

**STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION**

November 1, 2018 Hearing

**APPLICATION OF DEVON ENERGY
PRODUCTION COMPANY, L.P.
FOR COMPULSORY POOLING,
EDDY COUNTY, NEW MEXICO.**

CASE NO. 16449

Please Scan

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STATE OF NEW MEXICO
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OIL CONSERVATION DIVISION

APPLICATION OF DEVON ENERGY PRODUCTION COMPANY, L.P.
FOR COMPULSORY POOLING, EDDY COUNTY, NEW MEXICO.

CASE NO. 16449

AFFIDAVIT OF JOE HAMMOND

Joe Hammond of lawful age and being first duly sworn, declares as follows.

1. My name is Joe Hammond. I work for Devon Energy Production Company L.P. ("Devon") as a Landman.
2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum land matters. My credentials as a petroleum landman have been accepted by the Division and made a matter of record.
3. I am familiar with the application filed by Devon in these matters and I am familiar with the status of the lands in the subject areas.
4. None of the pooled parties named in this application have indicated opposition, therefor opposition at hearing is not anticipated.
5. In **Case No. 16449**, Devon is seeking an Order (a) pooling all uncommitted interests (working interest owners, mineral interest owners and/or overriding royalty interest owners) in the Bone Spring formation (Cedar Canyon; Bone Spring, Pool Code 11520) in a 640 acre, more or less, standard horizontal spacing unit comprised of the E/2W/2 of Section 31 and E/2W/2 Section 30, Township 23 South, Range 29 East, and the W/2E/2 of Section 31 and W/2E/2 Section 30, Township 23 South, Range 29 East, NMPM, Eddy County, New Mexico; (b) dedicating the proposed standard horizontal spacing unit to the **Spud Muffin 31-30 332H Well** which will be horizontally drilled from a surface location in Unit N of Section 31, Township 23 South, Range

29 East, Eddy County, New Mexico, to a bottom hole location in Unit C of Section 30-T23S-R29E, Eddy County, New Mexico; and (c) designating Devon Energy Production Company, L.P. as the operator of the well and spacing unit.

6. **Devon Exhibit No. 1** is a Form C-102 for the proposed well which has been approved by the NMOCD, API 30-015-45302. The proposed standard horizontal spacing and proration unit encompassing 640 acres is reflected as a red outline on the C-102. The proposed Spud Muffin 31-30 332H well will drilled within the Cedar Canyon; Bone Spring, (Pool Code 11520). The northern-most take-point and the southern-most take-point of the completed interval will be orthodox; however, the take-points in between the northern-most and southern-most take-points will be within ten (10) feet from the offsetting tracts (W/2E/2 of Section 30 and W/2E/2 of Section 31) and will be unorthodox. Applicant, therefore, proposes to include the W/2E/2 of Section 30 and W/2E/2 of Section 31 (proximity tracts) within its proposed 640-acre standard horizontal spacing and proration unit. Devon plans to batch drill and complete the wells proposed in pending Case Nos. 16163, 16164 (Wolfcamp), 16346 and 16349 (Bone Spring) and this Case No. 16449; therefore, Devon requests 365 days be allowed between spud and completion of the first well rather than the 120 days.

7. **Devon Exhibits No. 2** are copies of the well proposal letters Devon sent to all working interest owners within the 640-acre spacing unit, together with a copy of the Authority for Expenditure (AFE) included with the well proposal letter.

8. The proposal letters and the C-102 both place the proposed bottom hole location of the well 10 feet west of the boundary between of the W/2E/2 and E/2W/2 of Sections 30 and 31 ("Centerline"); however, the surveyed footage set forth in the C-102 takes into account the acreages in Lots 1, 2, 3 and 4 in each section and differs slightly from the footage found in the proposal letter which calculated footage based on an assumption of 40 acre tracts.

9. There are no depth severances within the Bone Spring Formation within this

proposed standard horizontal spacing unit.

10. There are no unleased mineral interest owners within the proposed unit.

11. The proposed spacing and proration unit includes fee lands only. All of the fee oil and gas leases covering the proposed spacing unit include pooling clauses granting the lessee the right to pool or unitize the leased acreage.

12. Devon has estimated well costs of \$8,134,067.00, as reflected in the Authority for Expenditure (AFE), which are consistent with what other operators have incurred for drilling similar Bone Spring horizontal wells in the area.

13. **Devon Exhibit No. 3** includes a plat and exhibit identifying the tracts of land comprising the proposed standard horizontal spacing unit, including the proximity tracts. This exhibit shows the interest owners and the percentage of their interest in each tract as well as a unit recapitulation showing the percentage of each interest owner in the spacing unit.

14. Devon requests overhead and administrative rates for drilling and producing the proposed well at \$8,000 per month while drilling and \$800 per month while producing. These rates are fair and are consistent with what other operators are charging in this area for similar type wells. Devon requests these rates be adjusted periodically as provided in the COPAS Accounting Procedure.

15. I have been in contact with Chevron USA, Inc., Oxy USA, Inc., RKI/WPX Energy, Inc. and Nortex Corp. who comprise all of the working interest owners within the proposed unit other than Devon. My negotiations with the working interest owners consisted of well proposal letters, multiple phone calls and emails that began August 14, 2018 and these communications continue to current date. I have been informed by each of these parties that they will either participate if current negotiations to trade acreage are not consummated.

16. The status of Devon's negotiations with each working interest owner is as follows:

(a) Nortex – has signed the AFE and a proposed JOA was sent on September 24, 2018.

(b) Chevron – has signed the AFE. Devon and Chevron are negotiating an acreage trade pertaining to this acreage and other lands. A proposed JOA was sent on September 24, 2018 and October 10, 2018.

(c) Oxy – Devon and Oxy are negotiating an acreage trade pertaining to this acreage and other lands. Oxy has not signed the AFE. A proposed JOA was sent on September 24, 2018 and October 10, 2018. Devon and Oxy have executed a side letter agreement dated June 15, 2018 that governs how elections will be handled while trade discussions are ongoing.

(d) RKI/WPX – has not signed the AFE. Devon and RKI/ are currently negotiating an acreage trade agreement pertaining to this acreage and other lands. A proposed JOA was sent on October 10, 2018.

17. **Devon Exhibit 4** is a list of names, addresses and type of interest owned for all parties Devon seeks to pool.

18. **Devon Exhibit 5A and 5B** is an Affidavit of Notice prepared by Devon's attorney regarding notice which has been given of this hearing to all mineral interest owners within the proposed spacing unit. In an abundance of caution, notice of the hearing on this application has been provided to all overriding royalty interest owners. **Exhibit 5B** is a list of all owners who were unlocatable or for whom a return receipt card was not received.

19. **Devon Exhibit 6** is an Affidavit of Publication identifying by name each interest owner who was unlocatable or for whom a return receipt card was not received.

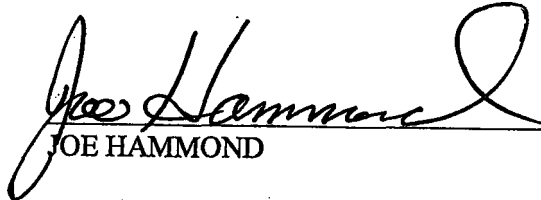
21. In obtaining an address for each interest owner Devon conducted a diligent search of public records in the county where the proposed well is located, as well as a search of free and paid internet search engines, such as Intelious, Accurint, white pages phone directories and Ancestry.com.

22. In my opinion, Devon has made a good faith effort to reach an agreement with the parties it is seeking to pool. If Devon reaches and agreement with any of the proposed pooled parties before the Division enters an Order, the Division will be notified that Devon is no longer seeking to pool those parties.

23. The Devon Exhibits 1 through 6 attached to this application were either prepared by me or compiled under my direction and supervision.

24. The granting of this application will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

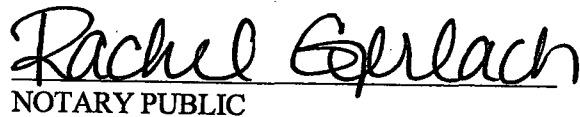
FURTHER AFFIANT SAYETH NOT


JOE HAMMOND

STATE OF OKLAHOMA)

COUNTY OF OKLAHOMA)

SUBSCRIBED and SWORN to before me this 29th day of October 2018 by Joe Hammond.


NOTARY PUBLIC

My Commission Expires:

6.22.19



**STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL
RESOURCES OIL CONSERVATION DIVISION**

**APPLICATION OF DEVON ENERGY PRODUCTION COMPANY, L.P.
FOR COMPULSORY POOLING, EDDY COUNTY, NEW MEXICO.**

CASE NO. 16449

AFFIDAVIT OF SUSAN ESTES

Susan Estes, of lawful age and being first duly sworn, declares as follows:

1. My name is Susan Estes. I work for Devon Energy Production Company L.P. ("Devon") as a geologist.
2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum geology. My credentials as a petroleum geologist have been accepted by the Division and made a matter of record.
3. I am familiar with the application filed by Devon Energy Production Company, L.P. in this case and I have conducted a geologic study of the Bone Spring Formation underlying the subject acreage.
4. Devon is targeting the Bone Spring Formation (3rd Bone Spring Sand interval) with the proposed Spud Muffin 31-30 332H well. The well will be located in the Cedar Canyon, Bone Spring Pool (pool code 11520).
5. **Devon Exhibit No. 7** is a map view of the execution plan for the 3rd Bone Spring Sand in the Spud Muffin development block in Sections 30 and 31, Township 23 South, Range 29 East, Eddy County, New Mexico. The proposed wellbores are denoted by the red lines, with the BHL locations being depicted by the red circles (i.e. these are all 2-mile laterals drilling south to north). The proposed Standard Horizontal spacing Unit for the well is

depicted by the blue outline or box. The subject well in this case (#16449) is the Spud Muffin Com 332H but the 331H and 334H wells were previously heard in case numbers 16346 (Exhibit 8) and 16349 (Exhibit 7) on September 6, 2018. Initially, the team had planned 4 wells per section but after evaluating public data of the 3rd Bone Spring wells in the area, the team felt that 3 wells per section would more effectively drain and develop the 3rd Bone Spring within Sections 30 and 31. Further clarification will be forthcoming in Exhibit # 13 and by testimony of Devon's Reservoir Engineer.

6. **Devon Exhibit No. 8** is a subsea structure map that I prepared for the top of the 3rd Bone Spring Sand. The proposed Standard Horizontal Spacing Unit for the well is depicted by the blue outline or box. The contour interval is 50 feet and the proposed wellbore path for the 332H well is depicted by the red line, with the BHL being indicated by the red circle. Offset 3rd Bone Spring horizontal producers are indicated by the blue triangles. The structure map shows that the area is gently dipping to the east and into the basin by approximately 1 degree +/- . I do not observe any faulting, pinch-outs, or other geologic impediments or hazards to developing this targeted interval with a horizontal well.

7. **Devon Exhibit No. 9** is a gross isopach map that I prepared for the 3rd Bone Spring Sand. As in the previous map, the proposed Standard Horizontal Spacing Unit for the well is depicted by the blue outline or box, the proposed wellbore path is denoted by the red line and the BHL is indicated by the red circle. Existing 3rd Bone Spring horizontal producers are indicated by the blue triangles. The contour interval is 10 feet and thickness of the 3rd Bone Spring Sand interval over the Spud Muffin development block ranges from approximately 330 feet to almost 370 feet. Also shown on the map are two (2) lines of section for cross-sections that I prepared to illustrate the consistent and contiguous nature of the 3rd Bone Spring Sand. The red line (A-A') is a strike section of type wells that penetrate the Bone Spring in and offsetting the Spud Muffin development block; the blue line (B-B') is a dip section of type logs that penetrate the Bone Spring in and offsetting the Spud Muffin

development block.

8. **Devon Exhibit No. 10** is a south to north strike section (A-A') illustrating the type wells (wells that are representative of the area) in and offsetting the Spud Muffin development block that penetrate the 3rd Bone Spring Sand (shown on the previous exhibit) with the line of section shown on the inset map. Each well in the cross-section contains gamma ray, resistivity, and porosity logs. The proposed target interval is labeled and depicted by the yellow shading. The cross-section demonstrates that the targeted interval extends across the proposed spacing and proration unit (i.e. laterally contiguous) and is consistent in thickness and log character.

9. **Devon Exhibit No. 11** is a west to east dip section (B-B') illustrating the type wells (wells that are representative of the area) in and offsetting the Spud Muffin development block that penetrate the 3rd Bone Spring Sand (shown on the previous exhibit) with the line of section shown on the inset map. Each well in the cross-section contains gamma ray, resistivity, and porosity logs. The proposed target interval is labeled and depicted by the yellow shading. The cross-section demonstrates that the targeted interval extends across the proposed spacing and proration unit (i.e. laterally contiguous) and is consistent in thickness and log character.

10. **Devon Exhibit No. 12** is a gun-barrel diagram (similar to a cross-section) illustrating how Devon is attempting to mitigate potential communication issues between the 3rd Bone Spring and the Upper Wolfcamp Formations. Since public data suggests that there is apparent communication between the two formations, Devon is doing everything we can to mitigate that risk and be a prudent operator. Since it is unknown how much these two formations communicate with each other, Devon is treating the Spud Muffin development block more like a pilot program so that we can obtain data to inform future decisions in our offsetting core acreage position. This data will allow us to optimize spacing patterns (wells

per section) and production, as well as prevent both waste and over-capitalization. Due to these potential communication issues, Devon will be co-developing the 3rd Bone Spring and the Wolfcamp XY.

On the right of the diagram is a wireline log showing the formation tops, log character and petrophysical attributes of the Lower 3rd Bone Spring Sand, the Wolfcamp XY Sands and the Wolfcamp 100 (aka Upper Wolfcamp A). On the left side of the diagram, the red and blue dots illustrate the planned vertical and horizontal spacing between the 3rd Bone Spring and Wolfcamp XY laterals, running west to east in the 1-mile Spud Muffin development block as shown in the small inset map to the right. The red dots represent the 3rd Bone Spring wells and the blue dots represent the Wolfcamp XY wells. Devon is planning to stagger the laterals ~ 250 feet or more vertically between the 3rd Bone Spring and Wolfcamp XY targets and between ~ 660-880 feet horizontally between targets so as to put as much distance as possible between the two formations to avoid potential interference issues. On a planar (same target formation) basis, the laterals will be spaced ~ 1,540-1,640 feet apart across the development block from west to east. Additionally, Devon will be installing down-hole gauges to monitor pressures between the two formations, as well as obtaining DFIT and PVT data. This data will inform our reservoir and frac modeling, as well as our petrophysical models, which ultimately impacts future decisions in our core acreage position.

11. In my opinion the south to north orientation of the proposed well in the Bone Spring formation is appropriate in order to effectively drain the targeted reservoirs and is effectively perpendicular to the maximum stress regime observed in the area.

12. Based on my geologic study of the area, the Bone Spring Formation underlying the subject area is suitable for development by horizontal wells and the acreage comprising the proposed spacing and proration units will contribute more-or-less equally to the production from the wellbores.

13. In my opinion, the granting of Devon's application will be in the best interest of conservation, the prevention of waste, and protection of correlative rights.

FURTHER AFFIANT SAYETH NOT.

Susan Estes
SUSAN ESTES

STATE OF OKLAHOMA)
)
COUNTY OF OKLAHOMA)

SUBSCRIBED and SWORN to before me this 29th day of October 2018 by
Susan Estes.

Rachel Gerlach
NOTARY PUBLIC

My Commission Expires:

6.22.19



**STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL
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CASE NO. 16449

AFFIDAVIT OF JASON GARRETT

Jason Garrett, of lawful age and being first duly sworn, declares as follows:

1. My name is Jason Garrett. I am a Reservoir Engineer for Devon Energy Production Company, L.P. ("Devon"). My responsibilities at Devon include performance of reserve appraisals, subsurface characterizations, and performance prediction.
2. I received a Bachelor of Science degree in petroleum engineering from University of Oklahoma in 2010. I have worked as a petroleum engineer since 2010. Prior to working for Devon, I worked for Denbury Resources and Wagner Oil.
3. I am familiar with the application filed by Devon in this case. I am also familiar with the applications filed by Devon in Case Nos. 16163, 16164, 16346 and 16349 heard by the Division on September 6, 2018 and pertaining to offsetting lands within the same Sections 30 and 31, Township 23 South, Range 29 East, Eddy County, New Mexico. I have conducted a spacing analysis of the Bone Spring formation underlying the subject acreage. I have also conducted a spacing analysis of the Wolfcamp formation.
4. In this case Devon is targeting the Bone Spring formation (3rd Bone Spring Sand interval) with the proposed Spud Muffin 31-30 332H well. In Devon's related Case Nos. 16346 and 16349, Devon is targeting the same formation and interval.
5. I analyzed reservoir characteristics of the 3rd Bone Spring reservoir in Sections 30 and 31, and reviewed well performance from wells in comparable areas.

Reviewing wells targeting both the Wolfcamp XY and 3rd Bone Spring, we see communication between these two zones and we have determined they should be co-developed.

6. **Devon Exhibit No. 13** is an early production analysis graph of horizontal wells drilled since 2015 at varying distances between laterals. The plot shows the IP30 or peak 30-day production rate versus the number of wells per section (WPS). The WPS correlates to the distance between the type wells as noted in the lower left of the slide. All of the type wells target the Wolfcamp XY which have similar reservoir characteristics to the 3rd Bone Spring. The type wells are located in 23S 27E and 23S 28E, 5-10 miles west of the subject Sections 30 and 31. The map on the right shows the type wells, highlighted with pink circles and red triangles, and their relationship to each other. Wells drilled in the 3-4 WPS range (or 1,320-1,760 feet apart) perform with the ability to capture the available resource in an economic manner. The type wells drilled at 5-8 WPS (or 660-1056 feet apart) do not capture additional resource in an economic manner, likely due to communication between wells in the Wolfcamp XY. Devon's development plan for Sections 30 and 31 proposed in this case and in NMOCD pending Case Nos. 16163 and 16164 (Wolfcamp) and Case Nos. 16346 and 16349 (Bone Spring) is a pilot program for Devon ("Pilot Program") ("Pilot Program Wells"). With this development plan Devon is testing a 3-4 WPS spacing for the Bone Spring, and gathering data [to include reservoir pressure (DFIT), flowing bottom hole pressure from gauges, and fluid property analysis (PVT)] to understand further how the spacing and target intervals (Wolfcamp XY and 3rd Bone Spring) communicate.

7. As a result of my analysis and in my opinion, the location of the Spud Muffin 31-30 332H well as reflected in the C-102 (Exhibit 1, Affidavit of Joe Hammond), when batch drilled and completed in conjunction with the other Pilot Program Wells will effectively drain the target intervals of the Bone Spring and Wolfcamp formations underlying all of

Sections 30 and 31 without waste of resources and over-capitalization, while minimizing communication between the 3rd Bone Spring and XY Wolfcamp intervals.

8. In my opinion each quarter-quarter section within each of the proposed spacing and proration units for all of Devon's Pilot Program Wells will contribute more or less equally to production from the wells proposed in each unit.

9. In my opinion, the granting of Devon's application will be in the best interest of conservation, the prevention of waste, and protection of correlative rights.

FURTHER AFFIANT SAYETH NOT.


JASON GARRETT

STATE OF OKLAHOMA)
)
COUNTY OF OKLAHOMA)

SUBSCRIBED and SWORN to before me this 29th day of October 2018 by
Jason Garrett.


NOTARY PUBLIC

My Commission Expires:

10.22.19

