OCD Hobbs

Form 3160-5
(June 2015)

HOBBS OCD
APR 24 2017
RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMLC061873

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
COTTON DRAW UNIT 312H

2. Name of Operator
DEVON ENERGY PRODUCTION COM LP
Contact: LINDA GOOD
E-Mail: linda.good@dvn.com

9. API Well No.
30-025-43330-00-X1

3a. Address
6488 SEVEN RIVERS HIGHWAY
ARTESIA, NM 88211

3b. Phone No. (include area code)
Ph: 405.552.6558

10. Field and Pool or Exploratory Area
WOLFCAMP

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 7 T25S R32E SESE 449FSL 1225FEL

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Devon Energy Production Co., L.P. respectfully requests permission to change the approved oil well to a vertical science/monitoring well, change the wellbore from horizontal to vertical and change the well name from the Cotton Draw Unit 312H to Cotton Draw Unit VDW 312.

The completion will entail Diagnostic Fracture Injection Tests (DFITs) and traced stimulations in order to help understand fracture geometries, reservoir properties, and improve future development planning. Depending on the number of tests to be conducted, rough completion testing time estimates range from several months to over one year for intermittent operations, monitoring, and data collection. After all formation testing has been completed, viability of commingling and/or isolating all tested intervals will be evaluated. After internal evaluation, Devon will sundry the well to propose to either produce the well, setup for long term pressure monitoring, evaluate further testing/re-completion, re-entry, or to plug and abandon the wellbore.

See attached Emails for any changes

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #364698 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION COM LP, sent to the Carlsbad
Committed to AFMSS for processing by DEBORAH MCKINNEY on 02/07/2017 (17DLM0714SE)

Name *(Printed/Typed)* LINDA GOOD — Title REGULATORY SPECIALIST

Signature (Electronic Submission) — Date 01/24/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By CHARLES NIMMER — Title PETROLEUM ENGINEER — Date 04/10/2017

Conditions of approval, if any, are attached. Approval of this notice 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.

Office Carlsbad

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

1. Geologic Formations

TVD of target	13,125'	Pilot hole depth	
MD at TD:	13,125'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	699		
Salado	1001		
Base of Salt	4224		
Delaware	4458		
Bell Canyon	4493		
Cherry Canyon	5420		
Brushy Canyon	6776		
1BSLM	8357		
1BSSS	9436		
2BSLM	9640		
2BSSS	10003		
3BSLM	10523		
3BSSS	11272		
3BSSS_L	11581		
WFMP X	11726		
WFMP 100	11847		
WFMP 200	12178		
WFMP 300	12633		
WFMP 400	12913		
TD	13125		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
26"	0	725'	20"	94	J-55	BTC	1.35	4.48	4.43
17-1/2"	0	4,350'	13-3/8"	68	J-55	BTC	1.37	4.06	2.42
12-1/4"	0	11,300'	9-5/8"	40	P-110 EC	BTC	2.03	1.31	2.35
8-1/2"	0	13,125'	5.5"	17	P-110	BTC	3.26	1.18	3.79
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

	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
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	H_2O gal/sk	Yld ft3/ sack	500# Comp. Strength (hours)	Slurry Description
20"	1924	14.8	6.37	1.33	7	Tail: Class C Cement
13-3/8" Int 1	1708	12.8	10.681	1.99	21.5	Lead: (65:35) Class C Cement: Poz (Fly Ash): 8% BWOB Bentonite + 8% BWOW Salt + 0.2 gal/sk Anti-Foam + 0.2% BWOB Dispersant + 0.4% BWOB Retarder
	705	14.8	6.352	1.33	5	Tail: Class C Cement: 0.2% BWOB Retarder
9-5/8" Inter II	733	9.07	12.292	2.99	17.5	Lead: LiteFILL Blend Cement: 0.5% Retarder + 0.05 gal/sk Anit-Foam
	586	13.5	7.459	1.55	5	Tail: (50:50) Class H Cement: Poz (Fly Ash): 0.4% BWOB Retarder + 0.02 gal/sk Anti-Foam + 0.2% BWOB FLAC + 10% BWOB Extender + 2% BWOB Expanding Agent
5-1/2" Prod	N/A	N/A	N/A	N/A	N/A	N/A
	507	13.5	7.459	1.55	5	Tail: (50:50) Class H Cement: Poz (Fly Ash): 0.4% BWOB Retarder + 0.02 gal/sk Anti-Foam + 0.4% BWOB FLAC + 10% BWOB Extender + 2% BWOB Expanding Agent

Casing String	TOC	% Excess
20" Surface	0'	50%
13-3/8" Intermediate 1	0'	50%
9-5/8" Intermediate 2	3,850	25%
5-1/2" Production Casing	11,000'	25%

4. Pressure Control Equipment

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

See Emails Attached

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type		Tested to:
17-1/2"	21-1/4"	2M	Annular	x	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram		
			Other*		
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		~~3M~~ 5M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-1/2"	13-5/8"	5M	Annular		50% testing pressure
			Blind Ram		~~5M~~ 10M
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

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.

	Y	Are anchors required by manufacturer?
Y	A multibowl wellhead may be 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. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (3M) psi. • Wellhead will be installed by wellhead representatives. • If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. • Wellhead representative will install the test plug for the initial BOP test. • Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP. Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.	

	Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	725	FW Gel	8.6-8.8	28-34	N/C
725'	4,350'	Saturated Brine	10.0-10.2	28-34	N/C
4,350'	11,300'	Cut Brine/WBM	8.5-9.8	28-34	N/C
11,300	13,125'	Cut Brine/WBM	9.8-12.0	30-40	N/C

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.	
x	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.
x	Core will be taken in the production hole.
x	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain

Additional logs planned		Interval
X	Resistivity	Int. shoe to TD
X	Density	Int. shoe to TD
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
X	PEX	**Int. shoe to TD**

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	8190 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

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

Is this a walking operation? No.
Will be pre-setting casing? No.

Attachments
__ Directional Plan
___ Other, describe

From: Nimmer, Charles [mailto:cnimmer@blm.gov]
Sent: Monday, March 20, 2017 2:47 PM
To: Dzurisin, Ryan (Term) <Ryan.Dzurisin@dvn.com>; Good, Linda <Linda.Good@dvn.com>
Subject: Cotton Draw Unit 312H

Good Afternoon Ryan,

I hope you are well. I reviewed the Cotton Draw Unit 312H Sundry and I had a few issues.

1. Could you send me the casing specification sheet for the 9 5/8" 40# P-110 EC?

OCTG Casing Data Sheet

VALLOUREC & MANNESMANN TUBES

O.D.	T&C LB/FT	PE LB/FT	GRADE
9.625	40.00	38.97	P110 EC

Grade - Material Properties

Minimum Yield Strength:	125.0	ksi
Maximum Yield Strength:	140	ksi
Minimum Tensile Strength:	135	ksi

Pipe Body Data (PE)

Geometry

Nominal ID:	8.835	inch
Wall:	0.395	inch
Nominal Area:	11.454	$inch^2$
API Drift:	8.679	inch
Alternate Drift:	8.750	inch

Performance

Pipe Body Yield Strength:	1,432	kips
Collapse Resistance:	4,230	psi
Internal Yield Pressure (*API Historical*):	8,980	psi

Lamé - Internal Yield Pressure

Lamé open:	8,950	psi
Lamé capped:	9,970	psi
Lamé ductile rupture:	9,700	psi

API Connection Data

STC Internal Pressure:	8,980	psi
STC Joint Strength:	861	kips
LC Internal Pressure:	8,980	psi
LC Joint Strength:	988	kips
BC Internal Pressure:	8,980	psi
BC Joint Strength:	1,266	kips

LC Torque (ft-lbs)

minimum: 7,410 optimum: 9,880 maximum: 12,350

2. According to my calculations the 13 3/8" casing will require a 5M BOP but a 3M BOP is proposed.

   - The Delaware formation will be exposed while drilling the 12-1/4" hole section. As such the maximum formation strength at ~8,200' is ~9.2ppge.

- Assuming 0.22psi/ft (4.23ppge) combination gas/fluid column to surface I get a calculated MASP of (9.2-4.23)*0.052*8,200' = 2,120psi

- It is not possible to have a higher surface pressure while drilling the 12-1/4" hole section because the Delaware formation integrity is not strong enough to support the pressure before breaking down.

3. Also the 9 5/8" casing requires a 10M BOP but a 5M BOP is proposed.

   - My calculated MASP is as follows for the planned TD:

     - (Maximum PP – 0.22psi/ft) * 13,125' * 0.052 = 5,300psi

     - I believe this to be overly conservative considering we would have to evacuate ¾ of the 9-5/8" volume with gas prior to shutting in the well.

   - We can accommodate the 10M BOP request since our well control system is a 10M system by default and we essentially always use the same system (stack/choke manifold configuration)

   - Although, I would prefer to test the BOPs to 80% of casing burst which would be 0.8 * 8980psi =**7,500psi test pressure**

   - A test pressure of 7,500psi would still exceed/satisfy the calculated MASP and not going to full rated working pressure of the BOPs will extend the rubber goods on the BOP ram pack offs

4. The collapse calculations on both intermediate casing strings do not meet our required safety factors of 1.125.

   - We will continuously fill casing while running which will prevent any risk of having fully evacuated casing.

   - 13-3/8" Casing

     - 1,950psi collapse rating

     - Assuming 8.3ppg mix water to surface from cement job on backside of casing (collapse pressure)

     - 1.125 SF would equal evacuation to 4,015' which satisfies 1/3 DSOH would be a depth of 3,766' which should be more than sufficient from a fluid drop in regards to potential lost returns in the Delaware.

   - 9-5/8" Casing

     - 4,230psi collapse rating

     - Assuming 8.3ppg mix water to TOC and drilling fluid on backside of casing (collapse pressure)

     - 1.125 SF would be evacuation to ~8,500' while drilling the next hole section

       - We haven't experienced any significant lost returns in the formations for the 8-1/2" hole section which would warrant any concerns for fluid drop while drilling.

Please let me know how you would like to remedy these issues. Thank you for your time and consideration.

Very Respectfully,

Charles L. Nimmer
Petroleum Engineer
BLM - Carlsbad Field Office
Phone: (575) 234-2237
Email: cnimmer@blm.gov

Nimmer, Charles <cnimmer@blm.gov>

Cotton Draw Unit 312H

Fisher, Jonathan <Jonathan.Fisher@dvn.com> Mon, Apr 3, 2017 at 12:29 PM
To: "Nimmer, Charles" <cnimmer@blm.gov>
Cc: "Good, Linda" <Linda.Good@dvn.com>, "Harkrider, JD" <JD.Harkrider@dvn.com>, Christopher Walls <cwalls@blm.gov>

Charles,

For this particular well, due to being a vertical data well with no intent to produce hydrocarbons, we will always maintain the well with a full column of fresh water at a minimum while collecting desired science which is the full lifespan of the 5-1/2" casing.

Due to the type of well; we will not have any fluid drop for the life of the 5-1/2" casing.

Collapse Load

External Pressure = 13,125' * 12ppg * 0.052 = 8,190 psi (assuming heaviest anticipated MW)

Internal Pressure = 13,125' * 8.3ppg * 0.052 = 5,665 psi (assuming well full of fresh water during science collection; i.e. traced frac's)

Collapse Load Pressure = 8,190psi – 5,665psi = 2,525 psi

Collapse Rating = 7,480psi

Collapse SF = 7,480/2,525 = 2.9

Thanks,

Jonathan Fisher

Drilling Engineer

Devon Energy Corporation

333 W Sheridan Ave

Oklahoma City, OK 73102

405-465-6842 Mobile

405-228-8976 Office

Nimmer, Charles <cnimmer@blm.gov>

Cotton Draw Unit 312H

Nimmer, Charles <cnimmer@blm.gov> Fri, Mar 24, 2017 at 10:44 AM
To: "Fisher, Jonathan" <Jonathan.Fisher@dvn.com>
Cc: "Good, Linda" <Linda.Good@dvn.com>, "Harkrider, JD" <JD.Harkrider@dvn.com>

Good Morning Jonathan,

I hope you are well. I reviewed your comments and I have the following comments:

1) According to my calculations the 13 3/8" casing will require a 5M BOP but a 3M BOP is proposed.

- I agree your explanation, that there would not be a surface blowout but in the worst case scenario, having an underground blowout is not permissible under our current regulations. Using a 3M BOP would violate our current regulations, so we cannot accommodate anything less than a 5M BOP.

2) Also the 9 5/8" casing requires a 10M BOP but a 5M BOP is proposed.

- I understand that you will be able to accommodate a 10M BOP. I understand your point in requesting to test it to 7500 psi but under our current regulations, testing it less than maximum working pressure would violate our current regulations.

3) The collapse calculations on both intermediate casing strings do not meet our required safety factors of 1.125.

- I have reviewed your comments and spoke with our engineering team here and we will be able to accommodate your current proposed intermediate casing designs.

4) I forgot to mention with my last email, but the production casing is inadequate because of collapse calculation safety factor. The production casing will need to be upgraded.

Thank you for your time and patience. I appreciate you putting in the time to evaluate my comments. I really appreciate it.

Very Respectfully,

Charles L. Nimmer
Petroleum Engineer
BLM - Carlsbad Field Office
Phone: (575) 234-2237
Email: cnimmer@blm.gov

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