

Oklahoma Corporation Commission  
 Oil & Gas Conservation Division  
 Post Office Box 52000  
 Oklahoma City, Oklahoma 73152-2000  
 Rule 165: 10-3-25

Form 1002A

API No.: 35051247700001

**Completion Report**

Spud Date: July 02, 2020

OTC Prod. Unit No.: 051-227082-0-0000

Drilling Finished Date: August 07, 2020

1st Prod Date: January 22, 2021

Completion Date: January 17, 2021

**Drill Type: HORIZONTAL HOLE**

Well Name: CUNNINGHAM 3-32-5XHW

Purchaser/Measurer: ENABLE MIDSTREAM

Location: GRADY 32 7N 6W  
 NW SW NE NW  
 890 FNL 1600 FWL of 1/4 SEC  
 Latitude: 35.041553 Longitude: -97.858828  
 Derrick Elevation: 1098 Ground Elevation: 1073

First Sales Date: 01/22/2021

Operator: CONTINENTAL RESOURCES INC 3186  
 PO BOX 268870  
 20 N BROADWAY AVE  
 OKLAHOMA CITY, OK 73126-8870

Completion Type	
X	Single Zone
	Multiple Zone
	Commingled

Location Exception	
Order No	
717444	

Increased Density	
Order No	
710095	
710097	

Casing and Cement							
Type	Size	Weight	Grade	Feet	PSI	SAX	Top of CMT
SURFACE	13 3/8	55	J-55	1500		681	SURFACE
INTERMEDIATE	9 5/8	40	P-110	12477		1391	3108
PRODUCTION	5 1/2	23	P-110	24664		2256	8228

Liner								
Type	Size	Weight	Grade	Length	PSI	SAX	Top Depth	Bottom Depth
There are no Liner records to display.								

**Total Depth: 24664**

Packer	
Depth	Brand & Type
There are no Packer records to display.	

Plug	
Depth	Plug Type
There are no Plug records to display.	

Initial Test Data

Test Date	Formation	Oil BBL/Day	Oil-Gravity (API)	Gas MCF/Day	Gas-Oil Ratio Cu FT/BBL	Water BBL/Day	Pumpin or Flowing	Initial Shut-In Pressure	Choke Size	Flow Tubing Pressure
Feb 02, 2021	WOODFORD	91	51.6	6910	75934	4458	FLOWING	4400	32/64	4002

**Completion and Test Data by Producing Formation**

Formation Name: WOODFORD

Code: 319WDFD

Class: GAS

**Spacing Orders**

Order No	Unit Size
204268	640
717433	MULTIUNIT

**Perforated Intervals**

From	To
14281	19352
19381	24488

**Acid Volumes**

216 BBLS 15% HCl

**Fracture Treatments**

471,118 BBLS FLUID & 25,351,829 LBS OF SAND

Formation	Top
WOODFORD MD	14281
WOODFORD TVD	14170

Were open hole logs run? No

Date last log run:

Were unusual drilling circumstances encountered? No

Explanation:

**Other Remarks**

There are no Other Remarks.

**Lateral Holes**

Sec: 5 TWP: 6N RGE: 6W County: GRADY

SE SE SW SW

30 FSL 1235 FWL of 1/4 SEC

Depth of Deviation: 13896 Radius of Turn: 546 Direction: 183 Total Length: 10383

Measured Total Depth: 24664 True Vertical Depth: 14664 End Pt. Location From Release, Unit or Property Line: 30

**FOR COMMISSION USE ONLY**

1146090

Status: Accepted



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Status: Accepted

4/1/21

TEST:  INITIAL  
 ANNUAL  
 RETEST

OKLAHOMA CORPORATION COMMISSION  
 Oil & Gas Conservation Division  
 Post Office Box 52000  
 Oklahoma City, Oklahoma 73152-2000

Form 1016  
 Rev. 2017

**1002A**  
**Addendum**

**BACK PRESSURE TEST FOR NATURAL GAS WELLS**

OAC 165:10-17-6

DATE OF TEST: 2/24/2020

DATE OF 1<sup>ST</sup> SALES: 1/22/2021

Operator Continental Resources Inc						Operator # 03186						
Address P.O. Box 268870						City OKC			ST OK		ZIP 73126	
E-mail carol.pratt@clr.com				Ph 405-234-9415		Fax		Well Name# Cunningham 3-32-5XHW				
Gas Volume Reporter Enable Midstream						Gas Volume 12,518			API # 35-051-24770-01			
Producing Zone Woodford						OTC Lease # 051-227082						
Surface Location		1/4 1/4		1/4 1/4		Sec 32		Twp 07N		Rge 06W		(OCC use) Allowable # (see below)
Zone Location		1/4 1/4		1/4 1/4		Sec		Twp		Rge		County Grady
Field Scoop						Spacing Size 1,280						

COMPLETION:  Single  Multiple Zone  Commingled  Recompletion Date of Completion 1/15/2021

Total Depth 24,664		Plug Back Depth 24,574		Packer Set Depth		Elevation 1,073		
Csg Size 5 1/2		WT 23		d		Depth Set		
Tbg Size		WT		d		Depth Set		
Prod. Thru Casing		Res. Temp. F @ 250		Mean Grd. Temp. F		Atm. Press. PSIA		
L 19,385	H 14,442	G <sub>w</sub> 0.72	%CO <sub>2</sub>	%N <sub>2</sub>	H <sub>2</sub> S(ppm)	Prover	Meter Run	Taps

SHUT-IN DATA		FLOW DATA						TUBING DATA		CASING DATA		BHP DATA		FLOW (HRS)
PRESS	(HRS)	PROVER			DIFF			PRESS (PSIG)	TEMP (F)	PRESS (PSIG)	TEMP (F)	PRESS (PSIG)	TEMP (F)	
		LINE SIZE	X	ORIFICE SIZE	PRESS (PSIG)	(INCHES) (ROOTS)	TEMP (F)							
9,825	N/A	6.065		3.375	200	112	121			7,727				24

RATE OF FLOW CALCULATIONS

COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	PRESSURE P <sub>m</sub>	FLOW TEMP. FACTOR F <sub>t</sub>	GRAVITY FACTOR F <sub>g</sub>	SUPER COMPRESS FACTOR F <sub>pv</sub>	RATE OF FLOW (Q) MCFD
72.230						12,518

P <sub>r</sub>	TEMP. R	T <sub>r</sub>	Z
			0.9957

Gas/Liquid Hydrocarbon Ratio	MCF/BBL
API Gravity of Liquid Hydrocarbons	Deg.
Specific Gravity Separator Gas	Specific Gravity Flowing
Critical Pressure PSIA	Critical Pressure PSIA
Critical Temperature R	Critical Temperature R

P<sub>c</sub> 9,825 (PSIA) P<sub>c</sub><sup>2</sup> 96,530,625

P <sub>w</sub>	P <sub>w</sub> <sup>2</sup>	P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>
7,750	60,060,869	36,469,756

[1]  $\frac{P_c^2}{P_c^2 - P_w^2} = 2.634$  (Not to exceed 5.263)

[2]  $\left(\frac{P_c^2}{P_c^2 - P_w^2}\right)^n = 2.278$  WHAOF=Q

$\frac{P_c^2}{P_c^2 - P_w^2} = 28,516$

Multinut: 32-07N-06W: 49.81% 227082 I  
 05-06N-06W: 50.19% 213439775

Calculated wellhead open flow MCFD @ 14.65 Angle of Slope Slope, n

Remarks AOF calculated using Alternative Method

RECEIVED  
 MAR 19 2021

Approved by Commission: James Humphrey Conducted by: Continental Resources Calculated by: Continental Resources Checked by: Oklahoma Corporation

WITNESSED - OCC FIELD STAFF: Y  N  NAME: DATE: 3/9/21

(over)

Type text here

IF THE ALLOWABLE FOR THIS WELL HAS BEEN ADJUSTED BY COMMISSION ORDER, PLEASE GIVE THE ORDER NUMBER(S) IN ONE OR MORE OF THE CATEGORIES BELOW:

INCREASED DENSITY 710095 LOCATION EXCEPTION\* 710338

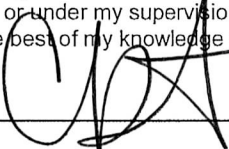
COMMINGLING \_\_\_\_\_ MULTIPLE ZONE 710337

SEPARATE OR SPECIAL ALLOWABLE\* \_\_\_\_\_

OTHER PENALTY ORDER(S)\* MuFo 717433

\* FOR THESE ORDER TYPES, PLEASE DESCRIBE ALLOWABLES AND/OR PENALTIES:

I declare that I have knowledge of the contents of this report and am authorized by my organization to make this report, which was prepared by me or under my supervision and direction, with the data and facts stated herein to be true, correct and complete to the best of my knowledge and belief.



Regulatory Compliance Specialist

SIGNATURE	TITLE
<u>Continental Resources, Inc.</u>	<u>405-234-9415</u>
COMPANY	PHONE NO.

DATE: 1/20/2021

- Pc SHUT-IN PRESSURE, PSIA (LENGTH OF SHUT-IN MINIMUM OF 24 HOURS).
- Pw STATIC COLUMN WELLHEAD PRESSURE CORRESPONDING TO THE FLOWING WELLHEAD PRESSURE, PSIA (TO BE RECORDED AT END OF EACH FLOW RATE.) THE VALUE OF Pw SHOULD NOT EXCEED 90% OF Pc.
- Gg SPECIFIC GRAVITY OF SEPARATOR GAS (AIR = 1.000).
- L LENGTH OF THE FLOW STRING FROM THE MIDDLE OF THE PRODUCING FORMATION TO THE PRESSURE POINT AT WELLHEAD, FEET.
- H VERTICAL DEPTH CORRESPONDING TO L, FEET.
- Q 24 HOUR RATE OF FLOW, MCF/D.
- d INSIDE DIAMETER, INCHES.
- R DEGREES, RANKINE (DEGREES FAHRENHEIT ABSOLUTE).
- Pr REDUCED PRESSURE, DIMENSIONLESS.
- Tr REDUCED TEMPERATURE, DIMENSIONLESS.
- Z COMPRESSIBILITY FACTOR, DIMENSIONLESS.

## FLOW CALCULATION

(When the ratio GH/TZ is less than 12)

Well: CUNNINGHAM 3-32-5XHW

TEST DATE : 2/5/2021

A: Enter the data from 1016 form

(Green Area)

Flow Through Casing

Entry data

Z	Gg	Fb	Pflow	DIFF.in	Tw	Pc psig	Pt psig	L	H	Ts
0.9957	0.7200	72.230	200	112	121	9825	7727	19385	14442	253

Fr	HwPm	Ft	Fg	Fpv	Q	Tav	TZ	GH/TZ
0.001822	155.108	0.946	1.176	1.002	12518	647	644.22	16.141

s	e^s	1-e^s	(Pc)^2	(Pt)^2	Fc	FcQm
0.6053	1.832	0.4541	96813.8	59929.27	1.174	14.694

(FcQm)^2	Fw	Pw	Ratio 1	Ratio 2
289.806	131.595	7749.9	2.634	2.278

0.6279

AOF	Pf	Ps
28516	13316.9	10488.9

0.001611
0.001611

AOF
51355

When Pw is based on 90% of Pc

Flow rate Q            12518    Calculated based on dry gas gravity  
 Pw                        7749.9  
 Ps(calc)                10488.9  
 Pf(calc)                13316.9  
 AOF                      28516    GH/TZ: 16.141            Ratio= 2.63

1	Total Depth	24,664
2	Elevation	1073
3	Casing size	5 1/2
4	Perfs	14281' - 24488'
5	Tubing size	N/A
6	Reservoir Temp	253
7	Mid perf	19,384.50
8	Mid perf TVD	14442
9	Gas Gravity	0.7200
10	Max Shut-in PSI	9825
11	Line size	6.065
12	Orifice size	3.375
13	Static psi	200
14	DIFF Inches	112
15	Gas Temp	121
16	Flowing casing PSI	7727

17	Coefficient (24 Hour)	72.230
18	Rate of Flow (Q)	12,518
19	Pc	9,825
20	Pc^2	96,530,625
21	Pw	7,750
22	Pw^2	60,060,869
23	Pc^2 - Pw^2	36,469,756
24	Pc^2 / (Pc^2 - Pw^2)	2.634
25	Pc^2 / (Pc^2 - Pw^2)^n	2.278
26	WHAOF	28,516



13-3/8" @  
1,500'

ELEVATIONS	
GROUND	1073'
KB	1098'
KB-GRD	25'

CRI INTERESTS	
WORKING	96%
NET	77%

DATE	
SPUD	7/2/2020
COMP	11/29/2020

9-5/8" @  
12,477'

35<sup>th</sup> Stage

14,281'  
TO  
14,550'

Average TVD of Perfs 14,442'

Toe  
Sleeve

24,483'  
TO  
24,488'

5 1/2" @  
24,664'

PBTD  
@  
24,574'  
TD @  
24,664'

WELL NAME	CUNNINGHAM 3-32-5XHW
LOCATION	SEC 32-7N-6W
COUNTY, ST	GRADY COUNTY, OKLAHOMA
API #	35-051-24770
OTC #	
DATE ENTERED	2/24/2021 JTM
Latest Revision	

CASING INFORMATION						
TYPE	SIZE	WT	GRADE	SET @	TOC @	CEMENTED W/
Surf	13 3/8"	54.50#	J-55	1,500	surf	
Intermediate	9 5/8"	40#	P-110	12,477'	3,108'	
Production	5 1/2"	23#	P-110	24,664'	12,480'	
-	-	-	-	-	-	