

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 276544

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
		3. API Number 30-015-46597
4. Property Code 325001	5. Property Name DAISY 24 STATE COM	6. Well No. 505H

7. Surface Location

UL - Lot A	Section 24	Township 25S	Range 27E	Lot Idn	Feet From 221	N/S Line N	Feet From 711	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot O	Section 25	Township 25S	Range 27E	Lot Idn O	Feet From 50	N/S Line S	Feet From 1650	E/W Line E	County Eddy
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9. Pool Information

HAY HOLLOW;BONE SPRING, NORTH	30216
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3089
16. Multiple N	17. Proposed Depth 18256	18. Formation 2nd Bone Spring Sand	19. Contractor	20. Spud Date 2/28/2020
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	500	400	0
Int1	12.25	9.625	40	2300	700	0
Prod	8.75	5.5	17	18256	3200	1800

Casing/Cement Program: Additional Comments

Drill 17-1/2" hole to 500' into the Rustler. Run 13-3/8" 54.5# J55 STC casing to TD and cement to surface in one stage. Will set in Rustler and cover water depth. Drill 12-1/4" hole to ~2,300' with Brine. Run 9-5/8" 40# J-55 casing to TD and cement to surface in one stage. Drill 8-3/4" vertical hole, curve & lateral to 18,256' with Cut Brine. Run 5-1/2" 17# P110 BTC casing to TD and cement to 1,800' in one stage.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	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.

OIL CONSERVATION DIVISION

Signature:			
Printed Name:	Electronically filed by Diane Kuykendall	Approved By:	Raymond Podany
Title:	Production Accounting Director	Title:	Geologist
Email Address:	dkuykendall@concho.com	Approved Date:	1/15/2020
Date:	1/6/2020	Expiration Date:	1/15/2022
Phone:	432-685-4372	Conditions of Approval Attached	

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

Form C-102

August 1, 2011

Permit 276544

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number 30-015-46597	2. Pool Code 30216	3. Pool Name HAY HOLLOW;BONE SPRING, NORTH
4. Property Code 325001	5. Property Name DAISY 24 STATE COM	6. Well No. 505H
7. OGRID No. 229137	8. Operator Name COG OPERATING LLC	9. Elevation 3089

10. Surface Location

UL - Lot A	Section 24	Township 25S	Range 27E	Lot Idn	Feet From 221	N/S Line N	Feet From 711	E/W Line E	County Eddy
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11. Bottom Hole Location If Different From Surface

UL - Lot O	Section 25	Township 25S	Range 27E	Lot Idn	Feet From 50	N/S Line S	Feet From 1650	E/W Line E	County Eddy
12. Dedicated Acres 320.00	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

	OPERATOR CERTIFICATION <i>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(s) 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.</i> E-Signed By: Diane Kuykendall Title: Production Accounting Director Date: 1/6/2020
	SURVEYOR CERTIFICATION <i>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.</i> Surveyed By: Garrett Smelker Date of Survey: 12/16/2019 Certificate Number: 25036

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GAS CAPTURE PLAN

Date: 1/15/2020

☒ 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, 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
DAISY 24 STATE COM #505H	30-015-46597	A-24-25S-27E	0221N 0711E	2494	None	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. 24, Twn. 25S, Rng. 27E, 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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Form APD Comments

Permit 276544

PERMIT COMMENTS

Operator Name and Address: COG OPERATING LLC [229137] 600 W Illinois Ave Midland, TX 79701		API Number: 30-015-46597
		Well: DAISY 24 STATE COM #505H

Created By	Comment	Comment Date
rodrom	H2S concentrations of wells in this area from surface to TD are low enough that a contingency plan is not required.	1/6/2020

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Form APD Conditions

Permit 276544

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address:		API Number:
COG OPERATING LLC [229137]		30-015-46597
600 W Illinois Ave		Well:
Midland, TX 79701		DAISY 24 STATE COM #505H

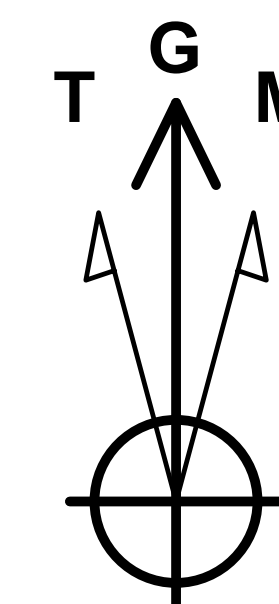
OCD Reviewer	Condition
rpodany	Will require a directional survey with the C-104
rpodany	Cement is required to circulate on both surface and intermediate1 strings of casing



Project: Eddy County, NM (NAD27 NME)
Site: Daisy 24 State Com
Well: 505H
Wellbore: OH
Design: Plan 1 01-03-20
Rig: Pioneer 84

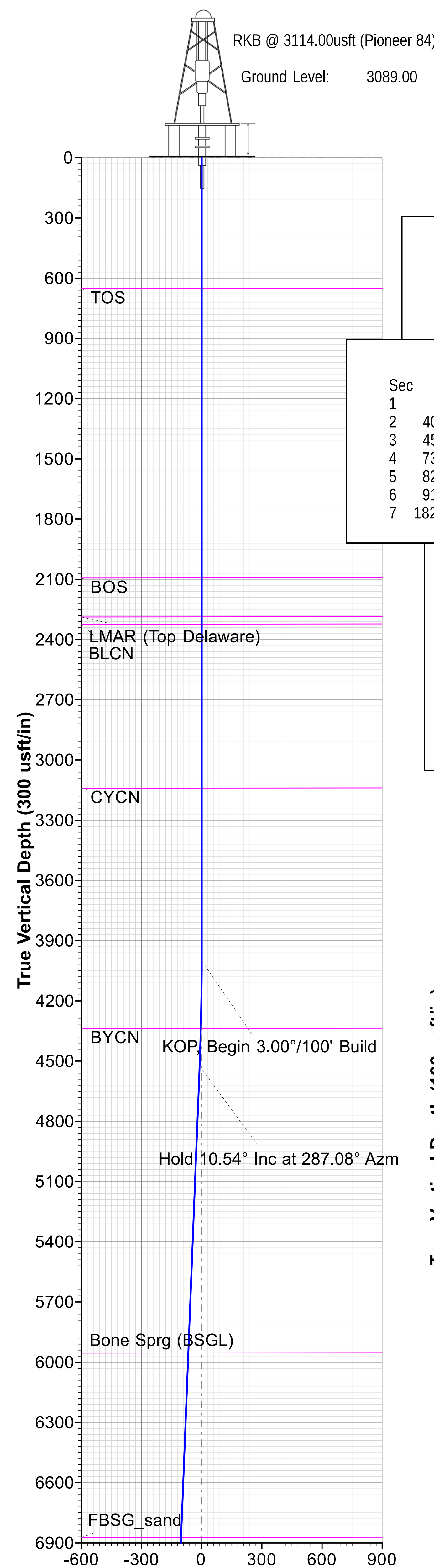


PHOENIX
TECHNOLOGY SERVICES

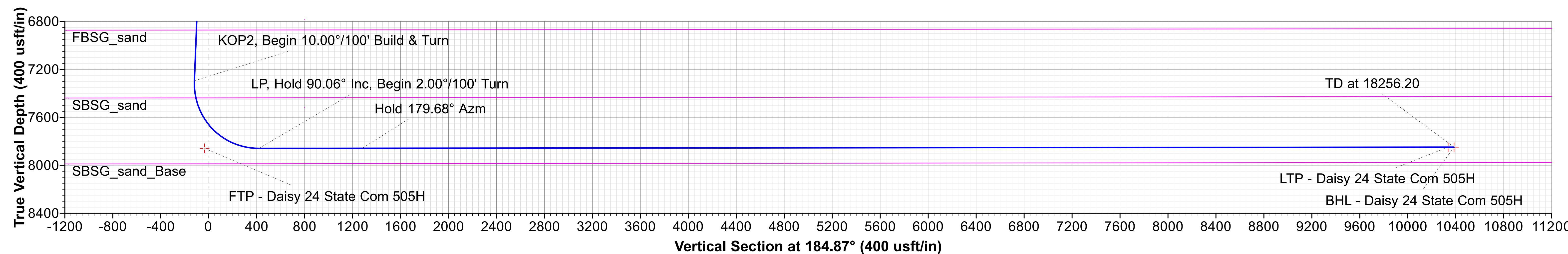


Azimuths to Grid North
True North: -0.10°
Magnetic North: 6.89°

Magnetic Field
Strength: 47785.8nT
Dip Angle: 59.78°
Date: 3/2/2020
Model: MVHD



Vertical Section at 184.87° (300 usft/in)



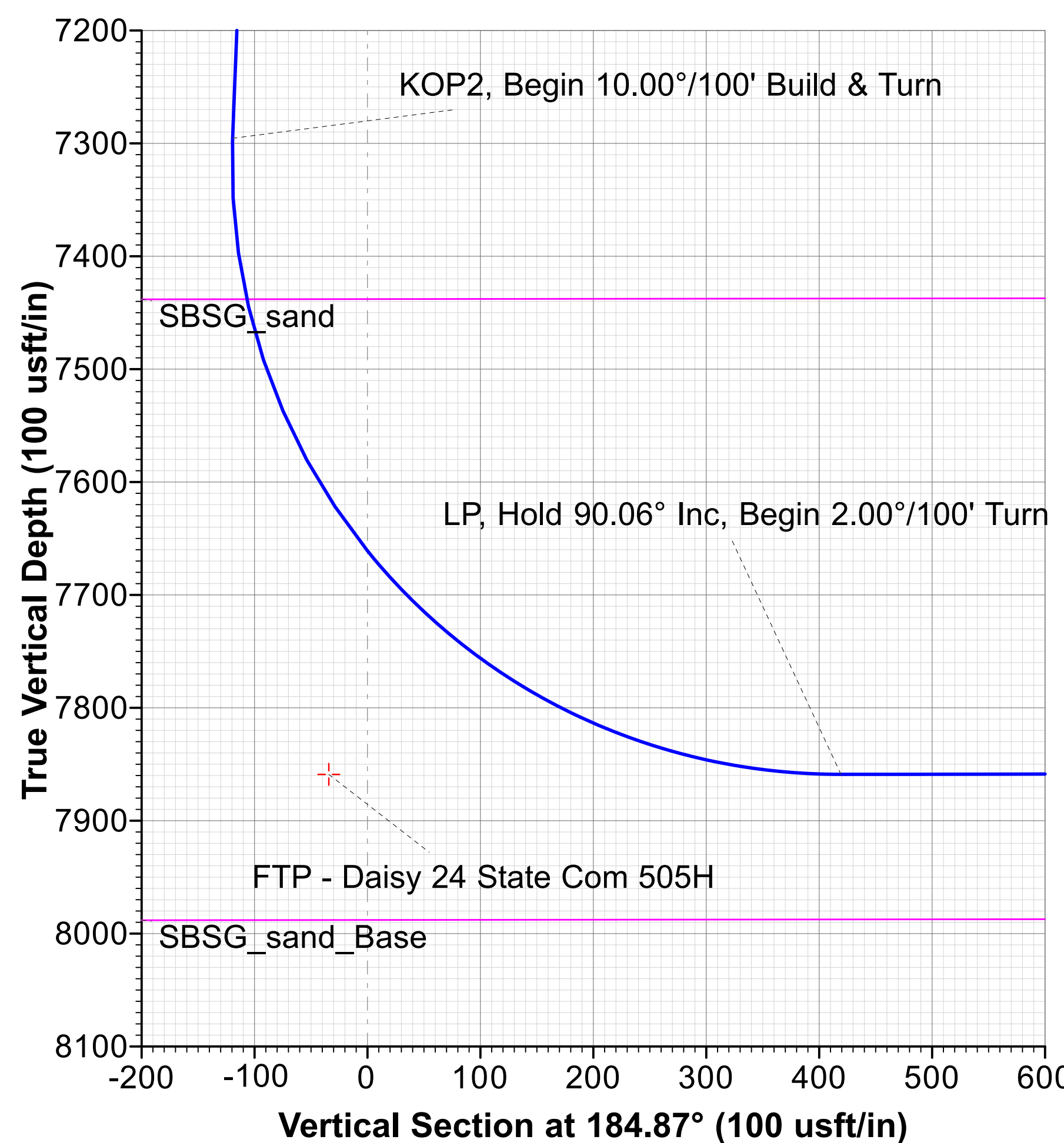
Vertical Section at 184.87° (400 usft/in)

WELL DETAILS							
GL @ 3089.00							
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
	0.00	0.00	408157.83	560719.88	32° 7' 19.165404 N	104° 8' 13.917948 W	

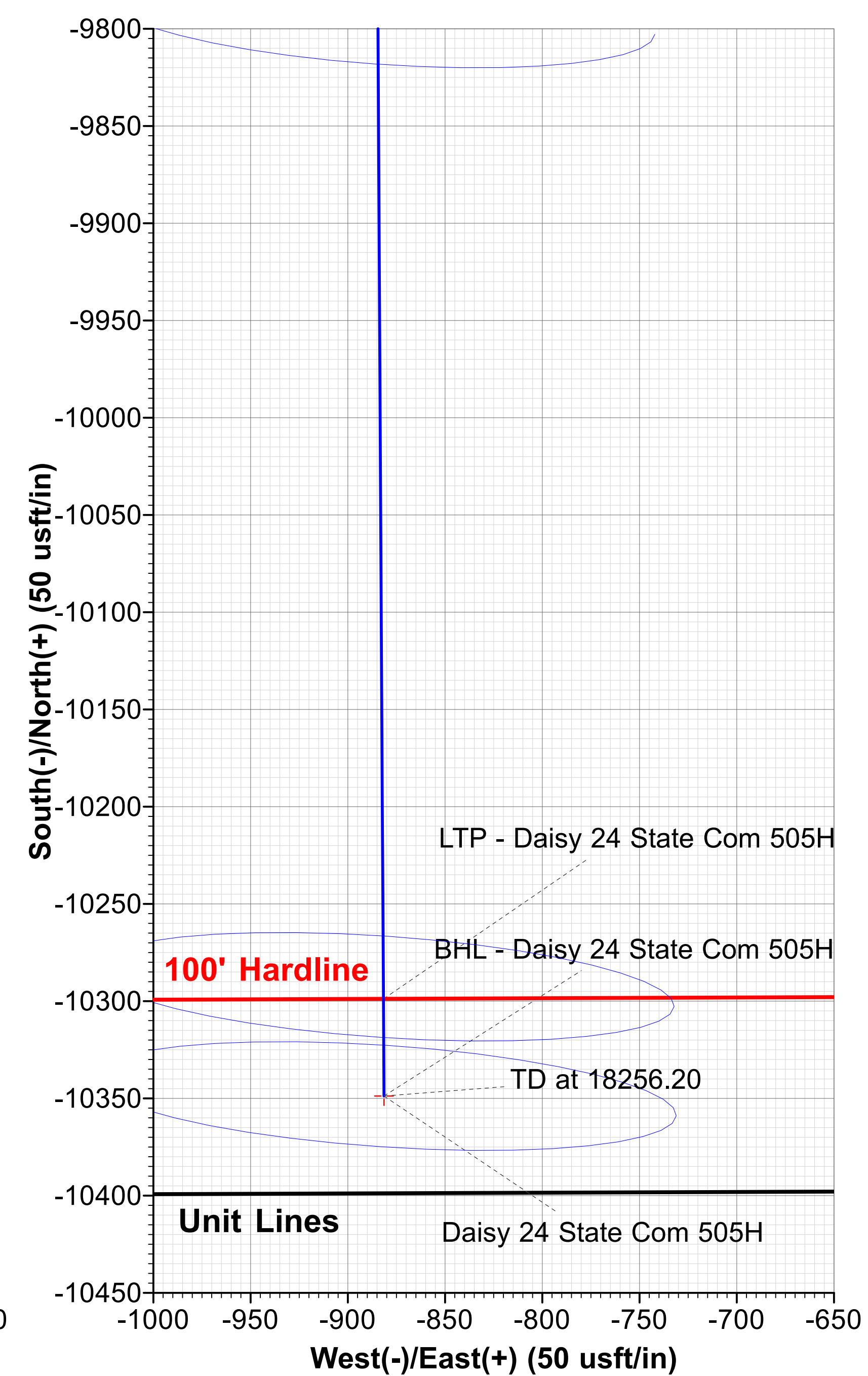
DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Daisy 24 State Com 505H	7849.00	-10348.79	-881.38	397809.04	559838.51	32° 5' 36.764268 N	104° 8' 24.382716 W
LTP - Daisy 24 State Com 505H	7849.00	-10298.79	-881.53	397859.04	559838.35	32° 5' 37.259088 N	104° 8' 24.383508 W
FTP - Daisy 24 State Com 505H	7859.00	114.27	-939.70	408272.11	559780.18	32° 7' 20.313120 N	104° 8' 24.842868 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			
2	4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00			
3	4527.23	10.54	287.08	4524.26	14.21	-46.24	2.00	287.08	-10.23			
4	7346.17	10.54	287.08	7295.59	165.73	-539.36	0.00	0.00	-119.36			
5	8246.90	90.06	197.00	7859.00	-352.06	-807.45	10.00	-90.07	419.31			
6	9112.95	90.06	179.68	7858.11	-1205.69	-932.58	2.00	-90.00	1280.48			
7	18256.20	90.06	179.68	7849.00	-10348.79	-881.38	0.00	0.00	10386.25	BHL - Daisy 24 State Com 505H	TD at 18256.20	

LEGEND	
—	506H, OH, Plan 1 01-03-20 V0
—	Plan 1 01-03-20



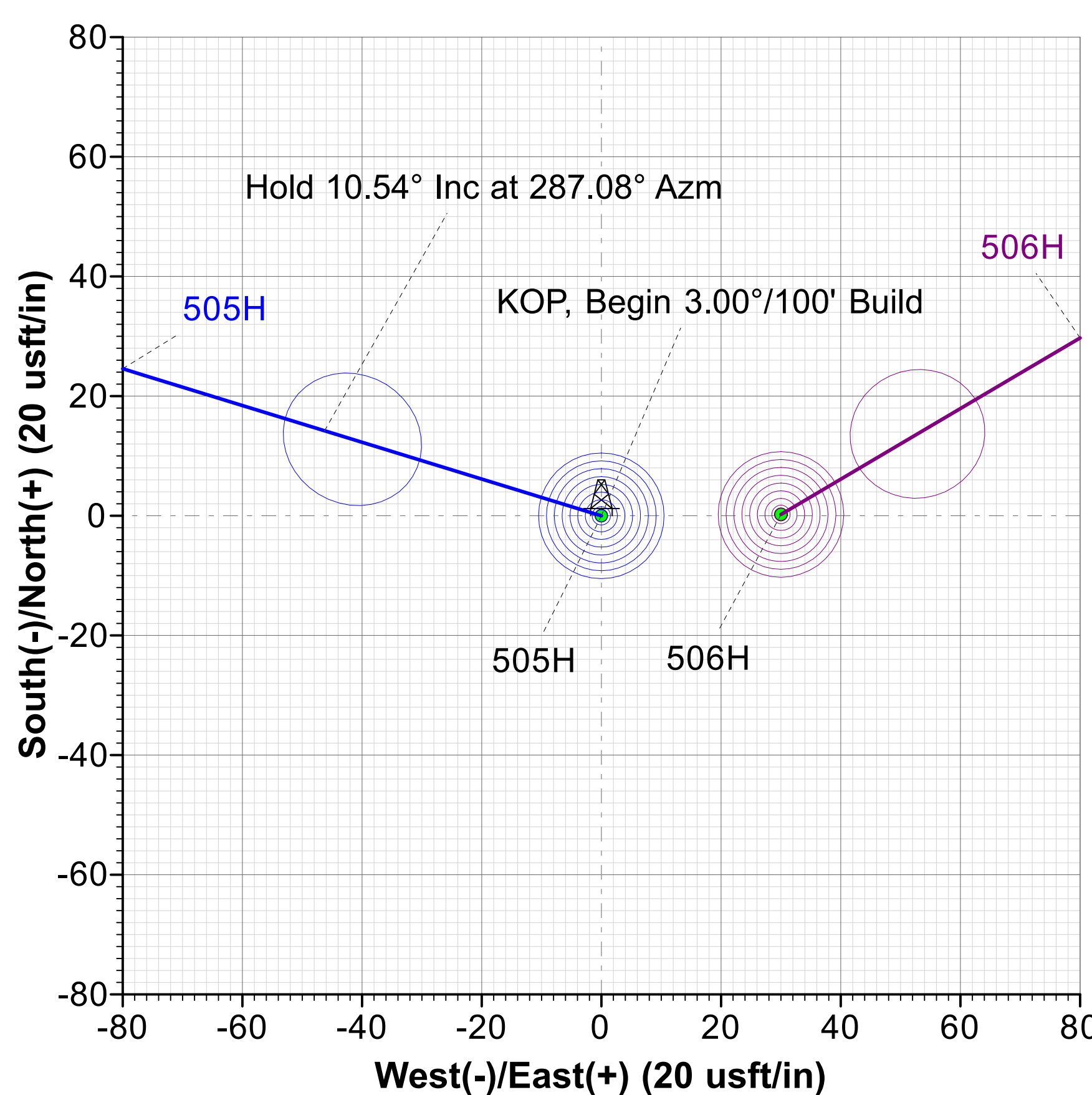
Vertical Section at 184.87° (100 usft/in)



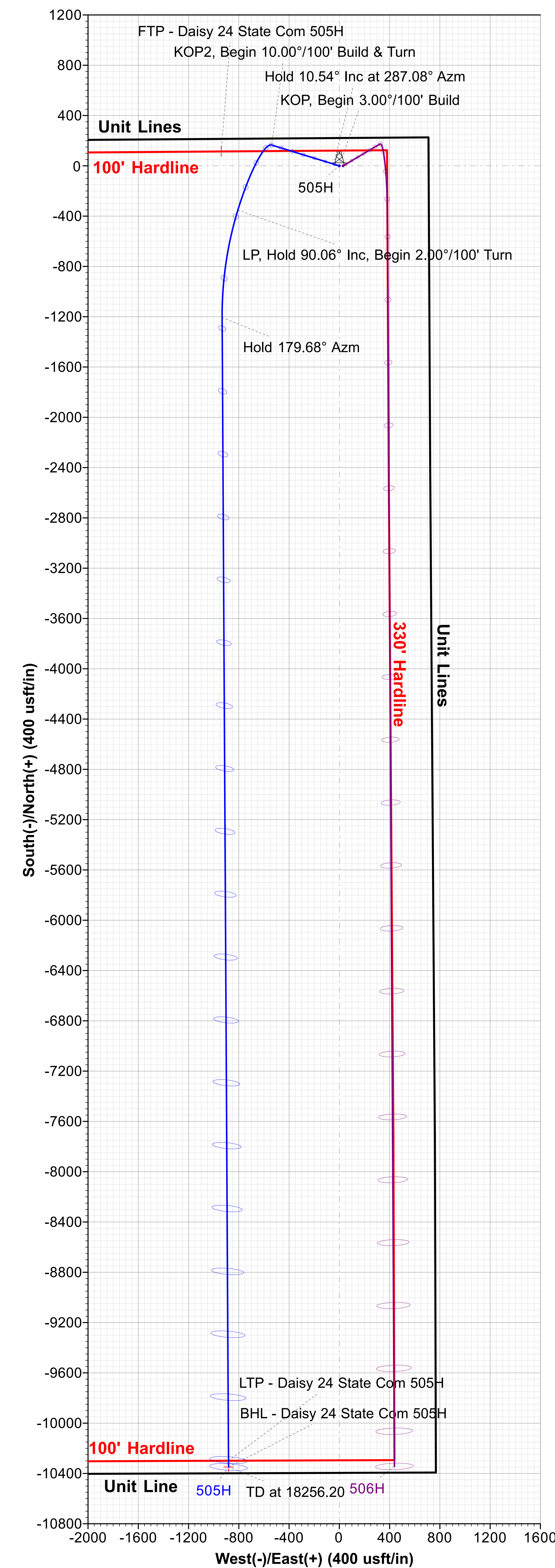
Vertical Section at 184.87° (50 usft/in)

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 505H, Grid North
Latitude: 32° 7' 19.165404 N
Longitude: 104° 8' 13.917948 W
Grid East: 560719.88
Grid North: 408157.83
Scale Factor: 1.000
Geomagnetic Model: MVHD
Sample Date: 02-Mar-20
Magnetic Declination: 6.99°
Dip Angle from Horizontal: 59.78°
Magnetic Field Strength: 47785.77836376nT
To convert a Magnetic Direction to a Grid Direction, Add 6.89°
To convert a Magnetic Direction to a True Direction, Add 6.99° East
To convert a True Direction to a Grid Direction, Subtract 0.10°

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
651.00	651.00	TOS	-0.06	184.87
2093.00	2093.00	BOS	-0.06	184.87
2287.00	2287.00	LMAR (Top Delaware)	-0.06	184.87
2323.00	2323.00	BLCN	-0.06	184.87
3140.00	3140.00	CYCN	-0.06	184.87
4336.00	4336.78	BYCN	-0.06	184.87
5954.07	5981.60	Bone Sprg (BSGL)	-0.06	184.87
6872.11	6915.41	FBSG_sand	-0.06	184.87
7438.11	7492.72	SBSG_sand	-0.06	184.87



Vertical Section at 184.87° (20 usft/in)



Vertical Section at 184.87° (400 usft/in)



COG Operating LLC

Eddy County, NM (NAD27 NME)

Daisy 24 State Com

505H

OH

Plan: Plan 1 01-03-20

Standard Planning Report

03 January, 2020





Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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		Daisy 24 State Com			
Site Position:		Northing:	408,073.20 usft	Latitude:	32° 7' 18.400350 N
From:	Map	Easting:	556,552.70 usft	Longitude:	104° 9' 2.377557 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.10 °

Well	505H					
Well Position	+N/-S	84.63 usft	Northing:	408,157.83 usft	Latitude:	32° 7' 19.165404 N
	+E/-W	4,167.18 usft	Easting:	560,719.89 usft	Longitude:	104° 8' 13.917948 W
Position Uncertainty	1.00 usft		Wellhead Elevation:		Ground Level:	3,089.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	3/2/2020	6.99	59.78	47,785.77836375

Design	Plan 1 01-03-20			
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	184.87

Plan Survey Tool Program	Date	1/3/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	4,000.00	Plan 1 01-03-20 (OH)	NS-GYRO-MS North sensing gyrocompass
2	4,000.00	18,256.20	Plan 1 01-03-20 (OH)	MWD+HRGM OWSG MWD + HRGM



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,527.23	10.54	287.08	4,524.26	14.21	-46.24	2.00	2.00	-13.83	287.08	
7,346.17	10.54	287.08	7,295.59	165.73	-539.36	0.00	0.00	0.00	0.00	
8,246.90	90.06	197.00	7,859.00	-352.06	-807.45	10.00	8.83	-10.00	-90.07	
9,112.95	90.06	179.68	7,858.11	-1,205.69	-932.58	2.00	0.00	-2.00	-90.00	
18,256.20	90.06	179.68	7,849.00	-10,348.79	-881.38	0.00	0.00	0.00	0.00	BHL - Daisy 24 Stal



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 3.00°/100' Build									
4,100.00	2.00	287.08	4,099.98	0.51	-1.67	-0.37	2.00	2.00	0.00
4,200.00	4.00	287.08	4,199.84	2.05	-6.67	-1.48	2.00	2.00	0.00
4,300.00	6.00	287.08	4,299.45	4.61	-15.00	-3.32	2.00	2.00	0.00
4,400.00	8.00	287.08	4,398.70	8.19	-26.65	-5.90	2.00	2.00	0.00
4,500.00	10.00	287.08	4,497.47	12.78	-41.60	-9.21	2.00	2.00	0.00
4,527.23	10.54	287.08	4,524.26	14.21	-46.24	-10.23	2.00	2.00	0.00
Hold 10.54° Inc at 287.08° Azm									
4,600.00	10.54	287.08	4,595.80	18.12	-58.97	-13.05	0.00	0.00	0.00
4,700.00	10.54	287.08	4,694.11	23.50	-76.47	-16.92	0.00	0.00	0.00
4,800.00	10.54	287.08	4,792.42	28.87	-93.96	-20.79	0.00	0.00	0.00
4,900.00	10.54	287.08	4,890.73	34.25	-111.45	-24.66	0.00	0.00	0.00
5,000.00	10.54	287.08	4,989.05	39.62	-128.95	-28.54	0.00	0.00	0.00
5,100.00	10.54	287.08	5,087.36	45.00	-146.44	-32.41	0.00	0.00	0.00
5,200.00	10.54	287.08	5,185.67	50.37	-163.93	-36.28	0.00	0.00	0.00
5,300.00	10.54	287.08	5,283.98	55.75	-181.42	-40.15	0.00	0.00	0.00
5,400.00	10.54	287.08	5,382.29	61.12	-198.92	-44.02	0.00	0.00	0.00
5,500.00	10.54	287.08	5,480.60	66.50	-216.41	-47.89	0.00	0.00	0.00
5,600.00	10.54	287.08	5,578.91	71.87	-233.90	-51.76	0.00	0.00	0.00
5,700.00	10.54	287.08	5,677.22	77.25	-251.40	-55.63	0.00	0.00	0.00
5,800.00	10.54	287.08	5,775.54	82.62	-268.89	-59.51	0.00	0.00	0.00
5,900.00	10.54	287.08	5,873.85	88.00	-286.38	-63.38	0.00	0.00	0.00
6,000.00	10.54	287.08	5,972.16	93.37	-303.88	-67.25	0.00	0.00	0.00
6,100.00	10.54	287.08	6,070.47	98.75	-321.37	-71.12	0.00	0.00	0.00
6,200.00	10.54	287.08	6,168.78	104.12	-338.86	-74.99	0.00	0.00	0.00
6,300.00	10.54	287.08	6,267.09	109.50	-356.35	-78.86	0.00	0.00	0.00
6,400.00	10.54	287.08	6,365.40	114.87	-373.85	-82.73	0.00	0.00	0.00
6,500.00	10.54	287.08	6,463.71	120.25	-391.34	-86.60	0.00	0.00	0.00
6,600.00	10.54	287.08	6,562.03	125.62	-408.83	-90.48	0.00	0.00	0.00
6,700.00	10.54	287.08	6,660.34	131.00	-426.33	-94.35	0.00	0.00	0.00
6,800.00	10.54	287.08	6,758.65	136.37	-443.82	-98.22	0.00	0.00	0.00
6,900.00	10.54	287.08	6,856.96	141.75	-461.31	-102.09	0.00	0.00	0.00
7,000.00	10.54	287.08	6,955.27	147.12	-478.81	-105.96	0.00	0.00	0.00
7,100.00	10.54	287.08	7,053.58	152.50	-496.30	-109.83	0.00	0.00	0.00
7,200.00	10.54	287.08	7,151.89	157.87	-513.79	-113.70	0.00	0.00	0.00
7,300.00	10.54	287.08	7,250.20	163.25	-531.28	-117.57	0.00	0.00	0.00
7,346.17	10.54	287.08	7,295.59	165.73	-539.36	-119.36	0.00	0.00	0.00
KOP2, Begin 10.00°/100' Build & Turn									
7,400.00	11.82	259.82	7,348.44	166.20	-549.50	-118.97	10.00	2.37	-50.64
7,500.00	18.57	230.66	7,445.02	154.27	-571.95	-105.18	10.00	6.75	-29.16
7,600.00	27.34	218.11	7,537.07	126.04	-598.51	-74.79	10.00	8.77	-12.55
7,700.00	36.71	211.47	7,621.78	82.37	-628.36	-28.75	10.00	9.37	-6.65
7,800.00	46.32	207.25	7,696.58	24.58	-660.60	31.57	10.00	9.61	-4.22
7,900.00	56.04	204.21	7,759.21	-45.57	-694.25	104.32	10.00	9.72	-3.04
8,000.00	65.81	201.81	7,807.75	-125.94	-728.29	187.29	10.00	9.78	-2.41
8,100.00	75.62	199.75	7,840.74	-214.09	-761.68	277.96	10.00	9.81	-2.06
8,200.00	85.45	197.86	7,857.16	-307.36	-793.41	373.58	10.00	9.83	-1.89
8,246.90	90.06	197.00	7,859.00	-352.06	-807.45	419.31	10.00	9.83	-1.83
LP, Hold 90.06° Inc, Begin 2.00°/100' Turn									
8,300.00	90.06	195.94	7,858.94	-402.98	-822.50	471.32	2.00	0.00	-2.00
8,400.00	90.06	193.94	7,858.84	-499.59	-848.28	569.78	2.00	0.00	-2.00
8,500.00	90.06	191.94	7,858.73	-597.05	-870.67	668.78	2.00	0.00	-2.00



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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)
8,600.00	90.06	189.94	7,858.63	-695.23	-889.64	768.22	2.00	0.00	-2.00
8,700.00	90.06	187.94	7,858.52	-794.01	-905.18	867.96	2.00	0.00	-2.00
8,800.00	90.06	185.94	7,858.42	-893.27	-917.25	967.89	2.00	0.00	-2.00
8,900.00	90.06	183.94	7,858.32	-992.90	-925.86	1,067.88	2.00	0.00	-2.00
9,000.00	90.06	181.94	7,858.22	-1,092.76	-930.99	1,167.82	2.00	0.00	-2.00
9,100.00	90.06	179.94	7,858.12	-1,192.74	-932.62	1,267.58	2.00	0.00	-2.00
9,112.95	90.06	179.68	7,858.11	-1,205.69	-932.58	1,280.48	2.00	0.00	-2.00
Hold 179.68° Azm									
9,200.00	90.06	179.68	7,858.02	-1,292.74	-932.09	1,367.17	0.00	0.00	0.00
9,300.00	90.06	179.68	7,857.92	-1,392.74	-931.53	1,466.76	0.00	0.00	0.00
9,400.00	90.06	179.68	7,857.82	-1,492.74	-930.97	1,566.35	0.00	0.00	0.00
9,500.00	90.06	179.68	7,857.72	-1,592.73	-930.41	1,665.94	0.00	0.00	0.00
9,600.00	90.06	179.68	7,857.62	-1,692.73	-929.85	1,765.53	0.00	0.00	0.00
9,700.00	90.06	179.68	7,857.52	-1,792.73	-929.29	1,865.12	0.00	0.00	0.00
9,800.00	90.06	179.68	7,857.42	-1,892.73	-928.73	1,964.71	0.00	0.00	0.00
9,900.00	90.06	179.68	7,857.32	-1,992.73	-928.17	2,064.30	0.00	0.00	0.00
10,000.00	90.06	179.68	7,857.22	-2,092.73	-927.61	2,163.89	0.00	0.00	0.00
10,100.00	90.06	179.68	7,857.12	-2,192.72	-927.05	2,263.49	0.00	0.00	0.00
10,200.00	90.06	179.68	7,857.02	-2,292.72	-926.49	2,363.08	0.00	0.00	0.00
10,300.00	90.06	179.68	7,856.92	-2,392.72	-925.93	2,462.67	0.00	0.00	0.00
10,400.00	90.06	179.68	7,856.82	-2,492.72	-925.37	2,562.26	0.00	0.00	0.00
10,500.00	90.06	179.68	7,856.72	-2,592.72	-924.81	2,661.85	0.00	0.00	0.00
10,600.00	90.06	179.68	7,856.62	-2,692.72	-924.25	2,761.44	0.00	0.00	0.00
10,700.00	90.06	179.68	7,856.53	-2,792.72	-923.69	2,861.03	0.00	0.00	0.00
10,800.00	90.06	179.68	7,856.43	-2,892.71	-923.13	2,960.62	0.00	0.00	0.00
10,900.00	90.06	179.68	7,856.33	-2,992.71	-922.57	3,060.21	0.00	0.00	0.00
11,000.00	90.06	179.68	7,856.23	-3,092.71	-922.01	3,159.80	0.00	0.00	0.00
11,100.00	90.06	179.68	7,856.13	-3,192.71	-921.45	3,259.39	0.00	0.00	0.00
11,200.00	90.06	179.68	7,856.03	-3,292.71	-920.89	3,358.98	0.00	0.00	0.00
11,300.00	90.06	179.68	7,855.93	-3,392.71	-920.33	3,458.57	0.00	0.00	0.00
11,400.00	90.06	179.68	7,855.83	-3,492.70	-919.77	3,558.16	0.00	0.00	0.00
11,500.00	90.06	179.68	7,855.73	-3,592.70	-919.21	3,657.75	0.00	0.00	0.00
11,600.00	90.06	179.68	7,855.63	-3,692.70	-918.65	3,757.34	0.00	0.00	0.00
11,700.00	90.06	179.68	7,855.53	-3,792.70	-918.09	3,856.93	0.00	0.00	0.00
11,800.00	90.06	179.68	7,855.43	-3,892.70	-917.53	3,956.52	0.00	0.00	0.00
11,900.00	90.06	179.68	7,855.33	-3,992.70	-916.97	4,056.11	0.00	0.00	0.00
12,000.00	90.06	179.68	7,855.23	-4,092.69	-916.41	4,155.70	0.00	0.00	0.00
12,100.00	90.06	179.68	7,855.13	-4,192.69	-915.85	4,255.29	0.00	0.00	0.00
12,200.00	90.06	179.68	7,855.03	-4,292.69	-915.29	4,354.88	0.00	0.00	0.00
12,300.00	90.06	179.68	7,854.93	-4,392.69	-914.73	4,454.47	0.00	0.00	0.00
12,400.00	90.06	179.68	7,854.83	-4,492.69	-914.17	4,554.06	0.00	0.00	0.00
12,500.00	90.06	179.68	7,854.73	-4,592.69	-913.61	4,653.65	0.00	0.00	0.00
12,600.00	90.06	179.68	7,854.63	-4,692.68	-913.05	4,753.24	0.00	0.00	0.00
12,700.00	90.06	179.68	7,854.53	-4,792.68	-912.49	4,852.83	0.00	0.00	0.00
12,800.00	90.06	179.68	7,854.43	-4,892.68	-911.93	4,952.42	0.00	0.00	0.00
12,900.00	90.06	179.68	7,854.33	-4,992.68	-911.37	5,052.01	0.00	0.00	0.00
13,000.00	90.06	179.68	7,854.23	-5,092.68	-910.81	5,151.60	0.00	0.00	0.00
13,100.00	90.06	179.68	7,854.14	-5,192.68	-910.25	5,251.19	0.00	0.00	0.00
13,200.00	90.06	179.68	7,854.04	-5,292.67	-909.69	5,350.78	0.00	0.00	0.00
13,300.00	90.06	179.68	7,853.94	-5,392.67	-909.13	5,450.37	0.00	0.00	0.00
13,400.00	90.06	179.68	7,853.84	-5,492.67	-908.57	5,549.96	0.00	0.00	0.00
13,500.00	90.06	179.68	7,853.74	-5,592.67	-908.01	5,649.55	0.00	0.00	0.00
13,600.00	90.06	179.68	7,853.64	-5,692.67	-907.45	5,749.14	0.00	0.00	0.00



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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)
13,700.00	90.06	179.68	7,853.54	-5,792.67	-906.89	5,848.73	0.00	0.00	0.00
13,800.00	90.06	179.68	7,853.44	-5,892.66	-906.33	5,948.32	0.00	0.00	0.00
13,900.00	90.06	179.68	7,853.34	-5,992.66	-905.77	6,047.91	0.00	0.00	0.00
14,000.00	90.06	179.68	7,853.24	-6,092.66	-905.21	6,147.50	0.00	0.00	0.00
14,100.00	90.06	179.68	7,853.14	-6,192.66	-904.65	6,247.09	0.00	0.00	0.00
14,200.00	90.06	179.68	7,853.04	-6,292.66	-904.09	6,346.68	0.00	0.00	0.00
14,300.00	90.06	179.68	7,852.94	-6,392.66	-903.53	6,446.27	0.00	0.00	0.00
14,400.00	90.06	179.68	7,852.84	-6,492.66	-902.97	6,545.86	0.00	0.00	0.00
14,500.00	90.06	179.68	7,852.74	-6,592.65	-902.41	6,645.45	0.00	0.00	0.00
14,600.00	90.06	179.68	7,852.64	-6,692.65	-901.85	6,745.04	0.00	0.00	0.00
14,700.00	90.06	179.68	7,852.54	-6,792.65	-901.29	6,844.63	0.00	0.00	0.00
14,800.00	90.06	179.68	7,852.44	-6,892.65	-900.73	6,944.22	0.00	0.00	0.00
14,900.00	90.06	179.68	7,852.34	-6,992.65	-900.17	7,043.81	0.00	0.00	0.00
15,000.00	90.06	179.68	7,852.24	-7,092.65	-899.61	7,143.40	0.00	0.00	0.00
15,100.00	90.06	179.68	7,852.14	-7,192.64	-899.05	7,242.99	0.00	0.00	0.00
15,200.00	90.06	179.68	7,852.04	-7,292.64	-898.49	7,342.58	0.00	0.00	0.00
15,300.00	90.06	179.68	7,851.94	-7,392.64	-897.93	7,442.17	0.00	0.00	0.00
15,400.00	90.06	179.68	7,851.84	-7,492.64	-897.37	7,541.76	0.00	0.00	0.00
15,500.00	90.06	179.68	7,851.74	-7,592.64	-896.81	7,641.35	0.00	0.00	0.00
15,600.00	90.06	179.68	7,851.65	-7,692.64	-896.25	7,740.94	0.00	0.00	0.00
15,700.00	90.06	179.68	7,851.55	-7,792.63	-895.69	7,840.53	0.00	0.00	0.00
15,800.00	90.06	179.68	7,851.45	-7,892.63	-895.13	7,940.12	0.00	0.00	0.00
15,900.00	90.06	179.68	7,851.35	-7,992.63	-894.57	8,039.71	0.00	0.00	0.00
16,000.00	90.06	179.68	7,851.25	-8,092.63	-894.01	8,139.30	0.00	0.00	0.00
16,100.00	90.06	179.68	7,851.15	-8,192.63	-893.45	8,238.89	0.00	0.00	0.00
16,200.00	90.06	179.68	7,851.05	-8,292.63	-892.89	8,338.48	0.00	0.00	0.00
16,300.00	90.06	179.68	7,850.95	-8,392.62	-892.33	8,438.07	0.00	0.00	0.00
16,400.00	90.06	179.68	7,850.85	-8,492.62	-891.77	8,537.66	0.00	0.00	0.00
16,500.00	90.06	179.68	7,850.75	-8,592.62	-891.21	8,637.26	0.00	0.00	0.00
16,600.00	90.06	179.68	7,850.65	-8,692.62	-890.65	8,736.85	0.00	0.00	0.00
16,700.00	90.06	179.68	7,850.55	-8,792.62	-890.09	8,836.44	0.00	0.00	0.00
16,800.00	90.06	179.68	7,850.45	-8,892.62	-889.53	8,936.03	0.00	0.00	0.00
16,900.00	90.06	179.68	7,850.35	-8,992.61	-888.97	9,035.62	0.00	0.00	0.00
17,000.00	90.06	179.68	7,850.25	-9,092.61	-888.41	9,135.21	0.00	0.00	0.00
17,100.00	90.06	179.68	7,850.15	-9,192.61	-887.85	9,234.80	0.00	0.00	0.00
17,200.00	90.06	179.68	7,850.05	-9,292.61	-887.29	9,334.39	0.00	0.00	0.00
17,300.00	90.06	179.68	7,849.95	-9,392.61	-886.73	9,433.98	0.00	0.00	0.00
17,400.00	90.06	179.68	7,849.85	-9,492.61	-886.17	9,533.57	0.00	0.00	0.00
17,500.00	90.06	179.68	7,849.75	-9,592.61	-885.61	9,633.16	0.00	0.00	0.00
17,600.00	90.06	179.68	7,849.65	-9,692.60	-885.05	9,732.75	0.00	0.00	0.00
17,700.00	90.06	179.68	7,849.55	-9,792.60	-884.49	9,832.34	0.00	0.00	0.00
17,800.00	90.06	179.68	7,849.45	-9,892.60	-883.93	9,931.93	0.00	0.00	0.00
17,900.00	90.06	179.68	7,849.35	-9,992.60	-883.37	10,031.52	0.00	0.00	0.00
18,000.00	90.06	179.68	7,849.26	-10,092.60	-882.81	10,131.11	0.00	0.00	0.00
18,100.00	90.06	179.68	7,849.16	-10,192.60	-882.25	10,230.70	0.00	0.00	0.00
18,200.00	90.06	179.68	7,849.06	-10,292.59	-881.69	10,330.29	0.00	0.00	0.00
18,256.20	90.06	179.68	7,849.00	-10,348.79	-881.38	10,386.25	0.00	0.00	0.00
TD at 18256.20									



Planning Report



Database:	USA Compass	Local Co-ordinate Reference:	Well 505H
Company:	COG Operating LLC	TVD Reference:	RKB @ 3114.00usft (Pioneer 84)
Project:	Eddy County, NM (NAD27 NME)	MD Reference:	RKB @ 3114.00usft (Pioneer 84)
Site:	Daisy 24 State Com	North Reference:	Grid
Well:	505H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 01-03-20		

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
BHL - Daisy 24 State - plan hits target center - Point	0.00	0.00	7,849.00	-10,348.79	-881.38	397,809.04	559,838.51	32° 5' 36.764268 N 04° 8' 24.382716 W	
LTP - Daisy 24 State - plan misses target center by 6.20usft at 18200.00usft MD (7849.06 TVD, -10292.59 N, -881.69 E) - Point	0.00	0.00	7,849.00	-10,298.79	-881.53	397,859.04	559,838.35	32° 5' 37.259088 N 04° 8' 24.383508 W	
FTP - Daisy 24 State - plan misses target center by 309.26usft at 7903.53usft MD (7761.17 TVD, -48.24 N, -695.45 E) - Point	0.00	0.00	7,859.00	114.27	-939.70	408,272.10	559,780.18	32° 7' 20.313120 N 04° 8' 24.842868 W	

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
651.00	651.00	TOS		-0.06	184.87
2,093.00	2,093.00	BOS		-0.06	184.87
2,287.00	2,287.00	LMAR (Top Delaware)		-0.06	184.87
2,323.00	2,323.00	BLCN		-0.06	184.87
3,140.00	3,140.00	CYCN		-0.06	184.87
4,336.78	4,336.00	BYCN		-0.06	184.87
5,981.60	5,954.07	Bone Sprg (BSGL)		-0.06	184.87
6,915.41	6,872.11	FBSG_sand		-0.06	184.87
7,492.72	7,438.11	SBSG_sand		-0.06	184.87

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,000.00	4,000.00	0.00	0.00	KOP, Begin 3.00°/100' Build
4,527.23	4,524.26	14.21	-46.24	Hold 10.54° Inc at 287.08° Azm
7,346.17	7,295.59	165.73	-539.36	KOP2, Begin 10.00°/100' Build & Turn
8,246.90	7,859.00	-352.06	-807.45	LP, Hold 90.06° Inc, Begin 2.00°/100' Turn
9,112.95	7,858.11	-1,205.69	-932.58	Hold 179.68° Azm
18,256.20	7,849.00	-10,348.79	-881.38	TD at 18256.20

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

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

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018