QCD Artesia

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

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 reverse side.

5. Lease Serial No.
NMLC069464A

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.
ARCTURUS 18 FED 7H

2. Name of Operator
DEVON ENERGY PRODUCTION CO LP
Contact: TRINA C COUCH
EMail: trina.couch@dvn.com

9. API Well No.
30-015-42618-00-X1

3a. Address
333 WEST SHERIDAN AVE
OKLAHOMA CITY, OK 73102

3b. Phone No. (include area code)
Ph: 405-228-7203

10. Field and Pool, or Exploratory
HACKBERRY

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 17 T19S R31E NWSW 2080FSL 20FWL
32.658863 N Lat, 103.899978 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK 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	☐ Fracture Treat	☐ 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall 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 Company, L.P. respectfully requests changing the 9-5/8" Intermediate 2 setting depth approved at 4580 ft on the APD to 4050 ft to ensure a firmer casing shoe.

Devon Energy also respectfully requests to run a tapered production string of 7" x 5.5" casing to a total depth of 12,586 feet measured depth as long as hole conditions permits. If lost circulation is encountered we will stay as originally planned to run a 5-1/2" production longstring. Casing design requirements are attached as well as the cement design for both the 7" x 5-1/2" tapered production string and the 5-1/2" production longstring.

Attached is the revised drilling plan
Thank you

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 04 2015
RECEIVED

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Accepted for record
RD NMOCD 5/7/15

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #299719 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION CO LP, sent to the Carlsbad
Committed to AFMSS for processing by CHRISTOPHER WALLS on 04/29/2015 (15CRW0061SE)

Name *(Printed/Typed)* TRINA C COUCH — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 04/29/2015

APPROVED
APR 29 2015
/s/ Chris Walls
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

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

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.

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

Sundry Request: Arcturus 18 Fed 7H
AAA 4-23-2015: Adjust 9-5/8' Intermediate 2 Setting Depth; add option for a 7" x 5.5" Combination Production String

Sundry Request:
Devon Energy Production Company, L.P. respectfully requests changing the 9-5/8" Intermediate 2 setting depth approved at 4,580 ft on the APD to 4,050 ft to ensure a firmer casing shoe.

Devon Energy Production Company, L.P. respectfully requests to run a tapered production string of 7" x 5.5" casing to a total depth of 12,586 ft measured depth as long as hole conditions permits. If lost circulation is encountered we will stay as originally planned to run a 5-1/2" production longstring. Casing design requirements are below as well as the cement design for both the 7" x 5-1/2" tapered production string and the 5-1/2" production longstring.

Casing Program Changes: 7" x 5.5" Tapered Production String

Hole Size	Hole Interval	OD Csg	Casing Interval	Weight	Collar	Grade
12-1/4"	2365 - 4050	9-5/8"	0 - 4050	40	LTC	J-55
8-3/4"	4050 - 7278	7"	0 - 7278	29#	BTC	P-110
8-3/4"	7278- 12586	5-1/2"	7278- 12586	17#	BTC	P-110

Casing Contingency Option: 5.5 Production Longstring

Hole Size	Hole Interval	OD Csg	Casing Interval	Weight	Collar	Grade
8-3/4"	0 - 12586	5-1/2"	0 - 12586	17#	BTC	P-110

Note: only new casing will be utilized

MAXIMUM LATERAL TVD **7,904**

Design Factors: 7" x 5.5" Tapered Production String

Casing Size	Collapse Design Factor	Burst Design Factor	Tension Design Factor
7" 29# P-110 BTC	2.50	3.29	4.40
5-1/2" 17# P-110 BTC	2.02	2.88	6.05

Casing Contingency Option: 5.5 Production Longstring

Casing Size	Collapse Design Factor	Burst Design Factor	Tension Design Factor
5-1/2" 17# P-110 BTC	2.02	2.88	2.55

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CEMENTING TABLE:

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
9-5/8' Intermediate 2 Single Stage	673	12.8	8.01	1.66	Lead	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 81.5% Fresh Water
	350	13.8	6.41	1.38	Tail	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.1% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.1% Fresh Water
9-5/8" Intermediate 2 2 Stage	174	12.8	8.01	1.66	1st Lead	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 81.5% Fresh Water
	350	13.8	6.40	1.38	1st Tail	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.1% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.1% Fresh Water
	DVT @ 2450'					
	375	12.8	8.02	1.66	2nd Lead	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 5 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 81.6% Fresh Water
	150	13.8	6.41	1.38	2nd Tail	(60:40) Poz (Fly Ash):Prem Plus C + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.5% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.2% Fresh Water
7" x 5-1/2" Production Casing Single Stage	185	11.8	13.15	2.30	1st Lead	(50:50) Poz (Fly Ash):Prem Plus H + 0.005 lbs/sack Static Free + 0.5% bwoc FL-52 + 0.3% bwoc ASA-301 + 0.005 gps FP-6L + 10% bwoc Bentonite + 0.35% bwoc R-21 + 130.6% Fresh Water
	171	12.5	11.00	2.01	2nd Lead	(35:65) Poz (Fly Ash):Prem Plus H + 0.005 lbs/sack Static Free + 3% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125 lbs/sack Cello Flake + 0.7% bwoc FL-52 + 0.3% bwoc ASA-301 + 0.005 gps FP-6L + 6% bwoc Bentonite
	1381	14.2	5.76	1.28	Tail	(50:50) Poz (Fly Ash):Prem Plus H + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 0.4% bwoc FL-52 + 0.005 gps FP-6L + 0.5% bwoc Sodium Metasilicate + 57.2% Fresh Water

Production @ 2489' (Cement top will tie-back 50' above Capitan Reef at 2539')

Notes:

- Cement volumes Production based on at least 25% excess
- Actual cement volumes will be adjusted based on fluid caliper and caliper log data
- If lost circulation is encountered while drilling the production wellbore, the 5.5" original production longstring will be used with a DV tool installed a minimum of 50' below the previous casing shoe and of 200' above the current shoe. If the DV tool has to be moved, the cement volumes will be adjusted proportionately.

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CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Devon Energy Production Company, L.P.
LEASE NO.:	NMLC-069464A
WELL NAME & NO.:	Arcturus 18 Federal 7H
SURFACE HOLE FOOTAGE:	2080' FSL & 0020' FWL
BOTTOM HOLE FOOTAGE	2080' FSL & 0340' FWL Sec. 18, T. 19 S., R 31 E.
LOCATION:	Section 17, T. 19 S., R 31 E., NMPM
COUNTY:	Eddy County, New Mexico

A. CASING

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.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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.

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

Medium Cave/Karst
Capitan Reef
Possibility of water flows in the Artesia Group, Salado, Queen, and Capitan Reef.
Possibility of lost circulation in the Artesia Group, Rustler, Delaware, and Capitan Reef.

1. The **20** inch surface casing shall be set at approximately **500** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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 is to include the lead cement slurry.

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 **13-3/8** inch 1st intermediate casing is:

Option #1:

☒ 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.**

Option #2:

Operator has proposed DV tool at depth of 550', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ 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. Excess calculates to 5% - Additional cement may be required.**

3. The minimum required fill of cement behind the **9-5/8** inch 2nd intermediate casing is:

Option #1:

☒ 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.**

Option #2:

Operator has proposed DV tool at depth of 2450', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

a. First stage to DV tool:

☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.

b. Second stage above DV tool:

☒ 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. Excess calculates to 5% - Additional cement may be required.**

If 75% or greater lost circulation occurs while drilling the 2nd intermediate casing hole, the cement on the production casing must come to surface.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

4. The minimum required fill of cement behind the **5-1/2 (or tapered 7 x 5-1/2)** inch production casing is:

   ☒ Cement should tie-back at least **50 feet above the Capitan Reef** (Top of Capitan Reef estimated at 3404'). Operator shall provide method of verification.

5. 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.

CRW 042915

Form 3160-5
(August 2007)

OCD Artesia

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

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 reverse side.

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NMLC069464A

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.
ARCTURUS 18 FED 7H

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

9. API Well No.
30-015-42618-00-X1

3a. Address
333 WEST SHERIDAN AVE
OKLAHOMA CITY, OK 73102

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

10. Field and Pool, or Exploratory
HACKBERRY

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 17 T19S R31E NWSW 2080FSL 20FWL
32.658863 N Lat, 103.899978 W Lon

11. County or Parish, and State
EDDY COUNTY, NM

12. CHECK 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	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Drilling Operations
	☐ 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Jennifer, Chris & Ed:

Change 13-3/8" & 9-5/8" Intermediate Casings

Devon Energy Production Company, L.P. respectfully requests permission to change the approved 13-3/8", 68 ppf casing to 13-3/8", 61 ppf; and the 9-5/8", 40#, HCK-55 to 40#, J-55.

Please find the attached summary of the changes and the Design Factors.

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

Electronic Submission #299716 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION CO LP, sent to the Carlsbad
Committed to AFMSS for processing by CHRISTOPHER WALLS on 04/29/2015 (15CRW0062SE)

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

Signature (Electronic Submission) — Date 04/29/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

APPROVED

Approved By _____ Title _____ Date APR 29 2015

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

/s/ Chris Walls
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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.

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

Sundry Request: Arcturus 18 Fed 7H
AAA 4-28-2015: Change 13-3/8" & 9-5/8" Intermediate Casings

Sundry Request:
Devon Energy Production Company, L.P. respectfully requests changing the approved 13-3/8", 68 ppf casing to 13-3/8", 61 ppf; and the 9-5/8", 40#, HCK-55 to 40#, J-55. Please find the summary of the changes and the Design Factors below.

Casing Program Changes:

Hole Size	Hole Interval	OD Csg	Casing Interval	Weight	Collar	Grade
13-3/8"	500 - 2365	13-3/8"	0 - 2365	61	BTC	J-55
12-1/4"	2365 - 4050	9-5/8"	0 - 4050	40	LTC	J-55

Note: only new casing will be utilized

Design Factors:

Casing Size	Max Mud Wt (ppg)	Collapse Design Factor	Burst Design Factor	Tension Design Factor
13-3/8", 61#, J-55, BTC	10.0	1.25	2.51	7.10
9-5/8", 40#, J-55, LTC	9.0	1.36	2.08	3.21