

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 273359

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

1. Operator Name and Address COG OPERATING LLC 600 W Illinois Ave Midland, TX 79701		2. OGRID Number 229137
4. Property Code 38476		3. API Number 30-015-46386
5. Property Name HONEY GRAHAM STATE COM		6. Well No. 703H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
D	20	26S	28E		320	N	1155	W	Eddy

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
E	32	26S	28E	1	200	S	670	W	Eddy

9. Pool Information

PURPLE SAGE;WOLFCAMP (GAS)	98220
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3084
16. Multiple N	17. Proposed Depth 21779	18. Formation Wolfcamp	19. Contractor	20. Spud Date 10/31/2019
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	54.4	500	450	0
Int1	12.25	9.625	40	8675	1400	0
Prod	8.75	5.5	23	21779	3000	8300

Casing/Cement Program: Additional Comments

Drill 17-1/2" hole to ~500' w/ fresh water. Run 13-3/8" 54.5# J-55 BTC casing to TD and cement to surface in one stage. Drill 12-1/4" hole to ~8,675' with cut brine emulsion. Run 9-5/8 40# L-80 BTC to TD and cement to surface in two stages. Drill 8-3/4" vertical hole, curve & lateral to 21,779' with OBM. Run 5-1/2" 23# P110 BTC casing from TD to surface and cement to 8300' in one stage.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	5000	5000	Cameron

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. Signature:	OIL CONSERVATION DIVISION
Printed Name: Electronically filed by Diane Kuykendall	Approved By: Raymond Podany
Title: Production Accounting Director	Title: Geologist
Email Address: dkuykendall@concho.com	Approved Date: 10/18/2019 Expiration Date: 10/18/2021
Date: 10/14/2019 Phone: 432-685-4372	Conditions of Approval Attached

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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 30-015-		² Pool Code 98220		³ Pool Name Purple Sage; Wolfcamp	
⁴ Property Code 38476		⁵ Property Name HONEY GRAHAM STATE COM			⁶ Well Number 703H
⁷ OGRID NO. 229137		⁸ Operator Name COG OPERATING, LLC			⁹ Elevation 3084'

¹⁰ Surface Location

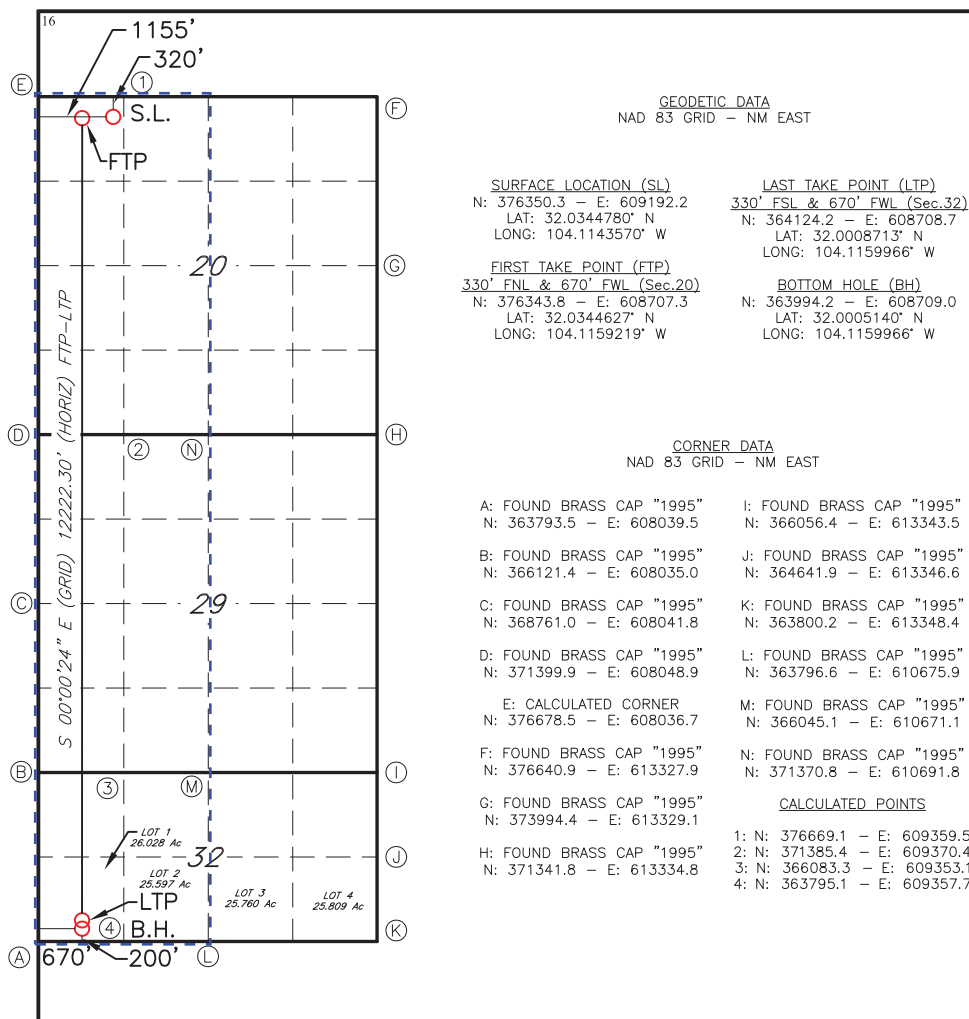
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet From the	East/West line	County
D	20	26S	28E		320	NORTH	1155	WEST	EDDY

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
1	32	26S	28E		200	SOUTH	670	WEST	EDDY

¹² Dedicated Acres 807.51	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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.



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: Robyn M. Russell Date: 10/14/19

Printed Name: Robyn M. Russell

E-mail Address: Russell@concho.com

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.

Date of Survey: 09-06-2019

Signature and Seal of Professional Surveyor: Robert M. Howett

Certificate Number: 19680

Job No.: LS19090861

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

GAS CAPTURE PLAN

Date: 10/18/2019

☒ Original

Operator & OGRID No.: [229137] COG 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, recomplete 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
HONEY GRAHAM STATE COM #703H	30-015-46386	D-20-26S-28E	0320N 1155W	7450	None	Length of additional line is not known at this time. Processing Plant Location: Sec 35, Blk 57, T2S, Culberson County, TX

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 ETC Texas Pipeline, Ltd. and will be connected to ETC Texas Pipeline, Ltd. Low Pressure gathering system located in Eddy County, New Mexico. It will require 0' of pipeline to connect the facility to Low Pressure gathering system. COG OPERATING LLC provides (periodically) to ETC Texas Pipeline, Ltd. a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, COG OPERATING LLC and ETC Texas Pipeline, Ltd. have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at ETC Texas Pipeline, Ltd. Processing Plant located in Sec. 20, Twn. 26S, Rng. 28E, Eddy 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 ETC Texas Pipeline, Ltd. system at that time. Based on current information, it is COG 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

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Energy, Minerals and Natural Resources

Oil Conservation Division

1220 S. St Francis Dr.

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Form APD Comments

Permit 273359

PERMIT COMMENTS

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701		API Number: 30-015-46386
		Well: HONEY GRAHAM STATE COM #703H
Created By	Comment	Comment Date
rodom	H2S concentrations of wells in this area from surface to TD are low enough that a contingency plan is not required.	10/14/2019

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Form APD Conditions

Permit 273359

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701		API Number: 30-015-46386
		Well: HONEY GRAHAM STATE COM #703H
OCD Reviewer	Condition	
rpodany	Will require a directional survey with the C-104	
rpodany	Cement is required to circulate on both surface and intermediate1 strings of casing	

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Santa Fe, NM 87505

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

☒ Original

Date: 10/09/2019

☐ 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: A C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule 19.15.18.12.A

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
Honey Graham State Com #703H	30-015-	Unit D, Sec 20, T26S, R28E	320 FNL 1155 FWL	7450	0	

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 **ETC** and will be connected to **ETC's** low/high pressure gathering system located in **Eddy County**, New Mexico. **It will require additional** pipeline to connect the facility to low/high pressure gathering system **of which the amount is unknown currently**. **COG Operating LLC** provides (periodically) to **ETC** a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, **COG Operating LLC** and **ETC** have periodic conference calls to discuss changes to the drilling and completion schedules. Gas from these wells will be processed at **ETC's Red Bluff** Processing Plant located in **Sec. 35, BLK 57, T2S, Culberson County, Texas**. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

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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.

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Intent ☒ As Drilled ☐

API #			
Operator Name: COG Operating LLC		Property Name: Honey Graham State Com	Well Number 703H

Kick Off Point (KOP)

UL D	Section 20	Township 26S	Range 28E	Lot	Feet 320	From N/S FNL	Feet 1155	From E/W FWL	County Eddy
Latitude 32.0344780					Longitude -104.1143570				NAD 83

First Take Point (FTP)

UL D	Section 20	Township 26S	Range 28E	Lot	Feet 330	From N/S FNL	Feet 670	From E/W FWL	County Eddy
Latitude 32.0344627					Longitude -104.1159219				NAD 83

Last Take Point (LTP)

UL E	Section 32	Township 26S	Range 28E	Lot 1	Feet 330	From N/S FSL	Feet 670	From E/W FWL	County Eddy
Latitude 32.0008713					Longitude -104.1159966				NAD 83

Is this well the defining well for the Horizontal Spacing Unit? ☐ N

Is this well an infill well? ☐ Y

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #			
Operator Name: COG Operating LLC		Property Name: Honey Graham State Com	Well Number 702H

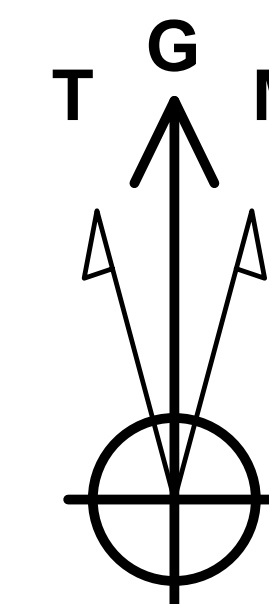
KZ 06/29/2018



Project: Eddy County, NM (NAD27 NME)
Site: Honey Graham State Com
Well: 703H
Wellbore: OH
Design: Plan 1 10-10-19
Rig: Ensign 155

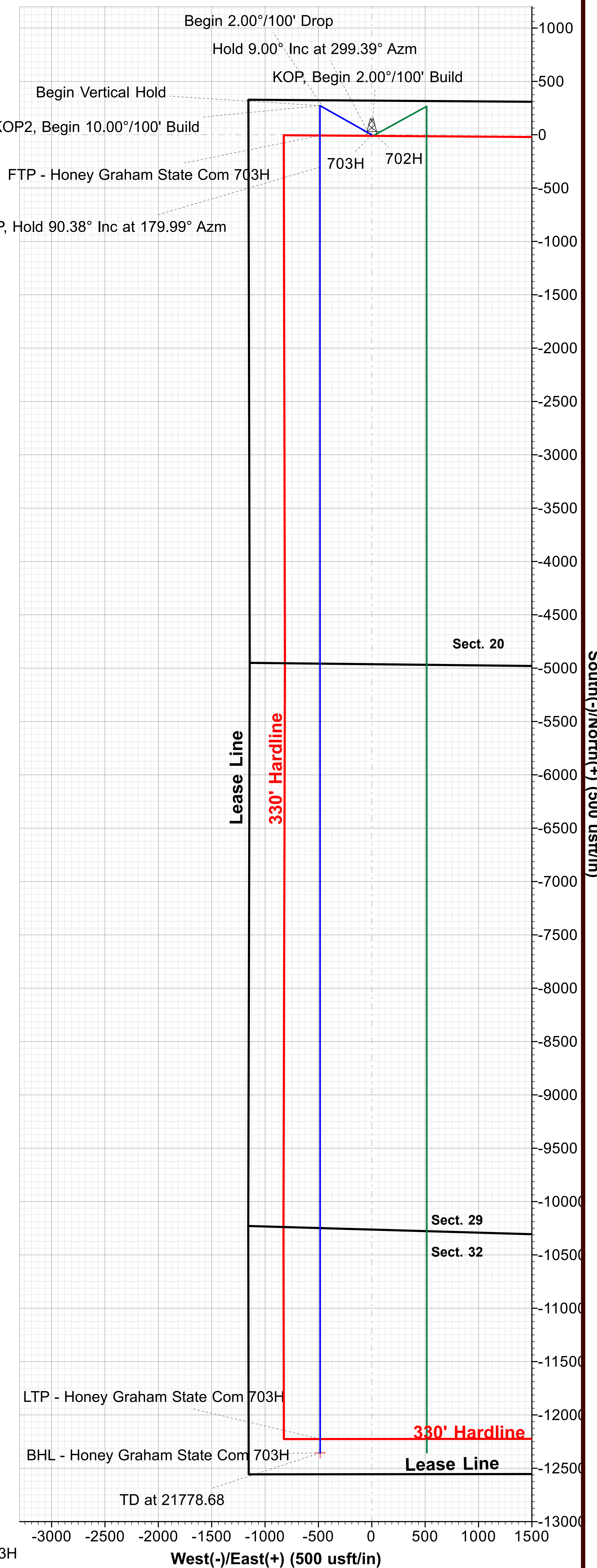
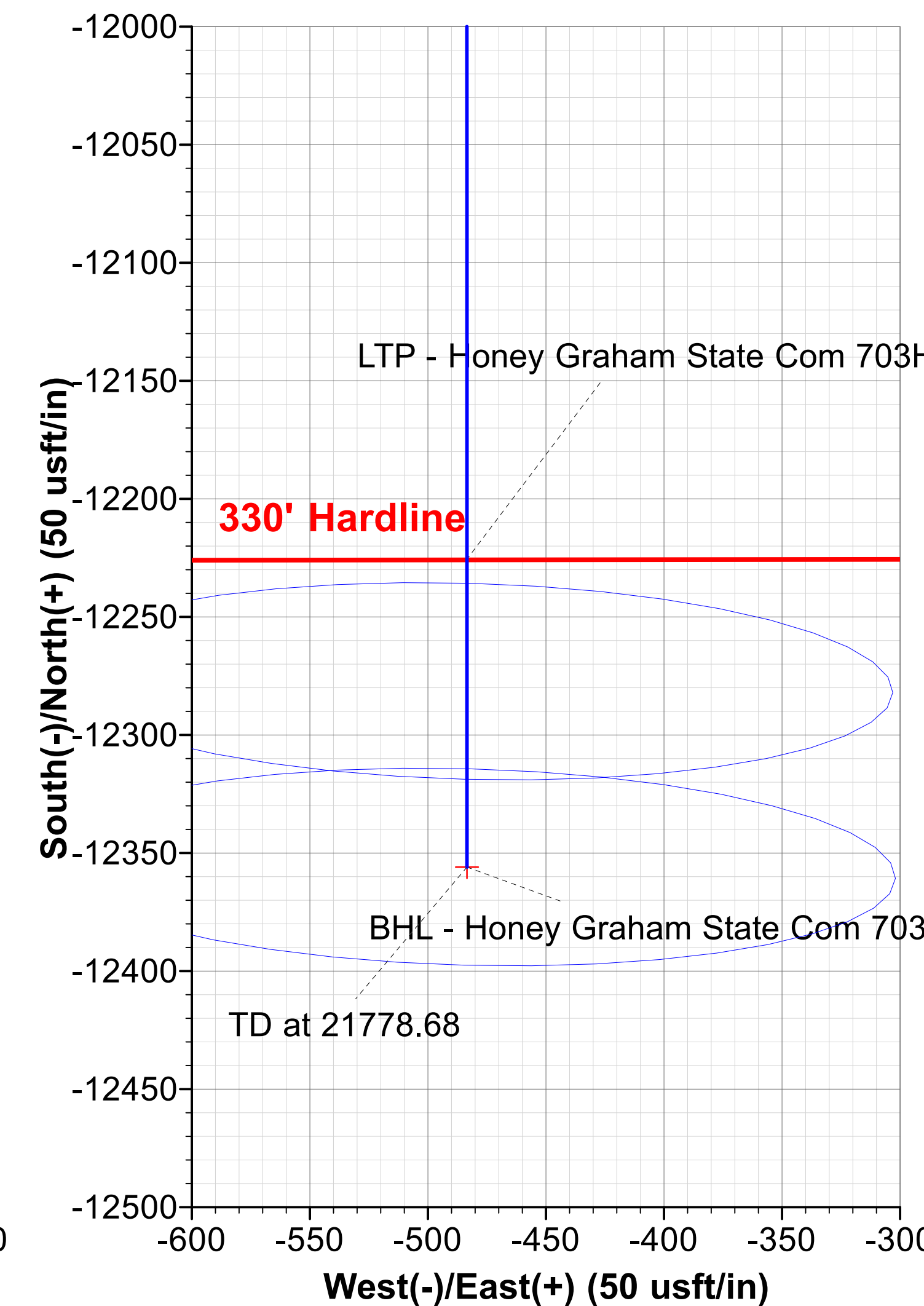
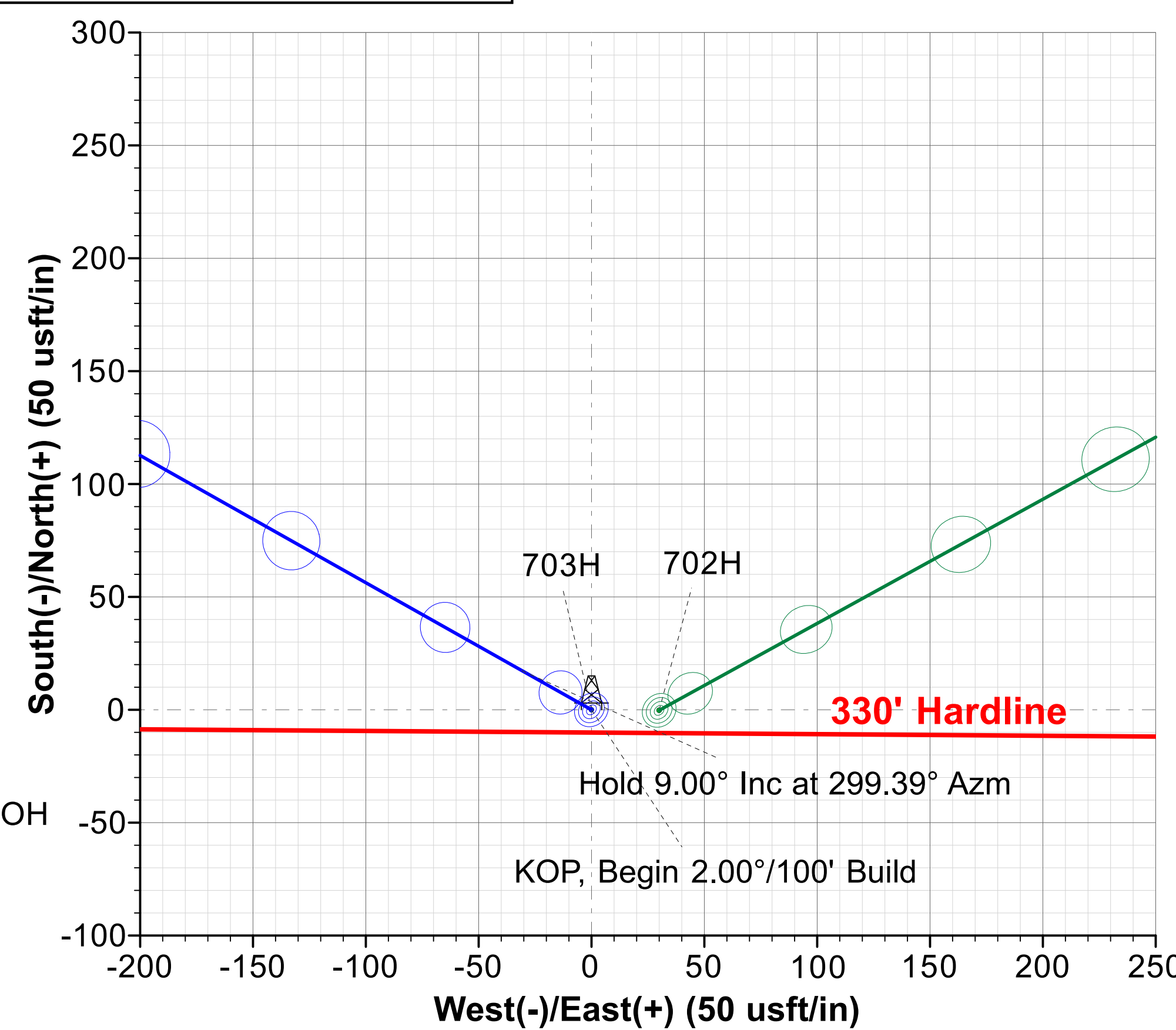
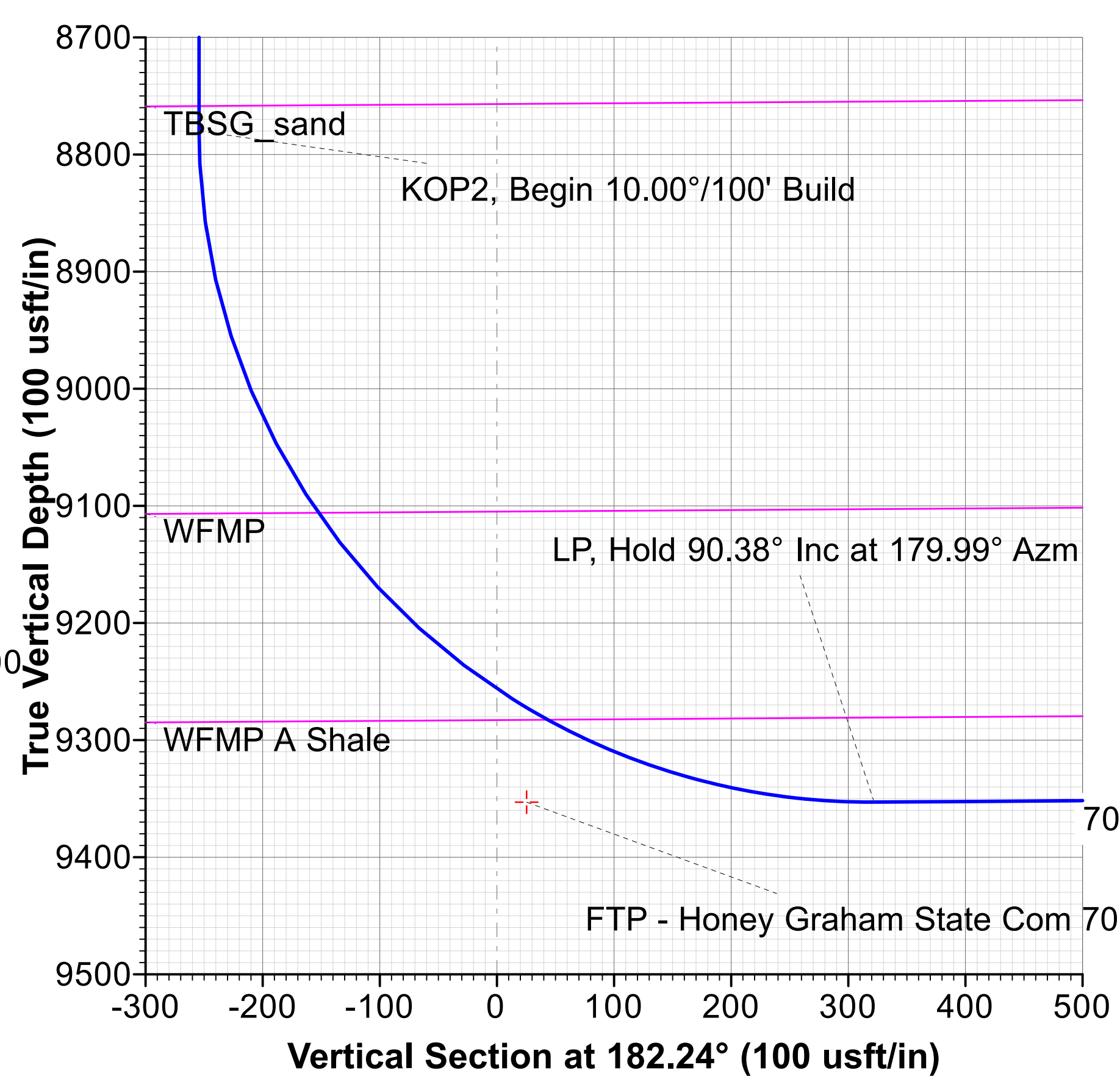
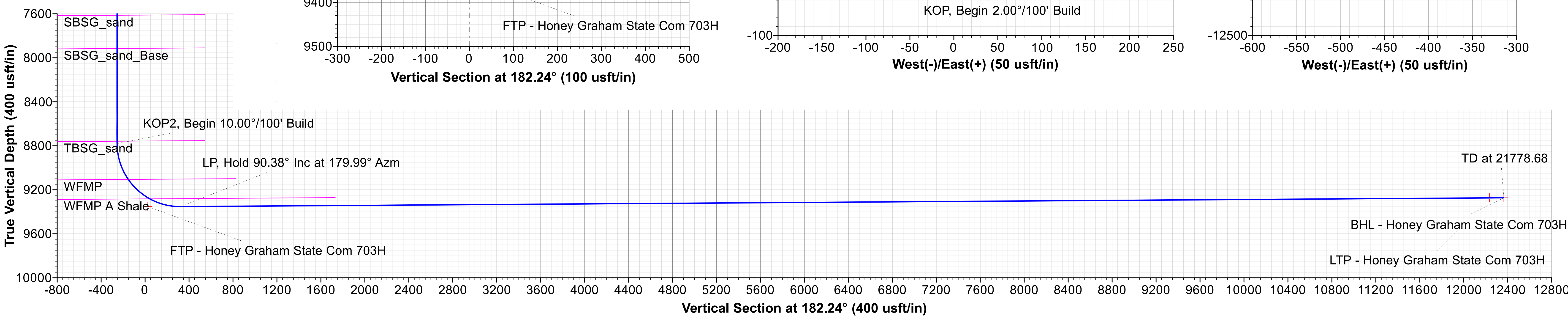
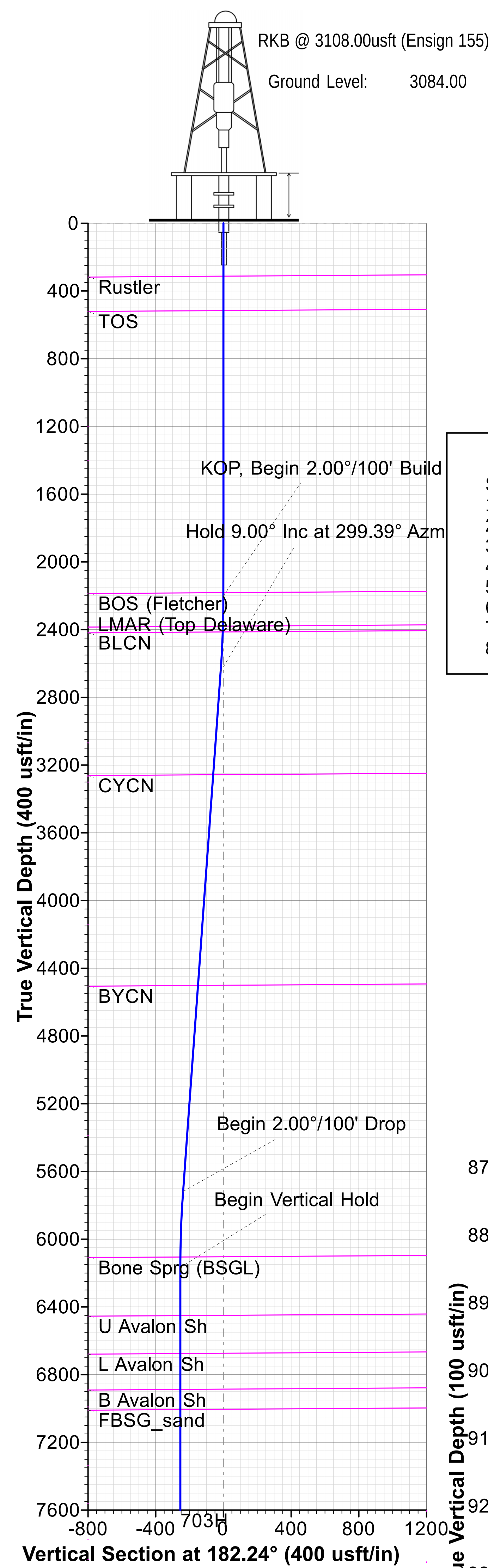


PHOENIX
TECHNOLOGY SERVICES



Azimuths to Grid North
True North: -0.12°
Magnetic North: 6.81°

Magnetic Field
Strength: 47767.5nT
Dip Angle: 59.63°
Date: 10/30/2019
Model: MVHD



WELL DETAILS							
			Ground Level:	3084.00			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
0.00	0.00	376293.20	568007.60	32° 2' 3.676616 N	104° 6' 49.926899 W		

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Honey Graham State Com 703H	9273.00	-12355.90	-483.40	363937.30	567524.20	32° 0' 1.404424 N	104° 6' 55.832053 W
LTP - Honey Graham State Com 703H	9273.86	-12225.90	-483.70	364067.30	567523.90	32° 0' 2.691000 N	104° 6' 55.832495 W
FTP - Honey Graham State Com 703H	9353.00	-6.50	-484.90	376286.70	567522.70	32° 2' 3.622003 N	104° 6' 55.560305 W

SECTION DETAILS												
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target	Annotation	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		KOP, Begin 2.00°/100' Build	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00		Hold 9.00° Inc at 299.39° Azm	
3	2650.18	9.00	299.39	2648.33	17.32	-30.75	2.00	299.39	-16.11		Begin 2.00°/100' Drop	
4	5758.83	9.00	299.39	5718.67	256.10	-454.62	0.00	0.00	-238.13		Begin Vertical Hold	
5	6209.00	0.00	0.00	6167.00	273.42	-485.37	2.00	180.00	-254.24		KOP2, Begin 10.00°/100' Build	
6	8822.05	0.00	0.00	8780.05	273.42	-485.37	0.00	0.00	-254.24		LP, Hold 90.38° Inc at 179.99° Azm	
7	9725.86	90.38	179.99	9353.00	-303.34	-485.28	10.00	179.99	322.08		BHL - Honey Graham State Com 703H TD at 21778.68	
8	21778.68	90.38	179.99	9273.00	-12355.90	-483.40	0.00	0.00	2365.35			

FORMATION TOP DETAILS					
TVDPath	MDPath	Formation	DipAngle	DipDir	
313.00	313.00	Rustler	-0.38	182.24	
516.00	516.00	TOS	-0.38	182.24	
2182.00	2182.00	BOS (Fletcher)	-0.38	182.24	
2380.02	2380.14	LMAR (Top Delaware)	-0.38	182.24	
2414.02	2414.22	BLCN	-0.38	182.24	
3257.40	3266.85	CYCN	-0.38	182.24	
4502.00	4526.97	BYCN	-0.38	182.24	
6105.68	6147.68	Bone Sprg (BSGL)	-0.38	182.24	
6451.69	6493.69	U Avalon Sh	-0.38	182.24	
6675.69	6717.69	L Avalon Sh	-0.38	182.24	
6887.69	6929.69	B Avalon Sh	-0.38	182.24	
7006.69	7048.69	FBSG_sand	-0.38	182.24	
7613.69	7655.69	SBSG_sand	-0.38	182.24	
7915.69	7957.69	SBSG_sand_Base	-0.38	182.24	
8758.69	8800.69	TBSG_sand	-0.38	182.24	
9106.01	9168.80	WFMP	-0.38	182.24	
9282.71	9435.25	WFMP A Shale	-0.38	182.24	

Map System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone Name: New Mexico East 3001

Local Origin: Well 703H, Grid North

Latitude: 32° 2' 3.676616 N
Longitude: 104° 6' 49.926899 W

Grid East: 568007.60
Grid North: 376293.20
Scale Factor: 1.000

Geomagnetic Model: MVHD
Sample Date: 30-Oct-19
Magnetic Declination: 6.93°
Dip Angle from Horizontal: 59.63°
Magnetic Field Strength: 47767.46558770nT

To convert a Magnetic Direction to a Grid Direction, Add 6.81°
To convert a Magnetic Direction to a True Direction, Add 6.93° East
To convert a True Direction to a Grid Direction, Subtract 0.12°

LEGEND
702H, OH, Plan 1 10-10-19 V0
Plan 1 10-10-19



COG Operating LLC

Eddy County, NM (NAD27 NME)

Honey Graham State Com

703H

OH

Plan: Plan 1 10-10-19

Standard Planning Report

10 October, 2019



Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

Project	Eddy County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Honey Graham State Com					
Site Position:		Northing:	376,292.96 usft	Latitude:	32° 2' 3.673680 N	
From:	Map	Easting:	568,037.63 usft	Longitude:	104° 6' 49.578120 W	
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well	703H					
Well Position	+N/-S	0.24 usft	Northing:	376,293.20 usft	Latitude:	32° 2' 3.676616 N
	+E/-W	-30.02 usft	Easting:	568,007.60 usft	Longitude:	104° 6' 49.926899 W
Position Uncertainty		1.00 usft	Wellhead Elevation:		Ground Level:	3,084.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	10/30/2019	6.93	59.63	47,767.46558770

Design	Plan 1 10-10-19			
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	182.24

Plan Survey Tool Program	Date	10/10/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,778.68	Plan 1 10-10-19 (OH)	MWD+HRGM
				OWSG MWD + HRGM

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	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,650.18	9.00	299.39	2,648.33	17.32	-30.75	2.00	2.00	0.00	299.39	
5,758.83	9.00	299.39	5,718.68	256.10	-454.62	0.00	0.00	0.00	0.00	
6,209.00	0.00	0.00	6,167.00	273.42	-485.37	2.00	-2.00	0.00	180.00	
8,822.05	0.00	0.00	8,780.05	273.42	-485.37	0.00	0.00	0.00	0.00	
9,725.86	90.38	179.99	9,353.00	-303.34	-485.28	10.00	10.00	19.91	179.99	
21,778.68	90.38	179.99	9,273.00	-12,355.90	-483.40	0.00	0.00	0.00	0.00	BHL - Honey Graham

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

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
313.00	0.00	0.00	313.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
516.00	0.00	0.00	516.00	0.00	0.00	0.00	0.00	0.00	0.00
TOS									
2,182.00	0.00	0.00	2,182.00	0.00	0.00	0.00	0.00	0.00	0.00
BOS (Fletcher)									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 2.00°/100' Build									
2,300.00	2.00	299.39	2,299.98	0.86	-1.52	-0.80	2.00	2.00	0.00
2,380.14	3.60	299.39	2,380.02	2.78	-4.93	-2.58	2.00	2.00	0.00
LMAR (Top Delaware)									
2,400.00	4.00	299.39	2,399.84	3.43	-6.08	-3.18	2.00	2.00	0.00
2,414.22	4.28	299.39	2,414.02	3.93	-6.98	-3.65	2.00	2.00	0.00
BLCN									
2,500.00	6.00	299.39	2,499.45	7.70	-13.67	-7.16	2.00	2.00	0.00
2,600.00	8.00	299.39	2,598.70	13.68	-24.29	-12.72	2.00	2.00	0.00
2,650.18	9.00	299.39	2,648.33	17.32	-30.75	-16.11	2.00	2.00	0.00
Hold 9.00° Inc at 299.39° Azm									
2,700.00	9.00	299.39	2,697.54	21.15	-37.55	-19.67	0.00	0.00	0.00
2,800.00	9.00	299.39	2,796.30	28.83	-51.18	-26.81	0.00	0.00	0.00
2,900.00	9.00	299.39	2,895.07	36.51	-64.82	-33.95	0.00	0.00	0.00
3,000.00	9.00	299.39	2,993.84	44.19	-78.45	-41.09	0.00	0.00	0.00
3,100.00	9.00	299.39	3,092.61	51.87	-92.09	-48.24	0.00	0.00	0.00
3,200.00	9.00	299.39	3,191.38	59.56	-105.72	-55.38	0.00	0.00	0.00
3,266.85	9.00	299.39	3,257.40	64.69	-114.84	-60.15	0.00	0.00	0.00
CYCN									
3,300.00	9.00	299.39	3,290.14	67.24	-119.36	-62.52	0.00	0.00	0.00
3,400.00	9.00	299.39	3,388.91	74.92	-132.99	-69.66	0.00	0.00	0.00
3,500.00	9.00	299.39	3,487.68	82.60	-146.63	-76.80	0.00	0.00	0.00
3,600.00	9.00	299.39	3,586.45	90.28	-160.26	-83.94	0.00	0.00	0.00
3,700.00	9.00	299.39	3,685.21	97.96	-173.90	-91.09	0.00	0.00	0.00
3,800.00	9.00	299.39	3,783.98	105.64	-187.53	-98.23	0.00	0.00	0.00
3,900.00	9.00	299.39	3,882.75	113.32	-201.17	-105.37	0.00	0.00	0.00
4,000.00	9.00	299.39	3,981.52	121.00	-214.80	-112.51	0.00	0.00	0.00
4,100.00	9.00	299.39	4,080.29	128.68	-228.44	-119.65	0.00	0.00	0.00
4,200.00	9.00	299.39	4,179.05	136.36	-242.07	-126.80	0.00	0.00	0.00
4,300.00	9.00	299.39	4,277.82	144.05	-255.71	-133.94	0.00	0.00	0.00
4,400.00	9.00	299.39	4,376.59	151.73	-269.34	-141.08	0.00	0.00	0.00
4,500.00	9.00	299.39	4,475.36	159.41	-282.98	-148.22	0.00	0.00	0.00
4,526.97	9.00	299.39	4,502.00	161.48	-286.65	-150.15	0.00	0.00	0.00
BYCN									
4,600.00	9.00	299.39	4,574.13	167.09	-296.61	-155.36	0.00	0.00	0.00
4,700.00	9.00	299.39	4,672.89	174.77	-310.25	-162.51	0.00	0.00	0.00
4,800.00	9.00	299.39	4,771.66	182.45	-323.88	-169.65	0.00	0.00	0.00
4,900.00	9.00	299.39	4,870.43	190.13	-337.52	-176.79	0.00	0.00	0.00
5,000.00	9.00	299.39	4,969.20	197.81	-351.15	-183.93	0.00	0.00	0.00
5,100.00	9.00	299.39	5,067.96	205.49	-364.79	-191.07	0.00	0.00	0.00
5,200.00	9.00	299.39	5,166.73	213.17	-378.42	-198.22	0.00	0.00	0.00
5,300.00	9.00	299.39	5,265.50	220.85	-392.06	-205.36	0.00	0.00	0.00
5,400.00	9.00	299.39	5,364.27	228.53	-405.69	-212.50	0.00	0.00	0.00
5,500.00	9.00	299.39	5,463.04	236.22	-419.33	-219.64	0.00	0.00	0.00
5,600.00	9.00	299.39	5,561.80	243.90	-432.96	-226.78	0.00	0.00	0.00

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

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)	
5,700.00	9.00	299.39	5,660.57	251.58	-446.60	-233.93	0.00	0.00	0.00	
5,758.83	9.00	299.39	5,718.68	256.10	-454.62	-238.13	0.00	0.00	0.00	
Begin 2.00°/100' Drop										
5,800.00	8.18	299.39	5,759.38	259.11	-459.98	-240.93	2.00	-2.00	0.00	
5,900.00	6.18	299.39	5,858.60	265.25	-470.86	-246.64	2.00	-2.00	0.00	
6,000.00	4.18	299.39	5,958.18	269.68	-478.73	-250.76	2.00	-2.00	0.00	
6,100.00	2.18	299.39	6,058.02	272.40	-483.56	-253.29	2.00	-2.00	0.00	
6,147.68	1.23	299.39	6,105.68	273.10	-484.80	-253.94	2.00	-2.00	0.00	
Bone Sprg (BSGL)										
6,200.00	0.18	299.39	6,158.00	273.41	-485.36	-254.23	2.00	-2.00	0.00	
6,209.00	0.00	0.00	6,167.00	273.42	-485.37	-254.24	2.00	-2.00	0.00	
Begin Vertical Hold										
6,493.69	0.00	0.00	6,451.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
U Avalon Sh										
6,717.69	0.00	0.00	6,675.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
L Avalon Sh										
6,929.69	0.00	0.00	6,887.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
B Avalon Sh										
7,048.69	0.00	0.00	7,006.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
FBSG_sand										
7,655.69	0.00	0.00	7,613.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
SBSG_sand										
7,957.69	0.00	0.00	7,915.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
SBSG_sand_Base										
8,800.69	0.00	0.00	8,758.69	273.42	-485.37	-254.24	0.00	0.00	0.00	
TBSG_sand										
8,822.05	0.00	0.00	8,780.05	273.42	-485.37	-254.24	0.00	0.00	0.00	
KOP2, Begin 10.00°/100' Build										
8,900.00	7.79	179.99	8,857.76	268.13	-485.37	-248.95	10.00	10.00	0.00	
9,000.00	17.79	179.99	8,955.15	246.01	-485.37	-226.85	10.00	10.00	0.00	
9,100.00	27.79	179.99	9,047.22	207.31	-485.36	-188.18	10.00	10.00	0.00	
9,168.80	34.67	179.99	9,106.01	171.66	-485.35	-152.56	10.00	10.00	0.00	
WFMP										
9,200.00	37.79	179.99	9,131.18	153.22	-485.35	-134.13	10.00	10.00	0.00	
9,300.00	47.79	179.99	9,204.46	85.37	-485.34	-66.33	10.00	10.00	0.00	
9,400.00	57.79	179.99	9,264.85	5.82	-485.33	13.15	10.00	10.00	0.00	
9,435.25	61.32	179.99	9,282.71	-24.56	-485.32	43.52	10.00	10.00	0.00	
WFMP A Shale										
9,500.00	67.79	179.99	9,310.51	-83.00	-485.31	101.91	10.00	10.00	0.00	
9,600.00	77.79	179.99	9,340.06	-178.41	-485.30	197.24	10.00	10.00	0.00	
9,700.00	87.79	179.99	9,352.58	-277.49	-485.28	296.25	10.00	10.00	0.00	
9,725.86	90.38	179.99	9,353.00	-303.34	-485.28	322.08	10.00	10.00	0.00	
LP, Hold 90.38° Inc at 179.99° Azm										
9,800.00	90.38	179.99	9,352.50	-377.48	-485.27	396.16	0.00	0.00	0.00	
9,900.00	90.38	179.99	9,351.84	-477.48	-485.25	496.09	0.00	0.00	0.00	
10,000.00	90.38	179.99	9,351.18	-577.48	-485.24	596.01	0.00	0.00	0.00	
10,100.00	90.38	179.99	9,350.51	-677.48	-485.22	695.93	0.00	0.00	0.00	
10,200.00	90.38	179.99	9,349.85	-777.47	-485.21	795.85	0.00	0.00	0.00	
10,300.00	90.38	179.99	9,349.18	-877.47	-485.19	895.77	0.00	0.00	0.00	
10,400.00	90.38	179.99	9,348.52	-977.47	-485.17	995.69	0.00	0.00	0.00	
10,500.00	90.38	179.99	9,347.86	-1,077.47	-485.16	1,095.61	0.00	0.00	0.00	
10,600.00	90.38	179.99	9,347.19	-1,177.47	-485.14	1,195.53	0.00	0.00	0.00	

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

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)
10,700.00	90.38	179.99	9,346.53	-1,277.46	-485.13	1,295.45	0.00	0.00	0.00
10,800.00	90.38	179.99	9,345.87	-1,377.46	-485.11	1,395.37	0.00	0.00	0.00
10,900.00	90.38	179.99	9,345.20	-1,477.46	-485.10	1,495.29	0.00	0.00	0.00
11,000.00	90.38	179.99	9,344.54	-1,577.46	-485.08	1,595.21	0.00	0.00	0.00
11,100.00	90.38	179.99	9,343.88	-1,677.45	-485.07	1,695.13	0.00	0.00	0.00
11,200.00	90.38	179.99	9,343.21	-1,777.45	-485.05	1,795.06	0.00	0.00	0.00
11,300.00	90.38	179.99	9,342.55	-1,877.45	-485.03	1,894.98	0.00	0.00	0.00
11,400.00	90.38	179.99	9,341.88	-1,977.45	-485.02	1,994.90	0.00	0.00	0.00
11,500.00	90.38	179.99	9,341.22	-2,077.45	-485.00	2,094.82	0.00	0.00	0.00
11,600.00	90.38	179.99	9,340.56	-2,177.44	-484.99	2,194.74	0.00	0.00	0.00
11,700.00	90.38	179.99	9,339.89	-2,277.44	-484.97	2,294.66	0.00	0.00	0.00
11,800.00	90.38	179.99	9,339.23	-2,377.44	-484.96	2,394.58	0.00	0.00	0.00
11,900.00	90.38	179.99	9,338.57	-2,477.44	-484.94	2,494.50	0.00	0.00	0.00
12,000.00	90.38	179.99	9,337.90	-2,577.43	-484.93	2,594.42	0.00	0.00	0.00
12,100.00	90.38	179.99	9,337.24	-2,677.43	-484.91	2,694.34	0.00	0.00	0.00
12,200.00	90.38	179.99	9,336.57	-2,777.43	-484.89	2,794.26	0.00	0.00	0.00
12,300.00	90.38	179.99	9,335.91	-2,877.43	-484.88	2,894.18	0.00	0.00	0.00
12,400.00	90.38	179.99	9,335.25	-2,977.43	-484.86	2,994.10	0.00	0.00	0.00
12,500.00	90.38	179.99	9,334.58	-3,077.42	-484.85	3,094.03	0.00	0.00	0.00
12,600.00	90.38	179.99	9,333.92	-3,177.42	-484.83	3,193.95	0.00	0.00	0.00
12,700.00	90.38	179.99	9,333.26	-3,277.42	-484.82	3,293.87	0.00	0.00	0.00
12,800.00	90.38	179.99	9,332.59	-3,377.42	-484.80	3,393.79	0.00	0.00	0.00
12,900.00	90.38	179.99	9,331.93	-3,477.41	-484.78	3,493.71	0.00	0.00	0.00
13,000.00	90.38	179.99	9,331.26	-3,577.41	-484.77	3,593.63	0.00	0.00	0.00
13,100.00	90.38	179.99	9,330.60	-3,677.41	-484.75	3,693.55	0.00	0.00	0.00
13,200.00	90.38	179.99	9,329.94	-3,777.41	-484.74	3,793.47	0.00	0.00	0.00
13,300.00	90.38	179.99	9,329.27	-3,877.41	-484.72	3,893.39	0.00	0.00	0.00
13,400.00	90.38	179.99	9,328.61	-3,977.40	-484.71	3,993.31	0.00	0.00	0.00
13,500.00	90.38	179.99	9,327.95	-4,077.40	-484.69	4,093.23	0.00	0.00	0.00
13,600.00	90.38	179.99	9,327.28	-4,177.40	-484.68	4,193.15	0.00	0.00	0.00
13,700.00	90.38	179.99	9,326.62	-4,277.40	-484.66	4,293.07	0.00	0.00	0.00
13,800.00	90.38	179.99	9,325.96	-4,377.39	-484.64	4,392.99	0.00	0.00	0.00
13,900.00	90.38	179.99	9,325.29	-4,477.39	-484.63	4,492.92	0.00	0.00	0.00
14,000.00	90.38	179.99	9,324.63	-4,577.39	-484.61	4,592.84	0.00	0.00	0.00
14,100.00	90.38	179.99	9,323.96	-4,677.39	-484.60	4,692.76	0.00	0.00	0.00
14,200.00	90.38	179.99	9,323.30	-4,777.39	-484.58	4,792.68	0.00	0.00	0.00
14,300.00	90.38	179.99	9,322.64	-4,877.38	-484.57	4,892.60	0.00	0.00	0.00
14,400.00	90.38	179.99	9,321.97	-4,977.38	-484.55	4,992.52	0.00	0.00	0.00
14,500.00	90.38	179.99	9,321.31	-5,077.38	-484.54	5,092.44	0.00	0.00	0.00
14,600.00	90.38	179.99	9,320.65	-5,177.38	-484.52	5,192.36	0.00	0.00	0.00
14,700.00	90.38	179.99	9,319.98	-5,277.37	-484.50	5,292.28	0.00	0.00	0.00
14,800.00	90.38	179.99	9,319.32	-5,377.37	-484.49	5,392.20	0.00	0.00	0.00
14,900.00	90.38	179.99	9,318.65	-5,477.37	-484.47	5,492.12	0.00	0.00	0.00
15,000.00	90.38	179.99	9,317.99	-5,577.37	-484.46	5,592.04	0.00	0.00	0.00
15,100.00	90.38	179.99	9,317.33	-5,677.37	-484.44	5,691.96	0.00	0.00	0.00
15,200.00	90.38	179.99	9,316.66	-5,777.36	-484.43	5,791.89	0.00	0.00	0.00
15,300.00	90.38	179.99	9,316.00	-5,877.36	-484.41	5,891.81	0.00	0.00	0.00
15,400.00	90.38	179.99	9,315.34	-5,977.36	-484.39	5,991.73	0.00	0.00	0.00
15,500.00	90.38	179.99	9,314.67	-6,077.36	-484.38	6,091.65	0.00	0.00	0.00
15,600.00	90.38	179.99	9,314.01	-6,177.36	-484.36	6,191.57	0.00	0.00	0.00
15,700.00	90.38	179.99	9,313.34	-6,277.35	-484.35	6,291.49	0.00	0.00	0.00
15,800.00	90.38	179.99	9,312.68	-6,377.35	-484.33	6,391.41	0.00	0.00	0.00
15,900.00	90.38	179.99	9,312.02	-6,477.35	-484.32	6,491.33	0.00	0.00	0.00
16,000.00	90.38	179.99	9,311.35	-6,577.35	-484.30	6,591.25	0.00	0.00	0.00

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

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)	
16,100.00	90.38	179.99	9,310.69	-6,677.34	-484.29	6,691.17	0.00	0.00	0.00	
16,200.00	90.38	179.99	9,310.03	-6,777.34	-484.27	6,791.09	0.00	0.00	0.00	
16,300.00	90.38	179.99	9,309.36	-6,877.34	-484.25	6,891.01	0.00	0.00	0.00	
16,400.00	90.38	179.99	9,308.70	-6,977.34	-484.24	6,990.93	0.00	0.00	0.00	
16,500.00	90.38	179.99	9,308.04	-7,077.34	-484.22	7,090.85	0.00	0.00	0.00	
16,600.00	90.38	179.99	9,307.37	-7,177.33	-484.21	7,190.78	0.00	0.00	0.00	
16,700.00	90.38	179.99	9,306.71	-7,277.33	-484.19	7,290.70	0.00	0.00	0.00	
16,800.00	90.38	179.99	9,306.04	-7,377.33	-484.18	7,390.62	0.00	0.00	0.00	
16,900.00	90.38	179.99	9,305.38	-7,477.33	-484.16	7,490.54	0.00	0.00	0.00	
17,000.00	90.38	179.99	9,304.72	-7,577.32	-484.15	7,590.46	0.00	0.00	0.00	
17,100.00	90.38	179.99	9,304.05	-7,677.32	-484.13	7,690.38	0.00	0.00	0.00	
17,200.00	90.38	179.99	9,303.39	-7,777.32	-484.11	7,790.30	0.00	0.00	0.00	
17,300.00	90.38	179.99	9,302.73	-7,877.32	-484.10	7,890.22	0.00	0.00	0.00	
17,400.00	90.38	179.99	9,302.06	-7,977.32	-484.08	7,990.14	0.00	0.00	0.00	
17,500.00	90.38	179.99	9,301.40	-8,077.31	-484.07	8,090.06	0.00	0.00	0.00	
17,600.00	90.38	179.99	9,300.73	-8,177.31	-484.05	8,189.98	0.00	0.00	0.00	
17,700.00	90.38	179.99	9,300.07	-8,277.31	-484.04	8,289.90	0.00	0.00	0.00	
17,800.00	90.38	179.99	9,299.41	-8,377.31	-484.02	8,389.82	0.00	0.00	0.00	
17,900.00	90.38	179.99	9,298.74	-8,477.30	-484.01	8,489.75	0.00	0.00	0.00	
18,000.00	90.38	179.99	9,298.08	-8,577.30	-483.99	8,589.67	0.00	0.00	0.00	
18,100.00	90.38	179.99	9,297.42	-8,677.30	-483.97	8,689.59	0.00	0.00	0.00	
18,200.00	90.38	179.99	9,296.75	-8,777.30	-483.96	8,789.51	0.00	0.00	0.00	
18,300.00	90.38	179.99	9,296.09	-8,877.30	-483.94	8,889.43	0.00	0.00	0.00	
18,400.00	90.38	179.99	9,295.42	-8,977.29	-483.93	8,989.35	0.00	0.00	0.00	
18,500.00	90.38	179.99	9,294.76	-9,077.29	-483.91	9,089.27	0.00	0.00	0.00	
18,600.00	90.38	179.99	9,294.10	-9,177.29	-483.90	9,189.19	0.00	0.00	0.00	
18,700.00	90.38	179.99	9,293.43	-9,277.29	-483.88	9,289.11	0.00	0.00	0.00	
18,800.00	90.38	179.99	9,292.77	-9,377.28	-483.86	9,389.03	0.00	0.00	0.00	
18,900.00	90.38	179.99	9,292.11	-9,477.28	-483.85	9,488.95	0.00	0.00	0.00	
19,000.00	90.38	179.99	9,291.44	-9,577.28	-483.83	9,588.87	0.00	0.00	0.00	
19,100.00	90.38	179.99	9,290.78	-9,677.28	-483.82	9,688.79	0.00	0.00	0.00	
19,200.00	90.38	179.99	9,290.12	-9,777.28	-483.80	9,788.72	0.00	0.00	0.00	
19,300.00	90.38	179.99	9,289.45	-9,877.27	-483.79	9,888.64	0.00	0.00	0.00	
19,400.00	90.38	179.99	9,288.79	-9,977.27	-483.77	9,988.56	0.00	0.00	0.00	
19,500.00	90.38	179.99	9,288.12	-10,077.27	-483.76	10,088.48	0.00	0.00	0.00	
19,600.00	90.38	179.99	9,287.46	-10,177.27	-483.74	10,188.40	0.00	0.00	0.00	
19,700.00	90.38	179.99	9,286.80	-10,277.26	-483.72	10,288.32	0.00	0.00	0.00	
19,800.00	90.38	179.99	9,286.13	-10,377.26	-483.71	10,388.24	0.00	0.00	0.00	
19,900.00	90.38	179.99	9,285.47	-10,477.26	-483.69	10,488.16	0.00	0.00	0.00	
20,000.00	90.38	179.99	9,284.81	-10,577.26	-483.68	10,588.08	0.00	0.00	0.00	
20,100.00	90.38	179.99	9,284.14	-10,677.26	-483.66	10,688.00	0.00	0.00	0.00	
20,200.00	90.38	179.99	9,283.48	-10,777.25	-483.65	10,787.92	0.00	0.00	0.00	
20,300.00	90.38	179.99	9,282.81	-10,877.25	-483.63	10,887.84	0.00	0.00	0.00	
20,400.00	90.38	179.99	9,282.15	-10,977.25	-483.62	10,987.76	0.00	0.00	0.00	
20,500.00	90.38	179.99	9,281.49	-11,077.25	-483.60	11,087.68	0.00	0.00	0.00	
20,600.00	90.38	179.99	9,280.82	-11,177.25	-483.58	11,187.61	0.00	0.00	0.00	
20,700.00	90.38	179.99	9,280.16	-11,277.24	-483.57	11,287.53	0.00	0.00	0.00	
20,800.00	90.38	179.99	9,279.50	-11,377.24	-483.55	11,387.45	0.00	0.00	0.00	
20,900.00	90.38	179.99	9,278.83	-11,477.24	-483.54	11,487.37	0.00	0.00	0.00	
21,000.00	90.38	179.99	9,278.17	-11,577.24	-483.52	11,587.29	0.00	0.00	0.00	
21,100.00	90.38	179.99	9,277.50	-11,677.23	-483.51	11,687.21	0.00	0.00	0.00	
21,200.00	90.38	179.99	9,276.84	-11,777.23	-483.49	11,787.13	0.00	0.00	0.00	
21,300.00	90.38	179.99	9,276.18	-11,877.23	-483.47	11,887.05	0.00	0.00	0.00	
21,400.00	90.38	179.99	9,275.51	-11,977.23	-483.46	11,986.97	0.00	0.00	0.00	

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

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)	
21,500.00	90.38	179.99	9,274.85	-12,077.23	-483.44	12,086.89	0.00	0.00	0.00	
21,600.00	90.38	179.99	9,274.19	-12,177.22	-483.43	12,186.81	0.00	0.00	0.00	
21,700.00	90.38	179.99	9,273.52	-12,277.22	-483.41	12,286.73	0.00	0.00	0.00	
21,778.68	90.38	179.99	9,273.00	-12,355.90	-483.40	12,365.35	0.00	0.00	0.00	
TD at 21778.68										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
BHL - Honey Graham St - hit/miss target - Shape - Point	0.00	0.00	9,273.00	-12,355.90	-483.40	363,937.30	567,524.20	32° 0' 1.404424 N	104° 6' 55.832053 W	
LTP - Honey Graham St: - plan misses target center by 0.28usft at 21648.68usft MD (9273.86 TVD, -12225.90 N, -483.42 E) - Point	0.00	0.00	9,273.86	-12,225.90	-483.70	364,067.30	567,523.90	32° 0' 2.691000 N	104° 6' 55.832495 W	
FTP - Honey Graham St - plan misses target center by 70.62usft at 9449.14usft MD (9289.23 TVD, -36.83 N, -485.32 E) - Point	0.00	0.00	9,353.00	-6.50	-484.90	376,286.70	567,522.70	32° 2' 3.622003 N	104° 6' 55.560305 W	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
313.00	313.00	Rustler		-0.38	182.24	
516.00	516.00	TOS		-0.38	182.24	
2,182.00	2,182.00	BOS (Fletcher)		-0.38	182.24	
2,380.14	2,380.02	LMAR (Top Delaware)		-0.38	182.24	
2,414.22	2,414.02	BLCN		-0.38	182.24	
3,266.85	3,257.40	CYCN		-0.38	182.24	
4,526.97	4,502.00	BYCN		-0.38	182.24	
6,147.68	6,105.68	Bone Sprg (BSGL)		-0.38	182.24	
6,493.69	6,451.69	U Avalon Sh		-0.38	182.24	
6,717.69	6,675.69	L Avalon Sh		-0.38	182.24	
6,929.69	6,887.69	B Avalon Sh		-0.38	182.24	
7,048.69	7,006.69	FBSG_sand		-0.38	182.24	
7,655.69	7,613.69	SBSG_sand		-0.38	182.24	
7,957.69	7,915.69	SBSG_sand_Base		-0.38	182.24	
8,800.69	8,758.69	TBSG_sand		-0.38	182.24	
9,168.80	9,106.01	WFMP		-0.38	182.24	
9,435.25	9,282.71	WFMP A Shale		-0.38	182.24	

Database:	USA Compass	Local Co-ordinate Reference:	Well 703H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3108.00usft (Ensign 155)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3108.00usft (Ensign 155)
Site:	Honey Graham State Com	North Reference:	Grid
Well:	703H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-10-19		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,200.00	2,200.00	0.00	0.00	KOP, Begin 2.00°/100' Build
2,650.18	2,648.33	17.32	-30.75	Hold 9.00° Inc at 299.39° Azm
5,758.83	5,718.68	256.10	-454.62	Begin 2.00°/100' Drop
6,209.00	6,167.00	273.42	-485.37	Begin Vertical Hold
8,822.05	8,780.05	273.42	-485.37	KOP2, Begin 10.00°/100' Build
9,725.86	9,353.00	-303.34	-485.28	LP, Hold 90.38° Inc at 179.99° Azm
21,778.68	9,273.00	-12,355.90	-483.40	TD at 21778.68