

**BEFORE THE CORPORATION COMMISSION
OF THE STATE OF OKLAHOMA**

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CORPORATION COMMISSION
OF OKLAHOMA

APPLICANT: WALTER DUNCAN OIL, LLC)
AND DUNCAN OIL)
PROPERTIES, INC.)
RELIEF SOUGHT: LOCATION EXCEPTION) CAUSE CD NO.
201407025)
LEGAL DESCRIPTION: SECTION 25, TOWNSHIP 16)
NORTH, RANGE 20 WEST,)
DEWEY COUNTY, OKLAHOMA)

REPORT OF THE OIL AND GAS APPELLATE REFEREE

This Cause came on for hearing before **Andrew Dunn**, Administrative Law Judge ("ALJ") for the Corporation Commission of the State of Oklahoma, on the 19th day of December, 2014, the 12th and 13th day of March, 2015, at 8:30 a.m. in the Commission's Courtroom, Jim Thorpe Building, Oklahoma City, Oklahoma, pursuant to notice given as required by law and the rules of the Commission for the purpose of taking testimony and reporting to the Commission.

APPEARANCES: **James M. Peters**, attorney, appeared on behalf of applicant, Walter Duncan Oil, LLC and Duncan Oil Properties, Inc. (collectively "WD"); **Charles Helm**, attorney, appeared on behalf of JMA Energy Company, LLC; Leedey Acquisition Company, LLC.; and Yukon Trading Company, LLC. (collectively "JMA"); **Freda Williams** and **David Mindieta**, attorneys, appeared on behalf of Chesapeake Operating, Inc. ("Chesapeake"); and **James L. Myles**, Deputy General Counsel for Deliberations, filed notice of appearance.

The Administrative Law Judge ("ALJ") filed his Report of the Administrative Law Judge on the 16th day of June, 2015, to which Exceptions were timely filed and proper notice given of the setting of the Exceptions.

The Appellate argument concerning the Oral Exceptions was referred to **Patricia D. MacGuigan**, Oil and Gas Appellate Referee ("Referee"), on the 10th day of August, 2015. After considering the arguments of counsel and the record contained within this Cause, the Referee finds as follows:

STATEMENT OF THE CASE

WD TAKES EXCEPTION to the recommendation of the ALJ to deny the location exception application.

WD filed an application for a location exception in Section 25, T16N, R20W, Dewey County, Oklahoma. WD's position is that the Commission should issue an order allowing it to drill and complete a cased and cemented horizontal well on a 640 acre unit in the Douglas (less Tonkawa), Tonkawa, Cottage Grove, and Cleveland common sources of supply with WD as the designated operator with the First Perforation no closer than 330 feet FSL and not closer than 750 feet FWL of Section 25-16N-20W, Dewey County, Oklahoma; and Second Perforation to be no closer than 330 feet FNL and no closer than 750 feet FWL of Section 25-16N-20W, Dewey County, Oklahoma. JMA Energy Company, LLC. ("JMA") protests WD's request to drill an Upper Cleveland well not closer than 750 feet FWL of Section 25, T16N, R20W, Dewey County, Oklahoma.

WD TAKES THE POSITION:

- 1) The Report of the ALJ is contrary to the law, unsupported by substantial evidence, arbitrary and capricious, and fails to achieve the goals of the State of Oklahoma and the Commission for the protection of correlative rights.
- 2) The Report of the ALJ is not upon terms which are fair, just and reasonable to all parties.
- 3) The evidence reflected that the Commission established Section 25-16N-20W as a 640 acre drilling and spacing unit by Order No. 66315 for the Cleveland separate common source of supply. In this regard, the Cleveland throughout this trend was initially developed by vertical drilling over the past two decades. These wells generally targeted the lower member of the Cleveland. With the advent of horizontal drilling, operators commenced utilizing said technique in drilling additional wells in the Lower Cleveland. WD has drilled three Lower Cleveland vertical wells in Section 25 and one horizontal well in the Lower Cleveland. In this regard, the Moore #1-25 well (a vertical Cleveland well) was drilled at a location in the SW/4 at a point 1320 feet FWL and approximately 835 feet FSL.
- 4) The uncontroverted evidence established that the Lower Cleveland reservoir contains limited permeability and low porosity which has resulted in wells having limited drainage. Further, the evidence established that the reservoir characteristics of the Upper Cleveland are not as good as those

contained in the Lower Cleveland which resulted in very few attempts to complete the vertical wells in the Upper Cleveland formation.

5) However, Chesapeake completed the Bucknell #21-16-20 #1-H as a horizontal well in the Upper Cleveland in May of 2012. This completion has led to subsequent development in the township of the Upper Cleveland. Mr. Branesky, a landman for WD, testified that they proposed to drill a horizontal well to test the Upper Cleveland at a location between the Moore #1-25 well and west unit boundary line from a surface location approximately 900 feet FWL and 190 feet FSL drilling in generally a north direction. WD sought a location that would encounter the Upper Cleveland not closer than 750 feet to the west line and not closer than 330 to the north and south unit boundary lines utilizing a cased and cemented completion, a surface location approximately 900 feet FWL and 190 feet FSL in generally a north direction. This location was selected by WD to provide the best opportunity to evaluate the Upper Cleveland and provide for subsequent development if successful. He identified the following sections in which the Oklahoma Corporation Commission had authorized Upper Cleveland wells at locations closer than 750 feet to an east-west boundary line as follows: 24-16N-20W, 26-16N-20W and 16-16N-20W. Further, JMA had pending applications for a location exception for an Upper Cleveland well 600 feet from the west unit boundary in 18-16N-19W.

6) In addition, the evidence established that JMA had obtained location exceptions to drill Upper Cleveland wells in Section 27-16N-20W at a location not closer than 600 feet to the east line (the Foster Trust #1-27H) and in Section 28-16N-20W (the Fletcher #1-H).

7) The ALJ, in limiting his analysis to the immediate offsets, is unreasonable and fails to consider compelling and pertinent evidence as to the development of the Upper Cleveland in this township. It is clear in that evaluating the development the Commission has consistently authorized location exceptions for Cleveland horizontal wells at locations closer than what WD is seeking in this cause.

8) The ALJ erred by failing to recognize the engineering data which established that a well drilled at the location proposed by WD was necessary and would have no adverse impact upon the offsetting units. The ALJ Report fails to protect correlative rights, prevent waste and deprives the royalty owners and working interest owners in Section 25 of the opportunity to recover hydrocarbons that underlie the W/2 W/2 of Section 25. The overwhelming evidence established that the Upper Cleveland wells have limited drainage areas and that multiple wells will be required to fully recover the hydrocarbons underlying a unit.

9) The ALJ Judge failed to consider the adverse effect his decision will have upon potential subsequent development taking into consideration the location

of the vertical Moore #1-25 well, the drainage from the Upper Cleveland and the need for additional wells. In this regard, it should be noted that JMA's expert Carol Kinney acknowledged that she testified for JMA in securing their location exception for an Upper Cleveland well in Section 24-16N-20W as follows: "This is a new zone. It's —it's more or less a wildcat zone, so we want to better space subsequent wells that may be drilled in Section 24 and at this time because is a wildcat zone, we have no idea how many wells we will drill in Section 24. So, it's best to space it along either the east side or the west side in order to space those later wells in case there's either an odd or an even number of them." and that it would have no adverse impact on offsetting owners. See OCC Interim Order No. 609629.

10) The ALJ's finding that "No inequity will occur by denying this location exception" is unsupported by any substantial evidence whatsoever. The ALJ fails to recognize or take into account that the technical evidence indicates (1) that the Upper Cleveland is primarily productive of oil, (2) that the reservoir characteristics are inferior to those which exist in the Lower Cleveland, and (3) that the Upper Cleveland has more limited drainage. Certainly, it's apparent from a review of Exhibit 2 and the testimony concerning the limited drainage from these reservoirs that the Commission has authorized multiple location exceptions for the vertical and horizontal wells as well as multiple increased densities per section. The ALJ, in his analysis, fails to recognize or just ignores the multiple Upper Cleveland location exceptions authorized by the Oklahoma Corporation Commission.

11) The ALJ's statement that WD will have a better chance of a successful well at a legal location as compared to the proposed location and "No unreasonable circumstances will arise, such as the risk of encountering a fault or encountering a thinner Upper Cleveland zone, by denying this location exception", is not the relevant factor. This statement evidences a lack of understanding of the risks associated with horizontal drilling and development of this Upper Cleveland formation. Further, there is very limited well information available to make such a definitive statement. However, the production available from the wells producing from the Upper Cleveland offsetting Section 25 indicate the most favorable location is west. Under the facts of this case, deference should be afforded to the location selected for the initial well by the operator who is investing and thus risking the funds for development.

12) The Report of the ALJ does not suggest anywhere that there would be an adverse impact on the offsetting units if the location exception requested by WD is granted. The ALJ's conclusion that a legal location is not unreasonable fails to consider the island of non-development that will result for which another future well cannot be economically justified. The evidence presented clearly demonstrated there is a need to space the proposed horizontal well from the existing vertical well and avoid an island of non-development in the W/2

W/2 of Section 25 which will result if the proposed horizontal well is drilled at a legal location because of limited drainage characteristics of the Upper Cleveland.

13) WD respectfully request the Commission reverse the Report of the ALJ and that the location exception sought by WD be granted.

THE ALJ FOUND:

1) WD filed an application for a location exception in Section 25-16N-20W, Dewey County, Oklahoma. WD's position is that the Commission should issue an order allowing it to drill and complete a cased and cemented horizontal well on a 640 acre conventional drilling and spacing unit in the Douglas (less Tonkawa), Tonkawa, Cottage Grove, and Cleveland common sources of supply with WD as the designated operator with the First Perforation no closer than 330 feet FSL and not closer than 750 feet FWL of Section 25-16N-20W, Dewey County, Oklahoma; and Second Perforation to be no closer than 330 feet FNL and no closer than 750 feet FWL of Section 25-16N-20W, Dewey County, Oklahoma.

2) JMA protests WD's application to drill an Upper Cleveland well not closer than 750 feet FWL of Section 25. JMA argues that WD should drill from a legal location not closer than 1320 feet to west boundary. JMA does not protest the north/south footages WD proposes.

3) Spacing orders set forth limitations for where a well may be located. These limitations vary with the size of the spaced unit. The Commission allows one to file an application for a location exception order to drill off-pattern in those cases where an operator needs a location variance because of surface or geological reasons or for another equitable reason. 52 O.S. Section 87.1 provides the Commission with the power to grant location exceptions when the requisite statutory requirements are met. 52 O.S. Section 87.1(c) provides in relevant part: "Subject to other provisions of this act, Section 81 et seq. of this title, the order establishing such spacing or drilling units shall direct that no more than one well shall thereafter be produced from the common source of supply on any unit so established, and that the well permitted on that unit shall be drilled at the location thereon as prescribed by the Commission, with such exception as may be reasonably necessary where it is shown, upon application, notice and hearing in conformity with the procedural requirements of Sections 86.1 et seq. of this title, and the Commission finds that any such spacing unit is located on the edge of a pool and adjacent to a producing unit, or for some other reason that to require the drilling of a well at the prescribed location on such spacing unit would be inequitable or unreasonable. Whenever such an exception is granted, the Commission shall adjust the allowable production for said spacing unit and take such other action as may be necessary to protect the rights of interested parties."

4) The issue before the ALJ is whether the prescribed location provided under Order No. 66316, which created conventional 640 acre drilling and spacing units for the Cleveland common source of supply, is inequitable or unreasonable to WD by requiring the well be located not closer than 1320 feet from the perimeter of the unit. The location exception must be shown to be reasonably necessary through supporting substantial evidence.

5) The ALJ had before him a battle of the experts. It is the duty of the ALJ to assign the weight to the expert opinion presented before him.

6) WD's petroleum geologist, Mr. Gerard J. Medina, testified on direct that the best geologic location for WD's proposed well in Section 25 was 750 feet to the west line and into evidence the Court admitted Exhibits 1 and 2, which were prepared by him to support WD's cause. Based on his study of production characteristics and logs for Cleveland wells over several townships, including the lands in question and surrounding lands, Mr. Medina testified that WD's proposed location was the best for recovery of hydrocarbons because that location had the best geology and provided for the most flexibility for developing the unit over time. The attorney for JMA, on cross-examination, then brought-forth from Mr. Medina that it was possible to drill a well from a legal location in a thicker portion of the Upper Cleveland common source of supply (in contrast to the WD's proposed location where it is a thinner portion of the Upper Cleveland). It was also brought forth on re-cross examination of the witness that not only is it possible to drill a lateral in a thicker portion of the Upper Cleveland from a legal location, but that by doing so WD gains additional lateral length in that thick-zone which is about 175 feet.

7) JMA's petroleum geologist, Ms. Carroll Kinney, testified on direct that there is no advantage to drilling the well further west geologically. The isopach map (Exhibit 2) shows that the contour of the Upper Cleveland is thickest in the N/2 of Section 25. She testified that, after her study of the isopach map, it is her conclusion that the location to place a well where the lateral will encounter the thickest portion of the Upper Cleveland is toward the center of Section 25 rather than to the west of the center of the section (where WD seeks to place its well in this location exception cause). Therefore, Ms. Kinney's opinion is that there is no geologic reason to get closer to the west boundary than 1320 feet because the legal location is an optimal location to drill a well. Ideally, she said, the goal is to drill in the thick reservoir rock.

8) The testimony of WD's and JMA's expert petroleum geologist witnesses are in agreement. Both believe that it is possible to drill a productive well from a legal location in Section 25 and, furthermore, that the place where a lateral will encounter the thickest portion of the Upper Cleveland over the greatest distance is in the center of Section 25 from a legal location.

9) The ALJ concludes that the prescribed legal location provided under Order No. 66316 is not inequitable or unreasonable to WD in its requirement that the well be located not closer than 1320 feet from the perimeter of the unit. No inequity will occur by denying this location exception application. WD will have an equal, if not better, chance at drilling a successful well from a legal location as compared to its proposed location exception footages. Undisputed geologic testimony from both sides showed that the thickest area of the Upper Cleveland is located toward the center of the section and that the lateral will encounter the greatest portion of this thickness toward the center of the section. No unreasonable circumstances will arise, such as the risk of encountering of a fault or encountering a thinner Upper Cleveland zone, by denying this location exception. Testimony provided that no faulting exists and that the thickest and longest portion of the Upper Cleveland exists toward the center (within the legal footage perimeters) of the section. The location exception WD seeks must be shown to be reasonably necessary through supporting substantial evidence and, here, expert testimony shows that it is possible to drill a successful well from a legal location.

11) The ALJ also finds that there is successful orderly development of the Upper Cleveland common source of supply by JMA and Chesapeake in the area. There are four Upper Cleveland horizontal wells in the surrounding area: a) in Section 23, Chesapeake drilled the Edward Mary #23-16-2 1H); b) in Section 24, JMA drilled the Kauk #24-4H well; c) in Section 26, JMA drilled the Lauder #26-1H well; and d) in Section 30, JMA drilled the Carney Hugh #3-7 well. The three of the above four Upper Cleveland wells are drilled from legal locations not closer than 1320 feet from the east or west lines of their respective sections. The Section 24 well is at an off-pattern location and it is located 838 feet FSL and 1,234 feet FWL for its first perforation and 337 feet FNL and 1,114 feet FWL for its last perforation. Thus, this well is about 86 feet (for its first perforation and 206 feet (for its second perforation) from being at a legal location not closer than 1,320 feet.

12) The orderly development of the Upper Cleveland common source of supply in the area follows a pattern for drilling from a location not closer than 1320 feet (in three of four instances). This development is in concord with the requirements of the conventional drilling and spacing units of each section. Requiring WD to drill from a legal location keeps with the pattern of development of the Upper Cleveland in the area surrounding Section 25.

13) The ALJ concludes that denying the location exception supports the prevention of waste and the protection of correlative rights. The primary purpose of prohibiting the drilling of a well into a common source of supply at a location other than that fixed by a spacing order is to prevent waste and affect conservation of oil and gas. See *Simpson v. Stanolind Oil and Gas Company*, 210 F.2d 640 (Okl. 1954). Note: The effective and efficient recovery and marketing of oil and gas resources is what the term 'conservation' describes.

Oklahoma is a Law-of-Capture state, as modified by the conservation laws established in Oklahoma. *Wood Oil Co. vs. Corporation Commission*, 239 P.2d 1023 (Okla. 1950); *Champlin Refining Company v. Corporation Commission of the State of Oklahoma*, 286 U.S. 210 (1932); and *In re Anderson*, 214 P.2d 896 (Okla. 1950). The Commission is granted almost plenary power and discretion in how to apply the doctrine of modified rule of capture or to safeguard the interests of the owners within a common source of supply and to prevent waste.

14) WD is afforded a reasonable opportunity to recover—without causing waste—a fair share of production from Section 25 by drilling within the prescribed parameters of 1320 feet from unit boundaries. Therefore, for the above reasons, WD's location exception is hereby denied.

POSITIONS OF THE PARTIES

WD

1) **James W. Peters**, attorney, appearing on behalf of WD, excepted to the ALJ Dunn's recommendation to deny the location exception relief for the Cleveland formation. WD proposes to drill an off-pattern increased density well in the W/2 of Section 25.

2) For this well, WD proposes to drill and complete a cased and cemented horizontal lateral in conventional 640 acre drilling and spacing units for the Douglas (less Tonkawa), Tonkawa, Cottage Grove and Cleveland formations. The first perforation of the completion interval would be 330 feet FSL of the governmental section and not closer than 750 FWL of that section. The second perforation would be 330 feet FNL of the section and not closer than 750 feet FWL of the section. JMA, who operates an Upper Cleveland horizontal oil well in Section 26, opposes encroachment on its well.

3) In 1967, Order No. 66315 established 640 acre drilling and spacing units for the production of natural gas from the Cleveland formation in the nine section area. Development of the Cleveland formation began with vertical well drilling in the late 1990s. Horizontal development began in 2012-2013. Exhibit 1 is a production map showing the vertical and horizontal wells drilled in the nine-section area.

4) Exhibits 3 and 4 present wireline surveys of the Cleveland formation. Those wireline logs show that the Cleveland formation consists of separate reservoirs, namely, an Upper Cleveland sandstone productive mainly of oil and a Lower Cleveland sandstone productive predominantly of gas. Before horizontal development, the focus of drilling in the Cleveland formation was on the Lower Cleveland, which contains limited permeability and low porosity

resulting in wells having limited drainage. In comparison, the reservoir characteristics of the Upper Cleveland are not as good as those contained in the Lower Cleveland resulting in very few attempts to complete vertical wells in the Upper Cleveland.

5) Interest in the Upper Cleveland began with completion of the CHK Bucknell #21-16-20 in May of 2012. WD now wants to develop the Upper Cleveland in the W/2 of Section 25 due to production from the CHK Mary Edward well in Section 23 and the JMA wells in Sections 24 and 26. WD proposes its off-pattern location in Section 25 for three reasons: 1) WD is moving toward well control; 2) ravines obstruct a location 900 feet FWL; and 3) the proposed WD well will not affect acreage outside the boundary of Section 25.

6) WD presented the pattern of development, various Commission orders and WD's engineering analysis, showing limited radial drainage, ranging from 22 acres to 187 acres at most. For WD, a limited drainage area results in recoverable reserves, left unproduced if WD must move toward a legal location. Such a result causes waste, leaving approximately 70 acres unrecovered and violates correlative rights of owners in Section 25.

JMA

1) **Charles L. Helm**, attorney, appearing on behalf of JMA, believes WD asks the Commission to incorrectly assume that drainage from a horizontal well in the Upper Cleveland will be as bad or worse than a well completed in the Lower Cleveland. The thickness of the Upper Cleveland increases as you move eastward. The optimum thickness for the Upper Cleveland in Section 25 is located in the center of the section.

2) The optimum location for an Upper Cleveland well in Section 25 should be in the center of the section. In any event, the Upper and Lower Cleveland have different reservoir characteristics. The uncontroverted evidence is that the Lower Cleveland wells have limited drainage, because the Lower Cleveland is thick and porous and has limited response to hydraulic fracture stimulation. In contrast, the Upper Cleveland is thinner and has less natural hydraulic conductivity, but the Upper Cleveland responds well to massive fracture treatments.

3) The cumulative production histories for the Lower Cleveland wells compare poorly with the short production histories for the horizontal Upper Cleveland wells. The post-treatment fracture lengths for the horizontal Upper Cleveland wells range from 3/4^{ths} to one mile. Consequently, a massive

fracture treatment on the proposed WD well would hit JMA's lateral in Section 26, causing increased water production and reduced oil production.

4) Furthermore, JMA's engineering testimony showed that WD could adequately protect Section 25 from drainage by Section 26 by drilling at least 1,320 feet FWL. As a result, it is neither fair nor reasonable to allow WD to drill 750 feet FWL of Section 25.

CONCLUSIONS

The Referee finds the Report of the Administrative Law Judge should be affirmed

1) On July 5, 1967, Order No. 66315 established 640-acre conventional drilling and spacing units for the production of natural gas from the Cleveland formation underlying Sections 13, 14, 23, 24, 25 and 26 of T16N, R20W and Sections 18, 19 and 30 of T16N, R19W. Order No. 66315 set the top of the Cleveland formation at 10,100 feet.

2) The wire line logs seen on Exhibits 3 and 4 show the Cleveland formation consists of separate reservoirs, basically an Upper Cleveland sandstone and a Lower Cleveland sandstone, vertically separated by an impermeable shale bed. The Cleveland formation is complex and highly heterogeneous but generally underlies the nine-section area although it consists of three lobes. According to the well logs, the top of the Upper Cleveland is approximately 9,594 feet in depth, and the top of the Lower Cleveland is approximately 9,810 feet in depth.

3) Exhibit 1 shows that the pattern of development in the Cleveland formation, consisting mainly of vertical wells drilled at off-pattern locations. The vertical wells were generally minimum, unallocated gas wells completed in the Lower Cleveland. While the vertical completions did use hydraulic fracture stimulation, the wells were completed before the development of stage completed horizontal wells. Current drilling in the Cleveland formation focuses on horizontal development in the Upper Cleveland because of horizontal oil completions in 2012 and 2013. Although the Upper Cleveland is thinner and has less natural hydraulic conductivity than the Lower Cleveland, the Upper Cleveland horizontal wells in the nine-section area are prolific wells, generally oil wells producing substantial volumes of associated gas. The superior performance of the Upper Cleveland wells results from increased fracture lengths due to reduced fluid leakoff during massive fracture treatment.

4) The outcome of the application depends on interpretation and weight assigned to the reservoir engineering testimony. The reservoir thickness is not in dispute. The central issue is the drainage for the proposed well and the possibility of undeveloped acreage if the Commission requires WD to move eastward toward what would be a permitted location with respect to the west line boundary of the unit.

5) WD's calculated estimates for radial drainage would keep the influence of the proposed well within the unit boundary. The key exhibits are Exhibits 5, 16, 17 and 18. However, post-stimulation fracture lengths in the nine section area are as long as one mile, which has two consequences. On one hand, the proposed WD well has an one-hundred percent chance of adversely affecting the JMA well in Section 26. On the other hand, the JMA well in Section 26 is sensing recoverable reserves in Section 25. However, the long fracture lengths also mean that a new horizontal well in Section 25 could adequately and efficiently drain its reserves from a legal location and adequately protect Section 25 from drainage by the JMA well in Section 26.

6) Furthermore, to establish a no-flow boundary between Sections 25 and 26 would mean that a new well in Section 25 would have to be drilled near the center of Section 25. Consequently, the Commission should find that requiring WD to drill its protection well no closer than 1,320 feet from the west line of Section 25 is just and reasonable. See *Application of Choctaw Express Company*, 253 P.2d 822 (Okl. 1953); *Palmer Oil Corporation v. Phillips Petroleum Company*, 231 P.2d 997 (Okl. 1951); 52 O.S. Section 87.1; *Simpson v. Stanolind Oil and Gas Company*, C.A. 10 (Okl.) 1954, 210 F.2d 640; and *Cameron v. Corporation Commission*, 418 P.2d 932 (Okl.1966).

7) The Referee for the above stated reasons believes the ALJ has reached the proper decision and should be affirmed.

RESPECTFULLY SUBMITTED THIS 30th day Of October, 2015.


Patricia D. MacGuigan
OIL & GAS APPELLATE REFEREE

PM:ac

xc: Commissioner Anthony
Commissioner Murphy
Commissioner Hiatt
James L. Myles

ALJ Andrew Dunn
James M. Peters
Charles Helm
Freda Williams
David Mindieta
Michael L. Decker, OAP Director
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