Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone

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

8. Lease Name and Well No.

2. Name of Operator

9. API Well No.
30 015 48528

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	Office	

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

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

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 11/02/2020

Confidential

Page 2 of 75

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) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-	98220	Purple Sage; Wolfcamp Gas

Property Code	Property Name	Well Number
	LITTLEFIELD 33 FEDERAL COM	701H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	2873.8'

Surface Location

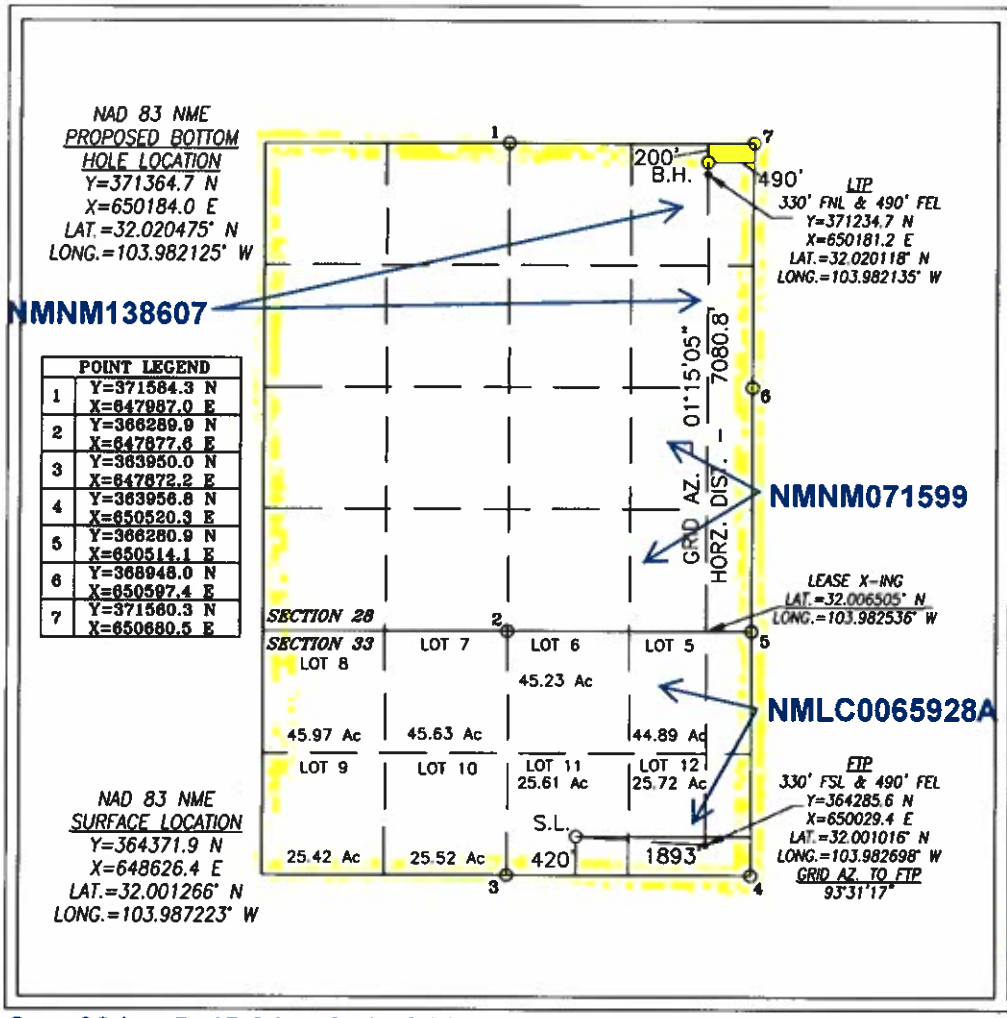
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
11	33	26-S	29-E		420	SOUTH	1893	EAST	EDDY

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
A	28	26-S	29-E		200	NORTH	490	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
927.09			

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 hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Mayte Reyes 2-24-2020
Signature Date

Mayte Reyes
Printed Name

mreyes1@concho.com
E-mail Address

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.

NOVEMBER 25, 2019
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 2/5/20
Certificate No. CHAD HARCROW 17777
W.O. # 20-199 DRAWN BY: AH

Sec. 33 Lot 5: 45.9 Lot 6: 45.94 Lot 7: 46.05 Lot 8: 46.09 Lot 9: 25.35 Lot 10: 25.64 Lot 11: 25.92 Lot 12: 26.2

Received by OCD: 5/20/2021 9:07:48 AM
Released to Imaging: 5/21/2021 9:04:26 AM

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1625 N. French Dr., Hobbs, NM 88240
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811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original to Appropriate District Office

GAS CAPTURE PLAN

Date: 2/19/2020

☒ Original Operator & OGRID No.: **COG Operating LLC, OGRID 229137**
☐ 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
Littlefield 33 Federal Com #701H	**30-015-**	**11-33-26S-29E**	**420' FSL & 1893' FEL**	**3,056 MCFD**		**Gas will connect on well pad.**

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 **DBM** and will be connected to **Ramsey** **low**/high pressure gathering system located in **Reeves County, Texas**. It will require approximately **0**' of pipeline on lease to connect the facility to **low**/high pressure gathering system. **COG Operating LLC** provides (periodically) to **DBM** 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 **DBM** have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at **Ramesy** Processing Plant located in **Sec 36-Block 58-T1-T&P; Reeves County, Texas**. 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 Gas Transporter system at that time. Based on current information, it is Operator'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

COG Operating, LLC - Littlefield 33 Federal Com #701H

1. Geologic Formations

TVD of target	10,107' EOL	Pilot hole depth	NA
MD at TD:	17,291'	Deepest expected fresh water:	51'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	293	Water	
Top of Salt	744	Salt	
Base of Salt	2586	Salt	
Lamar	2752	Salt Water	
Bell Canyon	2800	Salt Water	
Cherry Canyon	3669	Oil/Gas	
Brushy Canyon	4947	Oil/Gas	
Bone Spring Lime	6531	Oil/Gas	
1st Bone Spring Sand	7474	Oil/Gas	
2nd Bone Spring Sand	8231	Oil/Gas	
3rd Bone Spring Sand	9346	Oil/Gas	
Wolfcamp	9795	Target Oil/Gas	
Strawn	0	Not Penetrated	
	0	Not Penetrated	

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight	Grade	Conn.	SF	SF Burst	SF	SF
	From	To		(lbs)			Collapse		Body	Joint
14.75"	0	700	10.75"	45.5	N80	BTC	7.71	1.99	32.65	34.44
9.875"	0	7100	7.625"	29.7	HCL80	BTC	1.87	1.32	3.44	3.48
8.750"	7100	9500	7.625"	29.7	HCP110	TL-FJ	1.59	1.36	3.33	2.33
6.75"	0	9300	5.5"	23	P110	BTC	2.21	2.27	4.01	3.98
6.75"	9300	17,291	5"	18	P110	BTC	2.21	2.27	4.01	3.98
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing.to mitigate collapse. Surface burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface and
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

The 5" casing will be run back 200' into the intermediate casing to ensure the coupling OD clearance is greater than .422" for the cement bond tie in.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary?	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	334	13.5	1.75	9	12	Lead: Class C + 4% Gel + 1% CaCl2
	250	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl2
Inter. Stage 1	690	10.3	3.3	22	24	Halliburton tunded light
	250	14.8	1.35	6.6	8	Tail: Class H
Prod	432	12.7	2	10.7	72	Lead: 50:50:10 H Blend
	1012	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

If losses are encountered in the intermediate section a DV/ECP tool will be run ~50' above the Lamar Lime top, cement will be adjusted accordingly if this contingency is necessary.

Volumes Subject to Observed Hole Conditions and/or Fluid Caliper Results
Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
Surface	0’	50%
1st Intermediate	0’	50%
Production	6,600'	35% OH in Lateral (KOP to EOL)

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4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
9-7/8”	13-5/8”	3M	Annular	x	1500
			Blind Ram	x	3000
			Pipe Ram	x	
			Double Ram	x	
			Other*		
6-3/4”	13-5/8”	5M	5M Annular	x	50% testing pressure
			Blind Ram	x	5000
			Pipe Ram	x	
			Double Ram		
			Other*		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	N Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

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5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.6 - 8.8	28-34	N/C
Surf csg	9-5/8" Int shoe	Brine Diesel Emulsion	8.4 - 9	28-34	N/C
7-5/8" Int shoe	Lateral TD	OBM	9.6 - 12.5	35-45	<20

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
Y	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
Y	No Logs are planned based on well control or offset log information.
N	Drill stem test? If yes, explain.
N	Coring? If yes, explain.

Additional logs planned		Interval
N	Resistivity	Pilot Hole TD to ICP
N	Density	Pilot Hole TD to ICP
Y	CBL	Production casing (If cement not circulated to surface)
Y	Mud log	Intermediate shoe to TD
N	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6570 psi at 10107' TVD
Abnormal Temperature	NO 160 Deg. F.

No abnormal pressure or temperature conditions are anticipated. Sufficient mud materials to maintain mud properties and weight increase requirements will be kept on location at all times.

Sufficient supplies of Paper/LCM for periodic sweeps to control seepage and losses will be maintained on location.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other Facets of Operation

Y	Is it a walking operation?
Y	Is casing pre-set?

x	H2S Plan.
x	BOP & Choke Schematics.
x	Directional Plan

NORTHERN DELAWARE BASIN

EDDY COUNTY, NM
ATLAS
LITTLEFIELD 33 FEDERAL COM 701H

OWB

Plan: PWP1

Standard Survey Report

17 February, 2020

Concho Resources LLC

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Well:	LITTLEFIELD 33 FEDERAL COM 701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

Project	EDDY COUNTY, NM		
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		

Well	LITTLEFIELD 33 FEDERAL COM 701H					
Well Position	**+N/-S**	0.0 usft	**Northing:**	364,314.60 usft	**Latitude:**	32° 0' 4.107 N
	+E/-W	0.0 usft	**Easting:**	607,440.50 usft	**Longitude:**	103° 59' 12.270 W
Position Uncertainty		3.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	2,873.8 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/17/2020	6.84	59.76	47,492.50353589

Design PWP1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	12.56

Survey Tool Program **Date** 2/17/2020

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	17,291.3	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00

Concho Resources LLC

Survey Report

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Design:	PWP1	**Database:**	edm

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)
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
2,600.0	2.00	105.00	2,600.0	-0.5	1.7	-0.1	2.00	2.00	0.00
2,700.0	4.00	105.00	2,699.8	-1.8	6.7	-0.3	2.00	2.00	0.00
2,800.0	6.00	105.00	2,799.5	-4.1	15.2	-0.7	2.00	2.00	0.00
2,900.0	8.00	105.00	2,898.7	-7.2	26.9	-1.2	2.00	2.00	0.00
Start 6760.3 hold at 2900.0 MD									
3,000.0	8.00	105.00	2,997.7	-10.8	40.4	-1.8	0.00	0.00	0.00
3,100.0	8.00	105.00	3,096.8	-14.4	53.8	-2.4	0.00	0.00	0.00
3,200.0	8.00	105.00	3,195.8	-18.0	67.3	-3.0	0.00	0.00	0.00
3,300.0	8.00	105.00	3,294.8	-21.6	80.7	-3.6	0.00	0.00	0.00
3,400.0	8.00	105.00	3,393.8	-25.2	94.1	-4.2	0.00	0.00	0.00
3,500.0	8.00	105.00	3,492.9	-28.8	107.6	-4.7	0.00	0.00	0.00
3,600.0	8.00	105.00	3,591.9	-32.4	121.0	-5.3	0.00	0.00	0.00
3,700.0	8.00	105.00	3,690.9	-36.0	134.5	-5.9	0.00	0.00	0.00
3,800.0	8.00	105.00	3,789.9	-39.6	147.9	-6.5	0.00	0.00	0.00
3,900.0	8.00	105.00	3,889.0	-43.2	161.4	-7.1	0.00	0.00	0.00
4,000.0	8.00	105.00	3,988.0	-46.8	174.8	-7.7	0.00	0.00	0.00
4,100.0	8.00	105.00	4,087.0	-50.4	188.2	-8.3	0.00	0.00	0.00
4,200.0	8.00	105.00	4,186.0	-54.0	201.7	-8.9	0.00	0.00	0.00
4,300.0	8.00	105.00	4,285.1	-57.6	215.1	-9.5	0.00	0.00	0.00
4,400.0	8.00	105.00	4,384.1	-61.2	228.6	-10.1	0.00	0.00	0.00
4,500.0	8.00	105.00	4,483.1	-64.8	242.0	-10.7	0.00	0.00	0.00
4,600.0	8.00	105.00	4,582.2	-68.5	255.5	-11.3	0.00	0.00	0.00
4,700.0	8.00	105.00	4,681.2	-72.1	268.9	-11.9	0.00	0.00	0.00
4,800.0	8.00	105.00	4,780.2	-75.7	282.3	-12.4	0.00	0.00	0.00
4,900.0	8.00	105.00	4,879.2	-79.3	295.8	-13.0	0.00	0.00	0.00
5,000.0	8.00	105.00	4,978.3	-82.9	309.2	-13.6	0.00	0.00	0.00
5,100.0	8.00	105.00	5,077.3	-86.5	322.7	-14.2	0.00	0.00	0.00
5,200.0	8.00	105.00	5,176.3	-90.1	336.1	-14.8	0.00	0.00	0.00
5,300.0	8.00	105.00	5,275.3	-93.7	349.6	-15.4	0.00	0.00	0.00
5,400.0	8.00	105.00	5,374.4	-97.3	363.0	-16.0	0.00	0.00	0.00
5,500.0	8.00	105.00	5,473.4	-100.9	376.5	-16.6	0.00	0.00	0.00
5,600.0	8.00	105.00	5,572.4	-104.5	389.9	-17.2	0.00	0.00	0.00

Concho Resources LLC

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Well:	LITTLEFIELD 33 FEDERAL COM 701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
5,700.0	8.00	105.00	5,671.5	-108.1	403.3	-17.8	0.00	0.00	0.00
5,800.0	8.00	105.00	5,770.5	-111.7	416.8	-18.4	0.00	0.00	0.00
5,900.0	8.00	105.00	5,869.5	-115.3	430.2	-19.0	0.00	0.00	0.00
6,000.0	8.00	105.00	5,968.5	-118.9	443.7	-19.6	0.00	0.00	0.00
6,100.0	8.00	105.00	6,067.6	-122.5	457.1	-20.2	0.00	0.00	0.00
6,200.0	8.00	105.00	6,166.6	-126.1	470.6	-20.7	0.00	0.00	0.00
6,300.0	8.00	105.00	6,265.6	-129.7	484.0	-21.3	0.00	0.00	0.00
6,400.0	8.00	105.00	6,364.6	-133.3	497.4	-21.9	0.00	0.00	0.00
6,500.0	8.00	105.00	6,463.7	-136.9	510.9	-22.5	0.00	0.00	0.00
6,600.0	8.00	105.00	6,562.7	-140.5	524.3	-23.1	0.00	0.00	0.00
6,700.0	8.00	105.00	6,661.7	-144.1	537.8	-23.7	0.00	0.00	0.00
6,800.0	8.00	105.00	6,760.7	-147.7	551.2	-24.3	0.00	0.00	0.00
6,900.0	8.00	105.00	6,859.8	-151.3	564.7	-24.9	0.00	0.00	0.00
7,000.0	8.00	105.00	6,958.8	-154.9	578.1	-25.5	0.00	0.00	0.00
7,100.0	8.00	105.00	7,057.8	-158.5	591.5	-26.1	0.00	0.00	0.00
7,200.0	8.00	105.00	7,156.9	-162.1	605.0	-26.7	0.00	0.00	0.00
7,300.0	8.00	105.00	7,255.9	-165.7	618.4	-27.3	0.00	0.00	0.00
7,400.0	8.00	105.00	7,354.9	-169.3	631.9	-27.9	0.00	0.00	0.00
7,500.0	8.00	105.00	7,453.9	-172.9	645.3	-28.5	0.00	0.00	0.00
7,600.0	8.00	105.00	7,553.0	-176.5	658.8	-29.0	0.00	0.00	0.00
7,700.0	8.00	105.00	7,652.0	-180.1	672.2	-29.6	0.00	0.00	0.00
7,800.0	8.00	105.00	7,751.0	-183.7	685.6	-30.2	0.00	0.00	0.00
7,900.0	8.00	105.00	7,850.0	-187.3	699.1	-30.8	0.00	0.00	0.00
8,000.0	8.00	105.00	7,949.1	-190.9	712.5	-31.4	0.00	0.00	0.00
8,100.0	8.00	105.00	8,048.1	-194.5	726.0	-32.0	0.00	0.00	0.00
8,200.0	8.00	105.00	8,147.1	-198.1	739.4	-32.6	0.00	0.00	0.00
8,300.0	8.00	105.00	8,246.1	-201.7	752.9	-33.2	0.00	0.00	0.00
8,400.0	8.00	105.00	8,345.2	-205.3	766.3	-33.8	0.00	0.00	0.00
8,500.0	8.00	105.00	8,444.2	-208.9	779.7	-34.4	0.00	0.00	0.00
8,600.0	8.00	105.00	8,543.2	-212.5	793.2	-35.0	0.00	0.00	0.00
8,700.0	8.00	105.00	8,642.3	-216.1	806.6	-35.6	0.00	0.00	0.00
8,800.0	8.00	105.00	8,741.3	-219.7	820.1	-36.2	0.00	0.00	0.00
8,900.0	8.00	105.00	8,840.3	-223.3	833.5	-36.7	0.00	0.00	0.00
9,000.0	8.00	105.00	8,939.3	-226.9	847.0	-37.3	0.00	0.00	0.00
9,100.0	8.00	105.00	9,038.4	-230.5	860.4	-37.9	0.00	0.00	0.00
9,200.0	8.00	105.00	9,137.4	-234.1	873.8	-38.5	0.00	0.00	0.00
9,300.0	8.00	105.00	9,236.4	-237.7	887.3	-39.1	0.00	0.00	0.00
9,400.0	8.00	105.00	9,335.4	-241.4	900.7	-39.7	0.00	0.00	0.00
9,500.0	8.00	105.00	9,434.5	-245.0	914.2	-40.3	0.00	0.00	0.00
9,600.0	8.00	105.00	9,533.5	-248.6	927.6	-40.9	0.00	0.00	0.00
9,660.3	8.00	105.00	9,593.2	-250.7	935.7	-41.3	0.00	0.00	0.00
Start DLS 12.00 TFO -74.86									
9,700.0	10.32	78.41	9,632.4	-250.7	941.9	-39.9	12.00	5.84	-66.97
9,800.0	20.33	51.74	9,728.8	-238.1	964.4	-22.7	12.00	10.01	-26.66

Concho Resources LLC

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Well:	LITTLEFIELD 33 FEDERAL COM 701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
9,900.0	31.73	42.95	9,818.6	-208.0	996.0	13.6	12.00	11.39	-8.79
10,000.0	43.42	38.52	9,897.7	-161.7	1,035.5	67.3	12.00	11.70	-4.43
10,100.0	55.23	35.68	9,962.8	-101.2	1,081.0	136.3	12.00	11.81	-2.84
10,200.0	67.09	33.57	10,010.9	-29.2	1,130.6	217.3	12.00	11.86	-2.12
10,300.0	78.97	31.80	10,040.1	51.2	1,182.2	307.0	12.00	11.88	-1.77
10,388.6	89.50	30.35	10,049.0	126.5	1,227.6	390.4	12.00	11.89	-1.63
Start DLS 4.00 TFO -90.09									
10,400.0	89.50	29.89	10,049.1	136.4	1,233.3	401.3	4.00	-0.01	-4.00
10,500.0	89.49	25.89	10,049.9	224.8	1,280.1	497.7	4.00	0.00	-4.00
10,600.0	89.49	21.89	10,050.8	316.2	1,320.6	595.8	4.00	0.00	-4.00
10,700.0	89.49	17.89	10,051.7	410.2	1,354.6	694.9	4.00	0.00	-4.00
10,800.0	89.50	13.89	10,052.6	506.3	1,382.0	794.7	4.00	0.00	-4.00
10,900.0	89.50	9.89	10,053.5	604.2	1,402.6	894.7	4.00	0.01	-4.00
11,000.0	89.51	5.89	10,054.3	703.2	1,416.3	994.3	4.00	0.01	-4.00
11,100.0	89.52	1.89	10,055.2	803.0	1,423.1	1,093.2	4.00	0.01	-4.00
11,116.1	89.52	1.25	10,055.3	819.1	1,423.5	1,109.0	4.00	0.01	-4.00
Start 6175.2 hold at 11116.1 MD									
11,200.0	89.52	1.25	10,056.0	902.9	1,425.3	1,191.3	0.00	0.00	0.00
11,300.0	89.52	1.25	10,056.9	1,002.9	1,427.5	1,289.3	0.00	0.00	0.00
11,400.0	89.52	1.25	10,057.7	1,102.9	1,429.7	1,387.4	0.00	0.00	0.00
11,500.0	89.52	1.25	10,058.5	1,202.8	1,431.9	1,485.4	0.00	0.00	0.00
11,600.0	89.52	1.25	10,059.4	1,302.8	1,434.0	1,583.5	0.00	0.00	0.00
11,700.0	89.52	1.25	10,060.2	1,402.8	1,436.2	1,681.5	0.00	0.00	0.00
11,800.0	89.52	1.25	10,061.0	1,502.8	1,438.4	1,779.6	0.00	0.00	0.00
11,900.0	89.52	1.25	10,061.9	1,602.7	1,440.6	1,877.6	0.00	0.00	0.00
12,000.0	89.52	1.25	10,062.7	1,702.7	1,442.7	1,975.7	0.00	0.00	0.00
12,100.0	89.52	1.25	10,063.6	1,802.7	1,444.9	2,073.7	0.00	0.00	0.00
12,200.0	89.52	1.25	10,064.4	1,902.7	1,447.1	2,171.8	0.00	0.00	0.00
12,300.0	89.52	1.25	10,065.2	2,002.6	1,449.3	2,269.8	0.00	0.00	0.00
12,400.0	89.52	1.25	10,066.1	2,102.6	1,451.4	2,367.9	0.00	0.00	0.00
12,500.0	89.52	1.25	10,066.9	2,202.6	1,453.6	2,466.0	0.00	0.00	0.00
12,600.0	89.52	1.25	10,067.7	2,302.5	1,455.8	2,564.0	0.00	0.00	0.00
12,700.0	89.52	1.25	10,068.6	2,402.5	1,458.0	2,662.1	0.00	0.00	0.00
12,800.0	89.52	1.25	10,069.4	2,502.5	1,460.1	2,760.1	0.00	0.00	0.00
12,900.0	89.52	1.25	10,070.2	2,602.5	1,462.3	2,858.2	0.00	0.00	0.00
13,000.0	89.52	1.25	10,071.1	2,702.4	1,464.5	2,956.2	0.00	0.00	0.00
13,100.0	89.52	1.25	10,071.9	2,802.4	1,466.7	3,054.3	0.00	0.00	0.00
13,200.0	89.52	1.25	10,072.8	2,902.4	1,468.8	3,152.3	0.00	0.00	0.00
13,300.0	89.52	1.25	10,073.6	3,002.4	1,471.0	3,250.4	0.00	0.00	0.00
13,400.0	89.52	1.25	10,074.4	3,102.3	1,473.2	3,348.4	0.00	0.00	0.00
13,500.0	89.52	1.25	10,075.3	3,202.3	1,475.4	3,446.5	0.00	0.00	0.00
13,600.0	89.52	1.25	10,076.1	3,302.3	1,477.5	3,544.5	0.00	0.00	0.00
13,700.0	89.52	1.25	10,076.9	3,402.2	1,479.7	3,642.6	0.00	0.00	0.00

Concho Resources LLC

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Well:	LITTLEFIELD 33 FEDERAL COM 701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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)
13,800.0	89.52	1.25	10,077.8	3,502.2	1,481.9	3,740.6	0.00	0.00	0.00
13,900.0	89.52	1.25	10,078.6	3,602.2	1,484.1	3,838.7	0.00	0.00	0.00
14,000.0	89.52	1.25	10,079.5	3,702.2	1,486.2	3,936.8	0.00	0.00	0.00
14,100.0	89.52	1.25	10,080.3	3,802.1	1,488.4	4,034.8	0.00	0.00	0.00
14,200.0	89.52	1.25	10,081.1	3,902.1	1,490.6	4,132.9	0.00	0.00	0.00
14,300.0	89.52	1.25	10,082.0	4,002.1	1,492.7	4,230.9	0.00	0.00	0.00
14,400.0	89.52	1.25	10,082.8	4,102.1	1,494.9	4,329.0	0.00	0.00	0.00
14,500.0	89.52	1.25	10,083.6	4,202.0	1,497.1	4,427.0	0.00	0.00	0.00
14,600.0	89.52	1.25	10,084.5	4,302.0	1,499.3	4,525.1	0.00	0.00	0.00
14,700.0	89.52	1.25	10,085.3	4,402.0	1,501.4	4,623.1	0.00	0.00	0.00
14,800.0	89.52	1.25	10,086.1	4,501.9	1,503.6	4,721.2	0.00	0.00	0.00
14,900.0	89.52	1.25	10,087.0	4,601.9	1,505.8	4,819.2	0.00	0.00	0.00
15,000.0	89.52	1.25	10,087.8	4,701.9	1,508.0	4,917.3	0.00	0.00	0.00
15,100.0	89.52	1.25	10,088.7	4,801.9	1,510.1	5,015.3	0.00	0.00	0.00
15,200.0	89.52	1.25	10,089.5	4,901.8	1,512.3	5,113.4	0.00	0.00	0.00
15,300.0	89.52	1.25	10,090.3	5,001.8	1,514.5	5,211.5	0.00	0.00	0.00
15,400.0	89.52	1.25	10,091.2	5,101.8	1,516.7	5,309.5	0.00	0.00	0.00
15,500.0	89.52	1.25	10,092.0	5,201.8	1,518.8	5,407.6	0.00	0.00	0.00
15,600.0	89.52	1.25	10,092.8	5,301.7	1,521.0	5,505.6	0.00	0.00	0.00
15,700.0	89.52	1.25	10,093.7	5,401.7	1,523.2	5,603.7	0.00	0.00	0.00
15,800.0	89.52	1.25	10,094.5	5,501.7	1,525.4	5,701.7	0.00	0.00	0.00
15,900.0	89.52	1.25	10,095.4	5,601.6	1,527.5	5,799.8	0.00	0.00	0.00
16,000.0	89.52	1.25	10,096.2	5,701.6	1,529.7	5,897.8	0.00	0.00	0.00
16,100.0	89.52	1.25	10,097.0	5,801.6	1,531.9	5,995.9	0.00	0.00	0.00
16,200.0	89.52	1.25	10,097.9	5,901.6	1,534.1	6,093.9	0.00	0.00	0.00
16,300.0	89.52	1.25	10,098.7	6,001.5	1,536.2	6,192.0	0.00	0.00	0.00
16,400.0	89.52	1.25	10,099.5	6,101.5	1,538.4	6,290.0	0.00	0.00	0.00
16,500.0	89.52	1.25	10,100.4	6,201.5	1,540.6	6,388.1	0.00	0.00	0.00
16,600.0	89.52	1.25	10,101.2	6,301.5	1,542.8	6,486.1	0.00	0.00	0.00
16,700.0	89.52	1.25	10,102.1	6,401.4	1,544.9	6,584.2	0.00	0.00	0.00
16,800.0	89.52	1.25	10,102.9	6,501.4	1,547.1	6,682.3	0.00	0.00	0.00
16,900.0	89.52	1.25	10,103.7	6,601.4	1,549.3	6,780.3	0.00	0.00	0.00
17,000.0	89.52	1.25	10,104.6	6,701.3	1,551.5	6,878.4	0.00	0.00	0.00
17,100.0	89.52	1.25	10,105.4	6,801.3	1,553.6	6,976.4	0.00	0.00	0.00
17,200.0	89.52	1.25	10,106.2	6,901.3	1,555.8	7,074.5	0.00	0.00	0.00
17,291.3	89.52	1.25	10,107.0	6,992.6	1,557.8	7,164.0	0.00	0.00	0.00
TD at 17291.3									

Concho Resources LLC

Survey Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Well:	LITTLEFIELD 33 FEDERAL COM 701H	**North Reference:**	Grid
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	PWP1	**Database:**	edm

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
FTP (LITTLEFIELD 33	0.00	0.00	10,049.0	-86.3	1,403.0	364,228.30	608,843.50	32° 0' 3.208 N	103° 58' 55.981 W
- plan misses target center by 260.3usft at 10300.0usft MD (10040.1 TVD, 51.2 N, 1182.2 E)									
- Circle (radius 50.0)									
PBHL (LITTLEFIELD 3	-0.48	181.25	10,107.0	6,992.6	1,557.8	371,307.20	608,998.30	32° 1' 13.260 N	103° 58' 53.915 W
- plan hits target center									
- Rectangle (sides W100.0 H7,081.0 D20.0)									
LTP (LITTLEFIELD 33	0.00	0.00	10,107.0	6,862.7	1,554.9	371,177.30	608,995.40	32° 1' 11.975 N	103° 58' 53.954 W
- plan misses target center by 1.1usft at 17161.4usft MD (10105.9 TVD, 6862.7 N, 1555.0 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2500	2500	0	0	Start Build 2.00
2900	2899	-7	27	Start 6760.3 hold at 2900.0 MD
9660	9593	-251	936	Start DLS 12.00 TFO -74.86
10,389	10,049	127	1228	Start DLS 4.00 TFO -90.09
11,116	10,055	819	1424	Start 6175.2 hold at 11116.1 MD
17,291	10,107	6993	1558	TD at 17291.3

Checked By: _____ Approved By: _____ Date: _____

Received by OCD: 5/20/2021 9:07:48 AM

CONCHO

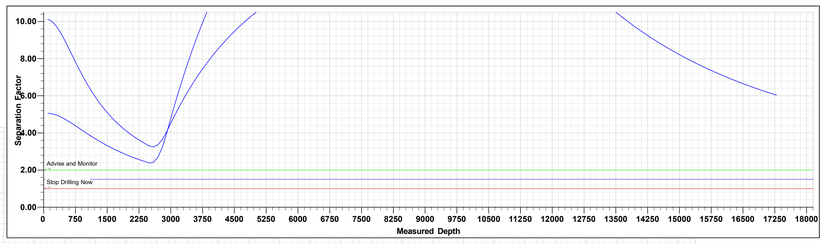
Project:	EDDY COUNTY, NM
Site:	ATLAS
Well:	LITTLEFIELD 33 FEDERAL COM 701H
Wellbore:	OWB
Design:	PWP1
GL:	2873.8
KB=25' @ 2898.8usft (PIONEER 84)	

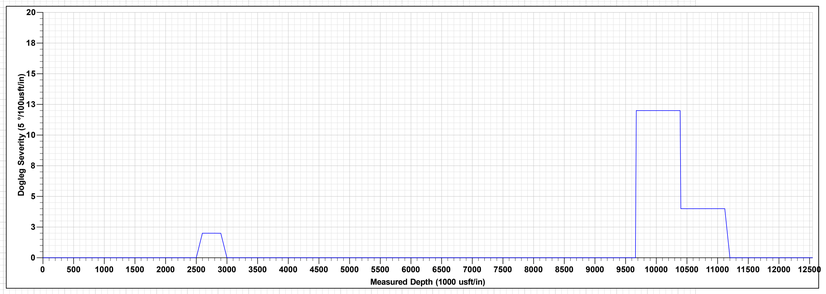
WELL DETAILS: LITTLEFIELD 33 FEDERAL COM 701H

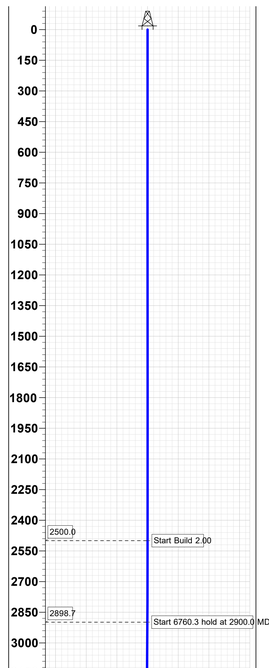
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.0	0.0	364314.60	607440.50	32° 0' 4.107 N	103° 59' 12.270 W

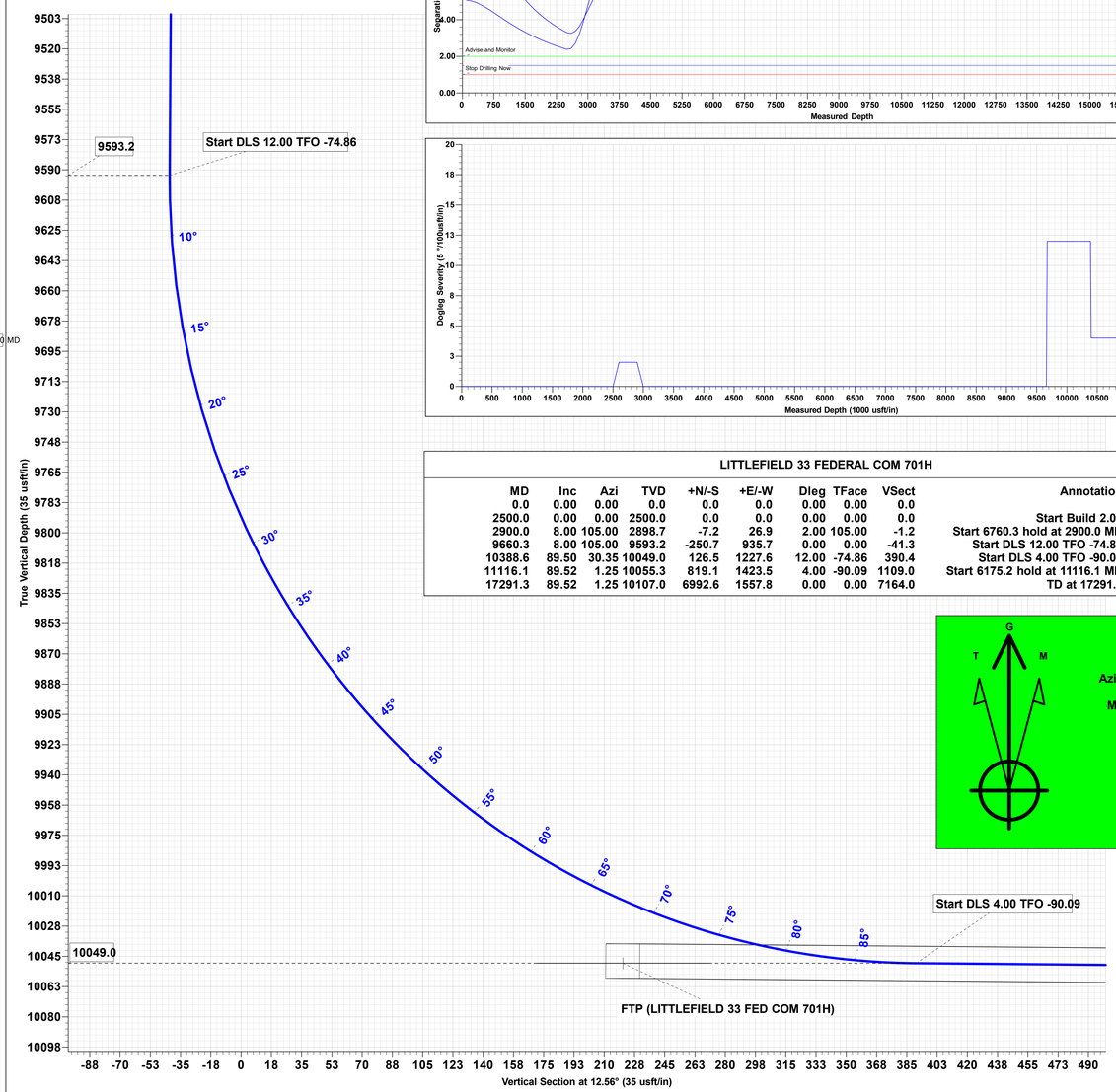
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP (LITTLEFIELD 33 FED COM 701H)	10049.0	-86.3	1403.0	364228.30	608843.50	32° 0' 3.208 N	103° 58' 55.981 W
LTP (LITTLEFIELD 33 FED COM 701H)	10107.0	6862.7	1554.9	371177.30	608995.40	32° 1' 11.975 N	103° 58' 53.954 W
PBHL (LITTLEFIELD 33 FED COM 701H)	10107.0	6992.6	1557.8	371307.20	608998.30	32° 1' 13.260 N	103° 58' 53.915 W



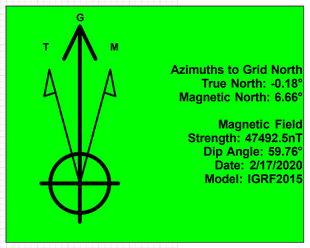


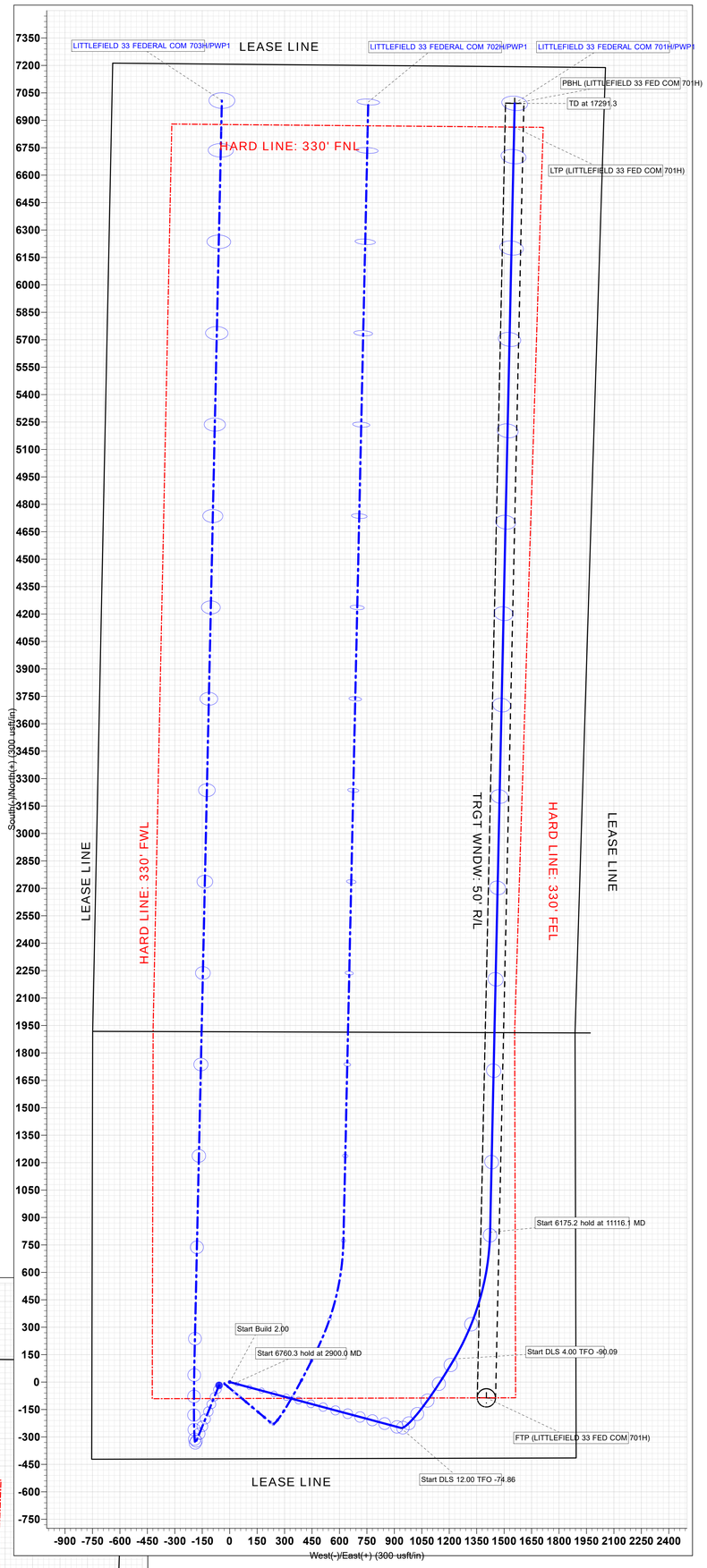


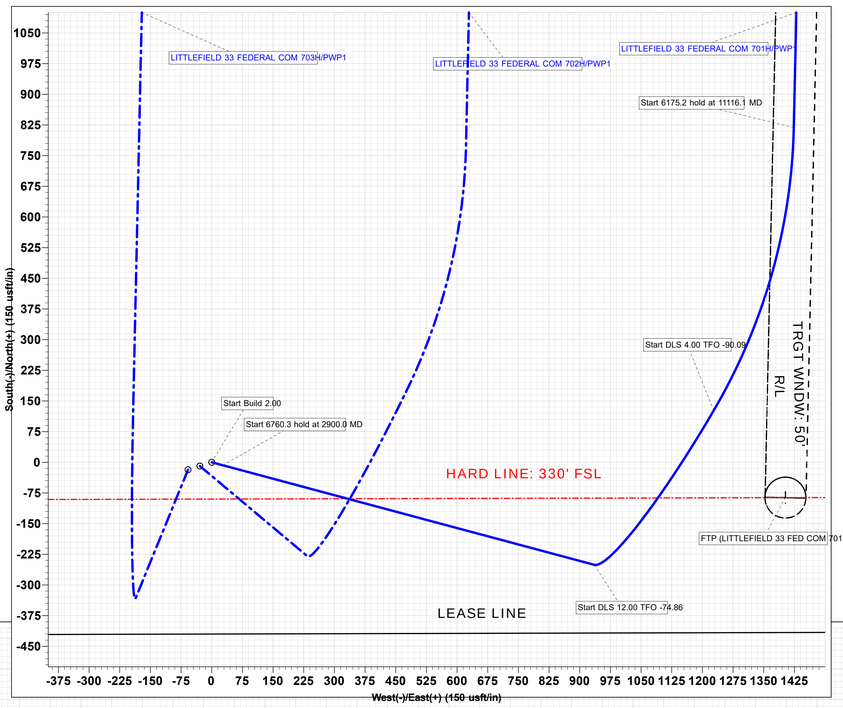


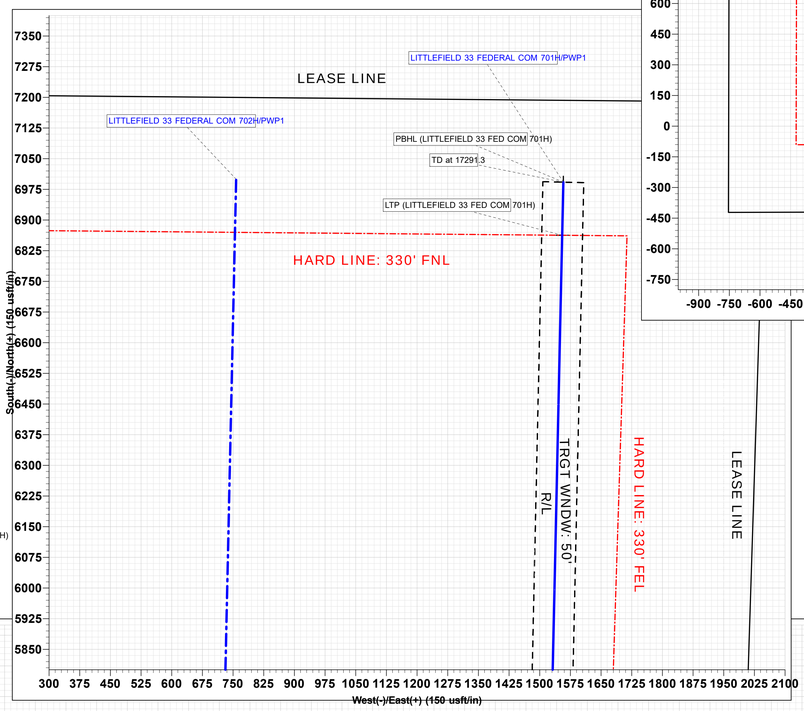
LITTLEFIELD 33 FEDERAL COM 701H

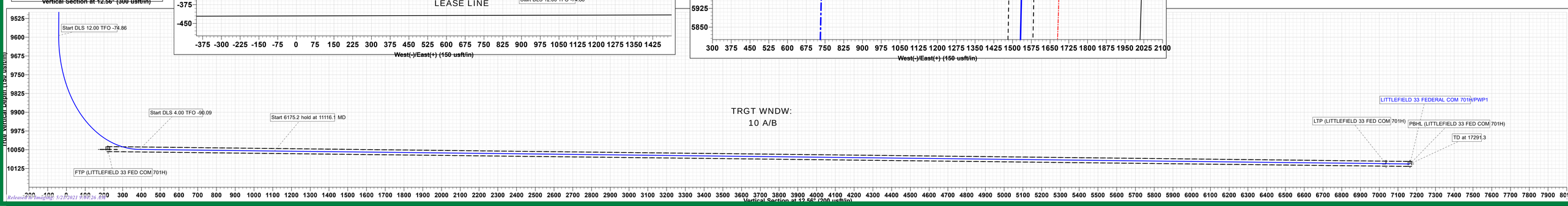
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2500.0	0.00	0.00	2500.0	0.0	0.0	0.00	0.00	0.0	Start Build 2.00
2900.0	8.00	105.00	2898.7	-7.2	26.9	2.00	105.00	-1.2	Start 6760.3 hold at 2900.0 MD
9660.3	8.00	105.00	9593.2	-250.7	935.7	0.00	0.00	-41.3	Start DLS 12.00 TFO -74.86
10388.6	89.50	30.35	10049.0	126.5	1227.6	12.00	-74.86	390.4	Start DLS 4.00 TFO -90.09
11116.1	89.52	1.25	10055.3	819.1	1423.5	4.00	-90.09	1109.0	Start 6175.2 hold at 11116.1 MD
17291.3	89.52	1.25	10107.0	6992.6	1557.8	0.00	0.00	7164.0	TD at 17291.3











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NORTHERN DELAWARE BASIN

EDDY COUNTY, NM
ATLAS
LITTLEFIELD 33 FEDERAL COM 701H

OWB
PWP1

Anticollision Report

17 February, 2020

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Reference PWP1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.0 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 2/17/2020

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	17,291.3	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
ATLAS						
LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1	2,500.0	2,500.5	30.4	17.6	2.378	CC, ES, SF
LITTLEFIELD 33 FEDERAL COM 703H - OWB - PWP1	2,500.0	2,500.8	60.8	42.3	3.290	CC, ES
LITTLEFIELD 33 FEDERAL COM 703H - OWB - PWP1	2,600.0	2,600.8	62.3	43.1	3.252	SF

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1 **Offset Site Error:** 0.0 usft

Survey Program: 0-Standard Keeper 104, 9563-MWD+IFR1+FDIR **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.5	0.5	3.0	3.0	-107.42	-9.1	-29.0	30.4				
100.0	100.0	100.5	100.5	3.0	3.0	-107.42	-9.1	-29.0	30.4	24.4	6.00	5.063	
200.0	200.0	200.5	200.5	3.0	3.0	-107.42	-9.1	-29.0	30.4	24.4	6.04	5.030	
300.0	300.0	300.5	300.5	3.1	3.0	-107.42	-9.1	-29.0	30.4	24.3	6.12	4.963	
400.0	400.0	400.5	400.5	3.2	3.0	-107.42	-9.1	-29.0	30.4	24.1	6.25	4.866	
500.0	500.0	500.5	500.5	3.4	3.1	-107.42	-9.1	-29.0	30.4	24.0	6.40	4.746	
600.0	600.0	600.5	600.5	3.6	3.1	-107.42	-9.1	-29.0	30.4	23.8	6.59	4.609	
700.0	700.0	700.5	700.5	3.8	3.1	-107.42	-9.1	-29.0	30.4	23.6	6.81	4.462	
800.0	800.0	800.5	800.5	4.0	3.2	-107.42	-9.1	-29.0	30.4	23.3	7.05	4.310	
900.0	900.0	900.5	900.5	4.2	3.2	-107.42	-9.1	-29.0	30.4	23.1	7.31	4.156	
1,000.0	1,000.0	1,000.5	1,000.5	4.5	3.2	-107.42	-9.1	-29.0	30.4	22.8	7.59	4.004	
1,100.0	1,100.0	1,100.5	1,100.5	4.8	3.3	-107.42	-9.1	-29.0	30.4	22.5	7.88	3.855	
1,200.0	1,200.0	1,200.5	1,200.5	5.1	3.4	-107.42	-9.1	-29.0	30.4	22.2	8.19	3.712	
1,300.0	1,300.0	1,300.5	1,300.5	5.4	3.4	-107.42	-9.1	-29.0	30.4	21.9	8.50	3.574	
1,400.0	1,400.0	1,400.5	1,400.5	5.7	3.5	-107.42	-9.1	-29.0	30.4	21.6	8.83	3.442	
1,500.0	1,500.0	1,500.5	1,500.5	6.0	3.5	-107.42	-9.1	-29.0	30.4	21.2	9.16	3.317	
1,600.0	1,600.0	1,600.5	1,600.5	6.3	3.6	-107.42	-9.1	-29.0	30.4	20.9	9.50	3.198	
1,700.0	1,700.0	1,700.5	1,700.5	6.6	3.7	-107.42	-9.1	-29.0	30.4	20.5	9.85	3.086	
1,800.0	1,800.0	1,800.5	1,800.5	6.9	3.8	-107.42	-9.1	-29.0	30.4	20.2	10.20	2.979	
1,900.0	1,900.0	1,900.5	1,900.5	7.2	3.9	-107.42	-9.1	-29.0	30.4	19.8	10.56	2.879	
2,000.0	2,000.0	2,000.5	2,000.5	7.6	3.9	-107.42	-9.1	-29.0	30.4	19.5	10.92	2.783	
2,100.0	2,100.0	2,100.5	2,100.5	7.9	4.0	-107.42	-9.1	-29.0	30.4	19.1	11.29	2.693	
2,200.0	2,200.0	2,200.5	2,200.5	8.2	4.1	-107.42	-9.1	-29.0	30.4	18.7	11.66	2.608	
2,300.0	2,300.0	2,300.5	2,300.5	8.6	4.2	-107.42	-9.1	-29.0	30.4	18.4	12.03	2.527	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-Standard Keeper 104, 9563-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,400.0	2,400.0	2,400.5	2,400.5	8.9	4.3	-107.42	-9.1	-29.0	30.4	18.0	12.40	2.450	
2,500.0	2,500.0	2,500.5	2,500.5	9.2	4.4	-107.42	-9.1	-29.0	30.4	17.6	12.78	2.378	CC, ES, SF
2,600.0	2,600.0	2,600.5	2,600.5	9.6	4.5	149.24	-9.1	-29.0	31.9	18.7	13.14	2.427	
2,700.0	2,699.8	2,700.3	2,700.3	9.9	4.6	153.41	-9.1	-29.0	36.5	23.0	13.46	2.711	
2,800.0	2,799.5	2,800.0	2,800.0	10.2	4.7	158.38	-9.1	-29.0	44.4	30.7	13.78	3.224	
2,900.0	2,898.7	2,899.2	2,899.2	10.5	4.8	162.91	-9.1	-29.0	56.0	41.8	14.13	3.960	
3,000.0	2,997.7	2,998.2	2,998.2	10.9	4.9	166.29	-9.1	-29.0	69.4	54.9	14.49	4.788	
3,100.0	3,096.8	3,097.3	3,097.3	11.2	5.0	168.57	-9.1	-29.0	83.0	68.1	14.86	5.583	
3,200.0	3,195.8	3,196.3	3,196.3	11.5	5.1	170.20	-9.1	-29.0	96.7	81.4	15.24	6.343	
3,300.0	3,294.8	3,295.3	3,295.3	11.9	5.2	171.43	-9.1	-29.0	110.4	94.8	15.62	7.068	
3,400.0	3,393.8	3,394.3	3,394.3	12.2	5.3	172.39	-9.1	-29.0	124.2	108.2	16.01	7.759	
3,500.0	3,492.9	3,493.4	3,493.4	12.6	5.4	173.15	-9.1	-29.0	138.0	121.6	16.39	8.419	
3,600.0	3,591.9	3,592.4	3,592.4	12.9	5.5	173.78	-9.1	-29.0	151.8	135.1	16.78	9.048	
3,700.0	3,690.9	3,691.4	3,691.4	13.2	5.6	174.30	-9.1	-29.0	165.7	148.5	17.17	9.648	
3,800.0	3,789.9	3,790.4	3,790.4	13.6	5.8	174.74	-9.1	-29.0	179.5	162.0	17.57	10.220	
3,900.0	3,889.0	3,889.5	3,889.5	13.9	5.9	175.12	-9.1	-29.0	193.4	175.4	17.96	10.767	
4,000.0	3,988.0	3,988.5	3,988.5	14.3	6.0	175.45	-9.1	-29.0	207.3	188.9	18.36	11.290	
4,100.0	4,087.0	4,087.5	4,087.5	14.6	6.1	175.73	-9.1	-29.0	221.1	202.4	18.76	11.790	
4,200.0	4,186.0	4,186.5	4,186.5	15.0	6.2	175.99	-9.1	-29.0	235.0	215.9	19.16	12.268	
4,300.0	4,285.1	4,285.6	4,285.6	15.3	6.3	176.21	-9.1	-29.0	248.9	229.4	19.56	12.725	
4,400.0	4,384.1	4,384.6	4,384.6	15.7	6.4	176.41	-9.1	-29.0	262.8	242.8	19.96	13.164	
4,500.0	4,483.1	4,483.6	4,483.6	16.1	6.6	176.59	-9.1	-29.0	276.7	256.3	20.37	13.584	
4,600.0	4,582.2	4,582.7	4,582.7	16.4	6.7	176.75	-9.1	-29.0	290.6	269.8	20.78	13.987	
4,700.0	4,681.2	4,681.7	4,681.7	16.8	6.8	176.90	-9.1	-29.0	304.5	283.3	21.18	14.373	
4,800.0	4,780.2	4,780.7	4,780.7	17.1	6.9	177.04	-9.1	-29.0	318.4	296.8	21.59	14.745	
4,900.0	4,879.2	4,879.7	4,879.7	17.5	7.0	177.16	-9.1	-29.0	332.3	310.3	22.00	15.101	
5,000.0	4,978.3	4,978.8	4,978.8	17.8	7.1	177.28	-9.1	-29.0	346.2	323.8	22.42	15.444	
5,100.0	5,077.3	5,077.8	5,077.8	18.2	7.3	177.38	-9.1	-29.0	360.1	337.3	22.83	15.774	
5,200.0	5,176.3	5,176.8	5,176.8	18.6	7.4	177.48	-9.1	-29.0	374.0	350.7	23.24	16.092	
5,300.0	5,275.3	5,275.8	5,275.8	18.9	7.5	177.57	-9.1	-29.0	387.9	364.2	23.66	16.397	
5,400.0	5,374.4	5,374.9	5,374.9	19.3	7.6	177.65	-9.1	-29.0	401.8	377.7	24.07	16.692	
5,500.0	5,473.4	5,473.9	5,473.9	19.6	7.7	177.73	-9.1	-29.0	415.7	391.2	24.49	16.976	
5,600.0	5,572.4	5,584.1	5,584.1	20.0	7.8	177.74	-9.9	-28.1	428.7	403.7	24.92	17.199	
5,700.0	5,671.5	5,699.1	5,699.0	20.4	7.8	177.48	-13.5	-23.7	438.2	412.9	25.34	17.294	
5,800.0	5,770.5	5,805.8	5,805.2	20.7	7.8	177.04	-19.2	-16.9	444.8	419.0	25.73	17.284	
5,900.0	5,869.5	5,905.5	5,904.6	21.1	7.8	176.61	-24.8	-10.3	451.0	424.9	26.12	17.265	
6,000.0	5,968.5	6,005.3	6,004.0	21.4	7.8	176.19	-30.4	-3.6	457.3	430.8	26.52	17.245	
6,100.0	6,067.6	6,105.0	6,103.4	21.8	7.8	175.79	-36.0	3.1	463.6	436.6	26.92	17.222	
6,200.0	6,166.6	6,204.8	6,202.7	22.2	7.8	175.39	-41.6	9.7	469.9	442.6	27.32	17.198	
6,300.0	6,265.6	6,304.5	6,302.1	22.5	7.7	175.01	-47.2	16.4	476.2	448.5	27.73	17.173	
6,400.0	6,364.6	6,404.3	6,401.5	22.9	7.7	174.64	-52.8	23.0	482.6	454.4	28.14	17.147	
6,500.0	6,463.7	6,504.0	6,500.8	23.3	7.7	174.27	-58.3	29.7	488.9	460.4	28.56	17.119	
6,600.0	6,562.7	6,603.8	6,600.2	23.6	7.7	173.92	-63.9	36.4	495.3	466.3	28.98	17.091	
6,700.0	6,661.7	6,703.5	6,699.6	24.0	7.8	173.58	-69.5	43.0	501.7	472.3	29.41	17.063	
6,800.0	6,760.7	6,803.3	6,798.9	24.4	7.8	173.24	-75.1	49.7	508.2	478.3	29.83	17.033	
6,900.0	6,859.8	6,903.0	6,898.3	24.7	7.8	172.91	-80.7	56.3	514.6	484.3	30.26	17.004	
7,000.0	6,958.8	7,002.8	6,997.7	25.1	7.8	172.59	-86.3	63.0	521.1	490.4	30.70	16.974	
7,100.0	7,057.8	7,102.5	7,097.1	25.5	7.8	172.28	-91.9	69.7	527.5	496.4	31.14	16.944	
7,200.0	7,156.9	7,202.3	7,196.4	25.8	7.8	171.98	-97.5	76.3	534.0	502.5	31.57	16.914	
7,300.0	7,255.9	7,302.0	7,295.8	26.2	7.8	171.68	-103.1	83.0	540.5	508.5	32.02	16.883	
7,400.0	7,354.9	7,401.8	7,395.2	26.6	7.9	171.39	-108.6	89.6	547.1	514.6	32.46	16.853	
7,500.0	7,453.9	7,501.5	7,494.5	26.9	7.9	171.10	-114.2	96.3	553.6	520.7	32.91	16.823	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-Standard Keeper 104, 9563-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,600.0	7,553.0	7,601.3	7,593.9	27.3	7.9	170.83	-119.8	103.0	560.1	526.8	33.36	16.793	
7,700.0	7,652.0	7,701.0	7,693.3	27.7	7.9	170.56	-125.4	109.6	566.7	532.9	33.81	16.763	
7,800.0	7,751.0	7,800.8	7,792.6	28.0	8.0	170.29	-131.0	116.3	573.3	539.0	34.26	16.734	
7,900.0	7,850.0	7,900.5	7,892.0	28.4	8.0	170.04	-136.6	122.9	579.9	545.2	34.71	16.705	
8,000.0	7,949.1	8,000.3	7,991.4	28.8	8.1	169.78	-142.2	129.6	586.5	551.3	35.17	16.676	
8,100.0	8,048.1	8,100.0	8,090.7	29.1	8.1	169.54	-147.8	136.2	593.1	557.4	35.63	16.647	
8,200.0	8,147.1	8,199.8	8,190.1	29.5	8.1	169.30	-153.3	142.9	599.7	563.6	36.09	16.619	
8,300.0	8,246.1	8,299.5	8,289.5	29.9	8.2	169.06	-158.9	149.6	606.3	569.8	36.55	16.591	
8,400.0	8,345.2	8,399.3	8,388.9	30.2	8.2	168.83	-164.5	156.2	613.0	576.0	37.01	16.563	
8,500.0	8,444.2	8,499.0	8,488.2	30.6	8.3	168.60	-170.1	162.9	619.6	582.1	37.47	16.536	
8,600.0	8,543.2	8,598.8	8,587.6	31.0	8.3	168.38	-175.7	169.5	626.3	588.3	37.93	16.510	
8,700.0	8,642.3	8,698.5	8,687.0	31.3	8.4	168.17	-181.3	176.2	632.9	594.5	38.40	16.483	
8,800.0	8,741.3	8,798.3	8,786.3	31.7	8.4	167.95	-186.9	182.9	639.6	600.7	38.86	16.457	
8,900.0	8,840.3	8,898.0	8,885.7	32.1	8.5	167.75	-192.5	189.5	646.3	607.0	39.33	16.432	
9,000.0	8,939.3	8,997.8	8,985.1	32.4	8.6	167.54	-198.1	196.2	653.0	613.2	39.80	16.407	
9,100.0	9,038.4	9,097.5	9,084.4	32.8	8.6	167.34	-203.6	202.8	659.7	619.4	40.27	16.382	
9,200.0	9,137.4	9,197.3	9,183.8	33.2	8.7	167.15	-209.2	209.5	666.4	625.7	40.74	16.358	
9,300.0	9,236.4	9,297.0	9,283.2	33.5	8.8	166.96	-214.8	216.2	673.1	631.9	41.21	16.334	
9,400.0	9,335.4	9,396.7	9,382.6	33.9	8.8	166.77	-220.4	222.8	679.8	638.1	41.68	16.311	
9,500.0	9,434.5	9,496.5	9,481.9	34.3	8.9	166.59	-226.0	229.5	686.6	644.4	42.15	16.288	
9,600.0	9,533.5	9,645.4	9,630.0	34.7	9.0	166.85	-227.9	242.5	692.1	649.5	42.60	16.245	
9,660.3	9,593.2	9,783.4	9,761.1	34.9	9.0	169.89	-196.7	270.0	688.5	645.6	42.88	16.056	
9,675.0	9,607.8	9,813.4	9,787.7	34.9	9.1	-177.95	-185.5	278.0	686.9	644.0	42.94	15.996	
9,700.0	9,632.4	9,861.4	9,828.4	35.0	9.1	-161.52	-164.3	292.1	684.0	640.9	43.04	15.893	
9,725.0	9,656.9	9,905.9	9,863.6	35.1	9.2	-149.80	-141.4	306.6	681.0	637.9	43.13	15.789	
9,750.0	9,681.2	9,947.1	9,894.0	35.2	9.2	-141.30	-117.5	321.1	678.0	634.8	43.22	15.688	
9,775.0	9,705.2	9,985.5	9,919.9	35.3	9.3	-134.89	-93.2	335.3	675.2	631.9	43.31	15.590	
9,800.0	9,728.8	10,021.2	9,942.1	35.4	9.3	-129.83	-68.8	349.3	672.5	629.1	43.40	15.496	
9,825.0	9,752.1	10,054.7	9,960.8	35.5	9.4	-125.68	-44.6	362.8	670.1	626.6	43.49	15.409	
9,850.0	9,774.8	10,086.2	9,976.6	35.6	9.4	-122.17	-20.8	375.8	668.1	624.5	43.59	15.327	
9,875.0	9,797.0	10,115.9	9,989.9	35.6	9.4	-119.11	2.6	388.5	666.3	622.6	43.68	15.253	
9,900.0	9,818.6	10,144.0	10,001.0	35.7	9.5	-116.40	25.5	400.6	664.9	621.2	43.78	15.187	
9,925.0	9,839.5	10,170.8	10,010.0	35.8	9.5	-113.95	47.8	412.3	664.0	620.1	43.89	15.129	
9,950.0	9,859.7	10,196.4	10,017.4	35.9	9.5	-111.69	69.6	423.6	663.4	619.4	44.00	15.079	
9,972.4	9,877.2	10,218.5	10,022.7	35.9	9.6	-109.81	88.6	433.3	663.2	619.1	44.10	15.040	
9,975.0	9,879.1	10,221.0	10,023.2	35.9	9.6	-109.60	90.8	434.4	663.2	619.1	44.11	15.036	
10,000.0	9,897.7	10,244.6	10,027.6	36.0	9.6	-107.62	111.5	444.9	663.5	619.3	44.23	15.002	
10,025.0	9,915.4	10,267.4	10,030.8	36.1	9.6	-105.75	131.7	455.0	664.1	619.8	44.35	14.975	
10,050.0	9,932.2	10,289.5	10,032.9	36.1	9.6	-103.96	151.4	464.8	665.2	620.7	44.48	14.955	
10,075.0	9,948.0	10,310.9	10,033.9	36.2	9.6	-102.24	170.6	474.2	666.6	622.0	44.61	14.942	
10,100.0	9,962.8	10,319.0	10,034.0	36.2	9.7	-101.22	177.9	477.8	668.5	623.8	44.71	14.950	
10,125.0	9,976.5	10,341.6	10,034.2	36.3	9.7	-99.53	198.3	487.5	670.7	625.9	44.87	14.950	
10,150.0	9,989.1	10,356.1	10,034.4	36.3	9.7	-98.28	211.5	493.6	673.6	628.6	44.99	14.971	
10,175.0	10,000.6	10,371.0	10,034.5	36.3	9.7	-97.05	225.1	499.7	676.8	631.7	45.12	15.001	
10,200.0	10,010.9	10,386.3	10,034.6	36.4	9.7	-95.87	239.1	505.8	680.4	635.2	45.24	15.040	
10,225.0	10,020.1	10,400.0	10,034.7	36.4	9.7	-94.79	251.7	511.1	684.4	639.0	45.36	15.088	
10,250.0	10,028.0	10,417.7	10,034.9	36.4	9.8	-93.66	268.0	517.8	688.6	643.1	45.50	15.136	
10,275.0	10,034.7	10,433.7	10,035.0	36.4	9.8	-92.65	282.9	523.8	693.1	647.5	45.62	15.192	
10,300.0	10,040.1	10,449.8	10,035.2	36.5	9.8	-91.70	298.0	529.6	697.7	652.0	45.74	15.254	
10,325.0	10,044.2	10,466.1	10,035.3	36.5	9.9	-90.83	313.2	535.2	702.6	656.7	45.86	15.321	
10,350.0	10,047.1	10,482.4	10,035.5	36.5	9.9	-90.04	328.6	540.7	707.5	661.6	45.97	15.392	
10,375.0	10,048.7	10,500.0	10,035.6	36.5	9.9	-89.33	345.2	546.5	712.6	666.5	46.08	15.466	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-Standard Keeper 104, 9563-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,388.6	10,049.0	10,500.0	10,035.6	36.6	9.9	-88.98	345.2	546.5	715.5	669.4	46.10	15.520	
10,400.0	10,049.1	10,500.0	10,035.6	36.6	9.9	-88.97	345.2	546.5	718.0	671.9	46.12	15.568	
10,500.0	10,049.9	10,580.2	10,036.3	36.7	10.2	-88.98	421.8	570.1	737.0	690.4	46.63	15.805	
10,600.0	10,050.8	10,645.0	10,036.9	36.8	10.5	-88.97	484.7	586.0	753.8	706.7	47.07	16.015	
10,700.0	10,051.7	10,700.0	10,037.4	37.0	10.8	-88.96	538.5	597.2	768.3	720.8	47.48	16.183	
10,800.0	10,052.6	10,774.1	10,038.1	37.2	11.2	-88.95	611.6	609.1	780.1	732.2	47.99	16.256	
10,900.0	10,053.5	10,838.4	10,038.6	37.3	11.5	-88.93	675.5	616.3	789.6	741.2	48.45	16.298	
11,000.0	10,054.3	10,900.0	10,039.2	37.5	11.9	-88.90	737.0	620.6	796.6	747.7	48.88	16.298	
11,100.0	10,055.2	10,983.6	10,039.9	37.7	12.4	-88.88	820.5	622.8	800.6	751.1	49.48	16.181	
11,116.1	10,055.3	10,999.8	10,040.1	37.7	12.5	-88.87	836.7	623.2	800.7	751.1	49.60	16.144	
11,200.0	10,056.0	11,083.6	10,040.8	37.8	13.0	-88.87	920.5	625.0	800.7	750.4	50.25	15.934	
11,300.0	10,056.9	11,183.6	10,041.7	38.0	13.6	-88.88	1,020.5	627.2	800.7	749.6	51.07	15.677	
11,400.0	10,057.7	11,283.6	10,042.6	38.3	14.3	-88.88	1,120.5	629.4	800.6	748.7	51.93	15.416	
11,500.0	10,058.5	11,383.6	10,043.4	38.5	14.9	-88.88	1,220.4	631.6	800.6	747.8	52.84	15.153	
11,600.0	10,059.4	11,483.6	10,044.3	38.7	15.6	-88.89	1,320.4	633.7	800.6	746.9	53.78	14.888	
11,700.0	10,060.2	11,583.6	10,045.2	39.0	16.3	-88.89	1,420.4	635.9	800.6	745.9	54.75	14.623	
11,800.0	10,061.0	11,683.6	10,046.0	39.3	17.1	-88.89	1,520.3	638.1	800.6	744.9	55.76	14.359	
11,900.0	10,061.9	11,783.6	10,046.9	39.6	17.8	-88.89	1,620.3	640.3	800.6	743.8	56.79	14.098	
12,000.0	10,062.7	11,883.6	10,047.8	39.9	18.5	-88.90	1,720.3	642.5	800.6	742.8	57.85	13.839	
12,100.0	10,063.6	11,983.6	10,048.7	40.2	19.3	-88.90	1,820.3	644.6	800.6	741.7	58.94	13.584	
12,200.0	10,064.4	12,083.6	10,049.5	40.6	20.0	-88.90	1,920.2	646.8	800.6	740.5	60.05	13.332	
12,300.0	10,065.2	12,183.6	10,050.4	40.9	20.8	-88.90	2,020.2	649.0	800.6	739.4	61.18	13.085	
12,400.0	10,066.1	12,283.6	10,051.3	41.3	21.6	-88.91	2,120.2	651.2	800.6	738.2	62.34	12.842	
12,500.0	10,066.9	12,383.6	10,052.2	41.7	22.4	-88.91	2,220.2	653.4	800.6	737.1	63.51	12.605	
12,600.0	10,067.7	12,483.6	10,053.0	42.1	23.1	-88.91	2,320.1	655.5	800.6	735.9	64.71	12.372	
12,700.0	10,068.6	12,583.6	10,053.9	42.5	23.9	-88.92	2,420.1	657.7	800.6	734.6	65.92	12.144	
12,800.0	10,069.4	12,683.6	10,054.8	43.0	24.7	-88.92	2,520.1	659.9	800.6	733.4	67.16	11.921	
12,900.0	10,070.2	12,783.6	10,055.7	43.4	25.5	-88.92	2,620.0	662.1	800.6	732.1	68.40	11.703	
13,000.0	10,071.1	12,883.6	10,056.5	43.9	26.3	-88.92	2,720.0	664.3	800.5	730.9	69.67	11.491	
13,100.0	10,071.9	12,983.6	10,057.4	44.3	27.1	-88.93	2,820.0	666.4	800.5	729.6	70.95	11.284	
13,200.0	10,072.8	13,083.6	10,058.3	44.8	28.0	-88.93	2,920.0	668.6	800.5	728.3	72.24	11.081	
13,300.0	10,073.6	13,183.6	10,059.2	45.3	28.8	-88.93	3,019.9	670.8	800.5	727.0	73.55	10.884	
13,400.0	10,074.4	13,283.6	10,060.0	45.8	29.6	-88.93	3,119.9	673.0	800.5	725.6	74.87	10.692	
13,500.0	10,075.3	13,383.6	10,060.9	46.3	30.4	-88.94	3,219.9	675.2	800.5	724.3	76.21	10.505	
13,600.0	10,076.1	13,483.6	10,061.8	46.9	31.2	-88.94	3,319.9	677.3	800.5	723.0	77.55	10.322	
13,700.0	10,076.9	13,583.6	10,062.7	47.4	32.0	-88.94	3,419.8	679.5	800.5	721.6	78.91	10.144	
13,800.0	10,077.8	13,683.6	10,063.5	47.9	32.9	-88.95	3,519.8	681.7	800.5	720.2	80.28	9.971	
13,900.0	10,078.6	13,783.6	10,064.4	48.5	33.7	-88.95	3,619.8	683.9	800.5	718.8	81.66	9.803	
14,000.0	10,079.5	13,883.6	10,065.3	49.0	34.5	-88.95	3,719.7	686.1	800.5	717.4	83.05	9.638	
14,100.0	10,080.3	13,983.6	10,066.2	49.6	35.3	-88.95	3,819.7	688.3	800.5	716.0	84.45	9.478	
14,200.0	10,081.1	14,083.6	10,067.0	50.2	36.2	-88.96	3,919.7	690.4	800.5	714.6	85.86	9.323	
14,300.0	10,082.0	14,183.6	10,067.9	50.8	37.0	-88.96	4,019.7	692.6	800.5	713.2	87.28	9.171	
14,400.0	10,082.8	14,283.6	10,068.8	51.4	37.8	-88.96	4,119.6	694.8	800.5	711.7	88.71	9.023	
14,500.0	10,083.6	14,383.6	10,069.7	52.0	38.7	-88.96	4,219.6	697.0	800.5	710.3	90.15	8.879	
14,600.0	10,084.5	14,483.6	10,070.5	52.6	39.5	-88.97	4,319.6	699.2	800.4	708.9	91.59	8.739	
14,700.0	10,085.3	14,583.6	10,071.4	53.2	40.3	-88.97	4,419.5	701.3	800.4	707.4	93.05	8.603	
14,800.0	10,086.1	14,683.6	10,072.3	53.8	41.2	-88.97	4,519.5	703.5	800.4	705.9	94.51	8.470	
14,900.0	10,087.0	14,783.6	10,073.2	54.4	42.0	-88.98	4,619.5	705.7	800.4	704.5	95.98	8.340	
15,000.0	10,087.8	14,883.6	10,074.0	55.1	42.8	-88.98	4,719.5	707.9	800.4	703.0	97.45	8.214	
15,100.0	10,088.7	14,983.6	10,074.9	55.7	43.7	-88.98	4,819.4	710.1	800.4	701.5	98.93	8.091	
15,200.0	10,089.5	15,083.6	10,075.8	56.4	44.5	-88.98	4,919.4	712.2	800.4	700.0	100.42	7.971	
15,300.0	10,090.3	15,183.6	10,076.7	57.0	45.4	-88.99	5,019.4	714.4	800.4	698.5	101.91	7.854	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 702H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-Standard Keeper 104, 9563-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,400.0	10,091.2	15,283.6	10,077.5	57.7	46.2	-88.99	5,119.4	716.6	800.4	697.0	103.41	7.740	
15,500.0	10,092.0	15,383.6	10,078.4	58.3	47.0	-88.99	5,219.3	718.8	800.4	695.5	104.92	7.628	
15,600.0	10,092.8	15,483.6	10,079.3	59.0	47.9	-88.99	5,319.3	721.0	800.4	694.0	106.43	7.520	
15,700.0	10,093.7	15,583.6	10,080.2	59.7	48.7	-89.00	5,419.3	723.1	800.4	692.4	107.95	7.414	
15,800.0	10,094.5	15,683.6	10,081.0	60.4	49.6	-89.00	5,519.2	725.3	800.4	690.9	109.47	7.311	
15,900.0	10,095.4	15,783.6	10,081.9	61.0	50.4	-89.00	5,619.2	727.5	800.4	689.4	111.00	7.210	
16,000.0	10,096.2	15,883.6	10,082.8	61.7	51.2	-89.00	5,719.2	729.7	800.4	687.8	112.53	7.112	
16,100.0	10,097.0	15,983.6	10,083.7	62.4	52.1	-89.01	5,819.2	731.9	800.4	686.3	114.07	7.016	
16,200.0	10,097.9	16,083.6	10,084.5	63.1	52.9	-89.01	5,919.1	734.0	800.3	684.7	115.61	6.923	
16,300.0	10,098.7	16,183.6	10,085.4	63.8	53.8	-89.01	6,019.1	736.2	800.3	683.2	117.16	6.831	
16,400.0	10,099.5	16,283.6	10,086.3	64.5	54.6	-89.02	6,119.1	738.4	800.3	681.6	118.71	6.742	
16,500.0	10,100.4	16,383.6	10,087.2	65.2	55.5	-89.02	6,219.1	740.6	800.3	680.1	120.26	6.655	
16,600.0	10,101.2	16,483.6	10,088.0	65.9	56.3	-89.02	6,319.0	742.8	800.3	678.5	121.82	6.570	
16,700.0	10,102.1	16,583.6	10,088.9	66.6	57.2	-89.02	6,419.0	744.9	800.3	676.9	123.38	6.486	
16,800.0	10,102.9	16,683.6	10,089.8	67.3	58.0	-89.03	6,519.0	747.1	800.3	675.4	124.95	6.405	
16,900.0	10,103.7	16,783.6	10,090.7	68.1	58.9	-89.03	6,618.9	749.3	800.3	673.8	126.52	6.326	
17,000.0	10,104.6	16,883.6	10,091.5	68.8	59.7	-89.03	6,718.9	751.5	800.3	672.2	128.09	6.248	
17,100.0	10,105.4	16,983.6	10,092.4	69.5	60.5	-89.03	6,818.9	753.7	800.3	670.6	129.67	6.172	
17,200.0	10,106.2	17,083.6	10,093.3	70.2	61.4	-89.04	6,918.9	755.8	800.3	669.0	131.24	6.098	
17,280.1	10,106.9	17,163.7	10,094.0	70.8	62.1	-89.04	6,998.9	757.6	800.3	667.8	132.51	6.039	
17,291.3	10,107.0	17,164.6	10,094.0	70.9	62.1	-89.04	6,999.8	757.6	800.3	667.8	132.51	6.040	

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 703H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.8	0.8	3.0	3.0	-107.42	-18.2	-58.0	60.8				
100.0	100.0	100.8	100.8	3.0	3.0	-107.42	-18.2	-58.0	60.8	54.8	6.01	10.121	
200.0	200.0	200.8	200.8	3.0	3.0	-107.42	-18.2	-58.0	60.8	54.7	6.08	9.997	
300.0	300.0	300.8	300.8	3.1	3.1	-107.42	-18.2	-58.0	60.8	54.6	6.24	9.745	
400.0	400.0	400.8	400.8	3.2	3.2	-107.42	-18.2	-58.0	60.8	54.3	6.47	9.395	
500.0	500.0	500.8	500.8	3.4	3.4	-107.42	-18.2	-58.0	60.8	54.0	6.77	8.977	
600.0	600.0	600.8	600.8	3.6	3.6	-107.42	-18.2	-58.0	60.8	53.7	7.13	8.523	
700.0	700.0	700.8	700.8	3.8	3.8	-107.42	-18.2	-58.0	60.8	53.2	7.54	8.058	
800.0	800.0	800.8	800.8	4.0	4.0	-107.42	-18.2	-58.0	60.8	52.8	8.00	7.599	
900.0	900.0	900.8	900.8	4.2	4.2	-107.42	-18.2	-58.0	60.8	52.3	8.49	7.160	
1,000.0	1,000.0	1,000.8	1,000.8	4.5	4.5	-107.42	-18.2	-58.0	60.8	51.8	9.01	6.745	
1,100.0	1,100.0	1,100.8	1,100.8	4.8	4.8	-107.42	-18.2	-58.0	60.8	51.2	9.56	6.359	
1,200.0	1,200.0	1,200.8	1,200.8	5.1	5.1	-107.42	-18.2	-58.0	60.8	50.7	10.13	6.003	
1,300.0	1,300.0	1,300.8	1,300.8	5.4	5.4	-107.42	-18.2	-58.0	60.8	50.1	10.71	5.674	
1,400.0	1,400.0	1,400.8	1,400.8	5.7	5.7	-107.42	-18.2	-58.0	60.8	49.5	11.31	5.373	
1,500.0	1,500.0	1,500.8	1,500.8	6.0	6.0	-107.42	-18.2	-58.0	60.8	48.9	11.93	5.096	
1,600.0	1,600.0	1,600.8	1,600.8	6.3	6.3	-107.42	-18.2	-58.0	60.8	48.2	12.55	4.843	
1,700.0	1,700.0	1,700.8	1,700.8	6.6	6.6	-107.42	-18.2	-58.0	60.8	47.6	13.19	4.610	
1,800.0	1,800.0	1,800.8	1,800.8	6.9	6.9	-107.42	-18.2	-58.0	60.8	47.0	13.83	4.396	
1,900.0	1,900.0	1,900.8	1,900.8	7.2	7.2	-107.42	-18.2	-58.0	60.8	46.3	14.48	4.199	
2,000.0	2,000.0	2,000.8	2,000.8	7.6	7.6	-107.42	-18.2	-58.0	60.8	45.7	15.13	4.017	
2,100.0	2,100.0	2,100.8	2,100.8	7.9	7.9	-107.42	-18.2	-58.0	60.8	45.0	15.79	3.849	
2,200.0	2,200.0	2,200.8	2,200.8	8.2	8.2	-107.42	-18.2	-58.0	60.8	44.3	16.46	3.693	
2,300.0	2,300.0	2,300.8	2,300.8	8.6	8.6	-107.42	-18.2	-58.0	60.8	43.7	17.13	3.549	
2,400.0	2,400.0	2,400.8	2,400.8	8.9	8.9	-107.42	-18.2	-58.0	60.8	43.0	17.80	3.415	
2,500.0	2,500.0	2,500.8	2,500.8	9.2	9.2	-107.42	-18.2	-58.0	60.8	42.3	18.48	3.290	CC, ES
2,600.0	2,600.0	2,600.8	2,600.8	9.6	9.6	148.42	-18.2	-58.0	62.3	43.1	19.15	3.252	SF
2,700.0	2,699.8	2,700.6	2,700.6	9.9	9.9	150.73	-18.2	-58.0	66.8	47.0	19.81	3.371	
2,800.0	2,799.5	2,800.3	2,800.3	10.2	10.3	153.94	-18.2	-58.0	74.5	54.0	20.47	3.640	
2,900.0	2,898.7	2,899.5	2,899.5	10.5	10.6	157.43	-18.2	-58.0	85.6	64.5	21.14	4.051	
3,000.0	2,997.7	2,998.5	2,998.5	10.9	10.9	160.53	-18.2	-58.0	98.6	76.8	21.80	4.524	
3,100.0	3,096.8	3,097.6	3,097.6	11.2	11.3	162.91	-18.2	-58.0	111.9	89.4	22.47	4.979	
3,200.0	3,195.8	3,196.6	3,196.6	11.5	11.6	164.78	-18.2	-58.0	125.3	102.1	23.14	5.412	
3,300.0	3,294.8	3,295.6	3,295.6	11.9	12.0	166.29	-18.2	-58.0	138.7	114.9	23.82	5.825	
3,400.0	3,393.8	3,394.6	3,394.6	12.2	12.3	167.53	-18.2	-58.0	152.3	127.8	24.50	6.218	
3,500.0	3,492.9	3,493.7	3,493.7	12.6	12.7	168.56	-18.2	-58.0	165.9	140.8	25.18	6.591	
3,600.0	3,591.9	3,592.7	3,592.7	12.9	13.0	169.44	-18.2	-58.0	179.6	153.7	25.86	6.945	
3,700.0	3,690.9	3,691.7	3,691.7	13.2	13.4	170.20	-18.2	-58.0	193.3	166.8	26.54	7.282	
3,800.0	3,789.9	3,790.7	3,790.7	13.6	13.7	170.86	-18.2	-58.0	207.0	179.8	27.23	7.603	
3,900.0	3,889.0	3,889.8	3,889.8	13.9	14.0	171.43	-18.2	-58.0	220.8	192.9	27.92	7.908	
4,000.0	3,988.0	3,988.8	3,988.8	14.3	14.4	171.94	-18.2	-58.0	234.6	205.9	28.61	8.199	
4,100.0	4,087.0	4,087.8	4,087.8	14.6	14.7	172.39	-18.2	-58.0	248.3	219.0	29.30	8.476	
4,200.0	4,186.0	4,186.8	4,186.8	15.0	15.1	172.79	-18.2	-58.0	262.2	232.2	30.00	8.740	
4,300.0	4,285.1	4,285.9	4,285.9	15.3	15.4	173.15	-18.2	-58.0	276.0	245.3	30.69	8.992	
4,400.0	4,384.1	4,384.9	4,384.9	15.7	15.8	173.48	-18.2	-58.0	289.8	258.4	31.39	9.233	
4,500.0	4,483.1	4,483.9	4,483.9	16.1	16.1	173.78	-18.2	-58.0	303.6	271.5	32.08	9.463	
4,600.0	4,582.2	4,583.0	4,583.0	16.4	16.5	174.05	-18.2	-58.0	317.5	284.7	32.78	9.684	
4,700.0	4,681.2	4,682.0	4,682.0	16.8	16.8	174.30	-18.2	-58.0	331.3	297.8	33.48	9.895	
4,800.0	4,780.2	4,781.0	4,781.0	17.1	17.2	174.53	-18.2	-58.0	345.2	311.0	34.18	10.097	
4,900.0	4,879.2	4,880.0	4,880.0	17.5	17.5	174.74	-18.2	-58.0	359.0	324.1	34.89	10.291	
5,000.0	4,978.3	4,979.1	4,979.1	17.8	17.9	174.94	-18.2	-58.0	372.9	337.3	35.59	10.478	
5,100.0	5,077.3	5,078.1	5,078.1	18.2	18.2	175.12	-18.2	-58.0	386.7	350.5	36.29	10.657	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Offset Design ATLAS - LITTLEFIELD 33 FEDERAL COM 703H - OWB - PWP1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD+IFR1+FDIR — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.0	5,176.3	5,177.1	5,177.1	18.6	18.6	175.29	-18.2	-58.0	400.6	363.6	37.00	10.829	
5,300.0	5,275.3	5,276.1	5,276.1	18.9	18.9	175.45	-18.2	-58.0	414.5	376.8	37.70	10.994	
5,400.0	5,374.4	5,375.2	5,375.2	19.3	19.3	175.59	-18.2	-58.0	428.4	390.0	38.41	11.153	
5,500.0	5,473.4	5,474.2	5,474.2	19.6	19.6	175.73	-18.2	-58.0	442.2	403.1	39.11	11.307	
5,600.0	5,572.4	5,571.0	5,571.0	20.0	20.0	175.75	-19.0	-58.3	456.3	416.5	39.79	11.466	
5,700.0	5,671.5	5,666.8	5,666.7	20.4	20.3	175.39	-22.7	-59.8	471.0	430.6	40.45	11.644	
5,800.0	5,770.5	5,762.5	5,762.1	20.7	20.6	174.69	-29.3	-62.5	486.4	445.3	41.10	11.834	
5,900.0	5,869.5	5,861.0	5,860.2	21.1	20.9	173.86	-37.2	-65.8	502.2	460.4	41.77	12.022	
6,000.0	5,968.5	5,959.5	5,958.4	21.4	21.2	173.09	-45.2	-69.0	518.1	475.6	42.45	12.205	
6,100.0	6,067.6	6,058.0	6,056.5	21.8	21.5	172.37	-53.1	-72.3	534.0	490.9	43.12	12.384	
6,200.0	6,166.6	6,156.5	6,154.6	22.2	21.9	171.68	-61.1	-75.5	550.1	506.3	43.80	12.559	
6,300.0	6,265.6	6,255.0	6,252.7	22.5	22.2	171.03	-69.0	-78.7	566.2	521.7	44.48	12.730	
6,400.0	6,364.6	6,353.5	6,350.8	22.9	22.5	170.42	-77.0	-82.0	582.3	537.2	45.16	12.896	
6,500.0	6,463.7	6,452.0	6,449.0	23.3	22.8	169.85	-84.9	-85.2	598.6	552.7	45.84	13.059	
6,600.0	6,562.7	6,550.5	6,547.1	23.6	23.1	169.30	-92.9	-88.5	614.9	568.3	46.52	13.217	
6,700.0	6,661.7	6,649.0	6,645.2	24.0	23.5	168.78	-100.8	-91.7	631.2	584.0	47.21	13.372	
6,800.0	6,760.7	6,747.5	6,743.3	24.4	23.8	168.29	-108.8	-95.0	647.6	599.7	47.89	13.522	
6,900.0	6,859.8	6,845.9	6,841.5	24.7	24.1	167.82	-116.7	-98.2	664.0	615.5	48.58	13.669	
7,000.0	6,958.8	6,944.4	6,939.6	25.1	24.4	167.38	-124.7	-101.5	680.5	631.2	49.27	13.813	
7,100.0	7,057.8	7,042.9	7,037.7	25.5	24.8	166.95	-132.6	-104.7	697.0	647.1	49.96	13.953	
7,200.0	7,156.9	7,141.4	7,135.8	25.8	25.1	166.55	-140.6	-107.9	713.6	662.9	50.65	14.089	
7,300.0	7,255.9	7,239.9	7,234.0	26.2	25.4	166.16	-148.5	-111.2	730.2	678.8	51.34	14.222	
7,400.0	7,354.9	7,338.4	7,332.1	26.6	25.8	165.79	-156.5	-114.4	746.8	694.7	52.03	14.352	
7,500.0	7,453.9	7,436.9	7,430.2	26.9	26.1	165.44	-164.4	-117.7	763.4	710.7	52.73	14.479	
7,600.0	7,553.0	7,535.4	7,528.3	27.3	26.4	165.10	-172.4	-120.9	780.1	726.7	53.42	14.602	
7,700.0	7,652.0	7,633.9	7,626.4	27.7	26.8	164.77	-180.3	-124.2	796.8	742.7	54.12	14.723	
7,800.0	7,751.0	7,732.4	7,724.6	28.0	27.1	164.46	-188.3	-127.4	813.5	758.7	54.82	14.841	
7,900.0	7,850.0	7,830.9	7,822.7	28.4	27.4	164.17	-196.2	-130.6	830.3	774.7	55.51	14.956	
8,000.0	7,949.1	7,929.4	7,920.8	28.8	27.8	163.88	-204.2	-133.9	847.0	790.8	56.21	15.068	
8,100.0	8,048.1	8,027.9	8,018.9	29.1	28.1	163.60	-212.1	-137.1	863.8	806.9	56.91	15.177	
8,200.0	8,147.1	8,126.4	8,117.1	29.5	28.4	163.34	-220.1	-140.4	880.6	823.0	57.61	15.284	
8,300.0	8,246.1	8,224.9	8,215.2	29.9	28.8	163.08	-228.0	-143.6	897.4	839.1	58.32	15.389	
8,400.0	8,345.2	8,323.4	8,313.3	30.2	29.1	162.84	-236.0	-146.9	914.3	855.2	59.02	15.491	
8,500.0	8,444.2	8,421.9	8,411.4	30.6	29.5	162.60	-243.9	-150.1	931.1	871.4	59.72	15.591	
8,600.0	8,543.2	8,520.4	8,509.6	31.0	29.8	162.37	-251.9	-153.4	948.0	887.6	60.43	15.688	
8,700.0	8,642.3	8,618.9	8,607.7	31.3	30.1	162.15	-259.8	-156.6	964.9	903.7	61.13	15.784	
8,800.0	8,741.3	8,717.4	8,705.8	31.7	30.5	161.94	-267.7	-159.8	981.8	919.9	61.84	15.877	
8,900.0	8,840.3	8,815.9	8,803.9	32.1	30.8	161.73	-275.7	-163.1	998.7	936.1	62.54	15.968	

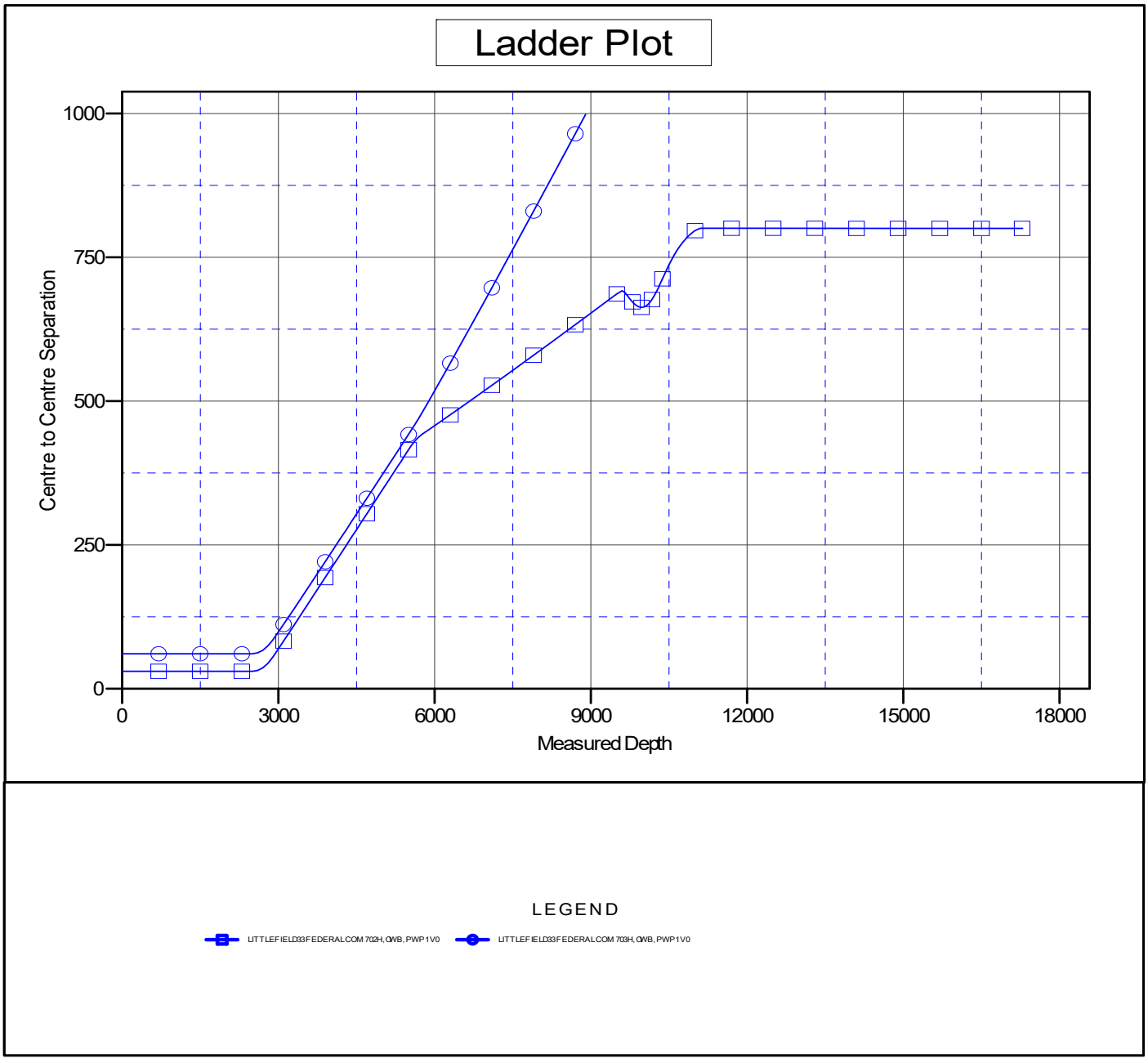
Concho Resources LLC

Anticollision Report

Company:	NORTHERN DELAWARE BASIN	**Local Co-ordinate Reference:**	Well LITTLEFIELD 33 FEDERAL COM 701H
Project:	EDDY COUNTY, NM	**TVD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Reference Site:	ATLAS	**MD Reference:**	KB=25' @ 2898.8usft (PIONEER 84)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	LITTLEFIELD 33 FEDERAL COM 701H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	3.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	edm
Reference Design:	PWP1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=25' @ 2898.8usft (PIONEER 84)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: LITTLEFIELD 33 FEDERAL COM 701H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.18°



Released to Imaging: 5/21/2021 9:04:26 AM

Concho Resources LLC

Anticollision Report

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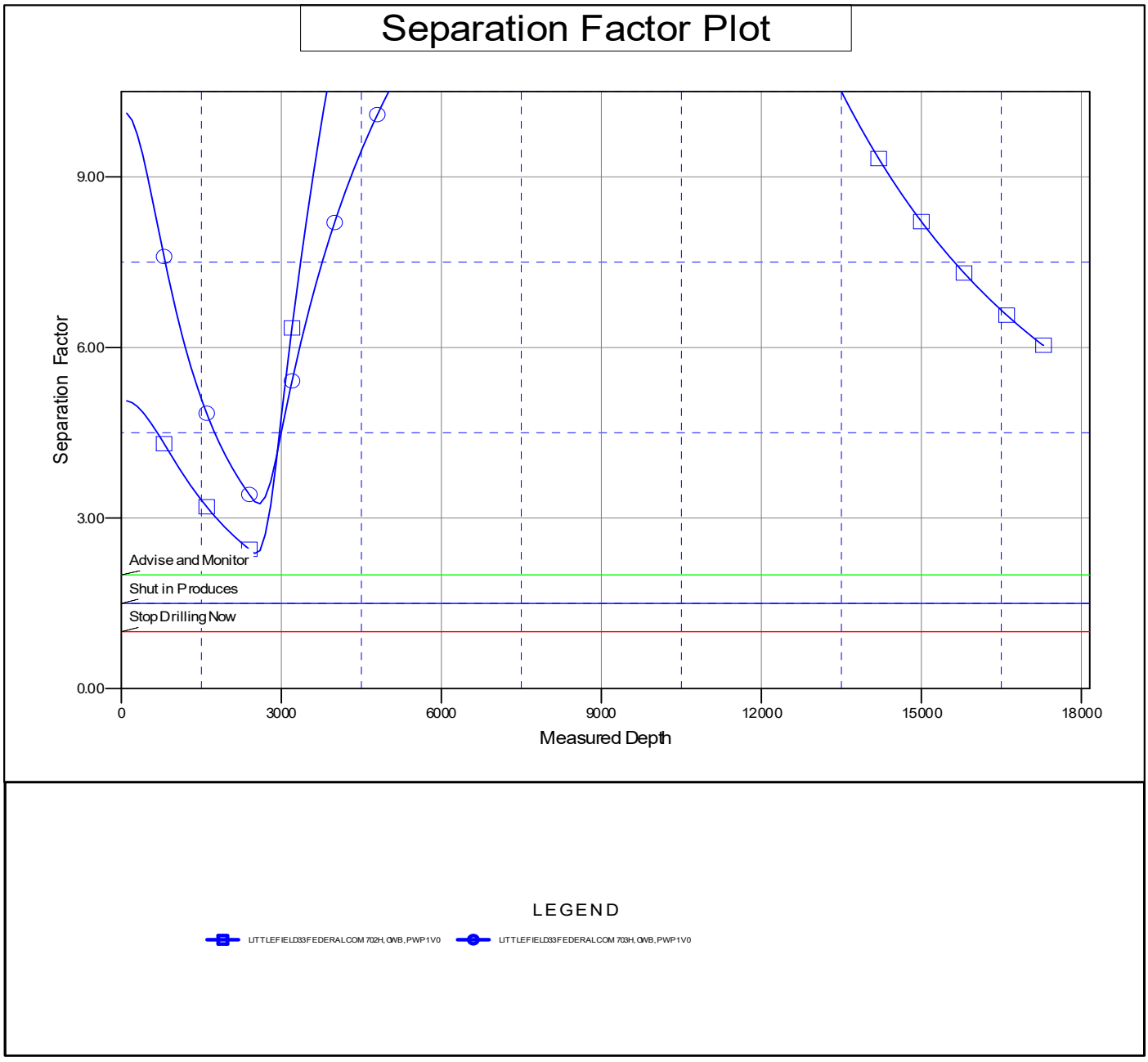

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating, LLC**
LEASE NO.:	**NMLC-065928A**
WELL NAME & NO.:	**Littlefield 33 Federal Com 701H**
SURFACE HOLE FOOTAGE:	**0420' FSL & 1893' FEL**
BOTTOM HOLE FOOTAGE	**0200' FNL & 0490' FEL Sec. 28, T.26 S., R.29 E**
LOCATION:	**Section 33, T.26 S., R.29 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

COA

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

Medium Cave/Karst
Possible water flows in the Salado and Castile.
Possible lost circulation in the Rustler and Saldao.
Abnormal pressures may be encountered within the 3rd Bone Spring Sandstone and Wolfcamp Formations.

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

Approval Date: 11/02/2020

B. CASING

1. The **10-3/4** inch surface casing shall be set at approximately **400** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **7-5/8** inch intermediate casing is:

    - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

    ❖ In Medium Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5** inch production casing is:

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

C. PRESSURE CONTROL

1. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **5000 (5M)** psi.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

4. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

5. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

6. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

Approval Date: 11/02/2020

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 10302020

COG OPERATING LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H_2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with remotely operated choke.
   Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
   Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG OPERATING LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

W A R N I N G

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 460' X 400' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location.

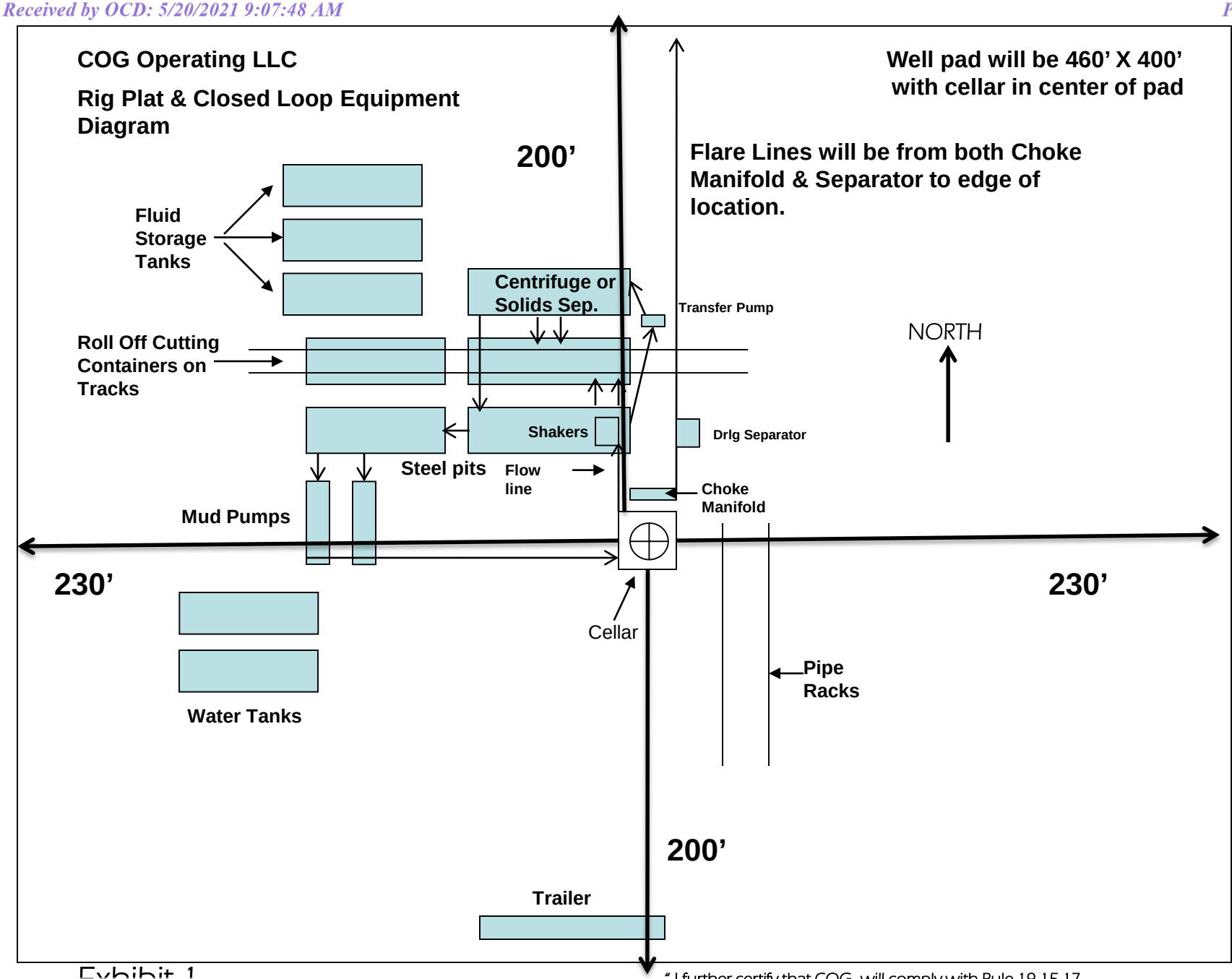

Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

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

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

05/18/2021

APD ID: 10400054237 **Submission Date:** 03/02/2020

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
660642	QUATERNARY	2874	0	0	ALLUVIUM	NONE	N
660643	RUSTLER	2581	293	293	ALLUVIUM	NONE	N
660644	TOP SALT	2130	744	744	SALT	NONE	N
660645	BASE OF SALT	288	2586	2586	ANHYDRITE	NONE	N
660646	LAMAR	122	2752	2752	LIMESTONE	OTHER : Salt Water	N
660648	BELL CANYON	74	2800	2800	SANDSTONE	OTHER : Salt Water	N
669067	CHERRY CANYON	-795	3669	3669	SILTSTONE	NATURAL GAS, OIL	N
669068	BRUSHY CANYON	-2073	4947	4947	SANDSTONE	NATURAL GAS, OIL	N
660649	BONE SPRING LIME	-3657	6531	6531	LIMESTONE	NATURAL GAS, OIL	N
660650	BONE SPRING 1ST	-4648	7522	7522	SANDSTONE	NATURAL GAS, OIL	N
660647	BONE SPRING 2ND	-5357	8231	8231	SANDSTONE	NATURAL GAS, OIL	N
660651	BONE SPRING 3RD	-6472	9346	9346	SANDSTONE	NATURAL GAS, OIL	N
660652	WOLFCAMP	-6921	9795	9795	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

CONFIDENTIAL

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Pressure Rating (PSI): 3M **Rating Depth:** 9500

Equipment: Annular, Blind Ram and Pipe Ram. Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.
Choke Diagram Attachment:

COG_Littlefield_701H_3M_Choke_20200220143820.pdf

BOP Diagram Attachment:

COG_Littlefield_701H_3M_BOP_20200220143827.pdf

COG_Littlefield_701H_Flex_Hose_20200220143839.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 10107

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.
Choke Diagram Attachment:

COG_Littlefield_701H_5M_Choke_20200220143929.pdf

BOP Diagram Attachment:

COG_Littlefield_701H_5M_BOP_20200220143936.pdf

COG_Littlefield_701H_Flex_Hose_20200220144006.pdf

CONFIDENTIAL

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.5	10.75	NEW	API	N	0	700	0	700	2874	2174	700	N-80	45.5	OTHER - BTC	7.71	1.99	DRY	32.65	DRY	34.44
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	9500	0	7100	-6999	-4226	9500	HCP-110	29.7	OTHER - TL-FJ	1.59	1.36	DRY	3.33	DRY	2.33
3	PRODUCTION	6.75	5.0	NEW	API	Y	0	17291	0	10107	-6999	-7233	17291	H-40	18	OTHER - BTC	2.21	2.27	DRY	4.01	DRY	3.98

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200220144252.pdf

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Littlefield_701H_Casing_Program_20200227091221.pdf

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200221082855.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Littlefield_701H_Casing_Program_20200221082957.pdf

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200221083031.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	700	334	1.75	13.5	584	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		0	700	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	9500	690	3.3	10.3	2277	50	Haliburton Tunded Light	As needed
INTERMEDIATE	Tail		0	9500	250	1.35	14.8	337	50	Tail: Class H	As needed
PRODUCTION	Lead		6600	17291	432	2	12.7	864	35	50:50:10 H Blend	As needed

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail		6600	17291	1012	1.24	14.4	1254	35	50:50:2 Class H Blend	As needed

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
700	9500	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
0	700	OTHER : FW Gel	8.6	8.8							FW Gel
9500	17291	OIL-BASED MUD	9.6	12.5							OBM

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6570 **Anticipated Surface Pressure:** 4346

Anticipated Bottom Hole Temperature(F): 160

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Littlefield_701H_H2S_SUP_20200221093831.pdf
COG_Littlefield_701H_H2S_Schematic_20200221093838.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_LITTLEFIELD_701H_Directional_Plan_20200221093911.pdf
COG_LITTLEFIELD_701H_AC_RPT_20200221093941.pdf

Other proposed operations facets description:

Drilling Plan Attached.
GCP Attached.
Cement plan attached.

Other proposed operations facets attachment:

COG_LITTLEFIELD_701H_Drilling_Program_20200221093952.pdf
COG_Littlefield_701H_GCP_20200221094002.pdf
COG_Littlefield_701H_Cement_Program_20200221094007.pdf

Other Variance attachment:

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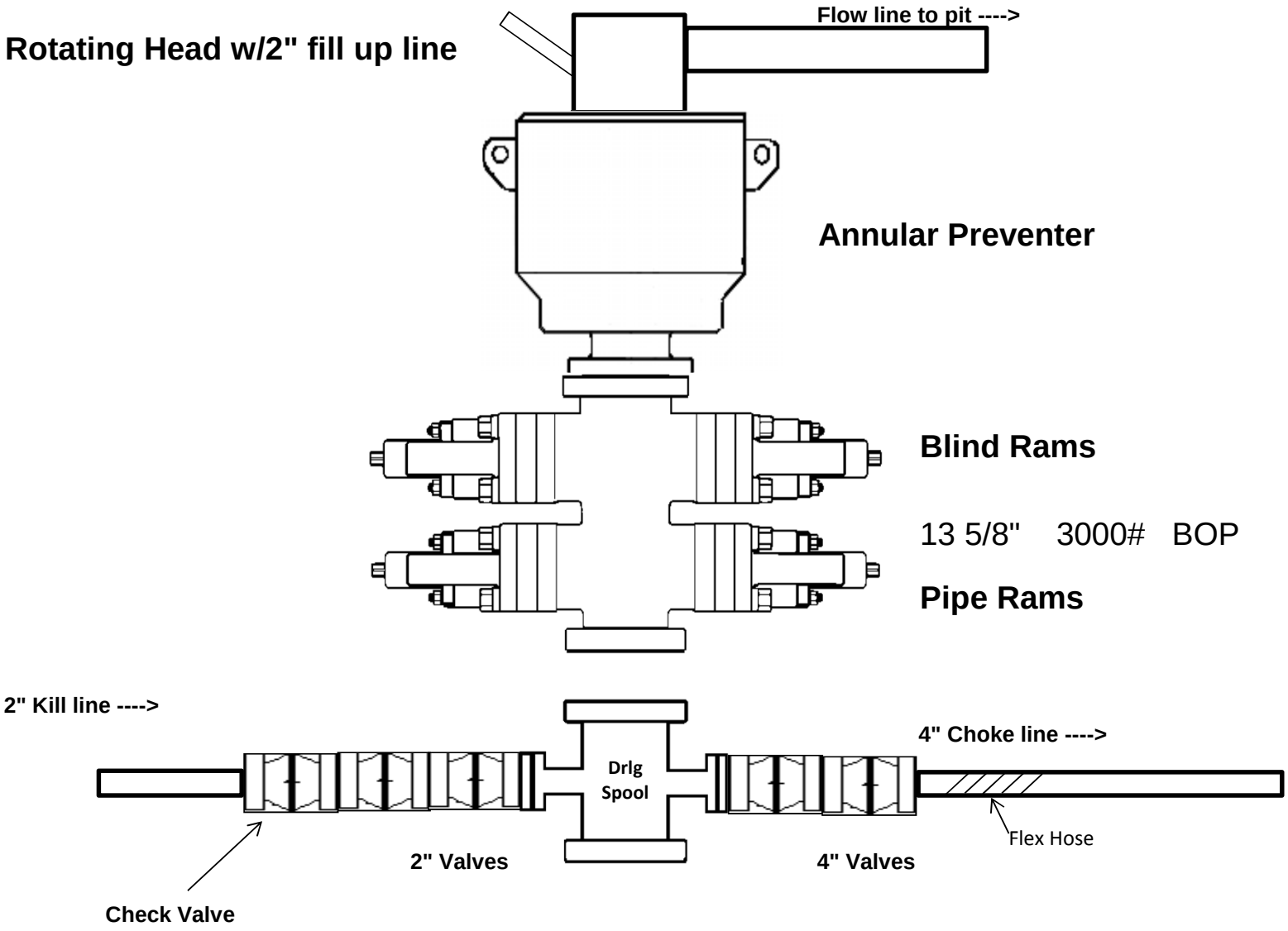
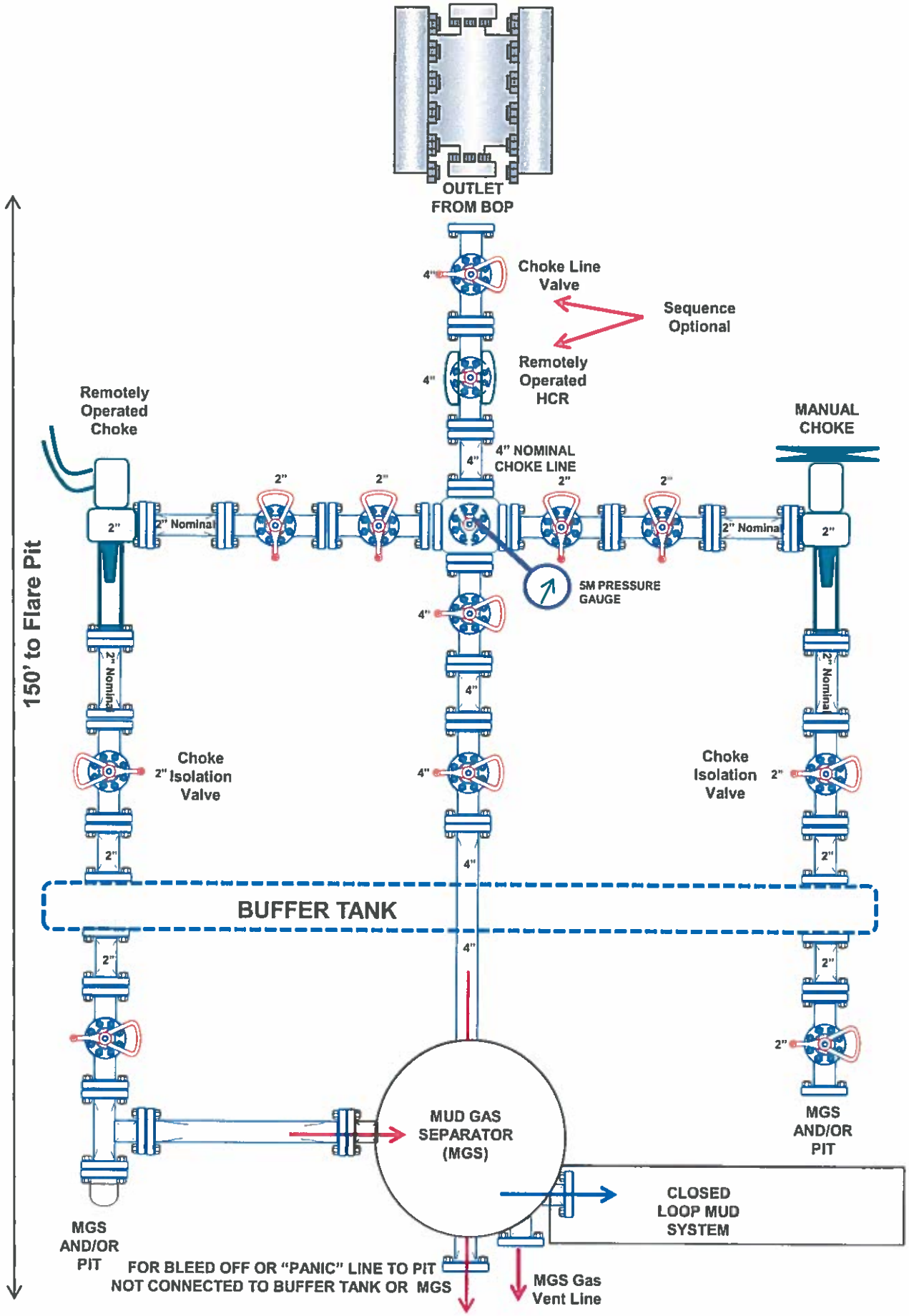
Released to Imaging: 5/21/2021 9:04:26 AM
Received by OCD: 5/20/2021 9:07:48 AM

3,000 psi BOP Schematic



Page 49 of 75

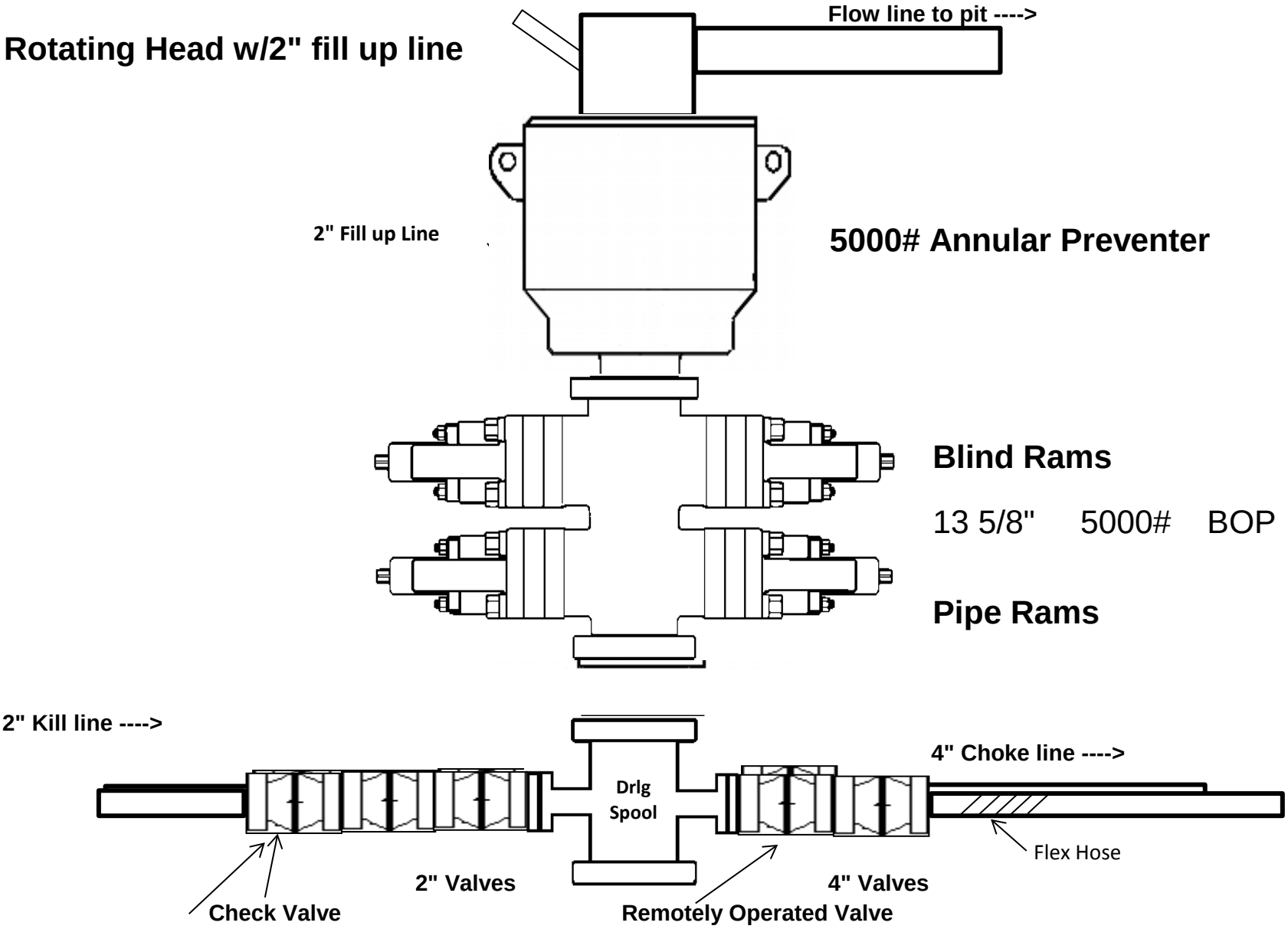
3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



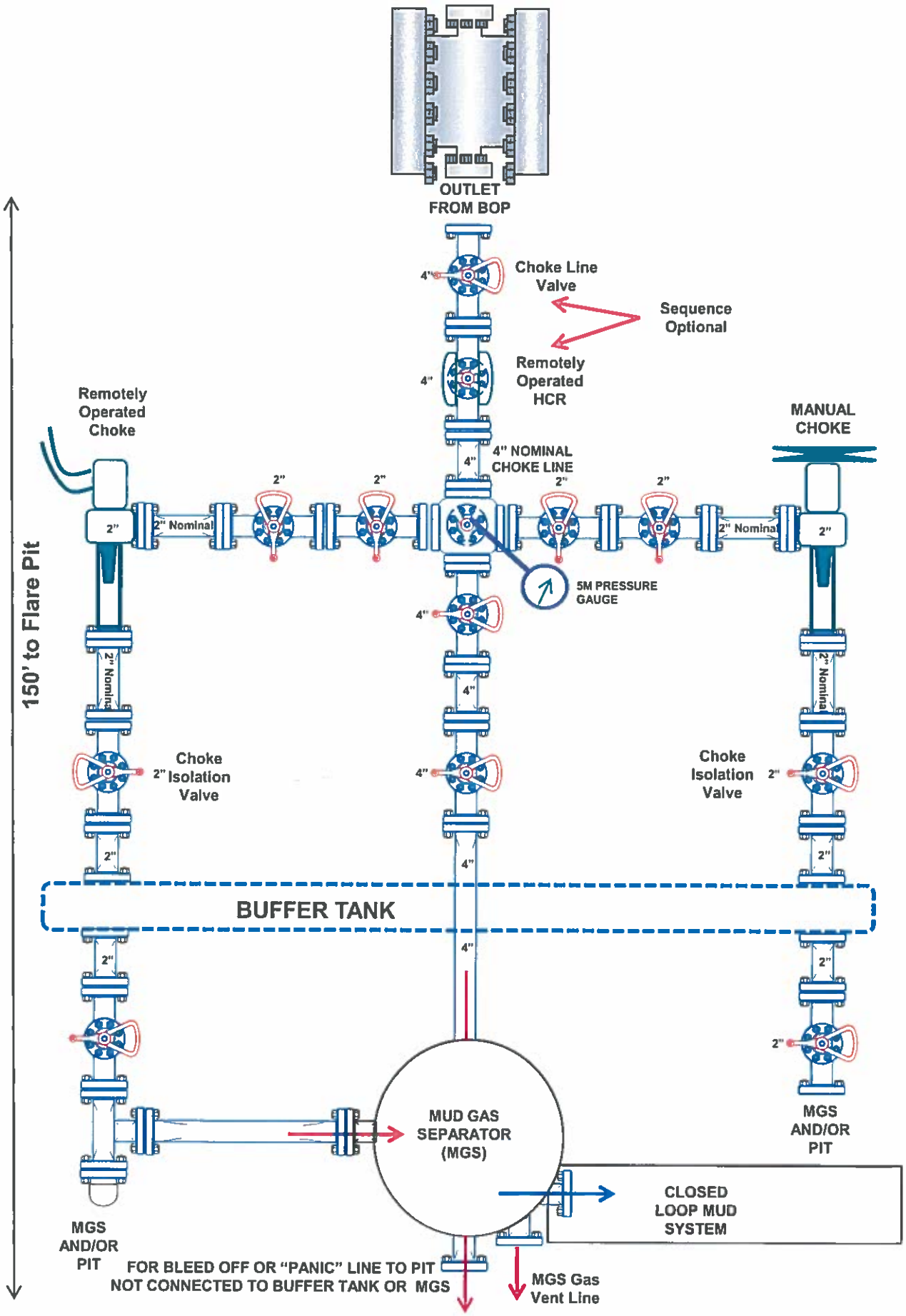
Received by OCD: 5/20/2021 9:07:48 AM

Released to Imaging: 5/21/2021 9:04:26 AM

5,000 psi BOP Schematic



5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



Received by OCD: 5/20/2021 9:07:48 AM

Released to Imaging: 5/21/2021 9:04:26 AM

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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

APD Print Report
05/18/2021

APD ID: 10400054237
Submission Date: 03/02/2020
Operator Name: COG OPERATING LLC
Federal/Indian APD: FED
Well Name: LITTLEFIELD 33 FEDERAL COM
Well Number: 701H
Well Type: OIL WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Application

Section 1 - General

APD ID: 10400054237
Tie to previous NOS?
Submission Date: 03/02/2020
BLM Office: CARLSBAD
User: MAYTE REYES
Title: Regulatory Analyst
Federal/Indian APD: FED
Is the first lease penetrated for production Federal or Indian? FED
Lease number: NMLC065928A
Lease Acres:
Surface access agreement in place?
Allotted?
Reservation:
Agreement in place? NO
Federal or Indian agreement:
Agreement number:
Agreement name:
Keep application confidential? YES
Permitting Agent? NO
APD Operator: COG OPERATING LLC
Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC
Operator Address: 600 West Illinois Ave
Zip: 79701
Operator PO Box:
Operator City: Midland
State: TX
Operator Phone: (432)683-7443
Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO
Master Development Plan name:
Well in Master SUPO? NO
Master SUPO name:

CONFIDENTIAL

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** WC015G04S23268M **Pool Name:** WOLFCAMP

Is the proposed well in an area containing other mineral resources? USEABLE WATER,OIL

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** N **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** LITTLEFIELD 33 FEDERAL COM **Number:** 701H, 702H and 703H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: EXPLORATORY (WILDCAT)

Describe sub-type:

Distance to town: 15 Miles **Distance to nearest well:** 641 FT **Distance to lease line:** 210 FT

Reservoir well spacing assigned acres Measurement: 927.09 Acres

Well plat: COG_Littlefield_701H_C102_20200302085234.pdf

Well work start Date: 07/01/2020 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: **Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
SHL Leg #1	420	FSL	1893	FEL	26S	29E	33	Lot 11	32.001266	-103.987223	EDDY	NEW MEXICO	NEW MEXICO	F	NMLC0065928A	2874	0	0	Y
KOP Leg #1	420	FSL	1893	FEL	26S	29E	33	Lot 11	32.001266	-103.987223	EDDY	NEW MEXICO	NEW MEXICO	F	NMLC0065928A	2874	0	0	Y

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this lease?
PPP Leg #1-1	330	FSL	490	FEL	26S	29E	33	Lot 12	32.001016	-103.982698	EDDY	NEW MEXICO	NEW MEXICO	F	NMLC0065928A	-7177	10650	10051	Y
PPP Leg #1-2	1	FSL	490	FEL	26S	29E	28	Aliquot SESE	32.006505	-103.982536	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 71599	-7194	12610	10068	Y
EXIT Leg #1	330	FNL	490	FEL	26S	29E	28	Aliquot NENE	32.020118	-103.982135	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 138607	-7233	17161	10107	Y
BHL Leg #1	200	FNL	490	FEL	26S	29E	28	Aliquot NENE	32.020475	-103.982125	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 138607	-7233	17291	10107	Y

Drilling Plan

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
660642	QUATERNARY	2874	0	0	ALLUVIUM	NONE	N
660643	RUSTLER	2581	293	293	ALLUVIUM	NONE	N
660644	TOP SALT	2130	744	744	SALT	NONE	N
660645	BASE OF SALT	288	2586	2586	ANHYDRITE	NONE	N
660646	LAMAR	122	2752	2752	LIMESTONE	OTHER : Salt Water	N
660648	BELL CANYON	74	2800	2800	SANDSTONE	OTHER : Salt Water	N
669067	CHERRY CANYON	-795	3669	3669	SILTSTONE	NATURAL GAS, OIL	N
669068	BRUSHY CANYON	-2073	4947	4947	SANDSTONE	NATURAL GAS, OIL	N
660649	BONE SPRING LIME	-3657	6531	6531	LIMESTONE	NATURAL GAS, OIL	N
660650	BONE SPRING 1ST	-4648	7522	7522	SANDSTONE	NATURAL GAS, OIL	N

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
660647	BONE SPRING 2ND	-5357	8231	8231	SANDSTONE	NATURAL GAS, OIL	N
660651	BONE SPRING 3RD	-6472	9346	9346	SANDSTONE	NATURAL GAS, OIL	N
660652	WOLFCAMP	-6921	9795	9795	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 9500

Equipment: Annular, Blind Ram and Pipe Ram. Accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold.
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.
Choke Diagram Attachment:

COG_Littlefield_701H_3M_Choke_20200220143820.pdf

BOP Diagram Attachment:

COG_Littlefield_701H_3M_BOP_20200220143827.pdf

COG_Littlefield_701H_Flex_Hose_20200220143839.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 10107

Equipment: Annular, Blind Ram, Pipe Ram. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold
Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.
Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets.
Choke Diagram Attachment:

COG_Littlefield_701H_5M_Choke_20200220143929.pdf

BOP Diagram Attachment:

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

COG_Littlefield_701H_5M_Choke_20200220143929.pdf

COG_Littlefield_701H_5M_BOP_20200220143936.pdf

COG_Littlefield_701H_Flex_Hose_20200220144006.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.5	10.75	NEW	API	N	0	700	0	700	2874	2174	700	N-80	45.5	OTHER - BTC	7.71	1.99	DRY	32.65	DRY	344
2	INTERMEDIATE	8.75	7.625	NEW	API	Y	0	9500	0	7100	-6999	-4226	9500	HCP-110	29.7	OTHER - TL-FJ	1.59	1.36	DRY	3.33	DRY	2.
3	PRODUCTION	6.75	5.0	NEW	API	Y	0	17291	0	10107	-6999	-7233	17291	H-40	18	OTHER - BTC	2.21	2.27	DRY	4.01	DRY	3.

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200220144252.pdf

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Casing Attachments

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Littlefield_701H_Casing_Program_20200227091221.pdf

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200221082855.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

COG_Littlefield_701H_Casing_Program_20200221082957.pdf

Casing Design Assumptions and Worksheet(s):

COG_Littlefield_701H_Casing_Program_20200221083031.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	700	334	1.75	13.5	584	50	Class C	4% Gel + 1% CaCl2
SURFACE	Tail		0	700	250	1.34	14.8	335	50	Class C	2% CaCl2
INTERMEDIATE	Lead		0	9500	690	3.3	10.3	2277	50	Haliburton Tunded Light	As needed
INTERMEDIATE	Tail		0	9500	250	1.35	14.8	337	50	Tail: Class H	As needed

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		6600	17291	432	2	12.7	864	35	50:50:10 H Blend	As needed
PRODUCTION	Tail		6600	17291	1012	1.24	14.4	1254	35	50:50:2 Class H Blend	As needed

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
700	9500	OTHER : Brine Diesel Emulsion	8.4	9							Brine Diesel Emulsion
0	700	OTHER : FW Gel	8.6	8.8							FW Gel
9500	17291	OIL-BASED MUD	9.6	12.5							OBM

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

None planned

List of open and cased hole logs run in the well:

COMPENSATED NEUTRON LOG,GAMMA RAY LOG,

Coring operation description for the well:

None planned

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6570 **Anticipated Surface Pressure:** 4346

Anticipated Bottom Hole Temperature(F): 160

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

COG_Littlefield_701H_H2S_SUP_20200221093831.pdf

COG_Littlefield_701H_H2S_Schematic_20200221093838.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

COG_LITTLEFIELD_701H_Directional_Plan_20200221093911.pdf

COG_LITTLEFIELD_701H_AC_RPT_20200221093941.pdf

Other proposed operations facets description:

Drilling Plan Attached.
GCP Attached.
Cement plan attached.

Other proposed operations facets attachment:

COG_LITTLEFIELD_701H_Drilling_Program_20200221093952.pdf

COG_Littlefield_701H_GCP_20200221094002.pdf

COG_Littlefield_701H_Cement_Program_20200221094007.pdf

Other Variance attachment:

SUPO

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

COG_Littlefield_701H_Existing_Rd_20200221094055.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

COG_Littlefield_701H_Road_Maps_Plats_20200221094745.pdf

New road type: TWO-TRACK

Length: 257.6 Feet **Width (ft.):** 30

Max slope (%): 33 **Max grade (%):** 1

Army Corp of Engineers (ACOE) permit required? N

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

New road access plan or profile prepared? N

New road access plan attachment:

Access road engineering design? N

Access road engineering design attachment:

Turnout? N

Access surfacing type: OTHER

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Access topsoil source: ONSITE

Access surfacing type description: Caliche

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: Blading

Access other construction information: No turnouts are planned. Re-routing access road around proposed well location.

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: OTHER

Drainage Control comments: None necessary.

Road Drainage Control Structures (DCS) description: None needed.

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

COG_Littlefield_701H_1_Mile_Data_20200221094808.pdf

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: The Littlefield Fed 33 N Central Tank Battery (CTB) existing in Sec. 33, T26S, R29E will be utilized. Production from each of the 3 Wolfcamp producing wells will be sent to the existing Littlefield Fed 33 N CTB. We plan to install 3 buried 4 FP 601HT production flowlines from each wellhead to the inlet manifold of the existing CTB; the route for these flowlines will follow the flowline corridor route as shown in the exhibit drawing and in the attached plats. We will also install 1 buried 4 FP 150 line for gas lift supply from the CTB to the well pad; the route for this gas lift line will start on the CTB pad where designated by gas line in the exhibit drawing and then following the flowline corridor in the attached plats.
Production Facilities map:

COG_Littlefield_701H_CTB_Flowlines_Powerlines_20200224085640.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Water source type: OTHER

Describe type: Fresh H2O

Water source use type: STIMULATION
SURFACE CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: PIPELINE

Source land ownership: PRIVATE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 337500 **Source volume (acre-feet):** 43.50142

Source volume (gal): 14175000

Water source type: OTHER

Describe type: Brine H2O

Water source use type: INTERMEDIATE/PRODUCTION CASING

Source latitude: **Source longitude:**

Source datum:

Water source permit type: PRIVATE CONTRACT

Water source transport method: TRUCKING

Source land ownership: COMMERCIAL

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 22500 **Source volume (acre-feet):** 2.9000947

Source volume (gal): 945000

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Water source and transportation map:

COG_Littlefield_701H_Brine_H2O_20200221095146.pdf

COG_Littlefield_701H_FreshH2O_20200221095156.pdf

Water source comments: Fresh water will be obtained from High Roller Wells, LLC CP-417610 water well located in Section 1. 58 T1. Brine water will be obtained from the Malaga I Brine station in Section 2. T21S. R25E., and will be provided by Malaga Brine Station.

New water well? N

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Using any construction materials: YES

Construction Materials description: Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be obtained from a Federal caliche pit located in Section 24, T26S, R29E.

Construction Materials source location attachment:

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 7 - Methods for Handling Waste

Waste type: GARBAGE

Waste content description: Garbage and trash produced during drilling and completion operations

Amount of waste: 125 pounds

Waste disposal frequency : Weekly

Safe containment description: Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: SEWAGE

Waste content description: Human waste and gray water

Amount of waste: 250 gallons

Waste disposal frequency : Weekly

Safe containment description: Waste will be properly contained and disposed of properly at a state approved disposal facility
Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Waste type: DRILLING

Waste content description: Drilling fluids and produced oil and water during drilling and completion operations

Amount of waste: 6000 barrels

Waste disposal frequency : One Time Only

Safe containment description: All drilling waste will be stored safely and disposed of properly

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
Disposal type description:

Disposal location description: Trucked to an approved disposal facility

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit? NO

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? Y

Description of cuttings location Roll off cuttings containers on tracks

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: N

Ancillary Facilities attachment:

Comments: GCP attached.

Section 9 - Well Site Layout

Well Site Layout Diagram:

COG_Littlefield_701H_Layout_20200221100725.pdf

Comments:

Released to Imaging: 5/21/2021 9:04:26 AM

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: LITTLEFIELD 33 FEDERAL COM

Multiple Well Pad Number: 701H, 702H and 703H

Recontouring attachment:

COG_Littlefield_701H_Reclamation_20200221100738.pdf

Drainage/Erosion control construction: Immediately following construction straw waddles will be placed as necessary at the well site to reduce sediment impacts to fragile/sensitive soils.

Drainage/Erosion control reclamation: Reclaim north 50'. East 50'

Well pad proposed disturbance (acres): 3.67

Road proposed disturbance (acres): 0.08

Powerline proposed disturbance (acres): 1.04

Pipeline proposed disturbance (acres): 0.32

Other proposed disturbance (acres): 5.74

Total proposed disturbance: 10.850000000000001

Well pad interim reclamation (acres): 0.01

Road interim reclamation (acres): 0.08

Powerline interim reclamation (acres): 1.04

Pipeline interim reclamation (acres): 0.32

Other interim reclamation (acres): 5.74

Total interim reclamation: 7.19

Well pad long term disturbance (acres): 2.94

Road long term disturbance (acres): 0.08

Powerline long term disturbance (acres): 1.04

Pipeline long term disturbance (acres): 0.32

Other long term disturbance (acres): 5.74

Total long term disturbance: 10.120000000000001

Disturbance Comments:

Reconstruction method: New construction of pad.

Topsoil redistribution: Reclaim north 50'. East 50'

Soil treatment: None

Existing Vegetation at the well pad: Shinnery Oak/Mesquite grassland

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Shinnery Oak/Mesquite grassland

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: N/A

Existing Vegetation Community at other disturbances attachment:

Non native seed used? N

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? N

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? N

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: **Last Name:**

Phone: **Email:**

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? N

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: N/A

Weed treatment plan attachment:

Monitoring plan description: N/A

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Pit closure attachment:

COG_Littlefield_701H_Closed_Loop_20200221101303.pdf

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Section 12 - Other Information

Right of Way needed? N **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Use a previously conducted onsite? Y

Previous Onsite information: On-site was done by Gerald Herrera (COG); Jeffery Robertson (BLM); on November 20th, 2018.

Other SUPO Attachment

COG_Littlefield_701H_SUP_20200224085746.pdf
COG_Littlefield_701H_C102_20200224085754.pdf
COG_Littlefield_701H_CTB_Flowlines_Powerlines_20200224085804.pdf
COG_Littlefield_701H_Road_Maps_Plats_20200224085828.pdf
COG_Littlefield_701H_Layout_20200224085841.pdf
COG_Littlefield_701H_Reclamation_20200224085848.pdf
COG_Littlefield_701H_1_Mile_Data_20200224085857.pdf

PWD

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? N

Produced Water Disposal (PWD) Location:

PWD disturbance (acres): **PWD surface owner:**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? N

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? N

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

Bond Info

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

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Operator Name: COG OPERATING LLC

Well Name: LITTLEFIELD 33 FEDERAL COM **Well Number:** 701H

Operator Certification

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 26NM5RH9

CONFIDENTIAL

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

COMMENTS

Action 28935

COMMENTS

Operator:			OGRID:	Action Number:	Action Type:
COG OPERATING LLC	600 W Illinois Ave	Midland, TX79701	229137	28935	FORM 3160-3

Created By	Comment	Comment Date
kpickford	KP GEO Review 5/20/2021	05/20/2021

District I
1625 N. French Dr., Hobbs, NM 88240
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 28935

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
COG OPERATING LLC 600 W Illinois Ave Midland, TX79701	229137	28935	FORM 3160-3

OCD Reviewer	Condition
kpickford	Will require administrative order for non-standard spacing unit
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	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