

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**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM126965
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator COG OPERATING LLC		8. Lease Name and Well No. BOO RADLEY COM 704H
3a. Address 600 West Illinois Ave, Midland, TX 79701	3b. Phone No. (include area code) (432) 683-7443	9. API Well No. 30 015 47785
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESW / 220 FSL / 1460 FWL / LAT 32.035836 / LONG -104.096302 At proposed prod. zone LOT 2 / 200 FSL / 2325 FWL / LAT 32.000517 / LONG -104.093531		10. Field and Pool, or Exploratory /PURPLE SAGE WOLFCAMP GAS
11. Sec., T. R. M. or Blk. and Survey or Area SEC 16/T26S/R28E/NMP		12. County or Parish EDDY
14. Distance in miles and direction from nearest town or post office* 13 miles		13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 10 feet	16. No of acres in lease	17. Spacing Unit dedicated to this well 1538.0
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 895 feet	19. Proposed Depth 9421 feet / 22050 feet	20. BLM/BIA Bond No. in file FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3036 feet	22. Approximate date work will start* 01/01/2021	23. Estimated duration 30 days
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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 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). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature (Electronic Submission)	Name (Printed/Typed) STAN WAGNER / Ph: (432) 683-7443	Date 08/17/2020
Title Regulatory Advisor		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575) 234-5959	Date 12/04/2020
Title Assistant Field Manager Lands & Minerals Office Carlsbad Field 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.

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.

- Will require a directional survey with the C-104
- NSL Will require an administrative order for non-standard location prior to placing the well on production.

(Continued on page 2)

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

KP 12/10/2020 GEO Review

\*(Instructions on page 2)



Approval Date: 12/04/2020

Entered - KMS NMOCD

DISTRICT I  
1625 N. FRENCH DR., HOBBS, NM 88240  
Phone: (505) 393-6181 Fax: (505) 393-0720

DISTRICT II  
811 S. FIRST ST., ARTESIA, NM 88210  
Phone: (505) 334-1283 Fax: (505) 746-9720

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) 478-3480 Fax: (505) 478-3482

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 30-015- <b>47785</b>	Pool Code 98220	Pool Name Purple Sage; Wolfcamp (Gas)
Property Code <b>328970</b>	Property Name <b>BOO RADLEY COM</b>	Well Number 704H
OGRID No. 229137	Operator Name <b>COG OPERATING, LLC</b>	Elevation 3036.2'

**Surface Location**

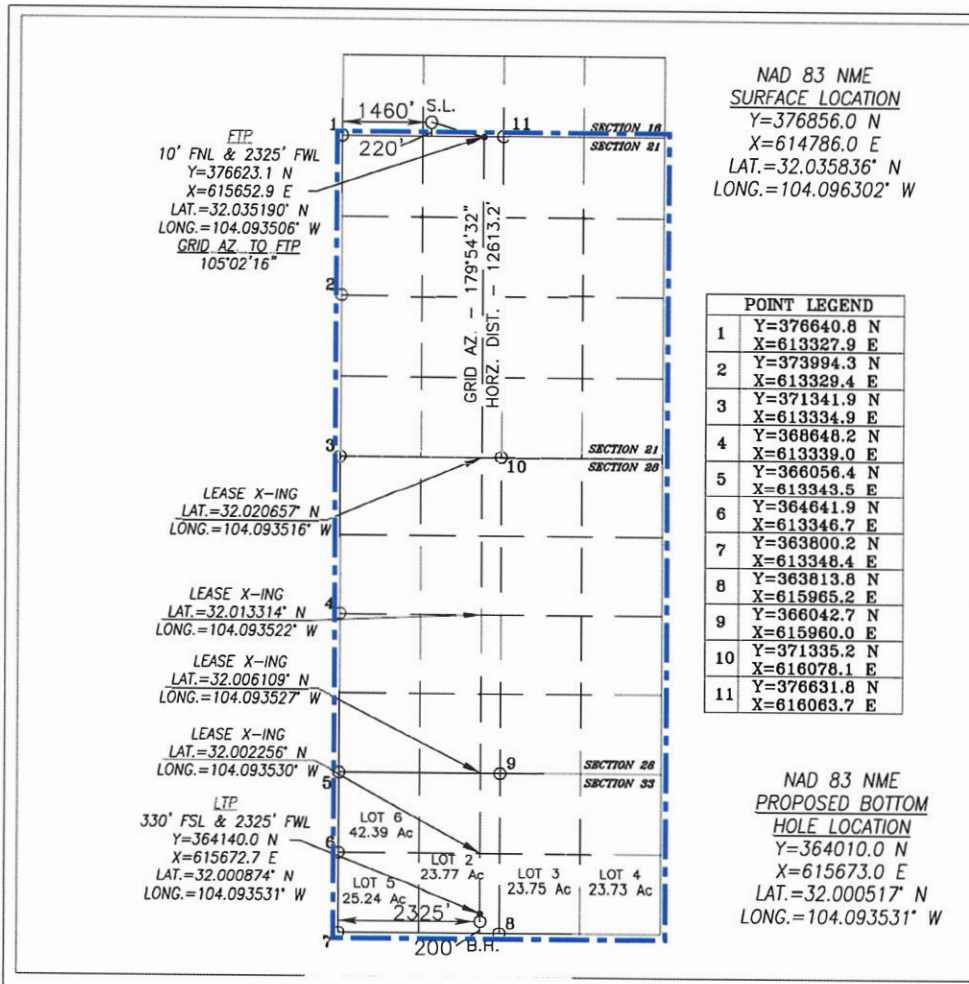
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	16	26-S	28-E		220	SOUTH	1460	WEST	EDDY

**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
2	33	26-S	28-E		200	SOUTH	2325	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
1538.88			

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.

*Stan Wagner* 10/14/20  
Signature Date

Stan Wagner  
Printed Name

E-mail Address

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**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.

JULY 17, 2020  
Date of Survey

Signature & Seal of Professional Surveyor

*Chad Harcrow* 7/28/20  
Certificate No. CHAD HARCROW 17777  
W.O. # 20-962 DRAWN BY: AH

Intent  As Drilled

API # 30-015		
Operator Name: COG Operating LLC	Property Name: Boo Radley Com	Well Number 704H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
N	16	26S	28E						Eddy
Latitude					Longitude				NAD 83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
C	21	26S	28E		10	North	2325	West	Eddy
Latitude 32.035190					Longitude -104.093506				NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	33	26S	28E	2	330	South	2325	West	Eddy
Latitude 32.000874					Longitude -104.093531				NAD 83

Is this well the defining well for the Horizontal Spacing Unit?  YES

Is this well an infill well?  NO

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

API # 30-015-		
Operator Name: COG Operating LLC	Property Name: Boo Radley Com	Well Number 704H

KZ 06/29/2018

## Additional Operator Remarks

### Location of Well

0. SHL: SESW / 220 FSL / 1460 FWL / TWSP: 26S / RANGE: 28E / SECTION: 16 / LAT: 32.035836 / LONG: -104.096302 ( TVD: 0 feet, MD: 0 feet )

PPP: NENW / 1 FNL / 2325 FWL / TWSP: 26S / RANGE: 28E / SECTION: 28 / LAT: 32.020657 / LONG: -104.093516 ( TVD: 9454 feet, MD: 14787 feet )

PPP: NENW / 10 FNL / 2325 FWL / TWSP: 26S / RANGE: 28E / SECTION: 21 / LAT: 32.03519 / LONG: -104.093506 ( TVD: 9393 feet, MD: 9516 feet )

BHL: LOT 2 / 200 FSL / 2325 FWL / TWSP: 26S / RANGE: 28E / SECTION: 33 / LAT: 32.000517 / LONG: -104.093531 ( TVD: 9421 feet, MD: 22050 feet )

### BLM Point of Contact

Name: Deborah Ham

Title: Legal Landlaw Examiner

Phone: (575) 234-5965

Email: dham@blm.gov

CONFIDENTIAL

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>COG Operating, LLC</b>
<b>LEASE NO.:</b>	<b>NMNM-126965</b>
<b>WELL NAME &amp; NO.:</b>	<b>Boo Radley Com 704H</b>
<b>SURFACE HOLE FOOTAGE:</b>	<b>0220' FSL &amp; 1460' FWL</b>
<b>BOTTOM HOLE FOOTAGE:</b>	<b>0200' FSL &amp; 2325' FWL Sec. 33, T.26 S., R.28 E.</b>
<b>LOCATION:</b>	<b>Section 16, T.26 S., R.28 E., NMPM</b>
<b>COUNTY:</b>	<b>Eddy County, New Mexico</b>

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### High Cave/Karst

**Possible water flows in the Salado and Castile.**

**Possible lost circulation in the Rustler and Delaware.**

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.



## B. CASING

1. The **10-3/4** inch surface casing shall be set at approximately **350** 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 High 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 **5-1/2** 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. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. 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.
3. 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 2<sup>nd</sup> 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 integrity 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).

- 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 10232020**

# COG Operating, LLC - Boo Radley Com 704H

## 1. Geologic Formations

TVD of target	9,477' EOL	Pilot hole depth	NA
MD at TD:	22,050'	Deepest expected fresh water:	50'

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	NP	Water	
Top of Salt	721	Salt	
Base of Salt	2271	Salt	
Lamar	2456	Salt Water	
Bell Canyon	2506	Salt Water	
Cherry Canyon	3336	Oil/Gas	
Brushy Canyon	4606	Oil/Gas	
Bone Spring Lime	6201	Oil/Gas	
1st Bone Spring Sand	7086	Oil/Gas	
2nd Bone Spring Sand	7731	Oil/Gas	
3rd Bone Spring Sand	8851	Oil/Gas	
Wolfcamp	9201	Target Oil/Gas	
Wolfcamp B	9621	Not Penetrated	
Wolfcamp C	9936	Not Penetrated	

## 2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
14.75	0	610	10.75	45.5	J55	STC	7.66	15.09	17.76
9.875	0	8730	7.625	29.7	HCL80	BTC	2.03	1.50	2.78
6.75	0	22,050	5.5"	23	P110	Talon HTQ	2.46	2.92	3.24
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

Intermediate casing will be kept at least 1/3 full while running casing to mitigate collapse. Intermediate burst based on 0.7 frac gradient at the shoe with Gas Gradient 0.1 psi/ft to surface.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

**COG Operating, LLC - Boo Radley Com 704H**

	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.	N
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
<b>Is well located within Capitan Reef?</b>	
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary?	
<b>Is well located in SOPA but not in R-111-P?</b>	
If yes, are the first 2 strings cemented to surface and 3 <sup>rd</sup> string cement tied back 500' into previous casing?	N
<b>Is well located in R-111-P and SOPA?</b>	
If yes, are the first three strings cemented to surface?	N
Is 2 <sup>nd</sup> string set 100' to 600' below the base of salt?	
<b>Is well located in high Cave/Karst?</b>	
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
<b>Is well located in critical Cave/Karst?</b>	
If yes, are there three strings cemented to surface?	N

**COG Operating, LLC - Boo Radley Com 704H**

**3. Cementing Program**

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	410	13.5	1.75	9	12	Lead: Class C + 4% Gel
	100	14.8	1.34	6.34	8	Tail: Class C + 2% CaCl <sub>2</sub>
Inter.	800	10.3	3.6	21.48	16	Lead: Tuned Light Blend
	250	16.4	1.1	5	8	Tail: Class H
5.5 Prod	550	11.9	2.5	19	72	Lead: 50:50:10 H Blend
	1200	14.4	1.24	5.7	19	Tail: 50:50:2 Class H Blend

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'	100%
1 <sup>st</sup> Intermediate	0'	50%
Production	8,230'	35% OH in Lateral (KOP to EOL)

**COG Operating, LLC - Boo Radley Com 704H**

**4. Pressure Control Equipment**

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	x	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	2500 psi
			Blind Ram		3M
			Pipe Ram	x	
			Double Ram	x	
			Other*		
8 1/2"	13-5/8"	5M	5M Annular	x	2500 psi
			Blind Ram		5M
			Pipe Ram	x	
			Double Ram	x	
			Other*		

BOP and BOPE will be installed per Onshore Order #2 requirements prior to drilling below the surface casing and will be rated to the above pressure rating or greater, see attached diagrams. Required safety valves, with appropriate wrenches and subs for the drill string being utilized, will be in the open position and accessible on the rig floor.

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 valves (inside BOP and full-opening valve) with appropriate wrenches 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.



## COG Operating, LLC - Boo Radley Com 704H

### 5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. Shoe	FW Gel	8.4 - 8.6	28-29	N/C
Surf csg	Int shoe	Diesel Brine Emul	8.6 - 9.4	30-40	N/C
Int shoe	Lateral TD	OBM	10.5 - 12	30-40	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.
N	Are 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	

**COG Operating, LLC - Boo Radley Com 704H**

**7. Drilling Conditions**

Condition	Specify what type and where?
BH Pressure at deepest TVD	5915 psi at 9477' TVD
Abnormal Temperature	NO 155 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
	5M Annular Variance

# **DELAWARE BASIN WEST**

**ATLAS PROSPECT (NM-E)  
BOO RADLEY COM PROJECT  
BOO RADLEY COM #704H**

**OWB  
PWP1**

## **Anticollision Report**

**12 August, 2020**

# Concho Resources LLC

## Anticollision Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Reference Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site Error:</b>	3.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	BOO RADLEY COM #704H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	edm
<b>Reference Design:</b>	PWP1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PWP1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum ellipse separation of 1,000.0 usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	Date	8/12/2020		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	22,050.6	PWP1 (OWB)	MWD+IFR1+FDIR	OWSG MWD + IFR1 + FDIR Correction

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
<b>BOO RADLEY COM PROJECT</b>						
BOO RADLEY COM #703H - OWB - PWP1	10,651.0	10,627.0	1,066.5	1,015.0	20.715	CC
BOO RADLEY COM #703H - OWB - PWP1	22,050.6	22,025.0	1,067.2	841.5	4.729	ES, SF
BOO RADLEY COM #705H - OWB - PWP1	2,500.0	2,500.1	30.0	17.3	2.366	CC, ES, SF
BOO RADLEY COM #706H - OWB - PWP1	2,416.5	2,416.9	60.0	47.6	4.851	CC
BOO RADLEY COM #706H - OWB - PWP1	2,500.0	2,500.0	60.0	47.3	4.733	ES, SF
SKEEN 21 DM STATE 1H - OWB - AWP	2,633.3	2,687.3	975.9	955.8	48.432	CC, ES
SKEEN 21 DM STATE 1H - OWB - AWP	14,500.0	12,525.0	2,350.0	2,231.6	19.841	SF
<b>HONEY GRAHAM STATE PROJECT (ATLAS 2628)</b>						
GRAHAM CRACKER 16 STATE #2H - OWB - AWP	8,030.6	12,538.0	276.8	196.7	3.454	CC, ES, SF
GRAHAM NASH STATE COM #6H - OWB-PILOT HOLE	21,743.8	9,417.7	941.7	821.3	7.825	CC, ES
GRAHAM NASH STATE COM #6H - OWB-PILOT HOLE	21,800.0	9,418.6	943.3	822.4	7.799	SF
<b>MYOX 4 28 &amp; 16 ST COM PROJECT</b>						
*MYOX 4 16 ST COM #704H - OWB - PWP0	9,300.0	22,845.5	302.9	180.4	2.473	SF
*MYOX 4 16 ST COM #704H - OWB - PWP0	9,350.0	22,845.5	295.7	179.4	2.541	ES
*MYOX 4 16 ST COM #704H - OWB - PWP0	9,355.9	22,845.5	295.7	180.1	2.559	CC
*MYOX 4 16 ST COM #705H - OWB - PWP0	9,223.9	22,738.2	744.4	598.2	5.091	CC, ES, SF

<b>Offset Design</b>												<b>Offset Site Error:</b>	3.0 usft	
BOO RADLEY COM PROJECT - BOO RADLEY COM #703H - OWB - PWP1												<b>Offset Well Error:</b>	3.0 usft	
Survey Program: 0-Standard Keeper 104, 8903-MWD+IFR1+FDIR														
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.0	0.0	0.0	0.0	3.0	3.0	90.66	-28.2	2,455.1	2,455.6					
100.0	100.0	58.8	58.8	3.0	3.0	90.66	-28.2	2,455.1	2,455.3	2,449.3	6.00	409.029		
200.0	200.0	158.8	158.8	3.0	3.0	90.66	-28.2	2,455.1	2,455.3	2,449.2	6.04	406.534		
300.0	300.0	258.8	258.8	3.1	3.0	90.66	-28.2	2,455.1	2,455.3	2,449.1	6.12	401.247		
400.0	400.0	358.8	358.8	3.2	3.0	90.66	-28.2	2,455.1	2,455.3	2,449.0	6.24	393.570		
500.0	500.0	458.8	458.8	3.4	3.0	90.66	-28.2	2,455.1	2,455.3	2,448.9	6.39	384.016		
600.0	600.0	558.8	558.8	3.6	3.1	90.66	-28.2	2,455.1	2,455.3	2,448.7	6.58	373.119		
700.0	700.0	658.8	658.8	3.8	3.1	90.66	-28.2	2,455.1	2,455.3	2,448.5	6.79	361.368		
800.0	800.0	758.8	758.8	4.0	3.1	90.66	-28.2	2,455.1	2,455.3	2,448.2	7.03	349.175		
900.0	900.0	858.8	858.8	4.2	3.2	90.66	-28.2	2,455.1	2,455.3	2,448.0	7.29	336.862		
1,000.0	1,000.0	958.8	958.8	4.5	3.2	90.66	-28.2	2,455.1	2,455.3	2,447.7	7.56	324.665		

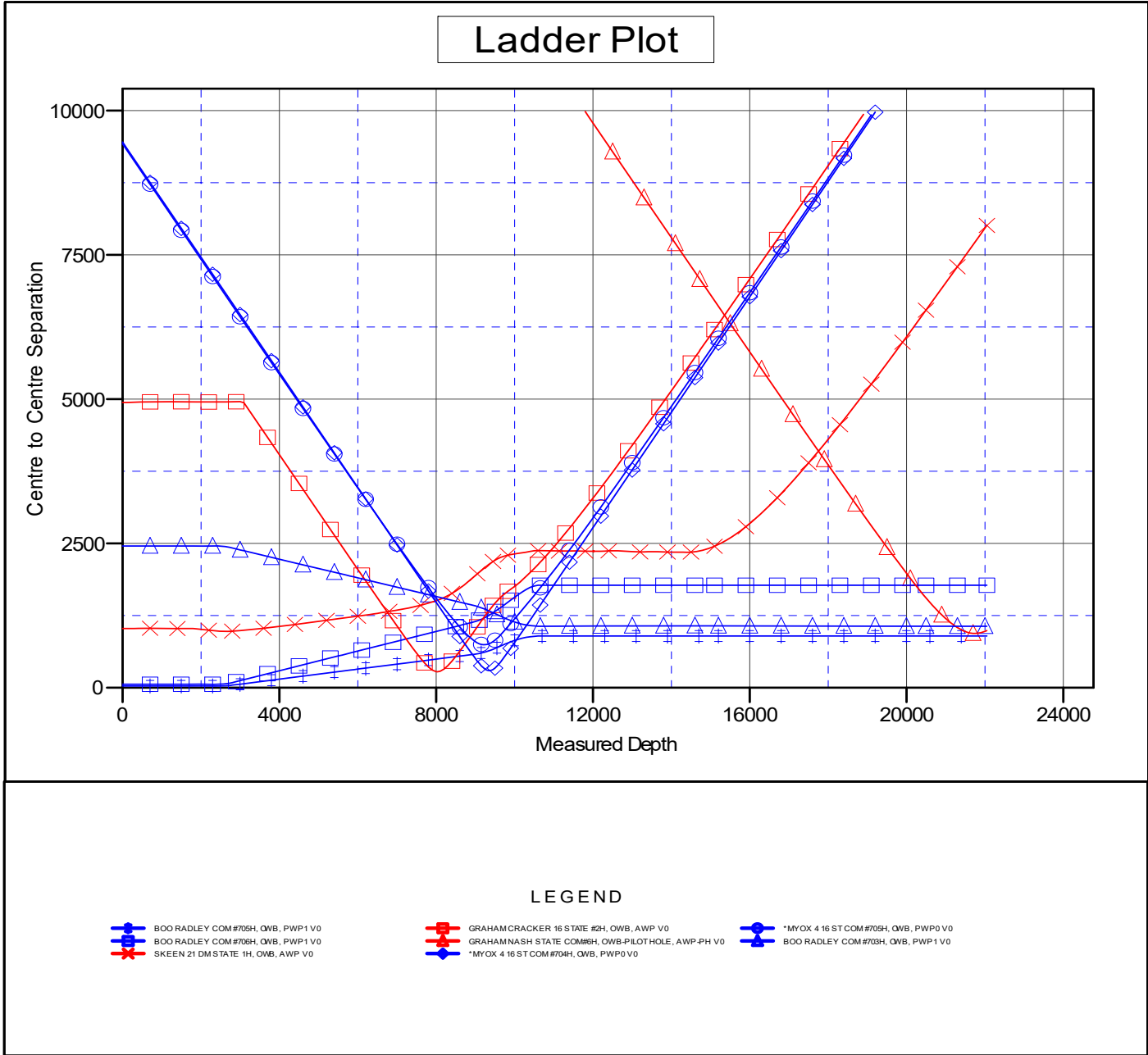
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Concho Resources LLC

## Anticollision Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Reference Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site Error:</b>	3.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	BOO RADLEY COM #704H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	edm
<b>Reference Design:</b>	PWP1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB=30' @ 3066.2usft (TBD)      Coordinates are relative to: BOO RADLEY COM #704H  
 Offset Depths are relative to Offset Datum      Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
 Central Meridian is 104° 20' 0.000 W      Grid Convergence at Surface is: 0.13°

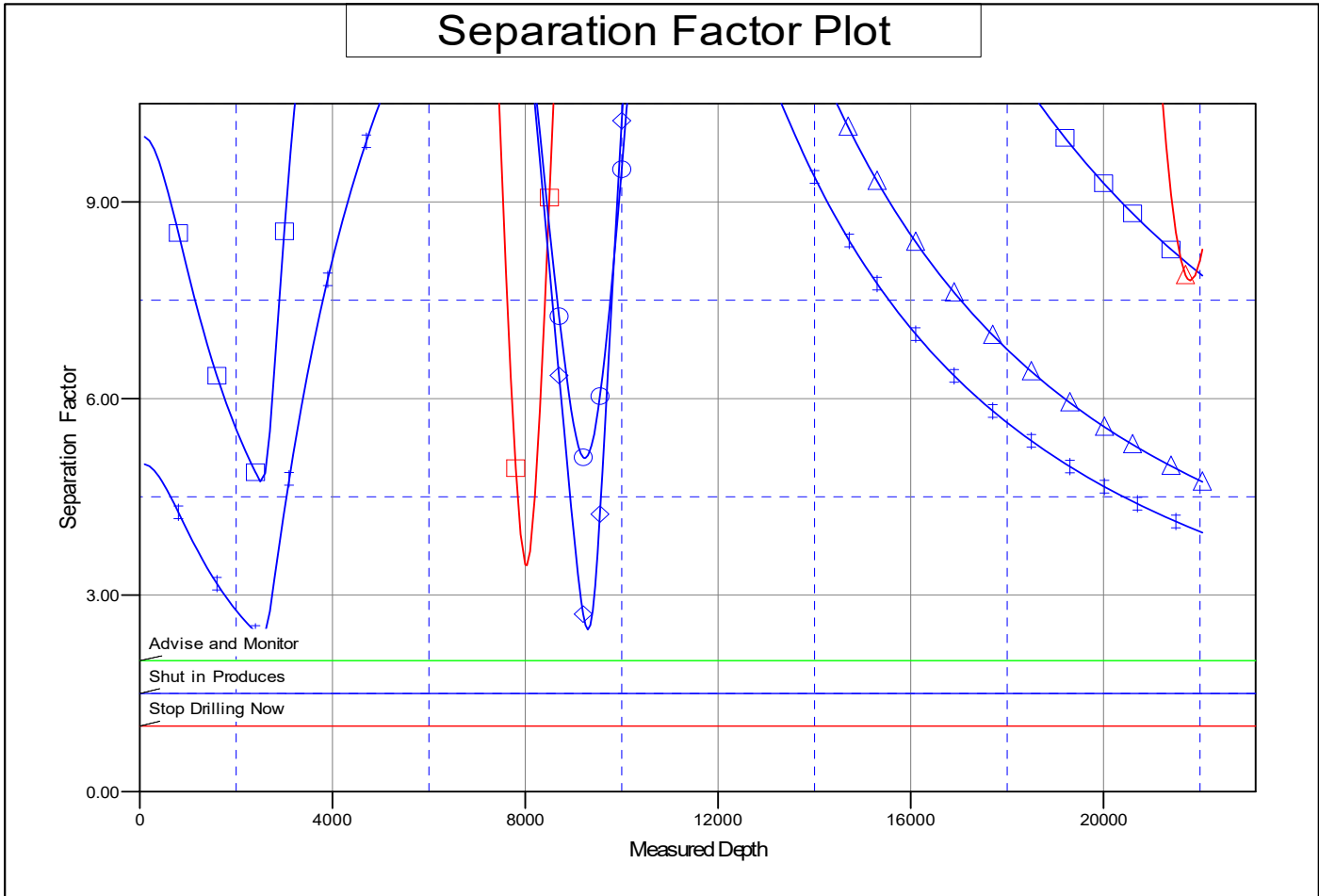


# Concho Resources LLC

## Anticollision Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Reference Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site Error:</b>	3.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	BOO RADLEY COM #704H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	3.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	edm
<b>Reference Design:</b>	PWP1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB=30' @ 3066.2usft (TBD)      Coordinates are relative to: BOO RADLEY COM #704H  
 Offset Depths are relative to Offset Datum      Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30  
 Central Meridian is 104° 20' 0.000 W      Grid Convergence at Surface is: 0.13°



#### LEGEND

<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> BOO RADLEY COM #705H, QWB, PWP1 V0</li> <li><span style="color: blue;">●</span> BOO RADLEY COM #706H, QWB, PWP1 V0</li> <li><span style="color: red;">✕</span> SKEEN 21 DM STATE 1H, QWB, AWP V0</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> GRAHAM CRACKER 16 STATE #2H, QWB, AWP V0</li> <li><span style="color: red;">●</span> GRAHAM NASH STATE COM#6H, QWB-PILOT HOLE, AWP-PH V0</li> <li><span style="color: blue;">◆</span> *MYOX 4 16 ST COM #704H, QWB, PWP0 V0</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: blue;">◆</span> *MYOX 4 16 ST COM #705H, QWB, PWP0 V0</li> <li><span style="color: blue;">▲</span> BOO RADLEY COM #703H, QWB, PWP1 V0</li> </ul>
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# **DELAWARE BASIN WEST**

**ATLAS PROSPECT (NM-E)  
BOO RADLEY COM PROJECT  
BOO RADLEY COM #704H**

**OWB**

**Plan: PWP1**

## **Standard Survey Report**

**12 August, 2020**



# Concho Resources LLC

## Survey Report

<b>Company:</b> DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b> Well BOO RADLEY COM #704H
<b>Project:</b> ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b> KB=30' @ 3066.2usft (TBD)
<b>Site:</b> BOO RADLEY COM PROJECT	<b>MD Reference:</b> KB=30' @ 3066.2usft (TBD)
<b>Well:</b> BOO RADLEY COM #704H	<b>North Reference:</b> Grid
<b>Wellbore:</b> OWB	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> PWP1	<b>Database:</b> edm

<b>Project</b> ATLAS PROSPECT (NM-E)	
<b>Map System:</b> US State Plane 1927 (Exact solution)	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> NAD 1927 (NADCON CONUS)	
<b>Map Zone:</b> New Mexico East 3001	

<b>Well</b> BOO RADLEY COM #704H	
<b>Well Position</b>	<b>+N/-S</b> 0.0 usft <b>Northing:</b> 376,798.80 usft <b>Latitude:</b> 32° 2' 8.563 N
	<b>+E/-W</b> 0.0 usft <b>Easting:</b> 573,601.30 usft <b>Longitude:</b> 104° 5' 44.930 W
<b>Position Uncertainty</b> 3.0 usft	<b>Wellhead Elevation:</b> usft <b>Ground Level:</b> 3,036.2 usft

<b>Wellbore</b> OWB					
<b>Magnetics</b>	<b>Model Name</b> IGRF2020	<b>Sample Date</b> 7/2/2020	<b>Declination</b> (°) 6.88	<b>Dip Angle</b> (°) 59.68	<b>Field Strength</b> (nT) 47,429.28848549

<b>Design</b> PWP1					
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b> PLAN	<b>Tie On Depth:</b> 0.0			
<b>Vertical Section:</b>	<b>Depth From (TVD)</b> (usft) 0.0	<b>+N/-S</b> (usft) 0.0	<b>+E/-W</b> (usft) 0.0	<b>Direction</b> (°) 176.05	

<b>Survey Tool Program</b>		<b>Date</b> 8/12/2020
<b>From</b> (usft) 0.0	<b>To</b> (usft) 22,050.6	<b>Survey (Wellbore)</b> PWP1 (OWB)
		<b>Tool Name</b> MWD+IFR1+FDIR
		<b>Description</b> OWSG MWD + IFR1 + FDIR Correction

<b>Planned Survey</b>										
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	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	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	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	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	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	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	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	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	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	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	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	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	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	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	0.00

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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	
<b>Start Build 2.00</b>										
2,600.0	2.00	100.49	2,600.0	-0.3	1.7	0.4	2.00	2.00	0.00	
2,700.0	4.00	100.49	2,699.8	-1.3	6.9	1.7	2.00	2.00	0.00	
2,749.0	4.98	100.49	2,748.6	-2.0	10.6	2.7	2.00	2.00	0.00	
<b>Start 6203.1 hold at 2749.0 MD</b>										
2,800.0	4.98	100.49	2,799.5	-2.8	15.0	3.8	0.00	0.00	0.00	
2,900.0	4.98	100.49	2,899.1	-4.4	23.5	6.0	0.00	0.00	0.00	
3,000.0	4.98	100.49	2,998.7	-5.9	32.1	8.1	0.00	0.00	0.00	
3,100.0	4.98	100.49	3,098.4	-7.5	40.6	10.3	0.00	0.00	0.00	
3,200.0	4.98	100.49	3,198.0	-9.1	49.1	12.5	0.00	0.00	0.00	
3,300.0	4.98	100.49	3,297.6	-10.7	57.7	14.6	0.00	0.00	0.00	
3,400.0	4.98	100.49	3,397.2	-12.3	66.2	16.8	0.00	0.00	0.00	
3,500.0	4.98	100.49	3,496.9	-13.8	74.7	19.0	0.00	0.00	0.00	
3,600.0	4.98	100.49	3,596.5	-15.4	83.3	21.1	0.00	0.00	0.00	
3,700.0	4.98	100.49	3,696.1	-17.0	91.8	23.3	0.00	0.00	0.00	
3,800.0	4.98	100.49	3,795.7	-18.6	100.3	25.4	0.00	0.00	0.00	
3,900.0	4.98	100.49	3,895.3	-20.2	108.9	27.6	0.00	0.00	0.00	
4,000.0	4.98	100.49	3,995.0	-21.7	117.4	29.8	0.00	0.00	0.00	
4,100.0	4.98	100.49	4,094.6	-23.3	125.9	31.9	0.00	0.00	0.00	
4,200.0	4.98	100.49	4,194.2	-24.9	134.5	34.1	0.00	0.00	0.00	
4,300.0	4.98	100.49	4,293.8	-26.5	143.0	36.3	0.00	0.00	0.00	
4,400.0	4.98	100.49	4,393.5	-28.1	151.5	38.4	0.00	0.00	0.00	
4,500.0	4.98	100.49	4,493.1	-29.6	160.1	40.6	0.00	0.00	0.00	
4,600.0	4.98	100.49	4,592.7	-31.2	168.6	42.8	0.00	0.00	0.00	
4,700.0	4.98	100.49	4,692.3	-32.8	177.1	44.9	0.00	0.00	0.00	
4,800.0	4.98	100.49	4,791.9	-34.4	185.7	47.1	0.00	0.00	0.00	
4,900.0	4.98	100.49	4,891.6	-36.0	194.2	49.2	0.00	0.00	0.00	
5,000.0	4.98	100.49	4,991.2	-37.5	202.7	51.4	0.00	0.00	0.00	
5,100.0	4.98	100.49	5,090.8	-39.1	211.3	53.6	0.00	0.00	0.00	
5,200.0	4.98	100.49	5,190.4	-40.7	219.8	55.7	0.00	0.00	0.00	
5,300.0	4.98	100.49	5,290.1	-42.3	228.3	57.9	0.00	0.00	0.00	
5,400.0	4.98	100.49	5,389.7	-43.9	236.9	60.1	0.00	0.00	0.00	
5,500.0	4.98	100.49	5,489.3	-45.4	245.4	62.2	0.00	0.00	0.00	

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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)	
5,600.0	4.98	100.49	5,588.9	-47.0	253.9	64.4	0.00	0.00	0.00	
5,700.0	4.98	100.49	5,688.6	-48.6	262.5	66.6	0.00	0.00	0.00	
5,800.0	4.98	100.49	5,788.2	-50.2	271.0	68.7	0.00	0.00	0.00	
5,900.0	4.98	100.49	5,887.8	-51.8	279.5	70.9	0.00	0.00	0.00	
6,000.0	4.98	100.49	5,987.4	-53.3	288.1	73.1	0.00	0.00	0.00	
6,100.0	4.98	100.49	6,087.0	-54.9	296.6	75.2	0.00	0.00	0.00	
6,200.0	4.98	100.49	6,186.7	-56.5	305.1	77.4	0.00	0.00	0.00	
6,300.0	4.98	100.49	6,286.3	-58.1	313.7	79.5	0.00	0.00	0.00	
6,400.0	4.98	100.49	6,385.9	-59.7	322.2	81.7	0.00	0.00	0.00	
6,500.0	4.98	100.49	6,485.5	-61.2	330.7	83.9	0.00	0.00	0.00	
6,600.0	4.98	100.49	6,585.2	-62.8	339.3	86.0	0.00	0.00	0.00	
6,700.0	4.98	100.49	6,684.8	-64.4	347.8	88.2	0.00	0.00	0.00	
6,800.0	4.98	100.49	6,784.4	-66.0	356.3	90.4	0.00	0.00	0.00	
6,900.0	4.98	100.49	6,884.0	-67.6	364.9	92.5	0.00	0.00	0.00	
7,000.0	4.98	100.49	6,983.6	-69.2	373.4	94.7	0.00	0.00	0.00	
7,100.0	4.98	100.49	7,083.3	-70.7	381.9	96.9	0.00	0.00	0.00	
7,200.0	4.98	100.49	7,182.9	-72.3	390.5	99.0	0.00	0.00	0.00	
7,300.0	4.98	100.49	7,282.5	-73.9	399.0	101.2	0.00	0.00	0.00	
7,400.0	4.98	100.49	7,382.1	-75.5	407.6	103.4	0.00	0.00	0.00	
7,500.0	4.98	100.49	7,481.8	-77.1	416.1	105.5	0.00	0.00	0.00	
7,600.0	4.98	100.49	7,581.4	-78.6	424.6	107.7	0.00	0.00	0.00	
7,700.0	4.98	100.49	7,681.0	-80.2	433.2	109.8	0.00	0.00	0.00	
7,800.0	4.98	100.49	7,780.6	-81.8	441.7	112.0	0.00	0.00	0.00	
7,900.0	4.98	100.49	7,880.2	-83.4	450.2	114.2	0.00	0.00	0.00	
8,000.0	4.98	100.49	7,979.9	-85.0	458.8	116.3	0.00	0.00	0.00	
8,100.0	4.98	100.49	8,079.5	-86.5	467.3	118.5	0.00	0.00	0.00	
8,200.0	4.98	100.49	8,179.1	-88.1	475.8	120.7	0.00	0.00	0.00	
8,300.0	4.98	100.49	8,278.7	-89.7	484.4	122.8	0.00	0.00	0.00	
8,400.0	4.98	100.49	8,378.4	-91.3	492.9	125.0	0.00	0.00	0.00	
8,500.0	4.98	100.49	8,478.0	-92.9	501.4	127.2	0.00	0.00	0.00	
8,600.0	4.98	100.49	8,577.6	-94.4	510.0	129.3	0.00	0.00	0.00	
8,700.0	4.98	100.49	8,677.2	-96.0	518.5	131.5	0.00	0.00	0.00	
8,800.0	4.98	100.49	8,776.9	-97.6	527.0	133.7	0.00	0.00	0.00	
8,900.0	4.98	100.49	8,876.5	-99.2	535.6	135.8	0.00	0.00	0.00	
8,952.0	4.98	100.49	8,928.3	-100.0	540.0	136.9	0.00	0.00	0.00	
<b>Start DLS 10.00 TFO 62.98</b>										
9,000.0	8.34	131.42	8,976.0	-102.7	544.7	139.9	10.00	6.99	64.47	
9,100.0	17.61	149.24	9,073.3	-120.5	557.9	158.7	10.00	9.28	17.82	
9,200.0	27.40	154.78	9,165.6	-154.4	575.5	193.7	10.00	9.78	5.53	
9,300.0	37.29	157.54	9,250.0	-203.4	596.9	244.0	10.00	9.89	2.76	
9,400.0	47.22	159.27	9,323.9	-265.8	621.5	308.0	10.00	9.93	1.73	
9,500.0	57.18	160.51	9,385.1	-340.0	648.6	383.8	10.00	9.95	1.25	
9,600.0	67.14	161.51	9,431.8	-423.5	677.3	469.1	10.00	9.96	0.99	
9,700.0	77.10	162.36	9,462.5	-513.8	706.8	561.3	10.00	9.97	0.86	

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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)
9,800.0	87.07	163.15	9,476.2	-608.3	736.1	657.6	10.00	9.97	0.79
9,832.0	90.26	163.40	9,476.9	-638.9	745.3	688.7	10.00	9.97	0.77
<b>Start DLS 2.00 TFO 89.95</b>									
9,900.0	90.26	164.76	9,476.6	-704.3	763.9	755.3	2.00	0.00	2.00
10,000.0	90.26	166.76	9,476.2	-801.3	788.5	853.7	2.00	0.00	2.00
10,100.0	90.26	168.76	9,475.7	-899.0	809.7	952.6	2.00	0.00	2.00
10,200.0	90.26	170.76	9,475.3	-997.4	827.5	1,052.0	2.00	0.00	2.00
10,300.0	90.26	172.76	9,474.8	-1,096.4	841.8	1,151.7	2.00	0.00	2.00
10,400.0	90.26	174.76	9,474.3	-1,195.8	852.7	1,251.6	2.00	0.00	2.00
10,500.0	90.26	176.76	9,473.9	-1,295.5	860.1	1,351.6	2.00	0.00	2.00
10,600.0	90.26	178.76	9,473.4	-1,395.4	864.0	1,451.6	2.00	0.00	2.00
10,655.6	90.26	179.87	9,473.2	-1,450.9	864.7	1,507.0	2.00	0.00	2.00
<b>Start 4068.8 hold at 10655.6 MD</b>									
10,700.0	90.26	179.87	9,473.0	-1,495.4	864.8	1,551.4	0.00	0.00	0.00
10,800.0	90.26	179.87	9,472.5	-1,595.4	865.0	1,651.2	0.00	0.00	0.00
10,900.0	90.26	179.87	9,472.0	-1,695.4	865.2	1,750.9	0.00	0.00	0.00
11,000.0	90.26	179.87	9,471.6	-1,795.4	865.4	1,850.7	0.00	0.00	0.00
11,100.0	90.26	179.87	9,471.1	-1,895.4	865.6	1,950.5	0.00	0.00	0.00
11,200.0	90.26	179.87	9,470.7	-1,995.4	865.9	2,050.3	0.00	0.00	0.00
11,300.0	90.26	179.87	9,470.2	-2,095.4	866.1	2,150.0	0.00	0.00	0.00
11,400.0	90.26	179.87	9,469.7	-2,195.4	866.3	2,249.8	0.00	0.00	0.00
11,500.0	90.26	179.87	9,469.3	-2,295.4	866.5	2,349.6	0.00	0.00	0.00
11,600.0	90.26	179.87	9,468.8	-2,395.4	866.8	2,449.4	0.00	0.00	0.00
11,700.0	90.26	179.87	9,468.4	-2,495.4	867.0	2,549.1	0.00	0.00	0.00
11,800.0	90.26	179.87	9,467.9	-2,595.4	867.2	2,648.9	0.00	0.00	0.00
11,900.0	90.26	179.87	9,467.5	-2,695.4	867.4	2,748.7	0.00	0.00	0.00
12,000.0	90.26	179.87	9,467.0	-2,795.4	867.7	2,848.5	0.00	0.00	0.00
12,100.0	90.26	179.87	9,466.5	-2,895.4	867.9	2,948.3	0.00	0.00	0.00
12,200.0	90.26	179.87	9,466.1	-2,995.4	868.1	3,048.0	0.00	0.00	0.00
12,300.0	90.26	179.87	9,465.6	-3,095.4	868.3	3,147.8	0.00	0.00	0.00
12,400.0	90.26	179.87	9,465.2	-3,195.4	868.5	3,247.6	0.00	0.00	0.00
12,500.0	90.26	179.87	9,464.7	-3,295.4	868.8	3,347.4	0.00	0.00	0.00
12,600.0	90.26	179.87	9,464.2	-3,395.4	869.0	3,447.1	0.00	0.00	0.00
12,700.0	90.26	179.87	9,463.8	-3,495.4	869.2	3,546.9	0.00	0.00	0.00
12,800.0	90.26	179.87	9,463.3	-3,595.4	869.4	3,646.7	0.00	0.00	0.00
12,900.0	90.26	179.87	9,462.9	-3,695.4	869.7	3,746.5	0.00	0.00	0.00
13,000.0	90.26	179.87	9,462.4	-3,795.4	869.9	3,846.2	0.00	0.00	0.00
13,100.0	90.26	179.87	9,461.9	-3,895.4	870.1	3,946.0	0.00	0.00	0.00
13,200.0	90.26	179.87	9,461.5	-3,995.4	870.3	4,045.8	0.00	0.00	0.00
13,300.0	90.26	179.87	9,461.0	-4,095.4	870.6	4,145.6	0.00	0.00	0.00
13,400.0	90.26	179.87	9,460.6	-4,195.4	870.8	4,245.4	0.00	0.00	0.00
13,500.0	90.26	179.87	9,460.1	-4,295.4	871.0	4,345.1	0.00	0.00	0.00
13,600.0	90.26	179.87	9,459.7	-4,395.4	871.2	4,444.9	0.00	0.00	0.00

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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)
13,700.0	90.26	179.87	9,459.2	-4,495.3	871.5	4,544.7	0.00	0.00	0.00
13,800.0	90.26	179.87	9,458.7	-4,595.3	871.7	4,644.5	0.00	0.00	0.00
13,900.0	90.26	179.87	9,458.3	-4,695.3	871.9	4,744.2	0.00	0.00	0.00
14,000.0	90.26	179.87	9,457.8	-4,795.3	872.1	4,844.0	0.00	0.00	0.00
14,100.0	90.26	179.87	9,457.4	-4,895.3	872.3	4,943.8	0.00	0.00	0.00
14,200.0	90.26	179.87	9,456.9	-4,995.3	872.6	5,043.6	0.00	0.00	0.00
14,300.0	90.26	179.87	9,456.4	-5,095.3	872.8	5,143.3	0.00	0.00	0.00
14,400.0	90.26	179.87	9,456.0	-5,195.3	873.0	5,243.1	0.00	0.00	0.00
14,500.0	90.26	179.87	9,455.5	-5,295.3	873.2	5,342.9	0.00	0.00	0.00
14,600.0	90.26	179.87	9,455.1	-5,395.3	873.5	5,442.7	0.00	0.00	0.00
14,700.0	90.26	179.87	9,454.6	-5,495.3	873.7	5,542.5	0.00	0.00	0.00
14,724.3	90.26	179.87	9,454.5	-5,519.7	873.7	5,566.7	0.00	0.00	0.00
<b>Start DLS 2.00 TFO 91.21</b>									
14,726.1	90.26	179.91	9,454.5	-5,521.4	873.7	5,568.5	2.00	-0.04	2.00
<b>Start 5290.2 hold at 14726.1 MD</b>									
14,800.0	90.26	179.91	9,454.2	-5,595.3	873.9	5,642.2	0.00	0.00	0.00
14,900.0	90.26	179.91	9,453.7	-5,695.3	874.0	5,742.0	0.00	0.00	0.00
15,000.0	90.26	179.91	9,453.2	-5,795.3	874.2	5,841.8	0.00	0.00	0.00
15,100.0	90.26	179.91	9,452.8	-5,895.3	874.3	5,941.5	0.00	0.00	0.00
15,200.0	90.26	179.91	9,452.3	-5,995.3	874.5	6,041.3	0.00	0.00	0.00
15,300.0	90.26	179.91	9,451.9	-6,095.3	874.7	6,141.1	0.00	0.00	0.00
15,400.0	90.26	179.91	9,451.4	-6,195.3	874.8	6,240.9	0.00	0.00	0.00
15,500.0	90.26	179.91	9,451.0	-6,295.3	875.0	6,340.6	0.00	0.00	0.00
15,600.0	90.26	179.91	9,450.5	-6,395.3	875.2	6,440.4	0.00	0.00	0.00
15,700.0	90.26	179.91	9,450.0	-6,495.3	875.3	6,540.2	0.00	0.00	0.00
15,800.0	90.26	179.91	9,449.6	-6,595.3	875.5	6,640.0	0.00	0.00	0.00
15,900.0	90.26	179.91	9,449.1	-6,695.3	875.6	6,739.7	0.00	0.00	0.00
16,000.0	90.26	179.91	9,448.7	-6,795.3	875.8	6,839.5	0.00	0.00	0.00
16,100.0	90.26	179.91	9,448.2	-6,895.3	876.0	6,939.3	0.00	0.00	0.00
16,200.0	90.26	179.91	9,447.8	-6,995.3	876.1	7,039.0	0.00	0.00	0.00
16,300.0	90.26	179.91	9,447.3	-7,095.3	876.3	7,138.8	0.00	0.00	0.00
16,400.0	90.26	179.91	9,446.8	-7,195.3	876.4	7,238.6	0.00	0.00	0.00
16,500.0	90.26	179.91	9,446.4	-7,295.3	876.6	7,338.4	0.00	0.00	0.00
16,600.0	90.26	179.91	9,445.9	-7,395.3	876.8	7,438.1	0.00	0.00	0.00
16,700.0	90.26	179.91	9,445.5	-7,495.3	876.9	7,537.9	0.00	0.00	0.00
16,800.0	90.26	179.91	9,445.0	-7,595.3	877.1	7,637.7	0.00	0.00	0.00
16,900.0	90.26	179.91	9,444.6	-7,695.3	877.3	7,737.5	0.00	0.00	0.00
17,000.0	90.26	179.91	9,444.1	-7,795.3	877.4	7,837.2	0.00	0.00	0.00
17,100.0	90.26	179.91	9,443.6	-7,895.3	877.6	7,937.0	0.00	0.00	0.00
17,200.0	90.26	179.91	9,443.2	-7,995.3	877.7	8,036.8	0.00	0.00	0.00
17,300.0	90.26	179.91	9,442.7	-8,095.3	877.9	8,136.5	0.00	0.00	0.00
17,400.0	90.26	179.91	9,442.3	-8,195.3	878.1	8,236.3	0.00	0.00	0.00
17,500.0	90.26	179.91	9,441.8	-8,295.3	878.2	8,336.1	0.00	0.00	0.00
17,600.0	90.26	179.91	9,441.3	-8,395.3	878.4	8,435.9	0.00	0.00	0.00

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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)	
17,700.0	90.26	179.91	9,440.9	-8,495.3	878.5	8,535.6	0.00	0.00	0.00	
17,800.0	90.26	179.91	9,440.4	-8,595.3	878.7	8,635.4	0.00	0.00	0.00	
17,900.0	90.26	179.91	9,440.0	-8,695.3	878.9	8,735.2	0.00	0.00	0.00	
18,000.0	90.26	179.91	9,439.5	-8,795.3	879.0	8,834.9	0.00	0.00	0.00	
18,100.0	90.26	179.91	9,439.1	-8,895.3	879.2	8,934.7	0.00	0.00	0.00	
18,200.0	90.26	179.91	9,438.6	-8,995.3	879.4	9,034.5	0.00	0.00	0.00	
18,300.0	90.26	179.91	9,438.1	-9,095.3	879.5	9,134.3	0.00	0.00	0.00	
18,400.0	90.26	179.91	9,437.7	-9,195.3	879.7	9,234.0	0.00	0.00	0.00	
18,500.0	90.26	179.91	9,437.2	-9,295.3	879.8	9,333.8	0.00	0.00	0.00	
18,600.0	90.26	179.91	9,436.8	-9,395.3	880.0	9,433.6	0.00	0.00	0.00	
18,700.0	90.26	179.91	9,436.3	-9,495.3	880.2	9,533.4	0.00	0.00	0.00	
18,800.0	90.26	179.91	9,435.9	-9,595.3	880.3	9,633.1	0.00	0.00	0.00	
18,900.0	90.26	179.91	9,435.4	-9,695.3	880.5	9,732.9	0.00	0.00	0.00	
19,000.0	90.26	179.91	9,434.9	-9,795.3	880.6	9,832.7	0.00	0.00	0.00	
19,100.0	90.26	179.91	9,434.5	-9,895.3	880.8	9,932.4	0.00	0.00	0.00	
19,200.0	90.26	179.91	9,434.0	-9,995.3	881.0	10,032.2	0.00	0.00	0.00	
19,300.0	90.26	179.91	9,433.6	-10,095.3	881.1	10,132.0	0.00	0.00	0.00	
19,400.0	90.26	179.91	9,433.1	-10,195.3	881.3	10,231.8	0.00	0.00	0.00	
19,500.0	90.26	179.91	9,432.7	-10,295.3	881.5	10,331.5	0.00	0.00	0.00	
19,600.0	90.26	179.91	9,432.2	-10,395.3	881.6	10,431.3	0.00	0.00	0.00	
19,700.0	90.26	179.91	9,431.7	-10,495.3	881.8	10,531.1	0.00	0.00	0.00	
19,800.0	90.26	179.91	9,431.3	-10,595.3	881.9	10,630.9	0.00	0.00	0.00	
19,900.0	90.26	179.91	9,430.8	-10,695.3	882.1	10,730.6	0.00	0.00	0.00	
20,000.0	90.26	179.91	9,430.4	-10,795.3	882.3	10,830.4	0.00	0.00	0.00	
20,016.3	90.26	179.91	9,430.3	-10,811.6	882.3	10,846.7	0.00	0.00	0.00	
<b>Start DLS 2.00 TFO -90.14</b>										
20,017.7	90.26	179.88	9,430.3	-10,813.0	882.3	10,848.1	2.00	-0.01	-2.00	
<b>Start 2032.8 hold at 20017.7 MD</b>										
20,100.0	90.26	179.88	9,429.9	-10,895.3	882.5	10,930.2	0.00	0.00	0.00	
20,200.0	90.26	179.88	9,429.5	-10,995.3	882.7	11,030.0	0.00	0.00	0.00	
20,300.0	90.26	179.88	9,429.0	-11,095.3	882.9	11,129.7	0.00	0.00	0.00	
20,400.0	90.26	179.88	9,428.5	-11,195.3	883.1	11,229.5	0.00	0.00	0.00	
20,500.0	90.26	179.88	9,428.1	-11,295.3	883.3	11,329.3	0.00	0.00	0.00	
20,600.0	90.26	179.88	9,427.6	-11,395.3	883.5	11,429.1	0.00	0.00	0.00	
20,700.0	90.26	179.88	9,427.2	-11,495.3	883.7	11,528.8	0.00	0.00	0.00	
20,800.0	90.26	179.88	9,426.7	-11,595.3	884.0	11,628.6	0.00	0.00	0.00	
20,900.0	90.26	179.88	9,426.3	-11,695.3	884.2	11,728.4	0.00	0.00	0.00	
21,000.0	90.26	179.88	9,425.8	-11,795.3	884.4	11,828.2	0.00	0.00	0.00	
21,100.0	90.26	179.88	9,425.3	-11,895.3	884.6	11,927.9	0.00	0.00	0.00	
21,200.0	90.26	179.88	9,424.9	-11,995.3	884.8	12,027.7	0.00	0.00	0.00	
21,300.0	90.26	179.88	9,424.4	-12,095.3	885.0	12,127.5	0.00	0.00	0.00	
21,400.0	90.26	179.88	9,424.0	-12,195.3	885.2	12,227.3	0.00	0.00	0.00	
21,500.0	90.26	179.88	9,423.5	-12,295.3	885.4	12,327.0	0.00	0.00	0.00	
21,600.0	90.26	179.88	9,423.1	-12,395.3	885.6	12,426.8	0.00	0.00	0.00	

# Concho Resources LLC

## Survey Report

<b>Company:</b>	DELAWARE BASIN WEST	<b>Local Co-ordinate Reference:</b>	Well BOO RADLEY COM #704H
<b>Project:</b>	ATLAS PROSPECT (NM-E)	<b>TVD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Site:</b>	BOO RADLEY COM PROJECT	<b>MD Reference:</b>	KB=30' @ 3066.2usft (TBD)
<b>Well:</b>	BOO RADLEY COM #704H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	PWP1	<b>Database:</b>	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)
21,700.0	90.26	179.88	9,422.6	-12,495.3	885.9	12,526.6	0.00	0.00	0.00
21,800.0	90.26	179.88	9,422.1	-12,595.3	886.1	12,626.4	0.00	0.00	0.00
21,900.0	90.26	179.88	9,421.7	-12,695.2	886.3	12,726.1	0.00	0.00	0.00
22,000.0	90.26	179.88	9,421.2	-12,795.2	886.5	12,825.9	0.00	0.00	0.00
22,050.6	90.26	179.88	9,421.0	-12,845.8	886.6	12,876.4	0.00	0.00	0.00
<b>TD at 22050.6</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LTP (BOO RADLEY C - hit/miss target - Shape - Point	0.00	0.00	9,421.0	-12,715.8	886.4	364,083.00	574,487.70	32° 0' 2.700 N	104° 5' 34.961 W
- plan misses target center by 0.6usft at 21920.6usft MD (9421.6 TVD, -12715.8 N, 886.3 E)									
PBHL (BOO RADLEY - plan hits target center - Rectangle (sides W100.0 H3,624.0 D20.0)	0.26	359.87	9,421.0	-12,845.8	886.6	363,953.00	574,487.90	32° 0' 1.414 N	104° 5' 34.962 W
T2 (BOO RADLEY CC - plan hits target center - Rectangle (sides W100.0 H5,292.0 D20.0)	0.26	359.91	9,430.3	-10,811.6	882.3	365,987.23	574,483.59	32° 0' 21.546 N	104° 5' 34.959 W
T1 (BOO RADLEY CC - plan hits target center - Rectangle (sides W100.0 H5,292.0 D20.0)	0.26	359.86	9,454.5	-5,519.7	873.7	371,279.13	574,475.04	32° 1' 13.918 N	104° 5' 34.922 W
FTP (BOO RADLEY C - plan misses target center by 258.8usft at 9516.1usft MD (9393.7 TVD, -352.8 N, 653.1 E) - Circle (radius 50.0)	0.00	0.00	9,477.0	-232.9	866.8	376,565.90	574,468.10	32° 2' 6.239 N	104° 5' 34.866 W

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
2500	2500	0	0	Start Build 2.00
2749	2749	-2	11	Start 6203.1 hold at 2749.0 MD
8952	8928	-100	540	Start DLS 10.00 TFO 62.98
9832	9477	-639	745	Start DLS 2.00 TFO 89.95
10,656	9473	-1451	865	Start 4068.8 hold at 10655.6 MD
14,724	9455	-5520	874	Start DLS 2.00 TFO 91.21
14,726	9454	-5521	874	Start 5290.2 hold at 14726.1 MD
20,016	9430	-10,812	882	Start DLS 2.00 TFO -90.14
20,018	9430	-10,813	882	Start 2032.8 hold at 20017.7 MD
22,051	9421	-12,846	887	TD at 22050.6

Checked By: _____	Approved By: _____	Date: _____
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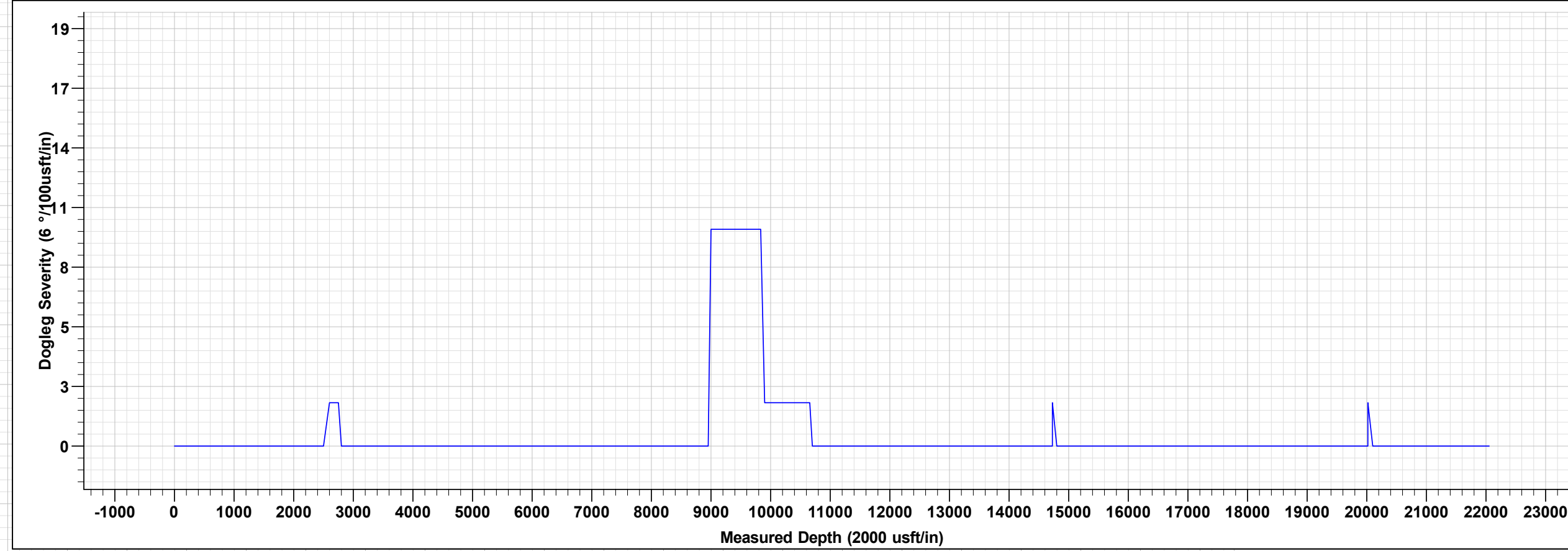
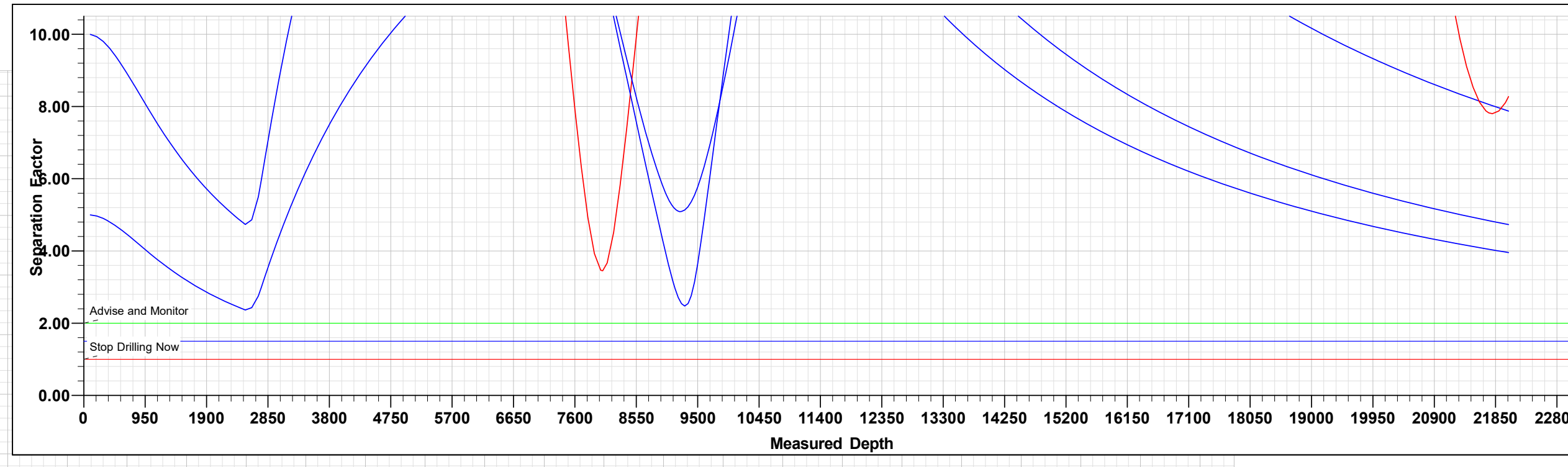
Project: ATLAS PROSPECT (NM-E)  
 Site: BOO RADLEY COM PROJECT  
 Well: BOO RADLEY COM #704H  
 Wellbore: OWB  
 Design: PWP1  
 GL: 3036.2  
 KB=30' @ 3066.2usft (TBD)

WELL DETAILS: BOO RADLEY COM #704H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	376798.80	573601.30	32° 2' 8.563 N	104° 5' 44.930 W

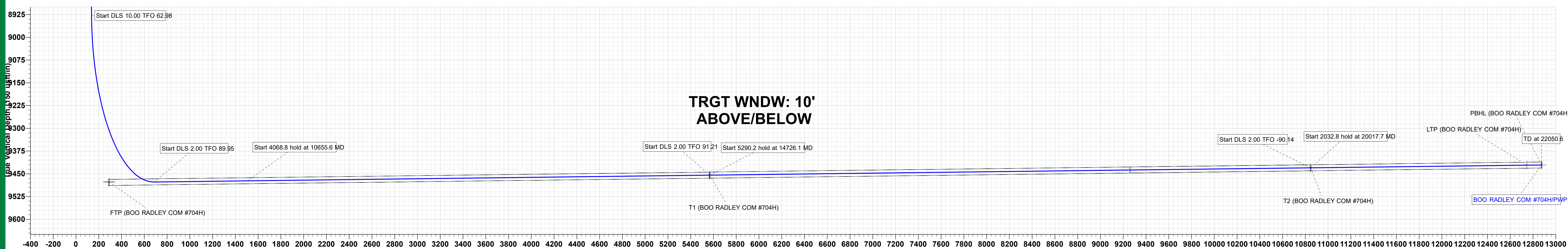
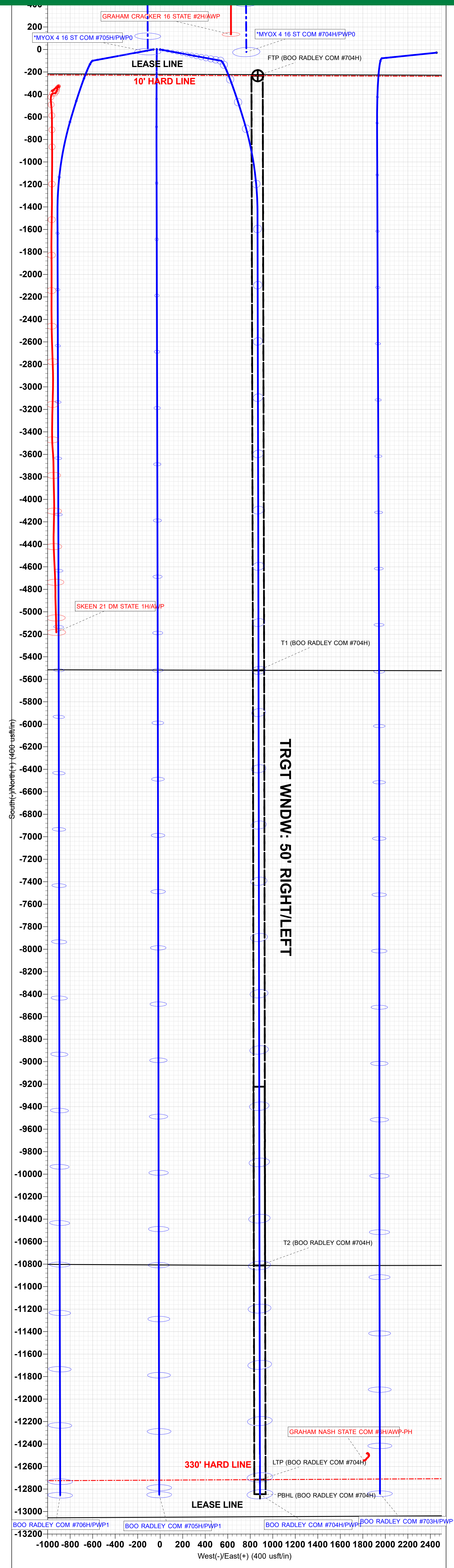
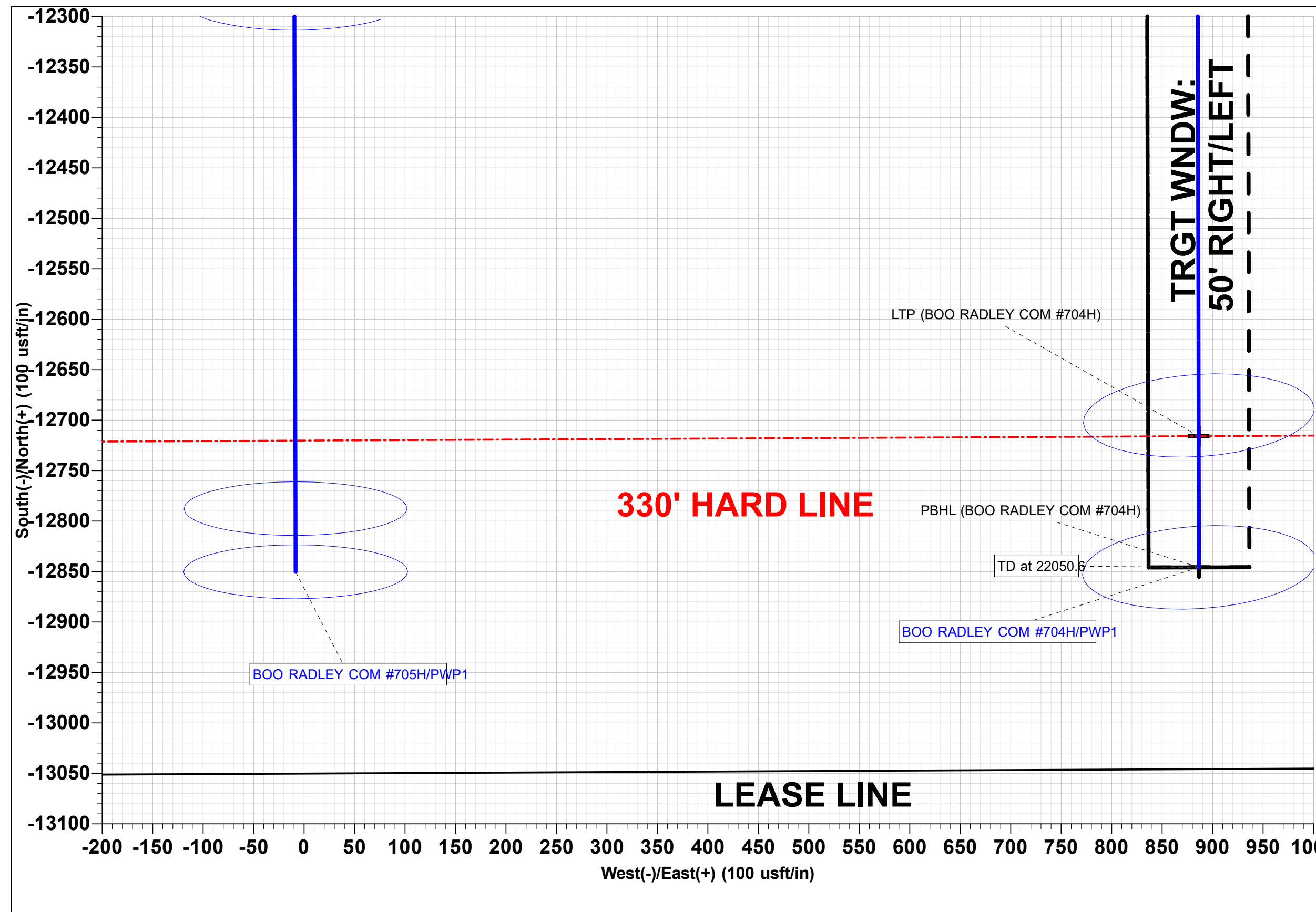
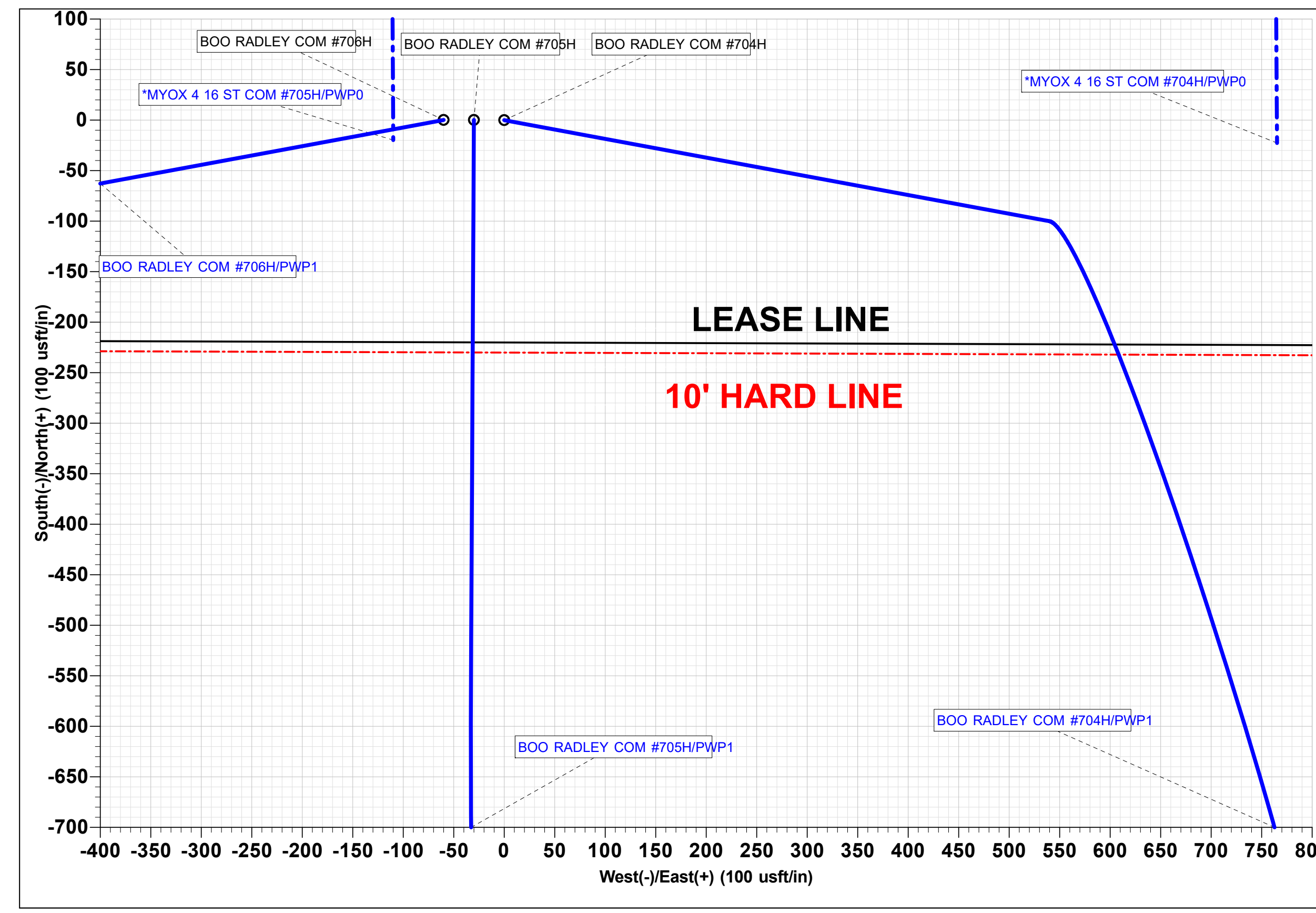
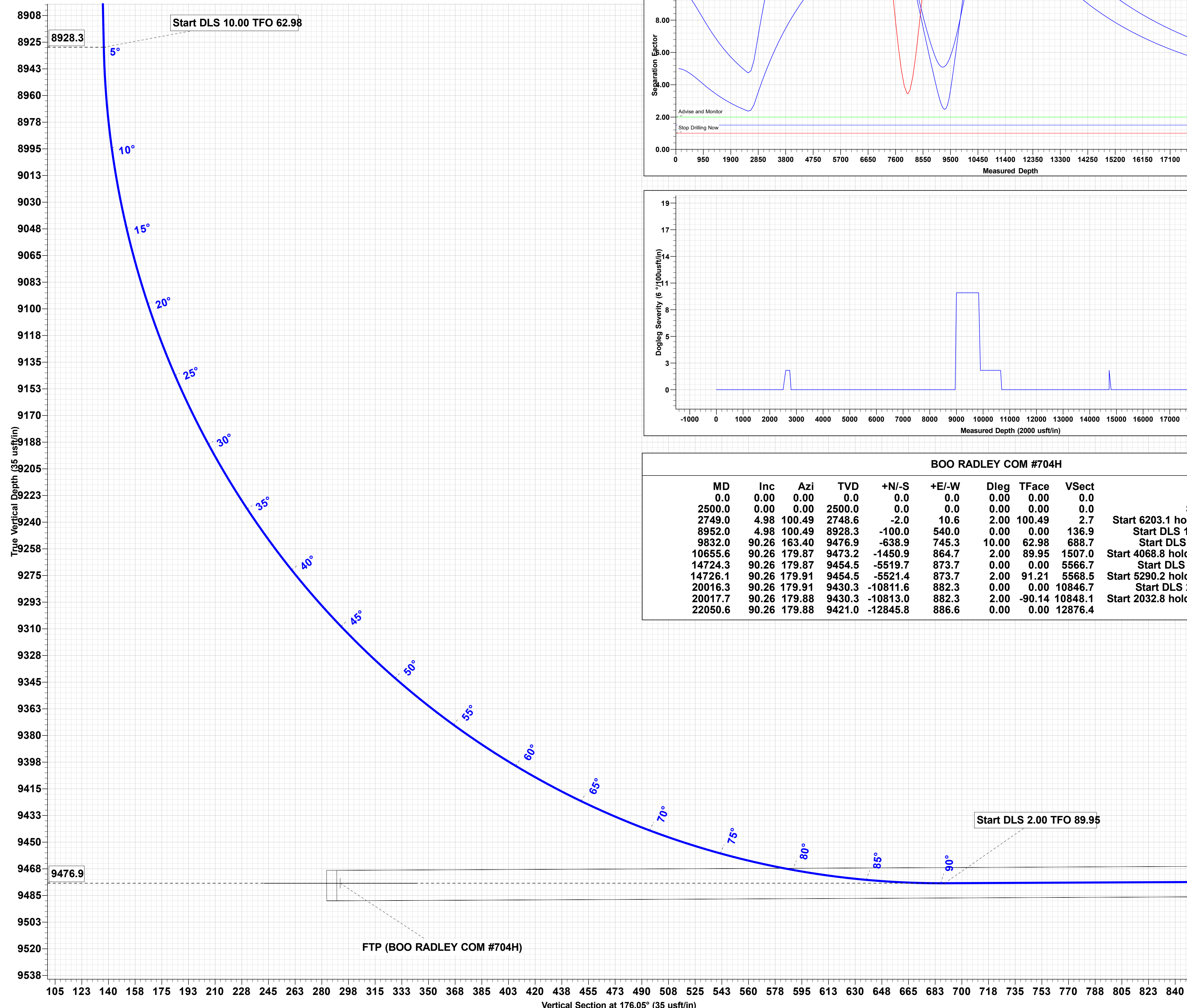
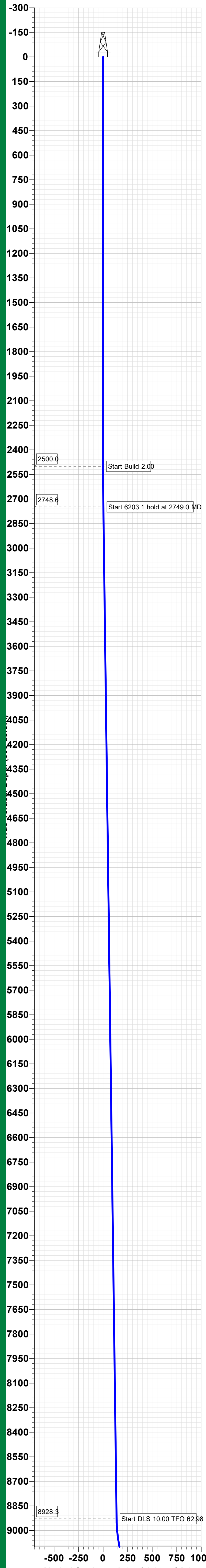
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
LTP (BOO RADLEY COM #704H)	9421.0	-12715.8	886.4	364053.00	574487.70	32° 0' 2.700 N	104° 5' 34.961 W
PBHL (BOO RADLEY COM #704H)	9421.0	-12845.8	886.6	363953.00	574487.90	32° 0' 1.414 N	104° 5' 34.962 W
T2 (BOO RADLEY COM #704H)	9430.3	-10811.6	882.3	365987.23	574483.59	32° 0' 21.546 N	104° 5' 34.959 W
T1 (BOO RADLEY COM #704H)	9454.5	-5519.7	873.7	371279.13	574475.04	32° 1' 13.918 N	104° 5' 34.922 W
FTP (BOO RADLEY COM #704H)	9477.0	-232.9	866.8	376565.90	574468.10	32° 2' 6.239 N	104° 5' 34.866 W



BOO RADLEY COM #704H

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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
2749.0	4.98	100.49	2748.6	-2.0	10.6	2.00	100.49	2.7	Start 6203.1 hold at 2749.0 MD
8952.0	4.98	100.49	8928.3	-100.0	540.0	0.00	0.00	136.9	Start DLS 10.00 TFO 62.98
9832.0	90.26	163.40	9476.9	-638.9	745.3	10.00	62.98	688.7	Start DLS 2.00 TFO 89.95
10655.6	90.26	179.87	9473.2	-1450.9	864.7	2.00	89.95	1507.0	Start 4068.8 hold at 10655.6 MD
14724.3	90.26	179.87	9454.5	-5519.7	873.7	0.00	0.00	5566.7	Start DLS 2.00 TFO 91.21
14726.1	90.26	179.91	9454.5	-5521.4	873.7	2.00	91.21	5568.5	Start 5290.2 hold at 14726.1 MD
20016.3	90.26	179.91	9430.3	-10811.6	882.3	0.00	0.00	10846.7	Start DLS 2.00 TFO -90.14
20017.7	90.26	179.88	9430.3	-10813.0	882.3	2.00	-90.14	10848.1	Start 2032.8 hold at 20017.7 MD
22050.6	90.26	179.88	9421.0	-12845.8	886.6	0.00	0.00	12876.4	TD at 22050.6



**Azimuths to Grid North**  
 True North: -0.13°  
 Magnetic North: 6.76°

**Magnetic Field**  
 Strength: 47429.3nT  
 Dip Angle: 59.68°  
 Date: 7/2/2020  
 Model: IGRF2020



**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<sub>2</sub>S).
- b. The proper use and maintenance of personal protective equipment and life support systems.
- c. The proper use of H<sub>2</sub>S 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 H<sub>2</sub>S 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<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S 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<sub>2</sub>S SAFETY EQUIPMENT AND SYSTEMS**

Note: All H<sub>2</sub>S 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 H<sub>2</sub>S. If H<sub>2</sub>S greater than 100 ppm is encountered in the gas stream we will shut in and install H<sub>2</sub>S 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<sub>2</sub>S 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**

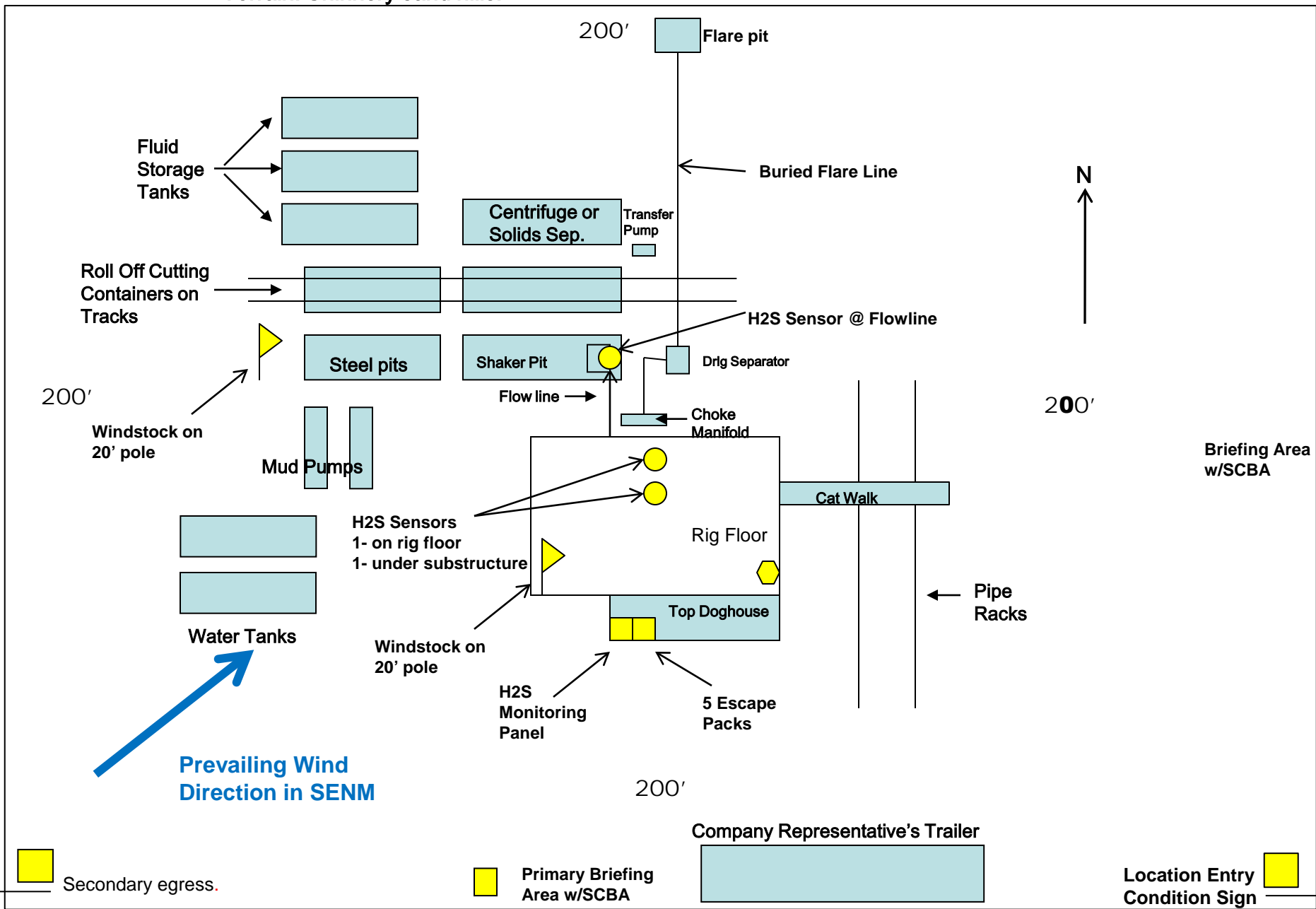
	<b><u>OFFICE</u></b>	<b><u>MOBILE</u></b>
COG OPERATING LLC OFFICE	575-748-6940	
SETH WILD	432-683-7443	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

# **EMERGENCY RESPONSE NUMBERS**


	<b><u>OFFICE</u></b>
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  
H<sub>2</sub>S Equipment Schematic  
Terrain: Shinnery sand hills.**

**Well pad will be 400' x 400'  
with cellar in center of pad**



 Secondary egress.

 Primary Briefing Area w/SCBA

 Location Entry Condition Sign

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
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: 8/17/20

Original Operator & OGRID No.: COG Production LLC, (217955)

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
Boo Radley Com 701H	30-015-	O-16-26S-28E	200' FSL & 1490' FEL	±5700	None Planned	APD Submission Plan Subject to change
Boo Radley Com 702H	30-015-	O-16-26S-28E	200' FSL & 1520' FEL	±5700	None Planned	APD Submission Plan Subject to change
Boo Radley Com 703H	30-015-	O-16-26S-28E	200' FSL & 1550' FEL	±5700	None Planned	APD Submission Plan Subject to change
Boo Radley Com 704H	30-015-	N-16-26S-28E	220' FSL & 1460' FWL	±5700	None Planned	APD Submission Plan Subject to change
Boo Radley Com 705H	30-015-	N-16-26S-28E	220' FSL & 1430' FWL	±5700	None Planned	APD Submission Plan Subject to change
Boo Radley Com 706H	30-015-	N-16-26S-28E	220' FSL & 1400' FWL	±5700	None Planned	APD Submission Plan Subject to change

**Gathering System and Pipeline Notification**

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to **ETC Field Services LLC** and will be connected to **Red Bluff** low pressure gathering system located in **Culberson** County, Texas. **COG Operating LLC** provides (periodically) to **ETC Field Services LLC** a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, **COG Operating LLC** and **ETC Field Services LLC** have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at **ETC Field Services LLC** Processing Plant located in Sec. **35**, Blk. **57, T2**, **Culberson** 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

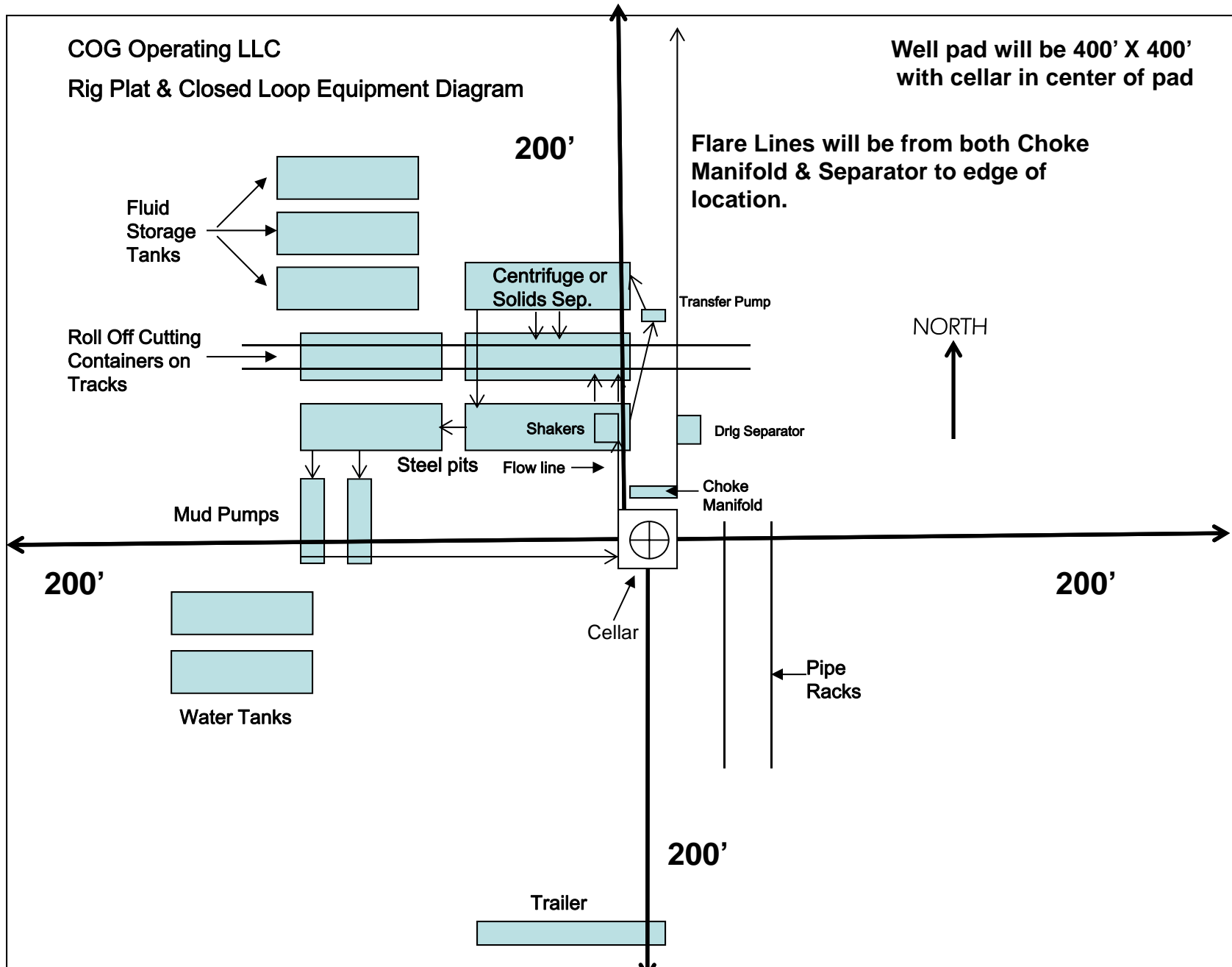


Exhibit 1

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