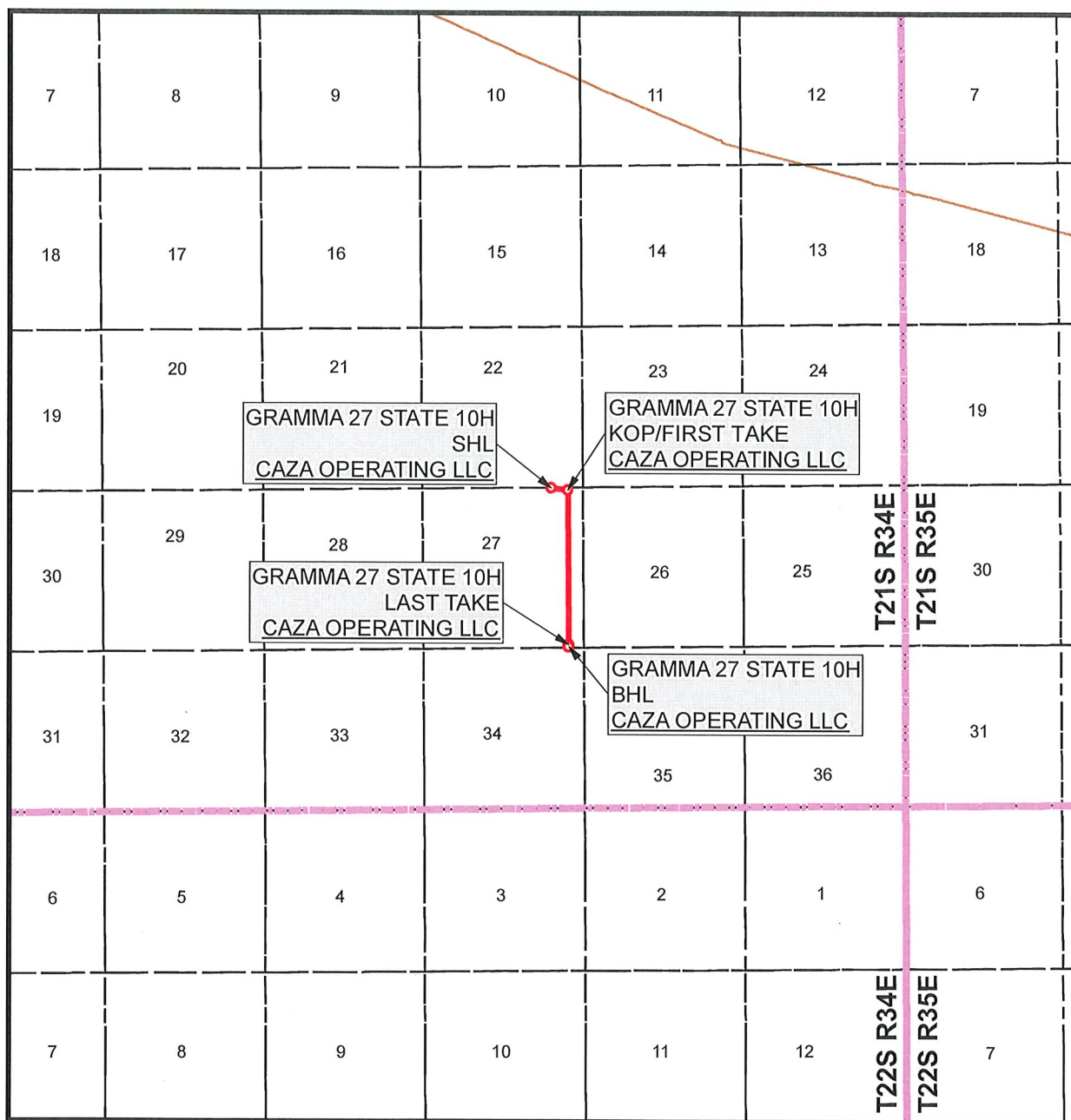
1" = 2,000'
 CONTOUR INTERVAL = 10'



SHEET 2 OF 3

PREPARED BY:
 R-SQUARED GLOBAL, LLC
 1309 LOUISVILLE AVENUE, MONROE, LA 71201
 318-323-6900 OFFICE
 JOB No. R4049_002_E

VICINITY MAP



SEC. 27 TWP. 21-S RGE. 34-E
SURVEY: N.M.P.M.
COUNTY: LEA
OPERATOR: CAZA OPERATING LLC
DESCRIPTION: 24' FNL & 1040' FEL
ELEVATION: 3690'
LEASE: GRAMMA 27 STATE
U.S.G.S. TOPOGRAPHIC MAP: SAN SIMON RANCH, NM.

1" = 1 MILE



SHEET 3 OF 3

PREPARED BY:
R-SQUARED GLOBAL, LLC
1309 LOUISVILLE AVENUE, MONROE, LA 71201
318-323-6900 OFFICE
JOB No. R4049_002_E

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

GAS CAPTURE PLAN

Date: 8/19/2020

☒ Original

Operator & OGRID No.: [249099] CAZA OPERATING, LLC

☐ Amended - Reason for
Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
GRAMMA 27 STATE #010H	30-025-47522	A-27-21S-34E	0024N 1040E	500	None	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to TARGA MIDSTREAM SERVICES LLC and will be connected to TARGA MIDSTREAM SERVICES LLC Low Pressure gathering system located in Lea County, New Mexico. It will require 300' of pipeline to connect the facility to Low Pressure gathering system. CAZA OPERATING, LLC provides (periodically) to TARGA MIDSTREAM SERVICES LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, CAZA OPERATING, LLC and TARGA MIDSTREAM SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at TARGA MIDSTREAM SERVICES LLC Processing Plant located in Sec. 33, Twn. 21S, Rng. 37E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on TARGA MIDSTREAM SERVICES LLC system at that time. Based on current information, it is CAZA OPERATING, LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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 APD Comments

Permit 285344

PERMIT COMMENTS

Operator Name and Address: CAZA OPERATING, LLC [249099] 200 N Loraine St Midland, TX 79701		API Number: 30-025-47522
		Well: GRAMMA 27 STATE #010H
Created By	Comment	Comment Date

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 APD Conditions

Permit 285344

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: CAZA OPERATING, LLC [249099] 200 N Loraine St Midland, TX 79701	API Number: 30-025-47522
	Well: GRAMMA 27 STATE #010H

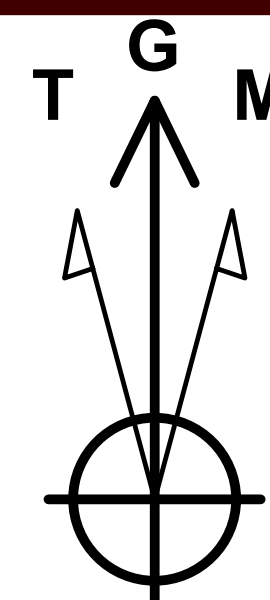
OCD Reviewer	Condition
pkautz	Will require a directional survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	1)- The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.



Project: Lea County, New Mexico (NAD83)
Site: Gramma 27 State
Well: 10H
Wellbore: OH
Design: Plan 1 02-21-20
Rig: Citadel #2

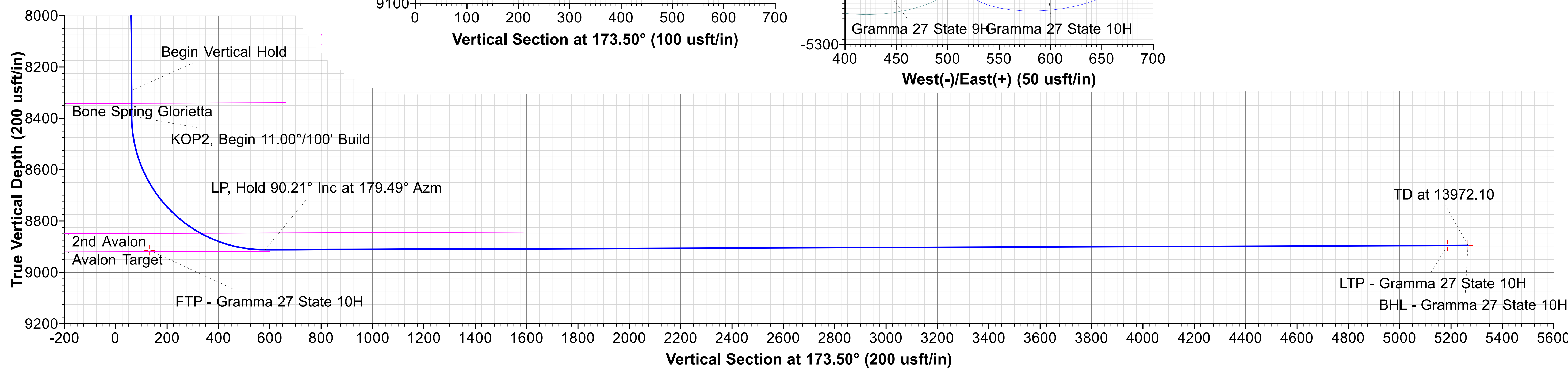
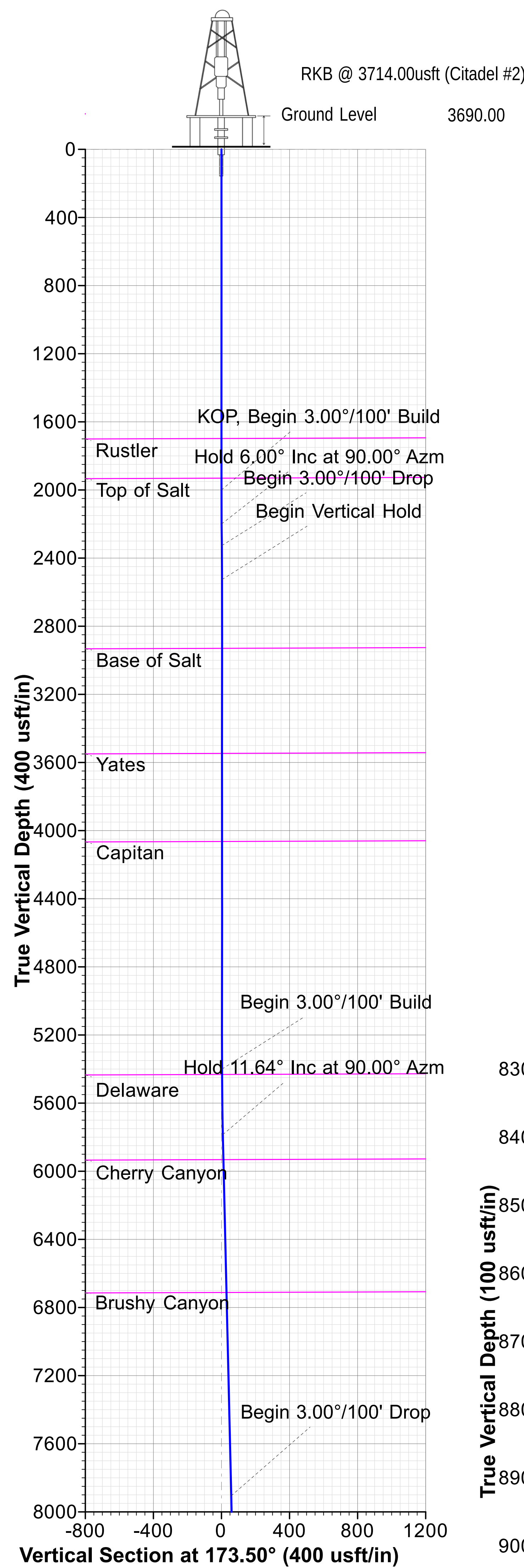


PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.47°
Magnetic North: 6.09°

Magnetic Field
Strength: 47995.4snT
Dip Angle: 60.22°
Date: 4/21/2020
Model: MVHD



WELL DETAILS						
+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	
0.00	0.00	531156.43	813005.46	32° 27' 25.677216 N	103° 27' 9.245520 W	

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Gramma 27 State 10H	8895.00	-5232.29	596.16	525924.14	813601.62	32° 26' 33.857448 N	103° 27' 2.792916 W
LTP - Gramma 27 State 10H	8895.29	-5152.29	595.45	526004.14	813600.92	32° 26' 34.649052 N	103° 27' 2.793420 W
FTP - Gramma 27 State 10H	8914.00	-70.23	550.64	531086.20	813556.10	32° 27' 24.937308 N	103° 27' 2.826180 W

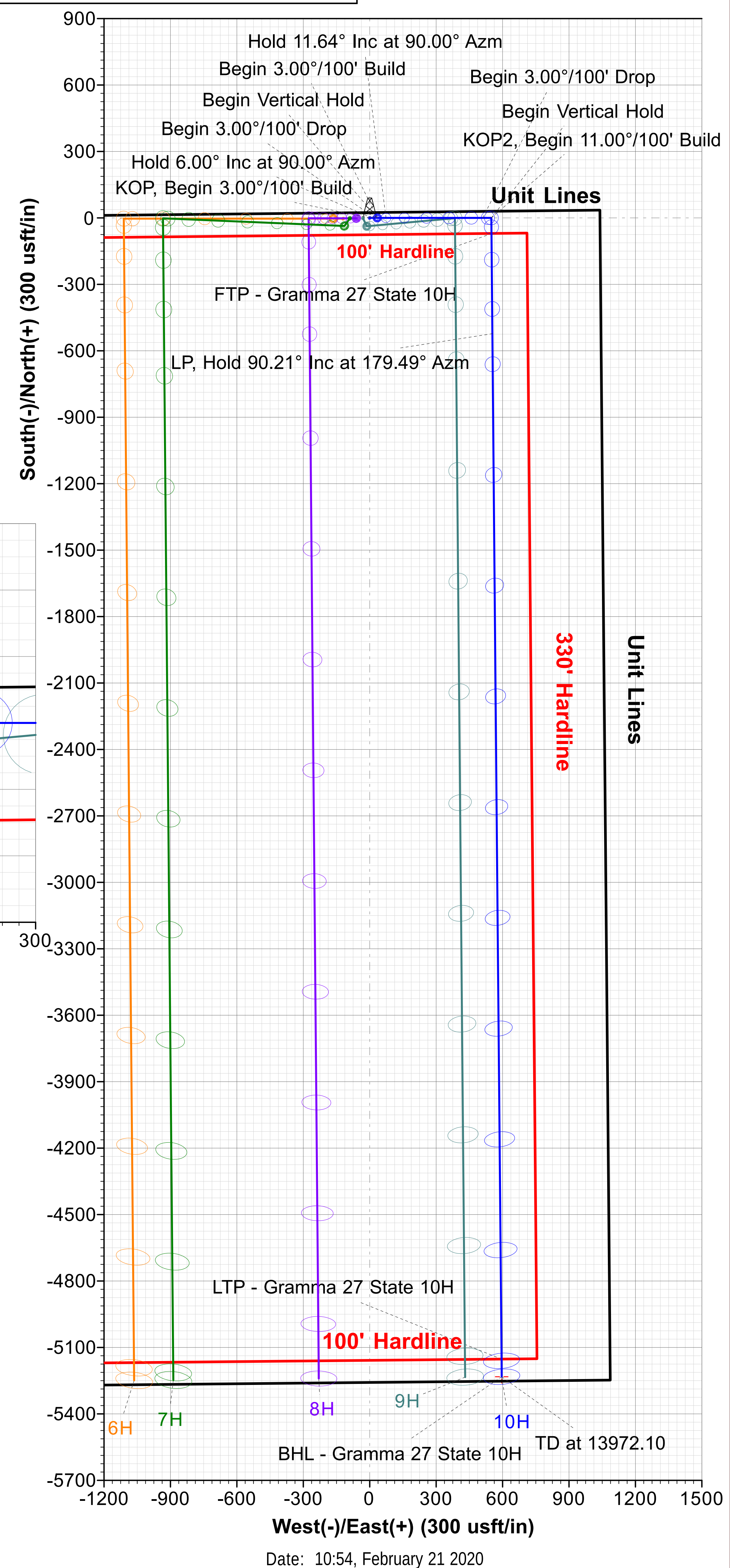
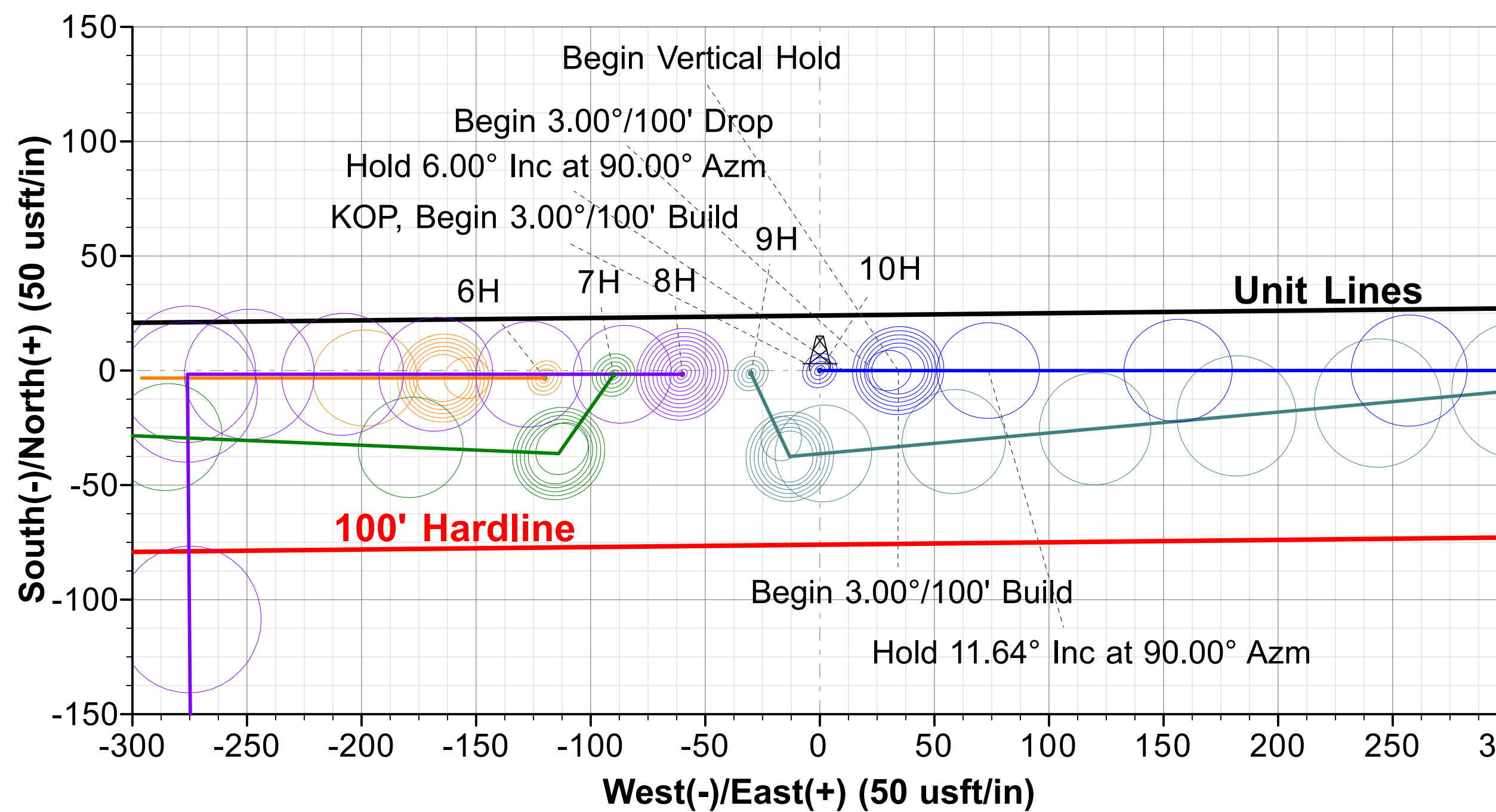
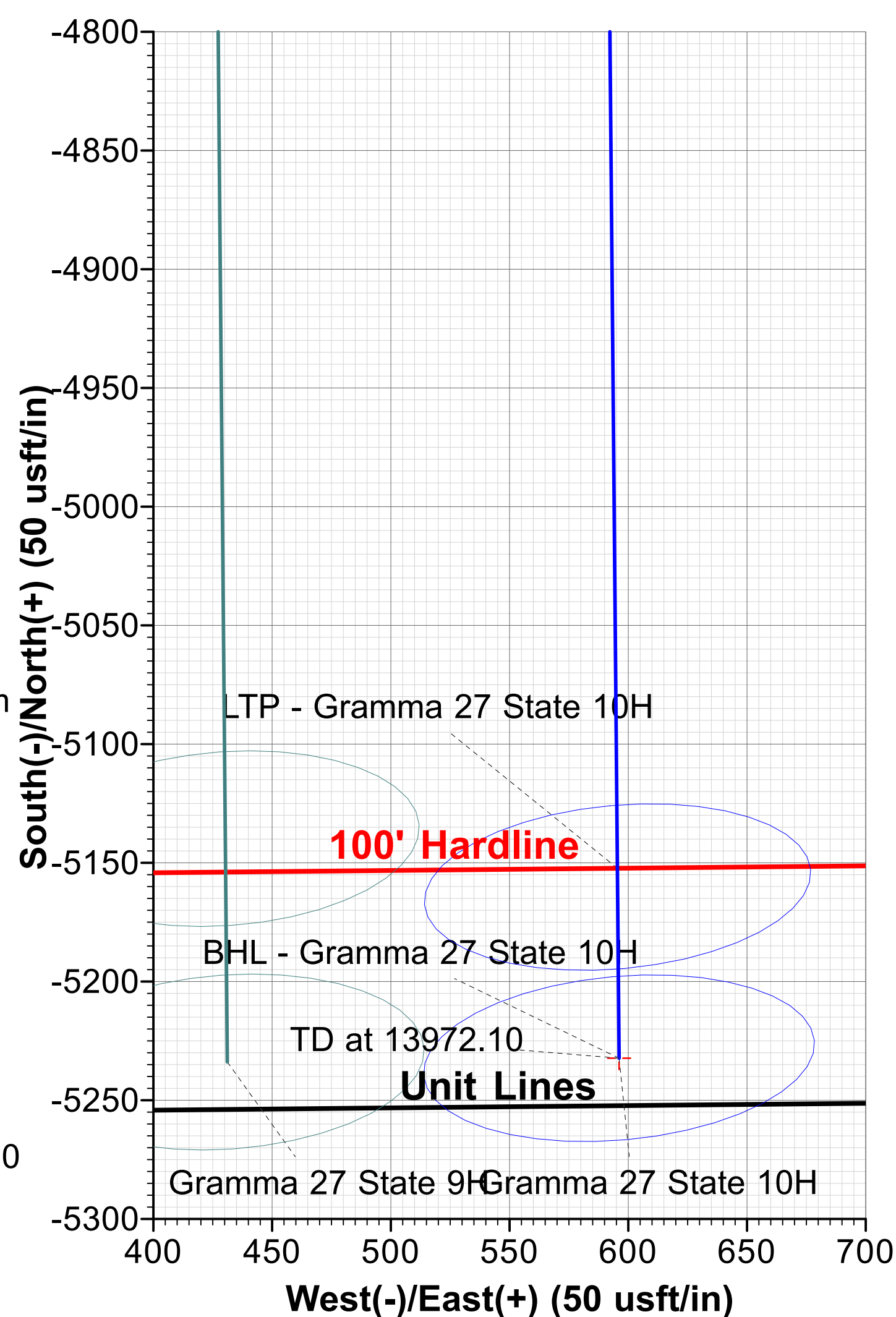
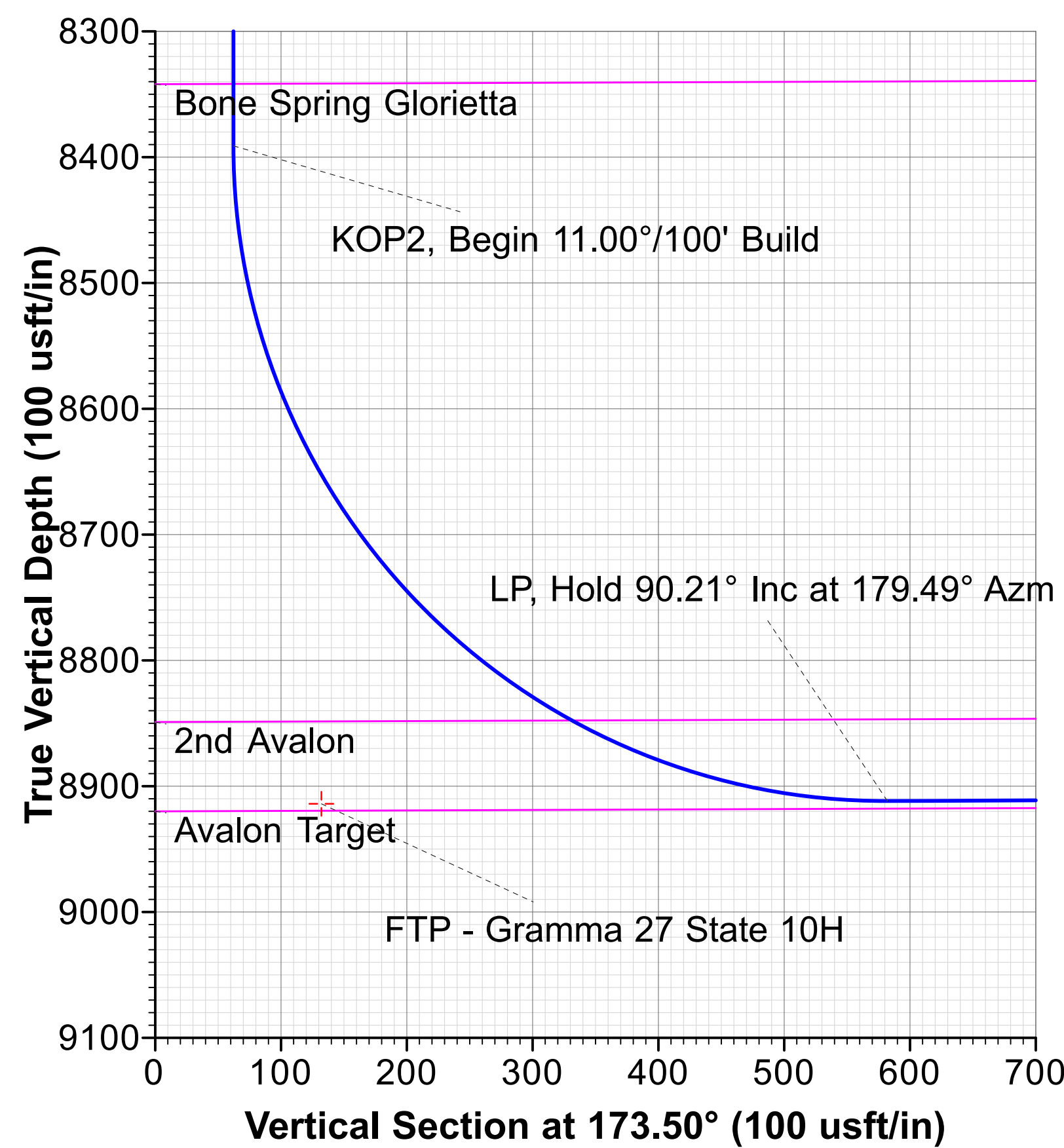
SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00		KOP, Begin 3.00°/100' Build
3	2200.00	6.00	90.00	2199.63	0.00	10.46	3.00	90.00	1.18		Hold 6.00° Inc at 90.00° Azm
4	2327.50	6.00	90.00	2326.44	0.00	23.79	0.00	0.00	2.69		Begin 3.00°/100' Drop
5	2527.50	0.00	0.00	2526.07	0.00	34.25	3.00	180.00	3.88		Begin Vertical Hold
6	5401.43	0.00	0.00	5400.00	0.00	34.25	0.00	0.00	3.88		Begin 3.00°/100' Build
7	5789.35	11.64	90.00	5785.26	0.00	73.51	3.00	90.00	8.32		Hold 11.64° Inc at 90.00° Azm
8	7954.34	11.64	90.00	7905.74	0.00	510.24	0.00	0.00	57.76		Begin 3.00°/100' Drop
9	8342.26	0.00	0.00	8291.00	0.00	549.50	3.00	180.00	62.21		Begin Vertical Hold
10	8442.26	0.00	0.00	8391.00	0.00	549.50	0.00	0.00	62.21		KOP2, Begin 11.00°/100' Build
11	9262.31	90.21	179.49	8911.87	-522.72	554.16	11.00	179.49	582.09		LP, Hold 90.21° Inc at 179.49° Azm
12	13972.10	90.21	179.49	8895.00	-5232.29	596.16	0.00	0.00	5266.14	BHL - Gramma 27 State 10H	TD at 13972.10

LEGEND

- 6H, OH, Plan 1 02-21-20 V0
- 8H, OH, Plan 1 02-21-20 V0
- 7H, OH, Plan 1 02-21-20 V0
- 9H, OH, Plan 1 02-21-20 V0
- Plan 1 02-21-20

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1698.00	1698.00	Rustler	-0.21	173.50
1931.00	1931.00	Top of Salt	-0.21	173.50
2929.99	2931.41	Base of Salt	-0.21	173.50
3546.99	3548.41	Yates	-0.21	173.50
4063.99	4065.41	Capitan	-0.21	173.50
5431.99	5433.42	Delaware	-0.21	173.50
5931.96	5939.13	Cherry Canyon	-0.21	173.50
6711.89	6735.43	Brushy Canyon	-0.21	173.50
8341.77	8393.03	Bone Spring Glorietta	-0.21	173.50
8847.79	8999.34	2nd Avalon	-0.21	173.50





Caza Operating, LLC

Lea County, New Mexico (NAD83)

Gamma 27 State

10H

OH

Plan: Plan 1 02-21-20

Standard Planning Report

21 February, 2020





Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gamma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

Project	Lea County, New Mexico (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Gamma 27 State			
Site Position: From:	Map	Northing:	531,153.17 usft	Latitude:	32° 27' 25.654752 N
		Easting:	812,885.49 usft	Longitude:	103° 27' 10.645956 W
		Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "

Well	10H					
Well Position	+N/-S	3.26 usft	Northing:	531,156.43 usft	Latitude:	32° 27' 25.677216 N
	+E/-W	119.97 usft	Easting:	813,005.46 usft	Longitude:	103° 27' 9.245520 W
Position Uncertainty		1.00 usft	Wellhead Elevation:		Ground Level:	3,690.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	4/21/2020	6.56	60.22	47,995.39476372

Design	Plan 1 02-21-20			
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	173.50

Plan Survey Tool Program	Date	2/21/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	13,972.10	Plan 1 02-21-20 (OH)	MWD+HRGM
				OWSG MWD + HRGM



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gamma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

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	
2,200.00	6.00	90.00	2,199.63	0.00	10.46	3.00	3.00	0.00	90.00	
2,327.50	6.00	90.00	2,326.44	0.00	23.79	0.00	0.00	0.00	0.00	
2,527.50	0.00	0.00	2,526.07	0.00	34.25	3.00	-3.00	0.00	180.00	
5,401.43	0.00	0.00	5,400.00	0.00	34.25	0.00	0.00	0.00	0.00	
5,789.35	11.64	90.00	5,785.26	0.00	73.51	3.00	3.00	0.00	90.00	
7,954.34	11.64	90.00	7,905.74	0.00	510.24	0.00	0.00	0.00	0.00	
8,342.26	0.00	0.00	8,291.00	0.00	549.50	3.00	-3.00	0.00	180.00	
8,442.26	0.00	0.00	8,391.00	0.00	549.50	0.00	0.00	0.00	0.00	
9,262.31	90.21	179.49	8,911.87	-522.72	554.16	11.00	11.00	21.89	179.49	
13,972.10	90.21	179.49	8,895.00	-5,232.29	596.16	0.00	0.00	0.00	0.00	BHL - Gamma 27 St



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gamma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

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
1,698.00	0.00	0.00	1,698.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,931.00	0.00	0.00	1,931.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salt									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 3.00°/100' Build									
2,100.00	3.00	90.00	2,099.95	0.00	2.62	0.30	3.00	3.00	0.00
2,200.00	6.00	90.00	2,199.63	0.00	10.46	1.18	3.00	3.00	0.00
Hold 6.00° Inc at 90.00° Azm									
2,300.00	6.00	90.00	2,299.09	0.00	20.92	2.37	0.00	0.00	0.00
2,327.50	6.00	90.00	2,326.44	0.00	23.79	2.69	0.00	0.00	0.00
Begin 3.00°/100' Drop									
2,400.00	3.82	90.00	2,398.67	0.00	30.00	3.40	3.00	-3.00	0.00
2,500.00	0.82	90.00	2,498.57	0.00	34.05	3.86	3.00	-3.00	0.00
2,527.50	0.00	0.00	2,526.07	0.00	34.25	3.88	3.00	-3.00	0.00
Begin Vertical Hold									
2,600.00	0.00	0.00	2,598.57	0.00	34.25	3.88	0.00	0.00	0.00
2,700.00	0.00	0.00	2,698.57	0.00	34.25	3.88	0.00	0.00	0.00
2,800.00	0.00	0.00	2,798.57	0.00	34.25	3.88	0.00	0.00	0.00
2,900.00	0.00	0.00	2,898.57	0.00	34.25	3.88	0.00	0.00	0.00
2,931.41	0.00	0.00	2,929.99	0.00	34.25	3.88	0.00	0.00	0.00
Base of Salt									
3,000.00	0.00	0.00	2,998.57	0.00	34.25	3.88	0.00	0.00	0.00
3,100.00	0.00	0.00	3,098.57	0.00	34.25	3.88	0.00	0.00	0.00
3,200.00	0.00	0.00	3,198.57	0.00	34.25	3.88	0.00	0.00	0.00
3,300.00	0.00	0.00	3,298.57	0.00	34.25	3.88	0.00	0.00	0.00
3,400.00	0.00	0.00	3,398.57	0.00	34.25	3.88	0.00	0.00	0.00
3,500.00	0.00	0.00	3,498.57	0.00	34.25	3.88	0.00	0.00	0.00
3,548.42	0.00	0.00	3,546.99	0.00	34.25	3.88	0.00	0.00	0.00
Yates									
3,600.00	0.00	0.00	3,598.57	0.00	34.25	3.88	0.00	0.00	0.00
3,700.00	0.00	0.00	3,698.57	0.00	34.25	3.88	0.00	0.00	0.00
3,800.00	0.00	0.00	3,798.57	0.00	34.25	3.88	0.00	0.00	0.00
3,900.00	0.00	0.00	3,898.57	0.00	34.25	3.88	0.00	0.00	0.00
4,000.00	0.00	0.00	3,998.57	0.00	34.25	3.88	0.00	0.00	0.00
4,065.42	0.00	0.00	4,063.99	0.00	34.25	3.88	0.00	0.00	0.00
Capitan									
4,100.00	0.00	0.00	4,098.57	0.00	34.25	3.88	0.00	0.00	0.00
4,200.00	0.00	0.00	4,198.57	0.00	34.25	3.88	0.00	0.00	0.00
4,300.00	0.00	0.00	4,298.57	0.00	34.25	3.88	0.00	0.00	0.00
4,400.00	0.00	0.00	4,398.57	0.00	34.25	3.88	0.00	0.00	0.00
4,500.00	0.00	0.00	4,498.57	0.00	34.25	3.88	0.00	0.00	0.00
4,600.00	0.00	0.00	4,598.57	0.00	34.25	3.88	0.00	0.00	0.00
4,700.00	0.00	0.00	4,698.57	0.00	34.25	3.88	0.00	0.00	0.00
4,800.00	0.00	0.00	4,798.57	0.00	34.25	3.88	0.00	0.00	0.00
4,900.00	0.00	0.00	4,898.57	0.00	34.25	3.88	0.00	0.00	0.00
5,000.00	0.00	0.00	4,998.57	0.00	34.25	3.88	0.00	0.00	0.00
5,100.00	0.00	0.00	5,098.57	0.00	34.25	3.88	0.00	0.00	0.00
5,200.00	0.00	0.00	5,198.57	0.00	34.25	3.88	0.00	0.00	0.00
5,300.00	0.00	0.00	5,298.57	0.00	34.25	3.88	0.00	0.00	0.00
5,400.00	0.00	0.00	5,398.57	0.00	34.25	3.88	0.00	0.00	0.00
5,401.43	0.00	0.00	5,400.00	0.00	34.25	3.88	0.00	0.00	0.00



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gamma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

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)	
Begin 3.00°/100' Build										
5,433.42	0.96	90.00	5,431.99	0.00	34.52	3.91	3.00	3.00	0.00	
Delaware										
5,500.00	2.96	90.00	5,498.53	0.00	36.80	4.17	3.00	3.00	0.00	
5,600.00	5.96	90.00	5,598.21	0.00	44.57	5.05	3.00	3.00	0.00	
5,700.00	8.96	90.00	5,697.36	0.00	57.54	6.51	3.00	3.00	0.00	
5,789.35	11.64	90.00	5,785.26	0.00	73.51	8.32	3.00	3.00	0.00	
Hold 11.64° Inc at 90.00° Azm										
5,800.00	11.64	90.00	5,795.69	0.00	75.66	8.57	0.00	0.00	0.00	
5,900.00	11.64	90.00	5,893.63	0.00	95.83	10.85	0.00	0.00	0.00	
5,939.13	11.64	90.00	5,931.96	0.00	103.73	11.74	0.00	0.00	0.00	
Cherry Canyon										
6,000.00	11.64	90.00	5,991.58	0.00	116.01	13.13	0.00	0.00	0.00	
6,100.00	11.64	90.00	6,089.52	0.00	136.18	15.42	0.00	0.00	0.00	
6,200.00	11.64	90.00	6,187.47	0.00	156.35	17.70	0.00	0.00	0.00	
6,300.00	11.64	90.00	6,285.41	0.00	176.52	19.98	0.00	0.00	0.00	
6,400.00	11.64	90.00	6,383.36	0.00	196.69	22.27	0.00	0.00	0.00	
6,500.00	11.64	90.00	6,481.30	0.00	216.87	24.55	0.00	0.00	0.00	
6,600.00	11.64	90.00	6,579.24	0.00	237.04	26.83	0.00	0.00	0.00	
6,700.00	11.64	90.00	6,677.19	0.00	257.21	29.12	0.00	0.00	0.00	
6,735.43	11.64	90.00	6,711.89	0.00	264.36	29.93	0.00	0.00	0.00	
Brushy Canyon										
6,800.00	11.64	90.00	6,775.13	0.00	277.38	31.40	0.00	0.00	0.00	
6,900.00	11.64	90.00	6,873.08	0.00	297.56	33.69	0.00	0.00	0.00	
7,000.00	11.64	90.00	6,971.02	0.00	317.73	35.97	0.00	0.00	0.00	
7,100.00	11.64	90.00	7,068.97	0.00	337.90	38.25	0.00	0.00	0.00	
7,200.00	11.64	90.00	7,166.91	0.00	358.07	40.54	0.00	0.00	0.00	
7,300.00	11.64	90.00	7,264.85	0.00	378.24	42.82	0.00	0.00	0.00	
7,400.00	11.64	90.00	7,362.80	0.00	398.42	45.10	0.00	0.00	0.00	
7,500.00	11.64	90.00	7,460.74	0.00	418.59	47.39	0.00	0.00	0.00	
7,600.00	11.64	90.00	7,558.69	0.00	438.76	49.67	0.00	0.00	0.00	
7,700.00	11.64	90.00	7,656.63	0.00	458.93	51.95	0.00	0.00	0.00	
7,800.00	11.64	90.00	7,754.58	0.00	479.11	54.24	0.00	0.00	0.00	
7,900.00	11.64	90.00	7,852.52	0.00	499.28	56.52	0.00	0.00	0.00	
7,954.34	11.64	90.00	7,905.74	0.00	510.24	57.76	0.00	0.00	0.00	
Begin 3.00°/100' Drop										
8,000.00	10.27	90.00	7,950.57	0.00	518.91	58.74	3.00	-3.00	0.00	
8,100.00	7.27	90.00	8,049.39	0.00	534.16	60.47	3.00	-3.00	0.00	
8,200.00	4.27	90.00	8,148.87	0.00	544.20	61.61	3.00	-3.00	0.00	
8,300.00	1.27	90.00	8,248.74	0.00	549.03	62.15	3.00	-3.00	0.00	
8,342.26	0.00	0.00	8,291.00	0.00	549.50	62.21	3.00	-3.00	0.00	
Begin Vertical Hold										
8,393.03	0.00	0.00	8,341.77	0.00	549.50	62.21	0.00	0.00	0.00	
Bone Spring Glorietta										
8,400.00	0.00	0.00	8,348.74	0.00	549.50	62.21	0.00	0.00	0.00	
8,442.26	0.00	0.00	8,391.00	0.00	549.50	62.21	0.00	0.00	0.00	
KOP2, Begin 11.00°/100' Build										
8,500.00	6.35	179.49	8,448.62	-3.20	549.53	65.39	11.00	11.00	0.00	
8,600.00	17.35	179.49	8,546.34	-23.70	549.71	85.78	11.00	11.00	0.00	
8,700.00	28.35	179.49	8,638.35	-62.48	550.06	124.34	11.00	11.00	0.00	
8,800.00	39.35	179.49	8,721.27	-118.09	550.55	179.66	11.00	11.00	0.00	
8,900.00	50.35	179.49	8,792.06	-188.51	551.18	249.69	11.00	11.00	0.00	
8,999.34	61.28	179.49	8,847.79	-270.55	551.91	331.29	11.00	11.00	0.00	



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gamma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

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)
2nd Avalon									
9,000.00	61.35	179.49	8,848.10	-271.14	551.92	331.87	11.00	11.00	0.00
9,100.00	72.35	179.49	8,887.36	-362.94	552.74	423.18	11.00	11.00	0.00
9,200.00	83.35	179.49	8,908.37	-460.55	553.61	520.26	11.00	11.00	0.00
9,262.31	90.21	179.49	8,911.87	-522.72	554.16	582.09	11.00	11.00	0.00
LP, Hold 90.21° Inc at 179.49° Azm									
9,300.00	90.21	179.49	8,911.73	-560.41	554.50	619.58	0.00	0.00	0.00
9,400.00	90.21	179.49	8,911.37	-660.40	555.39	719.03	0.00	0.00	0.00
9,500.00	90.21	179.49	8,911.02	-760.40	556.28	818.48	0.00	0.00	0.00
9,600.00	90.21	179.49	8,910.66	-860.39	557.17	917.94	0.00	0.00	0.00
9,700.00	90.21	179.49	8,910.30	-960.39	558.06	1,017.39	0.00	0.00	0.00
9,800.00	90.21	179.49	8,909.94	-1,060.38	558.96	1,116.84	0.00	0.00	0.00
9,900.00	90.21	179.49	8,909.58	-1,160.38	559.85	1,216.30	0.00	0.00	0.00
10,000.00	90.21	179.49	8,909.23	-1,260.38	560.74	1,315.75	0.00	0.00	0.00
10,100.00	90.21	179.49	8,908.87	-1,360.37	561.63	1,415.21	0.00	0.00	0.00
10,200.00	90.21	179.49	8,908.51	-1,460.37	562.52	1,514.66	0.00	0.00	0.00
10,300.00	90.21	179.49	8,908.15	-1,560.36	563.41	1,614.11	0.00	0.00	0.00
10,400.00	90.21	179.49	8,907.79	-1,660.36	564.31	1,713.57	0.00	0.00	0.00
10,500.00	90.21	179.49	8,907.43	-1,760.35	565.20	1,813.02	0.00	0.00	0.00
10,600.00	90.21	179.49	8,907.08	-1,860.35	566.09	1,912.47	0.00	0.00	0.00
10,700.00	90.21	179.49	8,906.72	-1,960.34	566.98	2,011.93	0.00	0.00	0.00
10,800.00	90.21	179.49	8,906.36	-2,060.34	567.87	2,111.38	0.00	0.00	0.00
10,900.00	90.21	179.49	8,906.00	-2,160.33	568.76	2,210.83	0.00	0.00	0.00
11,000.00	90.21	179.49	8,905.64	-2,260.33	569.66	2,310.29	0.00	0.00	0.00
11,100.00	90.21	179.49	8,905.29	-2,360.32	570.55	2,409.74	0.00	0.00	0.00
11,200.00	90.21	179.49	8,904.93	-2,460.32	571.44	2,509.19	0.00	0.00	0.00
11,300.00	90.21	179.49	8,904.57	-2,560.32	572.33	2,608.65	0.00	0.00	0.00
11,400.00	90.21	179.49	8,904.21	-2,660.31	573.22	2,708.10	0.00	0.00	0.00
11,500.00	90.21	179.49	8,903.85	-2,760.31	574.12	2,807.55	0.00	0.00	0.00
11,600.00	90.21	179.49	8,903.50	-2,860.30	575.01	2,907.01	0.00	0.00	0.00
11,700.00	90.21	179.49	8,903.14	-2,960.30	575.90	3,006.46	0.00	0.00	0.00
11,800.00	90.21	179.49	8,902.78	-3,060.29	576.79	3,105.92	0.00	0.00	0.00
11,900.00	90.21	179.49	8,902.42	-3,160.29	577.68	3,205.37	0.00	0.00	0.00
12,000.00	90.21	179.49	8,902.06	-3,260.28	578.57	3,304.82	0.00	0.00	0.00
12,100.00	90.21	179.49	8,901.70	-3,360.28	579.47	3,404.28	0.00	0.00	0.00
12,200.00	90.21	179.49	8,901.35	-3,460.27	580.36	3,503.73	0.00	0.00	0.00
12,300.00	90.21	179.49	8,900.99	-3,560.27	581.25	3,603.18	0.00	0.00	0.00
12,400.00	90.21	179.49	8,900.63	-3,660.26	582.14	3,702.64	0.00	0.00	0.00
12,500.00	90.21	179.49	8,900.27	-3,760.26	583.03	3,802.09	0.00	0.00	0.00
12,600.00	90.21	179.49	8,899.91	-3,860.26	583.92	3,901.54	0.00	0.00	0.00
12,700.00	90.21	179.49	8,899.56	-3,960.25	584.82	4,001.00	0.00	0.00	0.00
12,800.00	90.21	179.49	8,899.20	-4,060.25	585.71	4,100.45	0.00	0.00	0.00
12,900.00	90.21	179.49	8,898.84	-4,160.24	586.60	4,199.90	0.00	0.00	0.00
13,000.00	90.21	179.49	8,898.48	-4,260.24	587.49	4,299.36	0.00	0.00	0.00
13,100.00	90.21	179.49	8,898.12	-4,360.23	588.38	4,398.81	0.00	0.00	0.00
13,200.00	90.21	179.49	8,897.77	-4,460.23	589.27	4,498.26	0.00	0.00	0.00
13,300.00	90.21	179.49	8,897.41	-4,560.22	590.17	4,597.72	0.00	0.00	0.00
13,400.00	90.21	179.49	8,897.05	-4,660.22	591.06	4,697.17	0.00	0.00	0.00
13,500.00	90.21	179.49	8,896.69	-4,760.21	591.95	4,796.62	0.00	0.00	0.00
13,600.00	90.21	179.49	8,896.33	-4,860.21	592.84	4,896.08	0.00	0.00	0.00
13,700.00	90.21	179.49	8,895.97	-4,960.20	593.73	4,995.53	0.00	0.00	0.00
13,800.00	90.21	179.49	8,895.62	-5,060.20	594.62	5,094.99	0.00	0.00	0.00
13,900.00	90.21	179.49	8,895.26	-5,160.20	595.52	5,194.44	0.00	0.00	0.00
13,972.10	90.21	179.49	8,895.00	-5,232.29	596.16	5,266.14	0.00	0.00	0.00



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 10H
Company:	Caza Operating, LLC	TVD Reference:	RKB @ 3714.00usft (Citadel #2)
Project:	Lea County, New Mexico (NAD83)	MD Reference:	RKB @ 3714.00usft (Citadel #2)
Site:	Gramma 27 State	North Reference:	Grid
Well:	10H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 02-21-20		

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)
TD at 13972.10									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL - Gramma 27 State - hit/miss target - Shape - Point	0.00	0.00	8,895.00	-5,232.29	596.16	525,924.14	813,601.62	32° 26' 33.857448 N	103° 27' 2.792916 W
LTP - Gramma 27 State - plan hits target center - Point	0.00	0.00	8,895.29	-5,152.29	595.45	526,004.14	813,600.91	32° 26' 34.649052 N	103° 27' 2.793420 W
FTP - Gramma 27 State - plan misses target center by 0.01usft at 13892.09usft MD (8895.29 TVD, -5152.29 N, 595.45 E) - Point	0.00	0.00	8,914.00	-70.23	550.64	531,086.20	813,556.10	32° 27' 24.937308 N	103° 27' 2.826180 W

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,698.00	1,698.00	Rustler		-0.21	173.50	
1,931.00	1,931.00	Top of Salt		-0.21	173.50	
2,931.41	2,929.99	Base of Salt		-0.21	173.50	
3,548.42	3,546.99	Yates		-0.21	173.50	
4,065.42	4,063.99	Capitan		-0.21	173.50	
5,433.42	5,431.99	Delaware		-0.21	173.50	
5,939.13	5,931.96	Cherry Canyon		-0.21	173.50	
6,735.43	6,711.89	Brushy Canyon		-0.21	173.50	
8,393.03	8,341.77	Bone Spring Glorietta		-0.21	173.50	
8,999.34	8,847.79	2nd Avalon		-0.21	173.50	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.00	2,000.00	0.00	0.00	KOP, Begin 3.00°/100' Build
2,200.00	2,199.63	0.00	10.46	Hold 6.00° Inc at 90.00° Azm
2,327.50	2,326.44	0.00	23.79	Begin 3.00°/100' Drop
2,527.50	2,526.07	0.00	34.25	Begin Vertical Hold
5,401.43	5,400.00	0.00	34.25	Begin 3.00°/100' Build
5,789.35	5,785.26	0.00	73.51	Hold 11.64° Inc at 90.00° Azm
7,954.34	7,905.74	0.00	510.24	Begin 3.00°/100' Drop
8,342.26	8,291.00	0.00	549.50	Begin Vertical Hold
8,442.26	8,391.00	0.00	549.50	KOP2, Begin 11.00°/100' Build
9,262.31	8,911.87	-522.72	554.16	LP, Hold 90.21° Inc at 179.49° Azm
13,972.10	8,895.00	-5,232.29	596.16	TD at 13972.10