

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 332396

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

1. Operator Name and Address COLGATE OPERATING, LLC 300 North Marienfeld Street Midland, TX 79701		2. OGRID Number 371449
		3. API Number 30-015-53300
4. Property Code 333725	5. Property Name Blackhawk 16 State Com	6. Well No. 133H

7. Surface Location

UL - Lot P	Section 16	Township 19S	Range 28E	Lot Idn	Feet From 1176	N/S Line S	Feet From 180	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot L	Section 17	Township 19S	Range 28E	Lot Idn L	Feet From 2040	N/S Line S	Feet From 10	E/W Line W	County Eddy
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9. Pool Information

WINCHESTER; BONE SPRING, WEST	97569
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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 3463
16. Multiple N	17. Proposed Depth 18541	18. Formation 3rd Bone Spring Sand	19. Contractor	20. Spud Date 3/17/2023
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	200	284	0
Int1	12.25	9.625	40	2850	848	
Prod	7.875	5.5	20	18541	1907	7971
Prod	8.75	5.5	20	8728	711	

Casing/Cement Program: Additional Comments

Drilling 8.75-hole size for the curve and 7.875-hole size for the lateral for the 5.5 production casing string.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Pipe	10000	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.	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Electronically filed by Kayla Butler	Approved By: Katherine Pickford	
Title: Production Engineer Analyst	Title: Geoscientist	
Email Address: kbutler@colgateenergy.com	Approved Date: 2/22/2023	Expiration Date: 2/22/2025
Date: 1/13/2023	Phone: 432-219-8567	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 30-015-53300	2 Pool Code 97569	3 Pool Name WINCHESTER; BONE SPRING, WEST
4 Property Code 333725	5 Property Name BLACKHAWK 16 STATE COM	6 Well Number 133H
7 OGRID No. 371449	8 Operator Name COLGATE OPERATING, LLC	9 Elevation 3462.80'

¹⁰ Surface Location

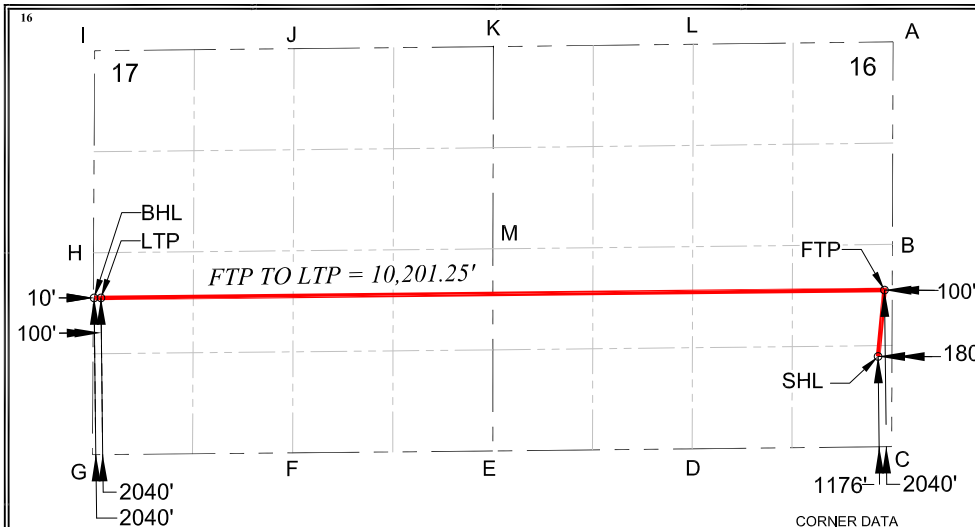
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	16	19-S	28-E		1176'	SOUTH	180'	EAST	EDDY

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
L	17	19-S	28-E		2040'	SOUTH	10'	WEST	EDDY

12 Dedicated Acres 320	13 Joint or Infill	14 Consolidation Code	15 Order No.
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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 DATA
NEW MEXICO EAST - NAD 83
- A - FOUND 2 1/4" IRON PIPE
N:606757.31' E:590806.24'
 - B - FOUND 1" IRON PIPE
N:604120.46' E:590796.45'
 - C - FOUND IRON PIPE W/ BRASS CAP
N:601487.49' E:590787.58'
 - D - FOUND IRON PIPE W/ BRASS CAP
N:601458.74' E:588190.50'
 - E - FOUND IRON PIPE W/ BRASS CAP
N:601430.34' E:585595.57'
 - F - FOUND IRON PIPE W/ BRASS CAP
N:601406.13' E:582988.92'
 - G - FOUND IRON PIPE W/ BRASS CAP
N:601382.22' E:580382.84'
 - H - FOUND IRON PIPE W/ BRASS CAP
N:604011.85' E:580396.86'
 - I - FOUND 2" IRON PIPE
N:606641.54' E:580411.81'
 - J - FOUND 1" IRON PIPE
N:606668.08' E:583007.40'
 - K - FOUND 2" IRON PIPE
N:606695.00' E:585602.41'
 - L - CALCULATED CORNER
N:606726.16' E:588204.33'
 - M - FOUND 1" IRON PIPE
N:604062.54' E:585596.50'

SURFACE HOLE LOCATION (SHL)
NEW MEXICO EAST - NAD 83
X=590611.52 LAT.= 32.65666155° N
Y=602661.61 LONG.= 104.17322728° W
NEW MEXICO EAST - NAD 27
X=549431.75 LAT.= 32.65654476° N
Y=602599.56 LONG.= -104.17271844° W
1176' FSL, 180' FEL - SECTION 16

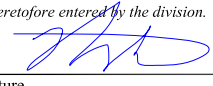
FIRST TAKE POINT (FTP)
NEW MEXICO EAST - NAD 83
X=590694.45 LAT.= 32.65903876° N
Y=603526.58 LONG.= 104.17295357° W
NEW MEXICO EAST - NAD 27
X=549514.70 LAT.= 32.65892199° N
Y=603464.51 LONG.= -104.17244469° W
2040' FSL, 100' FEL - SECTION 16

LAST TAKE POINT (LTP)
NEW MEXICO EAST - NAD 83
X=580493.72 LAT.= 32.65879291° N
Y=603423.32 LONG.= 104.20609998° W
NEW MEXICO EAST - NAD 27
X=539313.97 LAT.= 32.65867647° N
Y=603361.33 LONG.= -104.20559033° W
2040' FSL, 100' FWL - SECTION 17

BOTTOM HOLE LOCATION (BHL)
NEW MEXICO EAST - NAD 83
X=580403.72 LAT.= 32.65879094° N
Y=603422.50 LONG.= 104.20639245° W
NEW MEXICO EAST - NAD 27
X=539223.97 LAT.= 32.65867450° N
Y=603360.51 LONG.= -104.20588279° W
2040' FSL, 10' FWL - SECTION 17

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 **1/11/23**

Printed Name **Meghan Twele**

E-mail Address

meghan.twele@permianres.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 **1/11/23**
Signature and Seal of Professional Surveyor: 

Certificate Number

4/28/2022

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

Form APD Conditions

Permit 332396

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: COLGATE OPERATING, LLC [371449] 300 North Marienfeld Street Midland, TX 79701	API Number: 30-015-53300
	Well: Blackhawk 16 State Com #133H

OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

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

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: Colgate Operating, LLC **OGRID:** 371449 **Date:** 12 / 08 / 22

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Blackhawk 16 State Com 123H		P-16-19S-28E	1206FSL&180FEL	2100 BBL/D	3600 MCF/D	3600 BBL/D
Blackhawk 16 State Com 124H		P-16-19S-28E	1116FSL&180FEL	2100 BBL/D	3600 MCF/D	3600 BBL/D
Blackhawk 16 State Com 133H		P-16-19S-28E	1176FSL&180FEL	1800 BBL/D	3800 MCF/D	3300 BBL/D
Blackhawk 16 State Com 134H		P-16-19S-28E	1146FSL&180FEL	1800 BBL/D	3800 MCF/D	3300 BBL/D

IV. Central Delivery Point Name: BLACK CAT-BLACK HAWK CDP [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Blackhawk 16 State Com 123H		3/1/2023	3/16/2023	7/1/2023	7/19/2023	7/19/2023
Blackhawk 16 State Com 124H		2/17/2023	3/4/2023	7/1/2023	7/19/2023	7/19/2023
Blackhawk 16 State Com 133H		3/13/2023	3/29/2023	7/1/2023	7/19/2023	7/19/2023
Blackhawk 16 State Com 134H		4/18/2023	5/3/2023	7/1/2023	7/19/2023	7/19/2023

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

Page 8

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: <i>Jackson Taylor</i>
Printed Name: Jackson Taylor
Title: Director of Midstream & Marketing
E-mail Address: jackson.taylor@permianres.com
Date: 1/5/23
Phone: 720-499-1531
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
Approved By:
Title:
Approval Date:
Conditions of Approval:

VI. Separation Equipment:

Colgate Operating, LLC production tank batteries include separation equipment designed to efficiently separate gas from liquid phases to optimize gas capture based on projected and estimated volumes from the targeted pool in conjunction with the total number of wells planned to or existing within the facility. Separation equipment is upgraded prior to well being drilled or completed, if determined to be undersized or needed. The separation equipment is designed and built according to the relevant industry specifications (API Specification 12J and ASME Sec VIII Div I). Other recognized industry publications such as the Gas Processors Suppliers Association (GPSA) are referenced when designing separation equipment to optimize gas capture.

VII. Operational Practices:

1. Subsection B.

- During drilling, flare stacks will be located a minimum of 150 feet from the nearest surface hole location. All gas is captured or combusted. If an emergency or malfunction occurs, gas will be flared or vented for public health, safety and the environment and be properly reported to the NMOCD pursuant to 19.15.27.8.G.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

2. Subsection C.

- During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.

For emergencies, equipment malfunction, or if the operator decides to produce oil and gas during well completion:

- Flowlines will be routed for flowback fluids into a completion or storage tank and, if feasible under well conditions, flare rather than vent and commence operation of a separator as soon as it is technically feasible for a separator to function.

- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

3. Subsection D.

- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.
- Monitor manual liquid unloading for wells on-site or in close proximity (<30 minutes' drive time), take reasonable actions to achieve a stabilized rate and pressure at the earliest practical time, and take reasonable actions to minimize venting to the maximum extent practicable.
- Measure or estimate the volume of natural gas that is vented, flared or beneficially used during drilling, completion and production operations, regardless of the reason or authorization for such venting or flaring.

4. Subsection E.

- All tanks and separation equipment are designed for maximum throughput and pressure to minimize waste.
- Flare stack has been designed for proper size and combustion efficiency. Flare currently has a continuous pilot and is located more than 100 feet from any known well and storage tanks.
- At any point in the well life (drilling, completion, production, inactive) an audio, visual and olfactory (AVO) inspection will be performed weekly (at minimum) to confirm that all production equipment is operating properly and there are no leaks or releases except as allowed in Subsection D of 19.15.27.8 NMAC.

5. Subsection F.

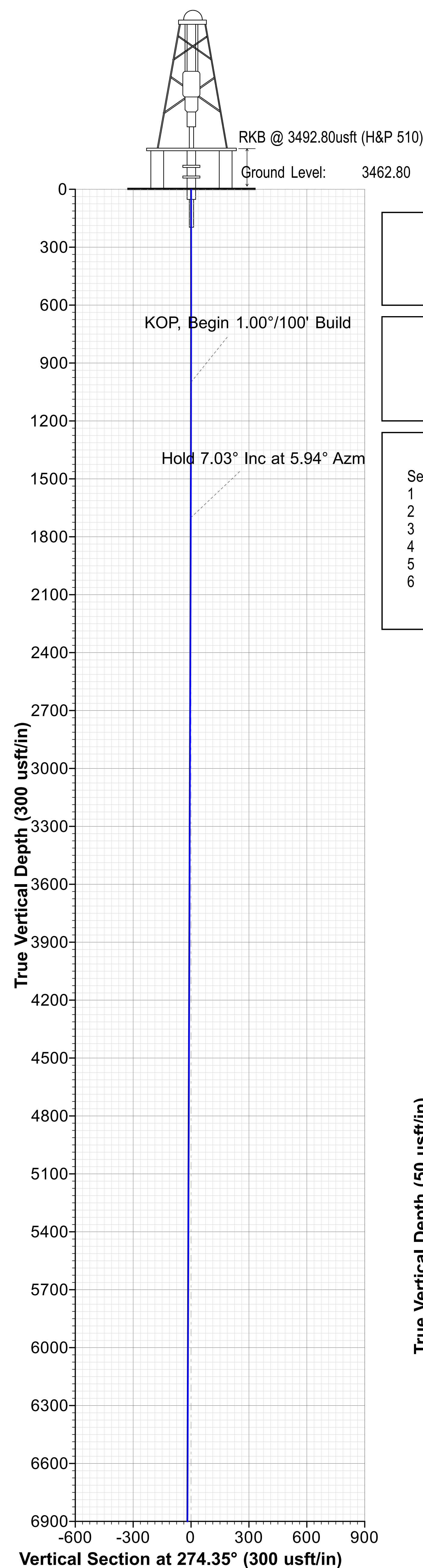
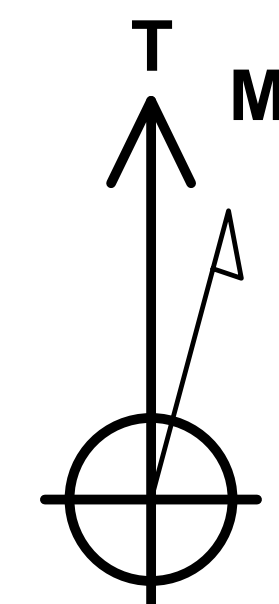
- Measurement equipment is installed to measure the volume of natural gas flared from process piping or a flowline piped from the equipment associated with a well and facility associated with the approved application for permit

to drill that has an average daily production greater than 60 mcf of natural gas.

- Measurement equipment installed is not designed or equipped with a manifold to allow diversion of natural gas around the metering equipment, except for the sole purpose of inspecting and servicing the measurement equipment, as noted in NMAC 19.15.27.8 Subsection G.

VIII. Best Management Practices:

1. During completion operations, operator does not produce oil or gas but maintains adequate well control through completion operations.
2. Operator does not flow well (well shut in) during initial production until all flowlines, tank batteries, and oil/gas takeaway are installed, tested, and determined operational.
3. Operator equips storage tanks with an automatic gauging system to reduce venting of natural gas.
4. Operator reduces the number of blowdowns by looking for opportunities to coordinate repair and maintenance activities.
5. Operator combusts natural gas that would otherwise be vented or flared, when feasible.
6. Operator has a flare stack designed in accordance with need and to handle sufficient volume to ensure proper combustion efficiency. Flare stacks are equipped with continuous pilots and securely anchored at least 100 feet (at minimum) from storage tanks and wells.
7. Operator minimizes venting (when feasible) through pump downs of vessels and reducing time required to purge equipment before returning equipment to service.
8. Operator will shut in wells (when feasible) in the event of a takeaway disruption, emergency situations, or other operations where venting or flaring may occur due to equipment failures.
9. Operator utilizes compressed air to operate pneumatic equipment instead of gas.
10. Operator utilizes vapor recovery towers and VRU's to increase gas capture efficiency.



WELL DETAILS									
					Ground Level:	3462.80			
	+N/-S	+E/-W	Northing		Easting	Latitude		Longitude	
	0.00	0.00	602661.61		590611.52	32° 39' 23.981604 N		104° 10' 23.618173 W	

DESIGN TARGET DETAILS										
Name				TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL - Blackhawk 16 State Com 133H				8403.00	776.28	-10206.64	603422.50	580403.72	32° 39' 31.647415 N	104° 12' 23.012775 W
FTP - Blackhawk 16 State Com 133H				8403.00	864.84	84.23	603526.58	590694.45	32° 39' 32.539541 N	104° 10' 22.632822 W
LTP - Blackhawk 16 State Com 133H				8403.00	776.97	-10116.64	603423.32	580493.72	32° 39' 31.654463 N	104° 12' 21.959968 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	0.000	0.00		
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.000	0.00		KOP, Begin 1.00°/100' Build
3	1703.05	7.03	5.94	1701.29	42.85	4.46	1.00	5.943	-1.20		Hold 7.03° Inc at 5.94° Azm
4	7971.47	7.03	5.94	7922.58	805.96	83.90	0.00	0.000	-22.54		KOP2, Begin 12.00°/100' Build
5	8728.02	90.00	269.51	8403.00	860.73	-394.00	12.00	-96.388	458.15		LP, Hold 90.00° Inc at 269.51° Azm
6	18541.02	90.00	269.51	8403.00	776.28	-10206.64	0.00	0.000	10236.12	BHL - Blackhawk 16 State Com 133H	TD at 18541.02

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: New Mexico Eastern Zone

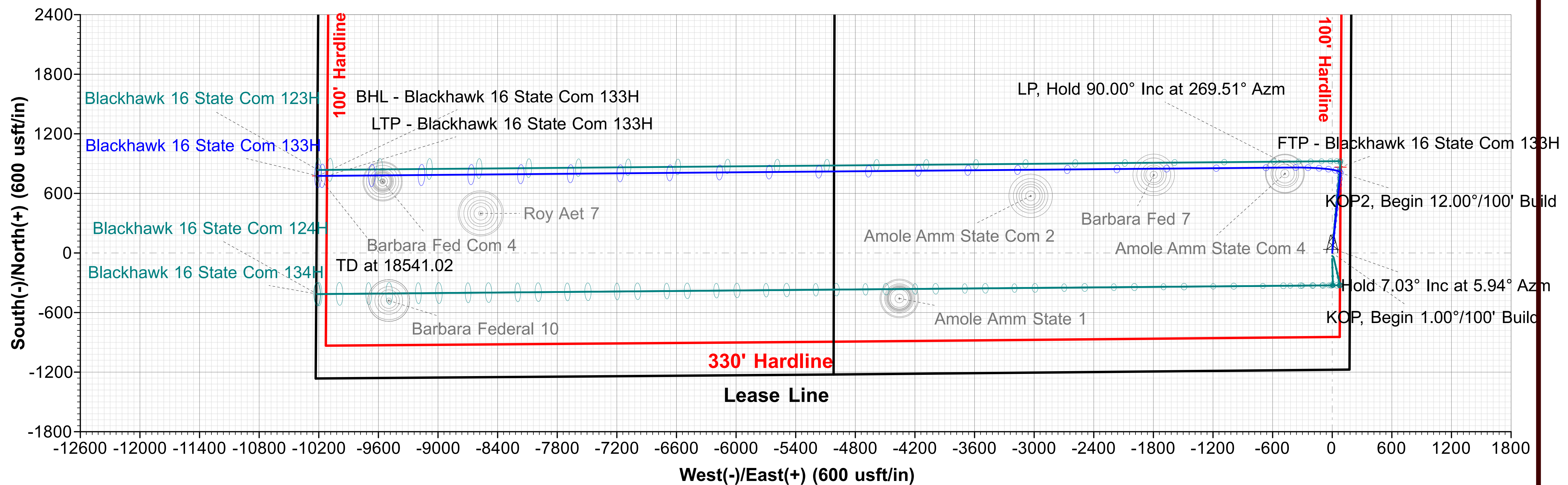
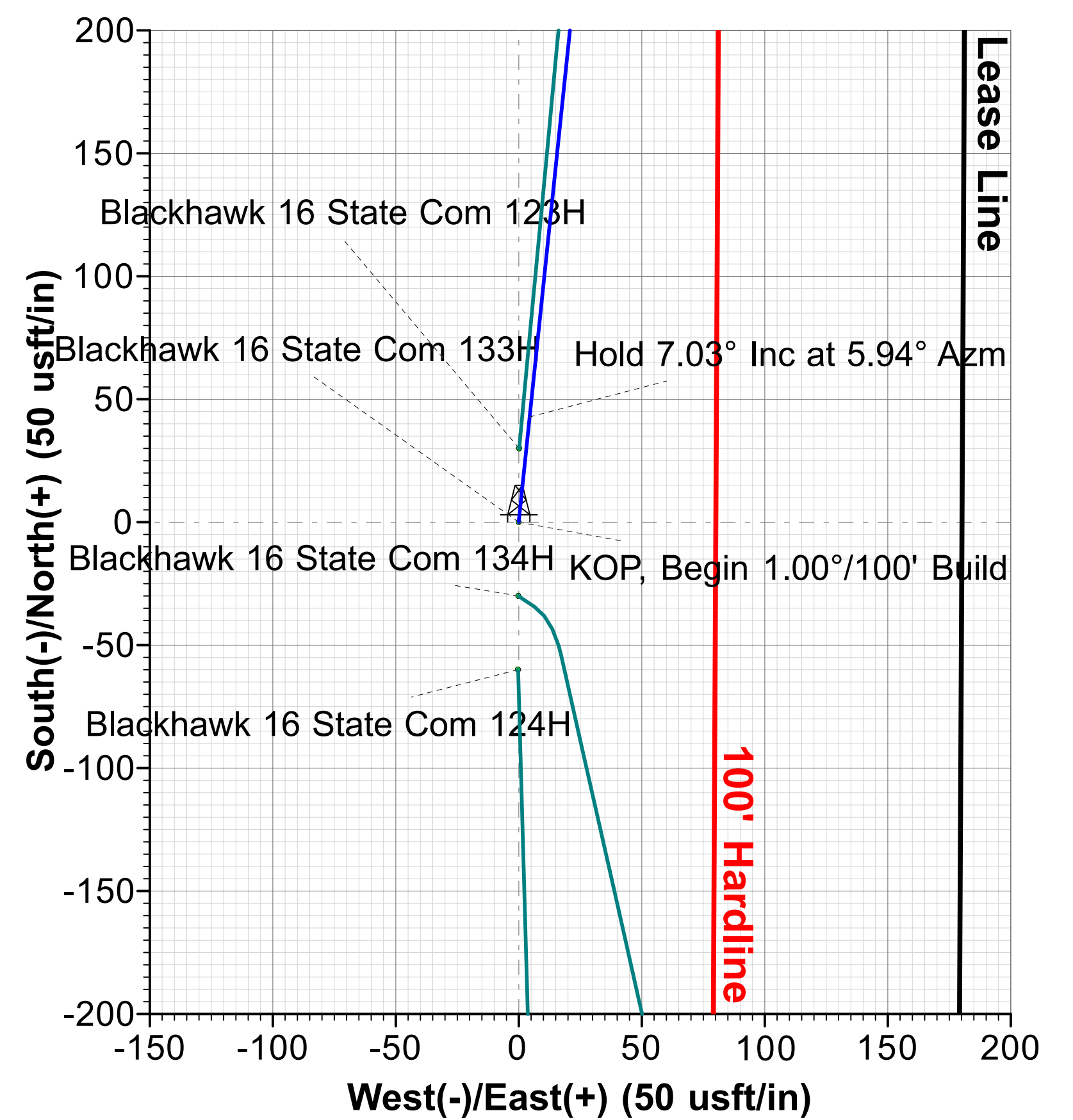
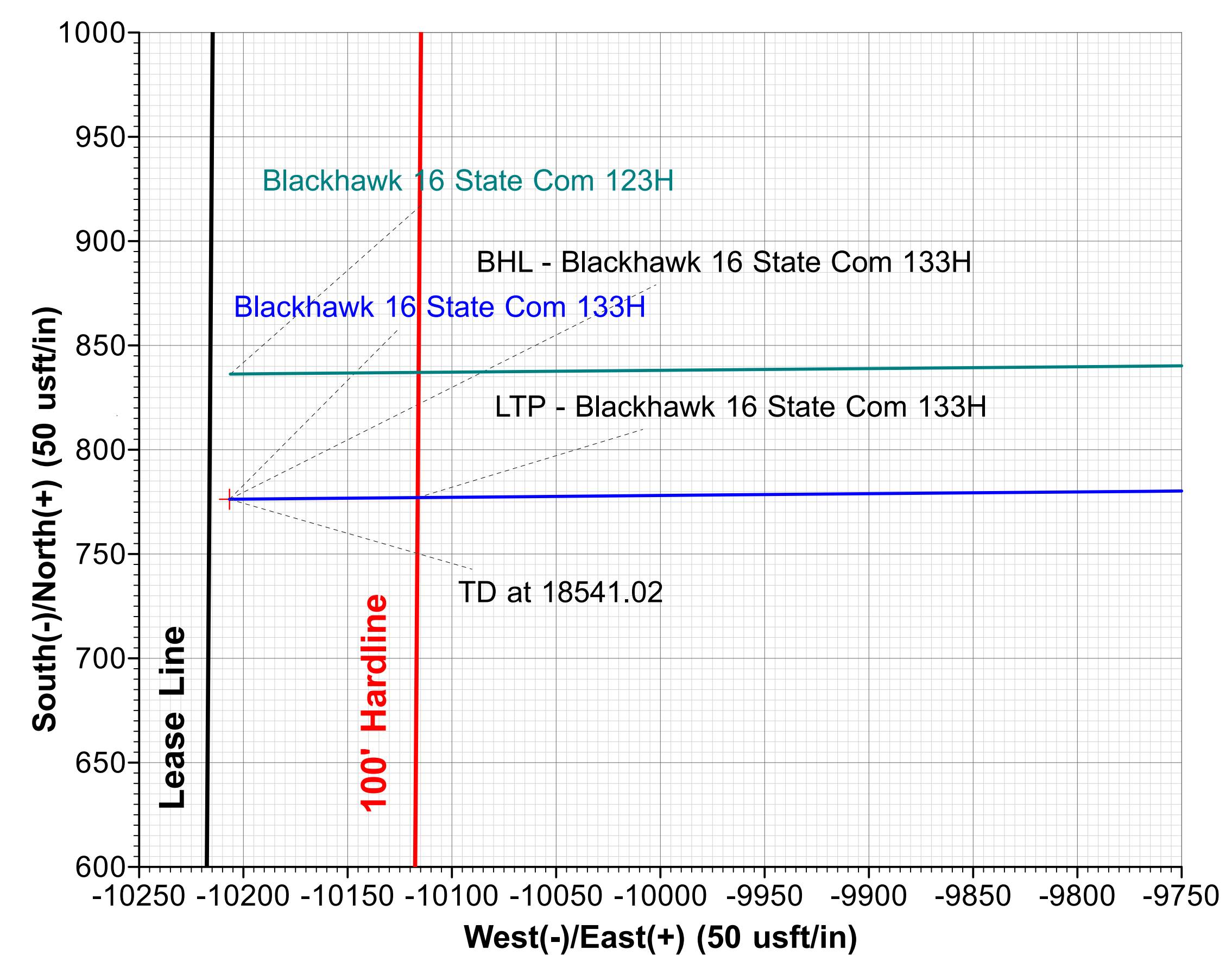
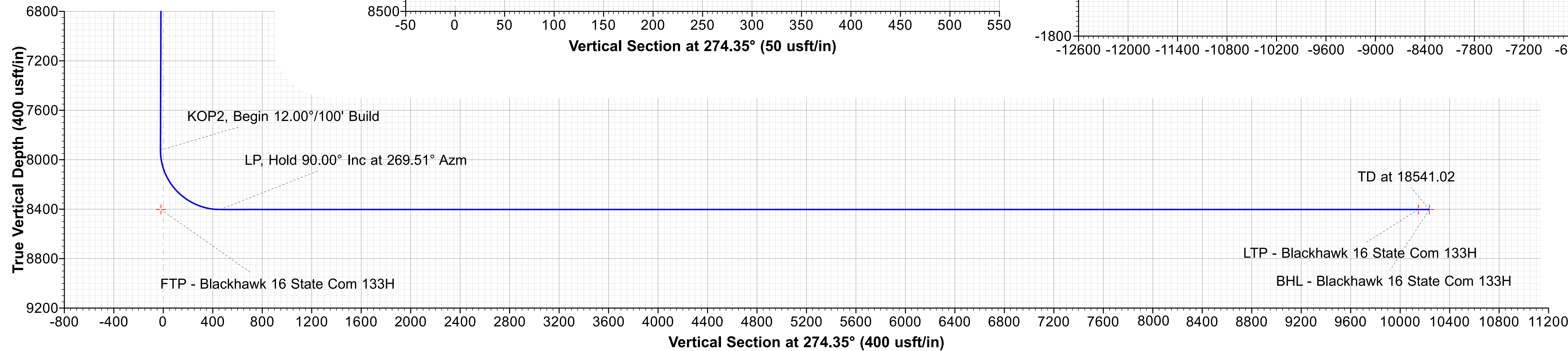
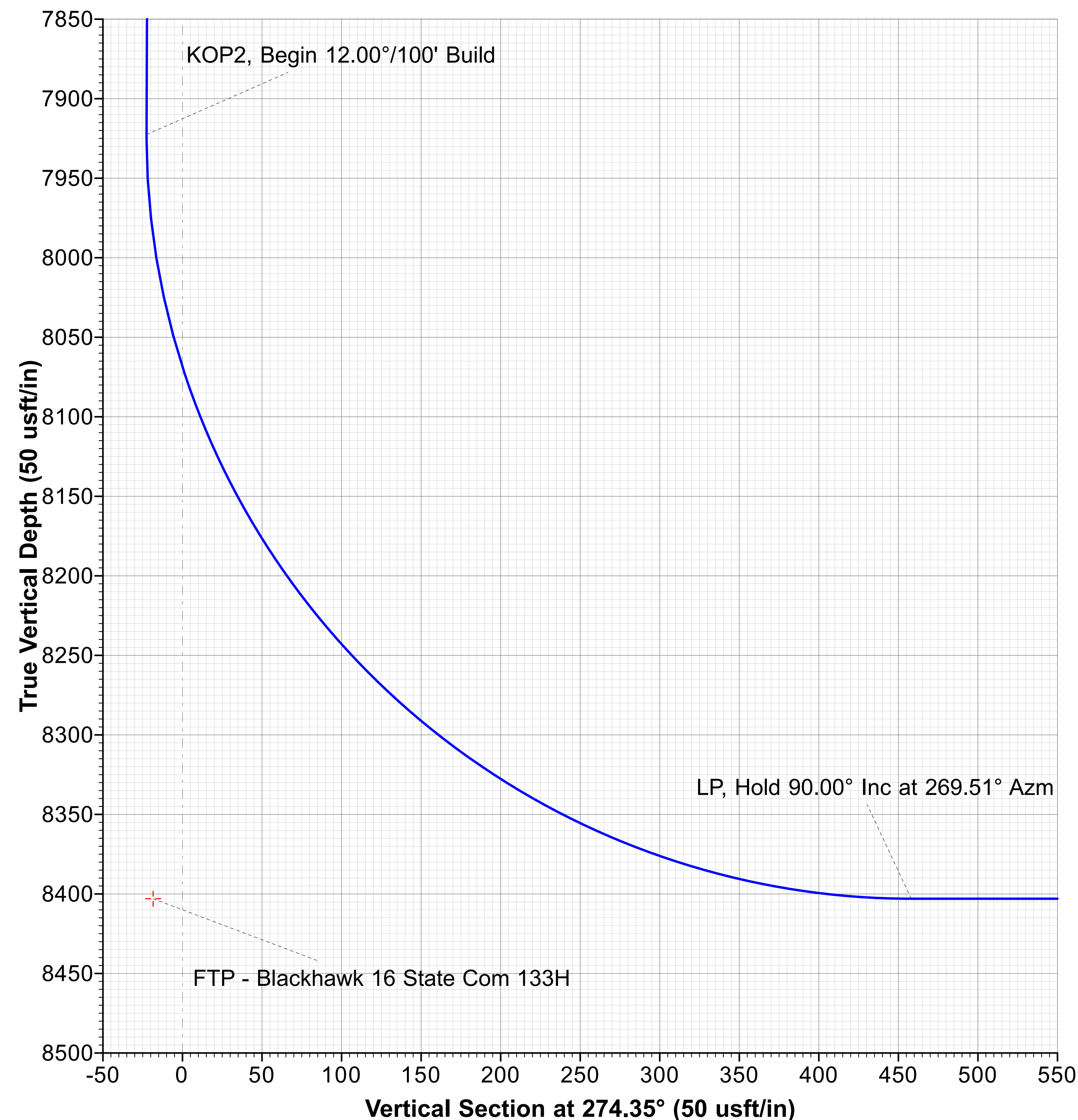
Local Origin: Well Blackhawk 16 State Com 133H, True North

Latitude: 32° 39' 23.981604 N
Longitude: 104° 10' 23.618173 W

Grid East: 590611.52
Grid North: 602661.61
Scale Factor: 1.000

Geomagnetic Model: MVHD
Sample Date: 17-Dec-22
Magnetic Declination: 6.930°
Dip Angle from Horizontal: 60.304°
Magnetic Field Strength: 47625.12748969nT

To convert a Magnetic Direction to a Grid Direction, Add 6.843°
To convert a Magnetic Direction to a True Direction, Add 6.930° East
To convert a True Direction to a Grid Direction, Subtract 0.086°





Permian Resources

Eddy County, NM (NAD83 - NME)

Blackhawk

Blackhawk 16 State Com 133H

OH

Plan: Plan 1 10-19-22

Standard Planning Report

19 October, 2022

PERMIAN
RESOURCES



Planning Report

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RESOURCES

Database:	USA Compass	Local Co-ordinate Reference:	Well Blackhawk 16 State Com 133H
Company:	Permian Resources	TVD Reference:	RKB @ 3492.80usft (H&P 510)
Project:	Eddy County, NM (NAD83 - NME)	MD Reference:	RKB @ 3492.80usft (H&P 510)
Site:	Blackhawk	North Reference:	True
Well:	Blackhawk 16 State Com 133H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-19-22		

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

Site		Blackhawk			
Site Position:		Northing:	602,691.66 usft	Latitude:	32° 39' 24.278904 N
From:	Map	Easting:	590,611.65 usft	Longitude:	104° 10' 23.616192 W
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16 "	

Well	Blackhawk 16 State Com 133H					
Well Position	+N/-S	-30.04 usft	Northing:	602,661.61 usft	Latitude:	32° 39' 23.981604 N
	+E/-W	-0.17 usft	Easting:	590,611.52 usft	Longitude:	104° 10' 23.618173 W
Position Uncertainty	1.00 usft		Wellhead Elevation:		Ground Level:	3,462.80 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	12/17/2022	6.930	60.304	47,625.12748969

Design	Plan 1 10-19-22			
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	274.35

Plan Survey Tool Program	Date	10/19/2022			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	18,541.02	Plan 1 10-19-22 (OH)	MWD+IFR1+SAG+FDIR	
				OWSG MWD + IFR1 + Sag	

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	0.000	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,703.05	7.03	5.94	1,701.29	42.85	4.46	1.00	1.00	0.00	5.943	
7,971.47	7.03	5.94	7,922.58	805.96	83.90	0.00	0.00	0.00	0.000	
8,728.02	90.00	269.51	8,403.00	860.73	-394.00	12.00	10.97	-12.75	-96.388	
18,541.02	90.00	269.51	8,403.00	776.28	-10,206.64	0.00	0.00	0.00	0.000	BHL - Blackhawk 16



Planning Report

PERMIAN

RESOURCES

Database:	USA Compass	Local Co-ordinate Reference:	Well Blackhawk 16 State Com 133H
Company:	Permian Resources	TVD Reference:	RKB @ 3492.80usft (H&P 510)
Project:	Eddy County, NM (NAD83 - NME)	MD Reference:	RKB @ 3492.80usft (H&P 510)
Site:	Blackhawk	North Reference:	True
Well:	Blackhawk 16 State Com 133H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-19-22		

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
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 1.00°/100' Build									
1,100.00	1.00	5.94	1,099.99	0.87	0.09	-0.02	1.00	1.00	0.00
1,200.00	2.00	5.94	1,199.96	3.47	0.36	-0.10	1.00	1.00	0.00
1,300.00	3.00	5.94	1,299.86	7.81	0.81	-0.22	1.00	1.00	0.00
1,400.00	4.00	5.94	1,399.68	13.88	1.45	-0.39	1.00	1.00	0.00
1,500.00	5.00	5.94	1,499.37	21.69	2.26	-0.61	1.00	1.00	0.00
1,600.00	6.00	5.94	1,598.90	31.22	3.25	-0.87	1.00	1.00	0.00
1,700.00	7.00	5.94	1,698.26	42.48	4.42	-1.19	1.00	1.00	0.00
1,703.05	7.03	5.94	1,701.29	42.85	4.46	-1.20	1.00	1.00	0.00
Hold 7.03° Inc at 5.94° Azm									
1,800.00	7.03	5.94	1,797.51	54.65	5.69	-1.53	0.00	0.00	0.00
1,900.00	7.03	5.94	1,896.76	66.82	6.96	-1.87	0.00	0.00	0.00
2,000.00	7.03	5.94	1,996.00	79.00	8.22	-2.21	0.00	0.00	0.00
2,100.00	7.03	5.94	2,095.25	91.17	9.49	-2.55	0.00	0.00	0.00
2,200.00	7.03	5.94	2,194.50	103.35	10.76	-2.89	0.00	0.00	0.00
2,300.00	7.03	5.94	2,293.75	115.52	12.03	-3.23	0.00	0.00	0.00
2,400.00	7.03	5.94	2,393.00	127.69	13.29	-3.57	0.00	0.00	0.00
2,500.00	7.03	5.94	2,492.24	139.87	14.56	-3.91	0.00	0.00	0.00
2,600.00	7.03	5.94	2,591.49	152.04	15.83	-4.25	0.00	0.00	0.00
2,700.00	7.03	5.94	2,690.74	164.22	17.10	-4.59	0.00	0.00	0.00
2,800.00	7.03	5.94	2,789.99	176.39	18.36	-4.93	0.00	0.00	0.00
2,900.00	7.03	5.94	2,889.24	188.56	19.63	-5.27	0.00	0.00	0.00
3,000.00	7.03	5.94	2,988.49	200.74	20.90	-5.61	0.00	0.00	0.00
3,100.00	7.03	5.94	3,087.73	212.91	22.17	-5.95	0.00	0.00	0.00
3,200.00	7.03	5.94	3,186.98	225.09	23.43	-6.30	0.00	0.00	0.00
3,300.00	7.03	5.94	3,286.23	237.26	24.70	-6.64	0.00	0.00	0.00
3,400.00	7.03	5.94	3,385.48	249.43	25.97	-6.98	0.00	0.00	0.00
3,500.00	7.03	5.94	3,484.73	261.61	27.23	-7.32	0.00	0.00	0.00
3,600.00	7.03	5.94	3,583.97	273.78	28.50	-7.66	0.00	0.00	0.00
3,700.00	7.03	5.94	3,683.22	285.96	29.77	-8.00	0.00	0.00	0.00
3,800.00	7.03	5.94	3,782.47	298.13	31.04	-8.34	0.00	0.00	0.00
3,900.00	7.03	5.94	3,881.72	310.30	32.30	-8.68	0.00	0.00	0.00
4,000.00	7.03	5.94	3,980.97	322.48	33.57	-9.02	0.00	0.00	0.00
4,100.00	7.03	5.94	4,080.21	334.65	34.84	-9.36	0.00	0.00	0.00
4,200.00	7.03	5.94	4,179.46	346.83	36.11	-9.70	0.00	0.00	0.00
4,300.00	7.03	5.94	4,278.71	359.00	37.37	-10.04	0.00	0.00	0.00
4,400.00	7.03	5.94	4,377.96	371.17	38.64	-10.38	0.00	0.00	0.00
4,500.00	7.03	5.94	4,477.21	383.35	39.91	-10.72	0.00	0.00	0.00
4,600.00	7.03	5.94	4,576.46	395.52	41.18	-11.06	0.00	0.00	0.00
4,700.00	7.03	5.94	4,675.70	407.70	42.44	-11.40	0.00	0.00	0.00
4,800.00	7.03	5.94	4,774.95	419.87	43.71	-11.74	0.00	0.00	0.00
4,900.00	7.03	5.94	4,874.20	432.04	44.98	-12.08	0.00	0.00	0.00
5,000.00	7.03	5.94	4,973.45	444.22	46.25	-12.42	0.00	0.00	0.00
5,100.00	7.03	5.94	5,072.70	456.39	47.51	-12.76	0.00	0.00	0.00
5,200.00	7.03	5.94	5,171.94	468.57	48.78	-13.10	0.00	0.00	0.00
5,300.00	7.03	5.94	5,271.19	480.74	50.05	-13.44	0.00	0.00	0.00
5,400.00	7.03	5.94	5,370.44	492.91	51.31	-13.79	0.00	0.00	0.00
5,500.00	7.03	5.94	5,469.69	505.09	52.58	-14.13	0.00	0.00	0.00
5,600.00	7.03	5.94	5,568.94	517.26	53.85	-14.47	0.00	0.00	0.00
5,700.00	7.03	5.94	5,668.18	529.44	55.12	-14.81	0.00	0.00	0.00
5,800.00	7.03	5.94	5,767.43	541.61	56.38	-15.15	0.00	0.00	0.00



Planning Report

PERMIAN

RESOURCES

Database:	USA Compass	Local Co-ordinate Reference:	Well Blackhawk 16 State Com 133H
Company:	Permian Resources	TVD Reference:	RKB @ 3492.80usft (H&P 510)
Project:	Eddy County, NM (NAD83 - NME)	MD Reference:	RKB @ 3492.80usft (H&P 510)
Site:	Blackhawk	North Reference:	True
Well:	Blackhawk 16 State Com 133H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-19-22		

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)
5,900.00	7.03	5.94	5,866.68	553.78	57.65	-15.49	0.00	0.00	0.00
6,000.00	7.03	5.94	5,965.93	565.96	58.92	-15.83	0.00	0.00	0.00
6,100.00	7.03	5.94	6,065.18	578.13	60.19	-16.17	0.00	0.00	0.00
6,200.00	7.03	5.94	6,164.43	590.31	61.45	-16.51	0.00	0.00	0.00
6,300.00	7.03	5.94	6,263.67	602.48	62.72	-16.85	0.00	0.00	0.00
6,400.00	7.03	5.94	6,362.92	614.65	63.99	-17.19	0.00	0.00	0.00
6,500.00	7.03	5.94	6,462.17	626.83	65.26	-17.53	0.00	0.00	0.00
6,600.00	7.03	5.94	6,561.42	639.00	66.52	-17.87	0.00	0.00	0.00
6,700.00	7.03	5.94	6,660.67	651.18	67.79	-18.21	0.00	0.00	0.00
6,800.00	7.03	5.94	6,759.91	663.35	69.06	-18.55	0.00	0.00	0.00
6,900.00	7.03	5.94	6,859.16	675.52	70.33	-18.89	0.00	0.00	0.00
7,000.00	7.03	5.94	6,958.41	687.70	71.59	-19.23	0.00	0.00	0.00
7,100.00	7.03	5.94	7,057.66	699.87	72.86	-19.57	0.00	0.00	0.00
7,200.00	7.03	5.94	7,156.91	712.05	74.13	-19.91	0.00	0.00	0.00
7,300.00	7.03	5.94	7,256.15	724.22	75.39	-20.25	0.00	0.00	0.00
7,400.00	7.03	5.94	7,355.40	736.39	76.66	-20.59	0.00	0.00	0.00
7,500.00	7.03	5.94	7,454.65	748.57	77.93	-20.94	0.00	0.00	0.00
7,600.00	7.03	5.94	7,553.90	760.74	79.20	-21.28	0.00	0.00	0.00
7,700.00	7.03	5.94	7,653.15	772.92	80.46	-21.62	0.00	0.00	0.00
7,800.00	7.03	5.94	7,752.40	785.09	81.73	-21.96	0.00	0.00	0.00
7,900.00	7.03	5.94	7,851.64	797.26	83.00	-22.30	0.00	0.00	0.00
7,971.47	7.03	5.94	7,922.58	805.96	83.90	-22.54	0.00	0.00	0.00
KOP2, Begin 12.00°/100' Build									
8,000.00	7.47	338.77	7,950.89	809.43	83.41	-21.79	12.00	1.52	-95.26
8,100.00	16.19	294.48	8,048.84	821.30	68.32	-5.84	12.00	8.72	-44.29
8,200.00	27.47	283.14	8,141.56	832.36	33.04	30.18	12.00	11.29	-11.34
8,300.00	39.17	278.16	8,224.99	842.12	-20.88	84.68	12.00	11.69	-4.98
8,400.00	50.99	275.21	8,295.49	850.16	-91.08	155.29	12.00	11.82	-2.95
8,500.00	62.86	273.11	8,349.98	856.12	-174.50	238.93	12.00	11.87	-2.10
8,600.00	74.75	271.42	8,386.07	859.74	-267.50	331.93	12.00	11.90	-1.69
8,700.00	86.66	269.92	8,402.18	860.87	-366.00	430.23	12.00	11.91	-1.50
8,728.02	90.00	269.51	8,403.00	860.73	-394.00	458.15	12.00	11.91	-1.46
LP, Hold 90.00° Inc at 269.51° Azm									
8,800.00	90.00	269.51	8,403.00	860.11	-465.98	529.86	0.00	0.00	0.00
8,900.00	90.00	269.51	8,403.00	859.25	-565.97	629.51	0.00	0.00	0.00
9,000.00	90.00	269.51	8,403.00	858.39	-665.97	729.15	0.00	0.00	0.00
9,100.00	90.00	269.51	8,403.00	857.53	-765.97	828.79	0.00	0.00	0.00
9,200.00	90.00	269.51	8,403.00	856.67	-865.96	928.44	0.00	0.00	0.00
9,300.00	90.00	269.51	8,403.00	855.81	-965.96	1,028.08	0.00	0.00	0.00
9,400.00	90.00	269.51	8,403.00	854.95	-1,065.96	1,127.72	0.00	0.00	0.00
9,500.00	90.00	269.51	8,403.00	854.09	-1,165.95	1,227.37	0.00	0.00	0.00
9,600.00	90.00	269.51	8,403.00	853.22	-1,265.95	1,327.01	0.00	0.00	0.00
9,700.00	90.00	269.51	8,403.00	852.36	-1,365.94	1,426.65	0.00	0.00	0.00
9,800.00	90.00	269.51	8,403.00	851.50	-1,465.94	1,526.30	0.00	0.00	0.00
9,900.00	90.00	269.51	8,403.00	850.64	-1,565.94	1,625.94	0.00	0.00	0.00
10,000.00	90.00	269.51	8,403.00	849.78	-1,665.93	1,725.58	0.00	0.00	0.00
10,100.00	90.00	269.51	8,403.00	848.92	-1,765.93	1,825.22	0.00	0.00	0.00
10,200.00	90.00	269.51	8,403.00	848.06	-1,865.93	1,924.87	0.00	0.00	0.00
10,300.00	90.00	269.51	8,403.00	847.20	-1,965.92	2,024.51	0.00	0.00	0.00
10,400.00	90.00	269.51	8,403.00	846.34	-2,065.92	2,124.15	0.00	0.00	0.00
10,500.00	90.00	269.51	8,403.00	845.48	-2,165.92	2,223.80	0.00	0.00	0.00
10,600.00	90.00	269.51	8,403.00	844.62	-2,265.91	2,323.44	0.00	0.00	0.00
10,700.00	90.00	269.51	8,403.00	843.76	-2,365.91	2,423.08	0.00	0.00	0.00
10,800.00	90.00	269.51	8,403.00	842.90	-2,465.90	2,522.73	0.00	0.00	0.00



Planning Report

PERMIAN

RESOURCES

Database:	USA Compass	Local Co-ordinate Reference:	Well Blackhawk 16 State Com 133H
Company:	Permian Resources	TVD Reference:	RKB @ 3492.80usft (H&P 510)
Project:	Eddy County, NM (NAD83 - NME)	MD Reference:	RKB @ 3492.80usft (H&P 510)
Site:	Blackhawk	North Reference:	True
Well:	Blackhawk 16 State Com 133H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-19-22		

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)
10,900.00	90.00	269.51	8,403.00	842.04	-2,565.90	2,622.37	0.00	0.00	0.00
11,000.00	90.00	269.51	8,403.00	841.18	-2,665.90	2,722.01	0.00	0.00	0.00
11,100.00	90.00	269.51	8,403.00	840.32	-2,765.89	2,821.66	0.00	0.00	0.00
11,200.00	90.00	269.51	8,403.00	839.46	-2,865.89	2,921.30	0.00	0.00	0.00
11,300.00	90.00	269.51	8,403.00	838.60	-2,965.89	3,020.94	0.00	0.00	0.00
11,400.00	90.00	269.51	8,403.00	837.73	-3,065.88	3,120.58	0.00	0.00	0.00
11,500.00	90.00	269.51	8,403.00	836.87	-3,165.88	3,220.23	0.00	0.00	0.00
11,600.00	90.00	269.51	8,403.00	836.01	-3,265.87	3,319.87	0.00	0.00	0.00
11,700.00	90.00	269.51	8,403.00	835.15	-3,365.87	3,419.51	0.00	0.00	0.00
11,800.00	90.00	269.51	8,403.00	834.29	-3,465.87	3,519.16	0.00	0.00	0.00
11,900.00	90.00	269.51	8,403.00	833.43	-3,565.86	3,618.80	0.00	0.00	0.00
12,000.00	90.00	269.51	8,403.00	832.57	-3,665.86	3,718.44	0.00	0.00	0.00
12,100.00	90.00	269.51	8,403.00	831.71	-3,765.86	3,818.09	0.00	0.00	0.00
12,200.00	90.00	269.51	8,403.00	830.85	-3,865.85	3,917.73	0.00	0.00	0.00
12,300.00	90.00	269.51	8,403.00	829.99	-3,965.85	4,017.37	0.00	0.00	0.00
12,400.00	90.00	269.51	8,403.00	829.13	-4,065.84	4,117.01	0.00	0.00	0.00
12,500.00	90.00	269.51	8,403.00	828.27	-4,165.84	4,216.66	0.00	0.00	0.00
12,600.00	90.00	269.51	8,403.00	827.41	-4,265.84	4,316.30	0.00	0.00	0.00
12,700.00	90.00	269.51	8,403.00	826.55	-4,365.83	4,415.94	0.00	0.00	0.00
12,800.00	90.00	269.51	8,403.00	825.69	-4,465.83	4,515.59	0.00	0.00	0.00
12,900.00	90.00	269.51	8,403.00	824.83	-4,565.83	4,615.23	0.00	0.00	0.00
13,000.00	90.00	269.51	8,403.00	823.97	-4,665.82	4,714.87	0.00	0.00	0.00
13,100.00	90.00	269.51	8,403.00	823.11	-4,765.82	4,814.52	0.00	0.00	0.00
13,200.00	90.00	269.51	8,403.00	822.24	-4,865.82	4,914.16	0.00	0.00	0.00
13,300.00	90.00	269.51	8,403.00	821.38	-4,965.81	5,013.80	0.00	0.00	0.00
13,400.00	90.00	269.51	8,403.00	820.52	-5,065.81	5,113.45	0.00	0.00	0.00
13,500.00	90.00	269.51	8,403.00	819.66	-5,165.80	5,213.09	0.00	0.00	0.00
13,600.00	90.00	269.51	8,403.00	818.80	-5,265.80	5,312.73	0.00	0.00	0.00
13,700.00	90.00	269.51	8,403.00	817.94	-5,365.80	5,412.37	0.00	0.00	0.00
13,800.00	90.00	269.51	8,403.00	817.08	-5,465.79	5,512.02	0.00	0.00	0.00
13,900.00	90.00	269.51	8,403.00	816.22	-5,565.79	5,611.66	0.00	0.00	0.00
14,000.00	90.00	269.51	8,403.00	815.36	-5,665.79	5,711.30	0.00	0.00	0.00
14,100.00	90.00	269.51	8,403.00	814.50	-5,765.78	5,810.95	0.00	0.00	0.00
14,200.00	90.00	269.51	8,403.00	813.64	-5,865.78	5,910.59	0.00	0.00	0.00
14,300.00	90.00	269.51	8,403.00	812.78	-5,965.77	6,010.23	0.00	0.00	0.00
14,400.00	90.00	269.51	8,403.00	811.92	-6,065.77	6,109.88	0.00	0.00	0.00
14,500.00	90.00	269.51	8,403.00	811.06	-6,165.77	6,209.52	0.00	0.00	0.00
14,600.00	90.00	269.51	8,403.00	810.20	-6,265.76	6,309.16	0.00	0.00	0.00
14,700.00	90.00	269.51	8,403.00	809.34	-6,365.76	6,408.81	0.00	0.00	0.00
14,800.00	90.00	269.51	8,403.00	808.48	-6,465.76	6,508.45	0.00	0.00	0.00
14,900.00	90.00	269.51	8,403.00	807.62	-6,565.75	6,608.09	0.00	0.00	0.00
15,000.00	90.00	269.51	8,403.00	806.75	-6,665.75	6,707.73	0.00	0.00	0.00
15,100.00	90.00	269.51	8,403.00	805.89	-6,765.74	6,807.38	0.00	0.00	0.00
15,200.00	90.00	269.51	8,403.00	805.03	-6,865.74	6,907.02	0.00	0.00	0.00
15,300.00	90.00	269.51	8,403.00	804.17	-6,965.74	7,006.66	0.00	0.00	0.00
15,400.00	90.00	269.51	8,403.00	803.31	-7,065.73	7,106.31	0.00	0.00	0.00
15,500.00	90.00	269.51	8,403.00	802.45	-7,165.73	7,205.95	0.00	0.00	0.00
15,600.00	90.00	269.51	8,403.00	801.59	-7,265.73	7,305.59	0.00	0.00	0.00
15,700.00	90.00	269.51	8,403.00	800.73	-7,365.72	7,405.24	0.00	0.00	0.00
15,800.00	90.00	269.51	8,403.00	799.87	-7,465.72	7,504.88	0.00	0.00	0.00
15,900.00	90.00	269.51	8,403.00	799.01	-7,565.72	7,604.52	0.00	0.00	0.00
16,000.00	90.00	269.51	8,403.00	798.15	-7,665.71	7,704.17	0.00	0.00	0.00
16,100.00	90.00	269.51	8,403.00	797.29	-7,765.71	7,803.81	0.00	0.00	0.00
16,200.00	90.00	269.51	8,403.00	796.43	-7,865.70	7,903.45	0.00	0.00	0.00



Planning Report

PERMIAN

RESOURCES

Database:	USA Compass	Local Co-ordinate Reference:	Well Blackhawk 16 State Com 133H
Company:	Permian Resources	TVD Reference:	RKB @ 3492.80usft (H&P 510)
Project:	Eddy County, NM (NAD83 - NME)	MD Reference:	RKB @ 3492.80usft (H&P 510)
Site:	Blackhawk	North Reference:	True
Well:	Blackhawk 16 State Com 133H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan 1 10-19-22		

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)
16,300.00	90.00	269.51	8,403.00	795.57	-7,965.70	8,003.09	0.00	0.00	0.00
16,400.00	90.00	269.51	8,403.00	794.71	-8,065.70	8,102.74	0.00	0.00	0.00
16,500.00	90.00	269.51	8,403.00	793.85	-8,165.69	8,202.38	0.00	0.00	0.00
16,600.00	90.00	269.51	8,403.00	792.99	-8,265.69	8,302.02	0.00	0.00	0.00
16,700.00	90.00	269.51	8,403.00	792.13	-8,365.69	8,401.67	0.00	0.00	0.00
16,800.00	90.00	269.51	8,403.00	791.26	-8,465.68	8,501.31	0.00	0.00	0.00
16,900.00	90.00	269.51	8,403.00	790.40	-8,565.68	8,600.95	0.00	0.00	0.00
17,000.00	90.00	269.51	8,403.00	789.54	-8,665.67	8,700.60	0.00	0.00	0.00
17,100.00	90.00	269.51	8,403.00	788.68	-8,765.67	8,800.24	0.00	0.00	0.00
17,200.00	90.00	269.51	8,403.00	787.82	-8,865.67	8,899.88	0.00	0.00	0.00
17,300.00	90.00	269.51	8,403.00	786.96	-8,965.66	8,999.53	0.00	0.00	0.00
17,400.00	90.00	269.51	8,403.00	786.10	-9,065.66	9,099.17	0.00	0.00	0.00
17,500.00	90.00	269.51	8,403.00	785.24	-9,165.66	9,198.81	0.00	0.00	0.00
17,600.00	90.00	269.51	8,403.00	784.38	-9,265.65	9,298.45	0.00	0.00	0.00
17,700.00	90.00	269.51	8,403.00	783.52	-9,365.65	9,398.10	0.00	0.00	0.00
17,800.00	90.00	269.51	8,403.00	782.66	-9,465.64	9,497.74	0.00	0.00	0.00
17,900.00	90.00	269.51	8,403.00	781.80	-9,565.64	9,597.38	0.00	0.00	0.00
18,000.00	90.00	269.51	8,403.00	780.94	-9,665.64	9,697.03	0.00	0.00	0.00
18,100.00	90.00	269.51	8,403.00	780.08	-9,765.63	9,796.67	0.00	0.00	0.00
18,200.00	90.00	269.51	8,403.00	779.22	-9,865.63	9,896.31	0.00	0.00	0.00
18,300.00	90.00	269.51	8,403.00	778.36	-9,965.63	9,995.96	0.00	0.00	0.00
18,400.00	90.00	269.51	8,403.00	777.50	-10,065.62	10,095.60	0.00	0.00	0.00
18,500.00	90.00	269.51	8,403.00	776.64	-10,165.62	10,195.24	0.00	0.00	0.00
18,541.02	90.00	269.51	8,403.00	776.28	-10,206.64	10,236.12	0.00	0.00	0.00
TD at 18541.02									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - Blackhawk 16 S - hit/miss target - Shape - Point	0.00	0.00	8,403.00	864.84	84.23	603,526.58	590,694.45	2° 39' 32.539541 N	4° 10' 22.632822 W
- plan misses target center by 198.34usft at 8353.73usft MD (8264.69 TVD, 846.68 N, -56.75 E)									
BHL - Blackhawk 16 S - plan hits target center - Point	0.00	0.00	8,403.00	776.28	-10,206.64	603,422.50	580,403.72	2° 39' 31.647415 N	4° 12' 23.012775 W
LTP - Blackhawk 16 S - plan misses target center by 0.09usft at 18451.02usft MD (8403.00 TVD, 777.06 N, -10116.64 E) - Point	0.00	0.00	8,403.00	776.97	-10,116.64	603,423.32	580,493.72	2° 39' 31.654464 N	4° 12' 21.959968 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,000.00	1,000.00	0.00	0.00	KOP, Begin 1.00°/100' Build
1,703.05	1,701.29	42.85	4.46	Hold 7.03° Inc at 5.94° Azm
7,971.47	7,922.58	805.96	83.90	KOP2, Begin 12.00°/100' Build
8,728.02	8,403.00	860.73	-394.00	LP, Hold 90.00° Inc at 269.51° Azm
18,541.02	8,403.00	776.28	-10,206.64	TD at 18541.02

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