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

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| **APPLICANT:** | **SANDRIDGE EXPLORATION AND PRODUCTION, L.L.C.** | ) | |
| **RELIEF SOUGHT:** | **HORIZONTAL DRILLING AND SPACING UNITS** | ) | **CAUSE CD NO. 201100264** |
| **LEGAL DESCRIPTION:** | **S/2 OF SECTION 7 AND N/2 OF SECTION 18, TOWNSHIP 28 NORTH, RANGE 5 WEST, GRANT COUNTY, OKLAHOMA** | ) | |

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| **APPLICANT:** | **ELIZABETH ANN KOCH** | ) | |
| **RELIEF SOUGHT:** | **IRREGULAR HORIZONTAL DRILLING AND SPACING UNITS** | ) | **CAUSE CD NO. 201101608** |
| **LEGAL DESCRIPTION:** | **S/2 OF SECTION 7 AND N/2 OF SECTION 18, TOWNSHIP 28 NORTH, RANGE 5 WEST, GRANT COUNTY, OKLAHOMA** | ) | |

# REPORT OF THE OIL AND GAS APPELLATE REFEREE

These Causes came on for hearing before **Michael Porter**, Administrative Law Judge for the Corporation Commission of the State of Oklahoma, on the 22nd and 23rd days of June, 2011, 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:** **Roger Grove** and **Richard Grimes**, attorneys, appeared for the applicant, Sandridge Exploration and Production, L.L.C. ("Sandridge); **Gregory Mahaffey**, attorney, appeared for applicant, Elizabeth Ann Koch and Greenleaf Energy Company (collectively "Koch"); **Michael Stack**, attorney, appeared for Robert and Margaret Kilian (collectively "Kilian"); **Jared**

**Giddens**, attorney, appeared on behalf of Fargo, L.L.C.; and **Jim Hamilton**, Assistant General Counsel for the Conservation Division, filed notice of appearance.

The Administrative Law Judge ("ALJ") filed his Report of the Administrative Law Judge on the 16th day of September, 2011, 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 21st day of November, 2011. After considering the arguments of counsel and the record contained within these Causes, the Referee finds as follows:

## STATEMENT OF THE CASE

**KOCH APPEALS** the ALJ's recommendation to grant Sandridge's application for a 640-acre horizontal spacing unit for the Mississippian and the ALJ's recommendation to deny Koch's application for two 320-acre horizontal units for the Mississippian in the S/2 of Section 7 and the N/2 of Section 18, T28N, R5W, Grant County, Oklahoma.

On the 19th day of January, 2011, Sandridge filed its application in Cause CD No. 201100264 for an Order establishing 640-acre horizontal drilling and spacing units for the Mississippi Chat, Mississippi Lime and Mississippi Solid common sources of supply comprised of the S/2 of Section 7 and N/2 of Section 18, T28N, R5W, Grant County, Oklahoma, along with a companion location exception application in CD No. 201100265. Sandridge also simultaneously filed Applications for Emergency Orders in said causes and the Commission issued Emergency Order Nos. 582497 and 582498 on February 3, 2011, authorizing Sandridge to begin drilling the Kilian #1-7H well as a horizontal well to test said common sources of supply in the requested unit pending the issuance of final orders in each cause. Sandridge spud the Kilian #1-7H well under the authority of said emergency orders. Thereafter, the Commission issued final spacing Order No. 582903 on February 22, 2011, establishing the requested unit as no party appeared to protest the requested relief, including Union Valley Petroleum Corporation, the top lessee of Ms. Koch.

After the issuance of said Order No. 582903, Sandridge determined that it had inadvertently failed to give notice by regular mail to one person having the right to participate in production from the proposed drilling and spacing unit no less than 15 days prior to the date of the hearing. That person, Koch, owns the oil, gas and mineral rights underlying the N/2 of Section 18, T28N, R5W, subject

to an oil and gas lease owned by Sandridge. Sandridge then filed a motion to vacate Order No. 582903 and requested that the record in said Cause be reopened to allow Sandridge to provide notice by regular mail to all parties having the right to participate in production from the proposed drilling and spacing unit, including Koch, no less than 15 days prior to the date of the hearing. Sandridge also sought a new emergency order in the spacing case so as to continue drilling operations on the Kilian #1-7H well pending new notice and hearing on the merits. The Commission issued Second Emergency Order No. 584001 on March 30, 2011, authorizing Sandridge to continue drilling and completion operations on said horizontal Kilian #1-7H well.

After some negotiations between the parties regarding the motion to vacate Order No. 582903, the Commission granted the motion on March 9, 2011 and thereafter entered Order No. 583493 vacating the original spacing order and reopening the cause, with the agreement that Sandridge would not ask for an effective date on the spacing order prior to the date that Koch was made a party to the case. The amended application adding her as a party was filed in Cause CD No. 201100264 on March 9, 2011. Koch filed her competing application in Cause CD No. 201101608 seeking standup 320-acre horizontal drilling and spacing units for the same formations and land on April 4, 2011. The competing causes were consolidated for hearing by agreement of the parties.

Pending the issuance of final orders in each of the captioned causes, Sandridge sought authority to produce the Kilian #1-7H well. The Commission granted that request and issued Emergency Order No. 585035 in both spacing cases and the location exception case authorizing the Kilian #1-7H well to produce pending the issuance of a final order in these cases.

The consolidated spacing causes were heard before ALJ Michael Porter on June 22 and 23, 2011. The parties were in agreement that the applications for spacing should be amended to request spacing of just the "Mississippian" rather than the individual Mississippi Chat, Mississippi Lime and Mississippi Solid. Also, the parties were in agreement that the effective date of the spacing should be the date of first production from the Kilian #1-7H well, being April 2, 2011.

**KOCH TAKES THE POSITION:**

(1) The Report of the ALJ is contrary to the evidence, it is contrary to the law and fails to protect correlative rights or prevent waste of hydrocarbons.

(2) The ALJ erred in failing to note that Counsel for Koch also appeared for her Lessee, Greenleaf, owner of approximately 51% of the proposed 640-acre unit.

(3) The ALJ erred in failing to note the stipulation and amendment in both applications by Sandridge and Koch that the Mississippian be spaced. Although the initial applications of Sandridge and Koch asked to space the Mississippi Chat, Mississippi Lime and Mississippi Solid, to avoid nomenclature issues, the parties stipulated that both the Sandridge and Koch applications be amended to seek spacing for the Mississippian. The ALJ in his conclusions continues to refer to Mississippi Chat. Mississippi Lime and Mississippi Solid.

(4) The ALJ erred in failing to consider that the 640-acre horizontal spacing does not comply with the Spacing Statute, 52 O.S. Section 87.1. The 640-acre spacing will not prevent waste, but could promote waste by non-drilling and by leaving unproduced hydrocarbons in the ground. As noted by the ALJ, it was undisputed that the Mississippian is a low porosity, shaley, high-water saturation reservoir, and that the Kilian #1-7H well drilled by Sandridge during the pendency of these cases will not recover any hydrocarbons in the E/2 of Sections 7 or 18. The ALJ finds the evidence submitted by Sandridge's consultant Mike Davis regarding drainage of 205 acres to be more convincing than Mr. Stromberg's of "159 acres", because "Mr. Davis used actual data from the Killian #1-7H well to develop his opinion of the drainage area and Mr. Stromburg (sic) did not".

The ALJ is in error in failing to properly note that Mr. Stromberg did use actual data from the Kilian #1-7H well. Mr. Stromberg declined the well based upon the most current production data resulting in an estimated ultimate recovery of 138,000 barrels; Mr. Stromberg calculated that such 135.000 barrels will drain less than 112 acres. However, Mr. Stromberg elected to use data obtained and published by Sandridge (Exhibit 10) using one of the top engineering firms in the country, Netherland, Sewell & Associates, Inc. What Sandridge had published based upon the extensive Netherland study of the Mississippian (not just the 9-section area generally studied by Mr. Davis) is that the average well makes around 211,000 barrels of oil which back calculates to only 112 acres of drainage.

At 112 acres, both Mr. Davis and Mr. Stromberg agree you may need six wells per section or three wells per half section. Nonproduction and leaving hydrocarbons in the ground is one of the wastes that our Supreme Court has mandated should be avoided, *Application of Peppers Refining Co.*, 272 P.2d 416 (Okl. 1954). Mr. Davis admitted on cross examination, on more than one occasion, that he did not know when or if Sandridge would drill a well in the E/2 of their proposed 640-acre unit. He admitted that an order for 640-acre spacing would provide for only one well and he could not give a guarantee of if, and when, increased density wells would be drilled.

Mr. Stromberg on the other hand said that 160-acre spacing would probably be more appropriate to honor the approximate area that would be drained by one well. However, 320 acres would account for the fact that the Kilian #1-7H well would not drain anything in the E/2, would establish a unit that would allow for the maximum area that Mr. Davis says could be drained by one well (about 359 acres) and also protect the correlative rights of the owners. Further, Mr. Stromberg used the data from the newest well, recently drilled in an adjacent quarter section to the proposed 640-acre unit, the Susie #Q1-7 well. This well is located in the NE/4 of Section 7. Mr. Davis had not seen the log, he used other logs for his evaluation process. Thus, Mr. Stromberg's calculation of Mississippian porosity and water saturation is more accurate and more consistent with data from the newest and closest well to the proposed unit. Further, Mr. Stromberg's model is more consistent with this tight, low permeability reservoir. "It will drain close to the wellbore effectively and efficiently but will not drain as you get away from the lateral." This is consistent with the type reservoir we have here which does not contain any known water drive or gas drive thus, making it hard to move oil through the reservoir. A drainage area of 205 acres around the Kilian #1-7H well is not consistent with this type of tight, low permeability reservoir. It is more consistent to have a higher recovery factor and smaller area drained, as Mr. Stromberg opined, than to have a lower recovery factor and larger area drained as opined by Mr. Davis.

Probably the best empirical data for the drainage area in the Mississippian and data not refuted by Sandridge was Mr. Stromberg's drainage calculation on the Sladik well. The Sladik well is a well that will recover approximately 50,000 barrels of oil and will drain only approximately 500 feet for a total of 18 acres. It is not practical or reasonable to say that the Kilian #1-7H well, as is opined by Mr. Davis to make 145,000 barrels, will drain ten times larger an area of 205 acres. A drainage area of 100 acres or less would be more consistent with 145,000 barrels EUR.

(5) Because creation of a 640-acre Mississippian Unit will not guarantee prevention of waste, the ALJ erred in violating the correlative rights of the owners within the area to be spaced. Koch testified that the minerals in the N/2 of Section 18 had been in her family for 30 years and she did not think it fair that the owners in the SE/4 of Section 7 participate in royalties from a well located on her property and Mr. Kilian's property, since their minerals were not going to contribute to the well, as acknowledged by all engineers who testified.

Kilian own approximately 140 acres in the SW/4 of Section 7. Kilian would admittedly suffer a huge financial loss in violation of their correlative rights to share their royalty with the owners in the SE/4. Based upon Mr. Davis' ultimate recovery of 145,000 barrels, the evidence was that Kilian could possibly enjoy future royalty revenue of $1,290,000 but by 640-acre spacing

they would lose approximately $680,000. Over half of the working interest and three-fourths of the mineral interest supported 320-acres spacing. There were no mineral owners and only about 47% of the working interest (Sandridge) in support of 640-acre spacing.

(6) The ALJ erred in finding that "This is not a matter of stripping anything from any party, it is more a concern of when a party would get their royalties." As was admitted by the Sandridge witnesses, there is no guarantee that Sandridge will ever drill another well in the E/2 of their proposed 640-acre unit and the ALJ admits "There is no evidence presented to show when a well will be drilled in the E/2 of a 640-acre unit." The ALJ's finding presumes that a well will be drilled, it is just a matter of when. But there was no evidence that a well or wells will be drilled in the E/2 of the proposed 640-acre unit. Further, it was brought out that Sandridge had purchased over 1,000,000 acres in the Mississippi play, had over 1,200 units to develop, and it is unlikely that, any time in the near future, they will be drilling development or density wells. Kilian and Koch are entitled to have their minerals developed in an orderly fashion, in their lifetime, and to enjoy the fruits of their ownership. The creation of 640-acre spacing absolutely violates their ownership rights and correlative rights in the Mississippian common source of supply.

(7) Sandridge's request for 640-acre spacing here is not consistent with 320-acre spacing which is sought and obtained in the Mississippian. This Commission should take judicial notice of its own spacing orders. Recently Sandridge has obtained 320-acre stand-up horizontal units for the Mississippian in lands either adjacent to or offsetting the subject lands. Mr. Davis. as engineering consultant for Sandridge, said that "the cross sections illustrated the Mississippian was a uniform formation with similar gross thickness and almost identical log signatures at the top of the Woodford." The creation of 320-acre spacing when Sandridge believes it is convenient in some places within the Mississippian reservoir and 640-acre spacing here violates the statutory mandate that the Commission shall create units of approximately uniform size and shape within the same common sources of supply.

If Sandridge can economically develop the Mississippian on 320-acre stand up horizontal spacing in these other nearby lands then it can economically develop the Mississippian on 320-acre stand up horizontal spacing in the subject lands.

(8) The Report of the ALJ should be reversed and 320-acre stand up horizontal spacing for the Mississippian common source of supply should be created with the Kilian #1-7H well being designated the unit well for the Mississippian unit comprised of the SW/4 of Section 7 and the NW/4 of Section 18 and the SE/4 of Section 7 and the NE/4 of Section 18 be established as a separate 320-acre Mississippian unit.

**THE ALJ FOUND:**

(1) The Mississippian is a low porosity, shaley, high water saturation reservoir; the Kilian #1-7H will not recover hydrocarbons from the E/2 of either Section 7 or 18; the Mississippi Chat will be found at a depth of 4,775 feet, the Mississippi Lime will be found at 4,780 feet and the Mississippi Solid will be found at 5,000 feet; and the Mississippi is an oil reservoir.

(2) Testimony was given of two types of waste that could be prevented if the proposed unit were to be established as an irregular 640-acre unit. Evidence was conflicting as to how many acres would be drained by the existing well, the Kilian #1-7H. The testimony ranged from 112 acres to 359 acres. Using the testimony from the expert who testified for Koch, at least two wells would be needed in the west 320 acres. The testimony indicated the east 320-acre unit had similar geological characteristics and would likely need at least two wells to drain its hydrocarbons. This gives a total of four wells for the entire 640-acre area. The evidence indicated that even with the four wells, hydrocarbons would likely be left in the ground in the area of the center dividing line between the two standup units because of set-backs. Using the testimony from the expert who testified for Sandridge, three wells would be needed to drain the unit and their placement could be more flexible in a 640-acre unit. Waste would be avoided by not drilling excessive wells and not leaving hydrocarbons in the ground, if a 640 unit is established. The ALJ found the evidence submitted by Mr. Davis regarding the drainage area of 205 acres to be more convincing than that of Mr. Stromberg's 159 acres. Mr. Davis used actual data from the Kilian #1-7H to develop his opinion of the drainage area and Mr. Stromberg did not.

(3) Koch presented testimony of how correlative rights would be affected if a 640-acre unit was formed. It is well established in Oklahoma that between the prevention of waste and the protection of correlative rights, prevention of waste is the superior interest of the Commission. This is not a matter of stripping anything from any party; it is more a concern of when a party would get their royalties. One concern of Koch was that if the 640-acre unit was formed, a well might never be drilled in the E/2. Thus Koch would have to share its minerals with the parties in the E/2. This would be true until a well is drilled in the E/2, when Koch would share in the minerals in that area. There was no evidence presented to show when a well would be drilled in the E/2 of a 640-acre unit. It was brought out that Sandridge had over 1200 units to develop and had done some increased density applications for a second well in a unit. Whether Koch is in a 320-acre unit or a 640-acre unit, Koch has a 50% royalty ownership position and would ultimately receive proceeds from the minerals in both halves. It is simply a matter of timing.

(4) Kilian would experience a 50% reduction in royalty because they own nothing in the E/2 of the proposed unit. If a 320-acre unit is formed, they would own the entire N/2 of that unit. They would share the total royalties with Koch who owns the S/2 of a 320-acre unit. The evidence presented was based on assumed values of $95 a barrel for oil and recovery of 145,000 barrels. Kilian has a 3/16 royalty so Kilian would gross approximately $1,290,000 from a 320-acre unit. They claim they would be losing approximately $680,000 if a 640-acre unit were formed. This is based on the assumption that a well would not be drilled in the E/2 of a 640-acre unit. Ultimately Kilian would receive proceeds from minerals in the E/2 of a 640-acre unit. Again, it is a matter of timing.

(5) This cause pits conflicting duties of the Commission against each other. The Commission is charged to prevent waste under Title 52 0. S. Section 86.2. The statute states the term waste shall include economic waste and underground waste. The Commission also seeks to prevent adverse effects to correlative rights. The law is well established which is the superior interest.

(6) After taking into consideration all the facts, circumstances, testimony and evidence presented in this cause, it is the recommendation of the ALJ that cause CD 2011000264 be approved with an effective date of first production as it will best prevent economic waste by minimizing the number of wells needed to develop the unit to recover the hydrocarbons in the unit. Cause CD 201101608 is not recommended for approval because it will contribute to waste by causing unnecessary wells to be drilled and leaving hydrocarbons unrecovered.

## POSITIONS OF THE PARTIES

## KOCH

1) **Gregory Mahaffey**, attorney, appearing on behalf of Koch, stated the Commission is changing from the long standing case law which creates drilling and spacing units that allow for one well to drain hydrocarbons from a particular section.

2) Koch notes that Sandridge failed to give notice to the owners in the N/2 of Section 18 (Koch) and the SW/4 of Section 7 (Kilian) of their 640 acre request. Koch notes upon receiving notice of the Sandridge request to vacate spacing Order No. 582903 due to lack of notice to Koch, that Koch filed this competing 320 acre request at trial now.

3) Koch notes that over 50% of the working interest owners and 75% of the mineral interest owners support Koch's request for 320-acre spacing. Koch points out that the remaining 50% interest is split with Sandridge owning 47% and Fargo owning 3%.

4) Koch notes there are few disputed facts here. The parties agree that the Mississippi is a conventional combination limestone, sand, and chert, oil type reservoir with low porosity, high water saturation and low primary recovery. The Mississippian is unlike the Woodford shale, which is a super low permeability unconventional reservoir.

5) There have been many 320-acre Mississippian drilling and spacing units created in the northwest Oklahoma area offsetting Section 18, proving the Mississippian here can be economically and efficiently developed on 320-acre spacing. Koch would reference current Exhibit 16 and Order No. 590445 which resulted from CD 201103650.

6) The Kilian 1-7H well ("Kilian" well) was recently completed in the west 320 acres of this proposed 640 irregular sized unit (see Exhibit 12), which has a north to south lateral which extends down into the NW/4 of Section 18.

7) Koch notes this Kilian well will drain less than 320 acres, if that, according to Sandridge. Further, this well's ultimate recovery drainagewise is unknown and the expert witnesses differed on the drainage estimates here.

8) Koch has empirical data from existing vertical wells that show fracing a lateral is not a guarantee of drainage further than what a vertical well would drain.

9) Koch notes all parties admitted to not having any idea how good a well in the E/2 of the proposed unit would be, if a well was ever drilled.

10) Koch submits the first ALJ error was that the 640-acre horizontal spacing request does not comply with current spacing statutes as it promotes waste by leaving hydrocarbons in the ground. Koch notes the ALJ found that Sandridge's 205 acre drainage estimate to be more convincing than Koch's 159 acres due to Sandridge's use of Kilian well date for his drainage opinion over that of Koch's. Koch points out that Koch did in fact utilize Kilian well data, contrary to the ALJ's Report. Koch notes that Koch did a detailed study of log analysis and used data from the Susie Q well and other NE/4 well data which Sandridge didn't have.

11) Koch noted the ALJ had some basic facts incorrect here. Koch's counsel had appeared for Koch's lessee, Greenleaf, not just for Koch.

12) Koch noted at the start of trial that both Koch and Sandridge stipulated that both applications herein should be spaced for the Mississippian not the Chad, Lime and Solid zones. Koch observed that the ALJ discussed all three formations--the Mississippi Chat, Mississippi Lime and Mississippi Solid. While these omissions may be minor, Koch believes it demonstrates that the ALJ made his decision on missing key facts.

13) Koch believes the ALJ thought that future wells would be of the same quality as that of the Kilian well.

14) Koch notes the Kilian well was drilled in the Mississippian play initially coming in at 800 BOPD then dropping to 300 BOPD after one month of production.

15) Koch believed that Sandridge relied on mostly published data, which was not totally admitted into evidence (see Exhibit 10). Koch further notes that Sandridge hired Netherland Sewell, a top engineering firm to evaluate the Mississippi reservoir.

16) Koch notes that Koch looked at the Sladek well, one of the best wells out here, which is adjacent to this proposed 640-acre unit. This well had made approximately 45,000 BO so far. Per Koch's number, the Sladek well was currently making 3 BOPD and 14 MCFPD.

17) Koch notes that Koch further determined this Sladek well, assuming radial drainage, calculated out about 500 feet or 18 acres. Koch believed the results for the Kilian well would drain less than 160 acres or less than 320 acres.

18) Koch notes the Carol, the south offset, made 5000 BO, the north offset 21000 BO and in the NW/4 of Section 7 this well made 7000 BO.

19) Koch further noted that the Kilian well if you gave it an average of 211,000 BO, the drainage would actually be less than 160 acres.

20) Koch believes the Mississippian is not homogeneous due to one well may make 50000 BO to a nearby well making 5000 BO. Hence, there is no guarantee that a E/2 well will be drilled of if drilled, such would be a good well, enough to support a larger size unit.

21) The bottom line is even using higher porosity and low water saturation as done by Sandridge, the Sladek well still would calculate to drain less than 160 acres. Even considering the Netherland's 211,000 figure, the Kilian well would still drain less than 160 acres.

22) Koch reiterates that all parties here agree that none are aware of the quality of a well that might be drilled in the E/2 of the proposed unit.

23) Koch submits that Koch used data from both the Kilian and Susie Q wells which Sandridge didn't use. Koch believes that Koch's porosity and water saturation calculations were more accurate and consistent with the data from the closest wells to the proposed unit covering this tight low permeability reservoir.

24) Koch notes in a tight low permeability reservoir away from the wellbore that good drainage is not achieved. Koch noted there was no known water drive or gas expansion drive here which makes it difficult to move oil out. Koch submits Sandridge's estimate of 204 acre drainage is not consistent with the tight, low permeability reservoir.

25) Koch's 320 acres has been in the family for some 30 years. Koch disagrees it is fair for the SW/4 Section 7 owners to participate in a well in the Koch's NW/4 of Section 18. Koch believes that Kilian would suffer a huge financial loss should 640-acre spacing be established as Kilian would be forced to give up half their current royalty monies to other owners.

26) Koch submits the ALJ erred when he stated this is not a matter of when a party gets their royalties, rather than a matter of stripping anything from any parties. Koch notes there may or may not be a well drilled in the SE/4 of Section 7 in the lifetime of Kilian or Koch.

27) Koch asserts vertical wells here are hit and miss on drainage and makes it difficult to tell if a proposed well will be a good well.

28) Koch does not believe the creation of 640-acre spacing will prevent waste nor protect correlative rights of Koch here. Koch believes the 640 acre request is inconsistent with the 320-acre Mississippian spacing as shown by Exhibit 16 in addition to the two recent offsets, Section 13 to the west and Section 6 to the north.

29) Koch notes Sandridge stated the cross section shown on Exhibit 6 was a uniform Mississippian formation with similar gross thickness and almost identical log signatures.

30) Koch submits from empirical data the production differs. Koch believes the varying levels of production, ranging from 7000 to 20000 to 50000 indicates the reservoir here is not homogeneous. Koch notes it could be also said it is inconsistent for Sandridge to create 640-acre spacing when 320-acre spacing is to the west in Section 13 and to the north in Section 6.

31) Koch wonders if both Sandridge and Panther can economically develop the Mississippian on 320 acres in Section 6 to the north and Section 13 to the west, then why can they not do the same in Sections 7 and 18.

32) Koch believes the ALJ should be reversed, with 320-acre spacing being granted for the SW/4 of Section 7 and NW/4 of Section 18 as one unit and the SE/4 of Section 7 and NE/4 of Section 18 as an additional 320-acre spacing separate undrilled unit. Koch believes the effective date of any order to issue here should be the date of first production or April 2nd. Koch notes further that Kilian supports Koch's arguments here.

## KILIAN

1) **Michael Stack**, attorney, appeared on behalf of Kilian, stated that his client is a mineral owner of 140 acres in the SW/4 of correctional Section 7.

2) Kilian thinks that Sandridge wants 640-acre spacing in order to drill additional wells if necessary with Kilian being able to share in the production. Kilian further thinks that Sandridge believes the Kilian 1-7H well is the best well that would ever be drilled in this section.

3) Kilian notes the spacing should be established in conjunction with the wells out there that are going to be affected by such spacing. Kilian notes that if another well is needed by Sandridge, the operator can file an application showing a change of condition in order to modify the spacing order.

4) Kilian believes if the 640-acre spacing request is granted that Kilian's ownership would drop to below 50% or approximately 23.33%, resulting in a loss of thousands of dollars or approximately $688,836. Kilian notes that all the evidence points to the oil production coming from the Kilian and Koch side, not the east side of the proposed 640-acre unit.

5) Kilian believes the spacing size should be the same as in the offsets, i.e. 320s.

6) Kilian requests the Court read their filed exceptions and briefs, as such documents reflect their arguments in this appeal hearing.

## SANDRIDGE

1) **Roger Grove** and **Richard A. Grimes**, attorneys, both appeared on behalf of Sandridge. Mr. Grove stated that he would touch on some of the arguments mentioned in their filed trial brief.

2) Sandridge notes the reason they shifted their well location down a half section was due to Koch opposing their governmental Section 7 application. Sandridge admits there were some expiring leases that necessitated some quick decisions on Sandridge's Commission filings.

3) Sandridge notes the application referenced by Koch as to being adjacent or adjoining lands was for Section 6 to the north, where Union Valley has two Mississippi wells in the E/2 who opposed Sandridge's 640-acre spacing, There were also some questions about the older Order's language concerning the existing Mississippian spacing language. Sandridge notes the above was why Sandridge sought 320-acre spacing in that cause.

4) Per judicial notice of pending and actual filed Mississippian well applications, Sandridge believes the Court would have to take notice of the fact that Sandridge had checked the records prior to the appeal hearing date. Sandridge, from looking at filings, found the predominant size unit being created for the Mississippian play in northern Oklahoma was 640 acres. The reason for such is referenced in our brief. Sandridge does not know how many wells will ultimately be required to fully develop this 640-acre horizontal unit.

5) Sandridge observed that Koch repeatedly said the Sladek well had the best empirical data. Mr. Grove notes that Mr. Grimes will discuss the cross examination of Koch's engineer. Koch's engineer, after the exhibits had been exchanged in this case, had prepared a second analysis of the Sladek well using different parameters for another case where Koch's engineer had increased his drainage calculation by 30% to come up with 208 acres, which is very close to Sandridge's current 205 acre figures in this case. Actually, Mr. Grimes, on his cross examination here, had gotten Koch's engineer to admit he had already changed his empirical data on this later exhibit in another case, where he up'd the drainage by 30%.

6) Sandridge wishes to avoid a well being put in the setback area of a 320-acre unit. Sandridge does not want to compact the wells into a 320-acre unit and limit their locations. Sandridge believes it will take more than one well to properly develop the 640 acres and does not wish to put three wells in a straight jacket of 320 acre unit should 3 wells truly be needed for development here.

7) Sandridge believes the Commission must establish the proper spacing size to develop the common source of supply rather than one certain well.

8) Sandridge notes that the Koch witnesses have agreed that there would be no waste involved nor any correlative rights damaged. Sandridge notes when the Commission creates drilling and spacing units, it is not based on either the impact to an individual owner or how it affects revenue distribution.

9) Sandridge notes the protection of correlative rights is the relationship of the package, or as Gene Kuntz described it as "the bundle of sticks". Sandridge notes the Koch engineer's primary concern at the hearing was to establish how the hydrocarbons were attributed from the well and to whom proceeds were paid too. Sandridge notes how revenues are paid out is not for the Commission to delve into.

10) Sandridge notes when establishing drilling and spacing units, neither land issues nor ownership issues are to be factors in determining spacing size. Sandridge notes the goal of a drilling and spacing unit is to prevent waste and to establish the proper size unit in order to recover the ultimate amount of hydrocarbons with the least amount of waste, which can be either leaving hydrocarbons in the ground or through drilling excess wells. Sandridge notes at about $3.5 million per well, the less wells there are drilled the better for all parties.

11) Sandridge's witness had done the only detailed, computer fracture analysis of the Kilian well which indicated that the fracture wing was going to be 845 feet on either side of the wellbore, not 500 feet as in the Sladek well.

12) Sandridge notes that with horizontal drilling, the ways of drilling have been modified. Sandridge believes there is nothing in the spacing statute of any reference to conventional shale, nonconventional shale or nonshale reservoirs. The many hundreds of horizontal wells in the 640-acre Woodford units over the years were established under what we are establishing for the Mississippian spacing units now. Shale, or nonshale, it is the same ballgame. Shales are very tight and require multiple wells to develop.

13) Sandridge notes the Commission has consistently established larger spacing units as such is the best way to allow for the flexibility to properly locate wells and to determine the number of wells needed to develop the common source of supply.

14) Sandridge notes the horizontal spacing rules allow for creating a nonstandard horizontal well unit covering contiguous lands in any configuration or shape deemed by the Commission to be necessary for the development of a conventional reservoir or an unconventional reservoir by the drilling of one or more horizontal well. Sandridge believes it is necessary to

establish a unit to cover possible wells needed in the future. Sandridge notes the Commission, by its rules and statutes, have the authority to create a drilling and spacing unit of a size previously only used in vertical wells.

15) Sandridge notes Koch did mention proper size of development in his filed appeal and felt compelled to respond to that in the arguments today. Sandridge agrees with Koch's statement in their appeal that spacing orders are to provide that no more than one well be produced from a common source of supply. Sandridge notes all of the Woodford horizontal orders as well as the 640 Mississippian horizontal orders all say one well will be produced yet it does not deny applications for increased density. Sandridge notes Commission orders do not say only one well is required, just that only one well is authorized to produce.

16) Sandridge submits there is no one who can state with certainty when additional wells will be required. Sandridge noted the Kilian's argument is all about the money and guarantying that amount for life.

17) Sandridge submits the Commission does not decide drilling and spacing units on one individual owner but looks at the effect on the reservoir and how to properly develop the common source of supply. Sandridge denotes waste prevention considers leaving hydrocarbons in the ground or economic waste by drilling additional wells.

18) Sandridge notes Kilian got proper notice of the original application and failed to show up and object. When Sandridge realized Koch had been omitted, Sandridge filed a Motion to Vacate to correct the parties named. Sandridge stated that Order No. 582903 issued with notice to Kilian, and only after it was issued did Kilian object.

19) Sandridge points out while they could come back to the Commission for more wells, the vested rights would create a problem if it were on 320-acre spacing. Sandridge asserts the appropriate way to proceed is to establish a unit size that will allow the proper development as the need arises, whether that be 3 or up to five wells. If such was on 320s, owners would be complaining of correlative right violations due to being to close to unit boundaries, hence 640s is the way to go.

20) Sandridge cites the Chesapeake case, CD No. 201002870 to support the particular cause herein, to avoid putting wells in the setback area of two 320-acre units. Sandridge notes Koch said this is the first well ever drilled on her property in over 30 years. Sandridge has spent $3.5 million for this well only to have Koch object to their spacing request though Koch would get her share of the production.

21) Sandridge submits smaller units would both be restrictive and not provide the operator flexibility in picking appropriate well locations conducive to more development. Sandridge notes the Koch and Sandridge witnesses did not possess the same information upon making their drainage determinations. In essence, Sandridge considered this to be comparing apples and oranges.

22) Sandridge says you cannot take a 7 to 8 inch vertical well's drainage and apply it to a horizontal well where fracture treatment will be used. Sandridge believes that Koch's engineer failed to take that into account when drawing his conclusions in these cases.

23) Sandridge notes Koch cites the *Panhandle Eastern Pipeline Co. v. Corporation Commission*, 285 P.2d 847 (Okl. 1955) case where it mentions exclusion of nonproductive lands. Sandridge submits that is not an issue here as all witnesses agreed the Mississippian is a blanket common source of supply underlying this entire area, or the E/2 and W/2 of this proposed unit.

24) Sandridge notes shale is a separate and distinct entity in the Shale Reservoir Redevelopment Act yet it also allows for unitizations up to 4 sections to create a unit or for shale development. Sandridge notes no one ever thought these horizontal wells would drain 640 acres.

25) Sandridge notes it was axiomatic that the Legislature knew they needed this type of size unit to provide for the proper development of these common sources of supply.

26) Sandridge believes the 640-acre units would give the operator the flexibility to properly locate the wells to maximize the recovery.

27) Sandridge notes it is not a foregone conclusion that the Greenleaf lease obtained from Koch is valid, as Sandridge has challenged that claim.

28) Sandridge believes the fact that engineers can vary so much shows the need for flexibility for creating a larger size unit to properly locate wells.

29) Sandridge believes the Court upon review of the record will understand why the ALJ gave more weight and credibility to Sandridge's expert testimony.

30) Sandridge submits the bottom line is the ALJ properly weighed the testimony herein, saw a need for 640 development to allow the operator flexibility to develop the Mississippian formation and his ruling should be upheld.

31) Mr. Grimes now indicated his arguments would be limited to Stromberg's testimony. Sandridge notes the purpose of spacing under a conservation statute is to drill the minimum number of wells in order to

maximize the production from the common source of supply. Sandridge admits the effect of a spacing does define how revenues are distributed. Sandridge notes Koch's arguments do not concern conservation or prevention of waste, only how much money Koch's interest will receive for their mineral owners.

32) Sandridge's engineer testified 640-acre spacing would allow maximum recovery with the lowest number of wells. Sandridge notes Koch's engineer testified the purpose of spacing was to allow for pooling, not to prevent waste. The Koch engineer's main concern was how to attribute hydrocarbons to particular owners and how are they to be paid.

33) Sandridge notes that waste prevails over correlative rights yet Koch fails to argue either one. Sandridge reiterates that Professor Kuntz had said correlative rights is "a bundle of sticks", with two of the sticks being waste prevention. Sandridge notes it is not how much does a party get paid but the creation of the spacing to let wells be drilled so as to properly develop the unit, yet at the same time, not harm parties' rights relative to receiving a share.

34) Sandridge notes Koch's engineer reached two unacceptable conclusions he was uncomfortable with, so he went to the Sandridge website, found an average recovery figure and decided to use it without attempting to determine how the number was derived. Sandridge believes Koch's engineer ignored the study's result as it would have harmed his ability to claim a need for four wells.

35) Sandridge noted the exhibit Koch's engineer prepared for the second analysis of the Sladek well where he used 84 feet of thickness over 122 feet here in the current case, but used the same log. Sandridge believes the difference was due to Koch desired a different result, so Koch modified the data to make it work. Koch's engineer rejected his own studies due to the results being either too close or higher than Sandridge's figures. Using the same set of empirical data Koch's engineer came up with a new outcome without explanation.

36) Sandridge presented enough evidence to support their 640-acre spacing request to help prevent waste and the ALJ found for the 640 acre over 320s. Sandridge submits a review of the record would show the ALJ approached it from the proper standpoint, based upon the engineer who approached it from the same standpoint.

## RESPONSE OF KOCH

1) Koch notes that Greenleaf has a valid lease. The District Court has granted summary judgment for both Greenleaf and Koch. The lease in question has not expired on its own terms.

2) Koch notes there have been many 640-acre horizontal well applications filed in this area. Koch notes that most operators want to hold as much acreage as possible for flexibility in drilling. Even though Sandridge may want their 640-acre spacing under the auspices or claim of being more flexible, Koch submits that is not the real question.

3) Koch notes that Koch's engineer re-evaluated the log data and came up with different data whereby the Sladek well would have drained 25 acres or about 575 feet.

4) Koch believes that Sandridge wants the Commission to believe that if there is no dispute on the 18-25 acres with 50000 BO drainage, the well that makes 145,000 BO is not going to drain 8 times that amount.

5) Koch notes that if one looks at the Sladek well next door in SW/4 of Section 8, Koch disagrees the proposed unit well will drain 145,000 BO, i.e. drain 200 plus acres or 8 to 10 times the estimated Sladek well's drainage. Koch notes that Koch's engineer corroborated the drainage figures with the Susie Q log.

6) Koch notes that Netherland looked at 130 wells to come up with their 211,000 BO acreage recovery, yet it will still drain less than 160 acres.

7) Koch does admit to being concerned about its pocketbook. Koch notes there might be economic waste in drilling an unnecessary well yet other types of waste would be leaving the hydrocarbons in the ground.

8) Koch noted that with 45 days of production, one can flatten it out and come up with nearly 400,000 BO. Even at 300,000 BO, it would still drain less than 160 acres. Koch's engineer came up with 138,000 BO which was pretty close to the Sandridge engineer's 145,000 BO figure.

9) Koch cites *Panhandle Eastern Pipeline v. Corporation Commission*, 285 P.2d 847 (Okl. 1955), and Shell Oil Company v. Davidor and Davidor, 315 P.2d 259 (Okl. 1957). Koch notes the Oklahoma Supreme Court has said on many occasions only so much acreage that will contribute to production should be included in a drilling and spacing unit.

10) Koch believes the proper spacing size is 320 acres. Per Exhibit 4, Koch finds this shows the effective frac is about 1300 feet on either side of the lateral. Koch is concerned about the nonproduction in the E/2 as such is waste. Koch submits the E/2 hydrocarbons will not contribute to a W/2 drilled well.

11) Koch notes there are different kinds of wastes. Due to E/2 acreage not contributing any hydrocarbons to a W/2 well, Koch submits the ALJ should be reversed and 320-acre spacing granted.

## RESPONSE OF KILIAN

1) Kilian reminds the Court that Sandridge stated the production amounts differ greatly from well to well, which is a concern to Kilian. Kilian notes the conservation statutes are to prevent waste, not to drill unnecessary wells.

2) Kilian wonders why Sandridge believes that unnecessary wells would not also be drilled if 640-acre spacing was established. Kilian notes that one well will affect the W/2 here. Kilian asks how many more wells will be needed by Sandridge here--four, five, or more?

3) Kilian does not infer that 640-acre spacing is the proper spacing to be established here. Kilian does not know the future. Kilian only knows today is one well per 320-acre spacing. If it should be 640, a well would need to be drilled in the E/2.

4) Kilian asserts that regardless of either spacing, there is no guarantee a well would be drilled in the E/2. Kilian urges the Commission to look at today's situation, not the future. The protection of both correlative rights and prevention of waste must be considered.

## CONCLUSIONS

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

1) The Referee finds the ALJ's determination to grant the Sandridge application for 640-acre horizontal spacing for the S/2 of Section 7 and the N/2 of Section 18 and deny Koch's application for 320-acre horizontal spacing for the S/2 of Section 7 and the N/2 of Section 18 prevents waste and is

supported by the weight of the evidence, and by the law. The ALJ is the trier of fact and it is his duty as the trier of fact to observe the demeanor of the witnesses, assess their credibility, and assign the appropriate weight to their opinions. *Grison Oil Corporation v. Corporation Commission,* 99 P.2d 134 (Okl. 1940).

2) Of prime importance is that the Sandridge application and the Koch application present a choice of how the Commission will proceed with orderly development of this area and prevent waste. As stated in *Winter v. Corporation Com'n of State of Oklahoma,* 660 P.2d 145 (Ok1.App. 1983):

> Having been given a choice of remedies, it is incumbent upon the Commission to use the remedy which will best prevent waste and protect correlative rights.

3) The Supreme Court in *Denver Producing & Ref. Co. v. State,* 184 P.2d 961 (Okl. 1947) found:

> ...In most instances it is impossible to use a formula which will apply equally to all persons producing from a common source. In striking a balance between conservation of natural resources and the protection of correlative rights, the latter is secondary and must yield to a reasonable exercise of the former.

It is the Referee's opinion that the facts of the instant case require the granting of Sandridge's request for a 640-acre horizontal drilling and spacing unit as Sandridge's request conforms to the principles of preventing waste, including economic waste.

4) Title 52 O.S. Section 87.1 states:

> (a) To prevent or to assist in preventing the various types of waste of oil or gas prohibited by statute, or any of said wastes, or to protect or assist in protecting the correlative rights of interested parties, the Corporation Commission, upon a proper application and notice given as hereinafter provided, and after a hearing as provided in said notice, shall have the power to establish well spacing and drilling units of specified and approximately uniform size and shape covering any common source of supply, or prospective common source of supply, of oil or gas within the State

> of Oklahoma; provided, that the Commission may authorize the drilling of an additional well or wells on any spacing and drilling unit or units or any portion or portions thereof or may establish, reestablish, or reform well spacing and drilling units of different sizes and shapes when the Commission determines that a common source of supply contains predominantly oil underlying an area or areas and contains predominantly gas underlying a different area or areas;
>
> * * *
>
> (f) Notwithstanding any provision of this section to the contrary, the Corporation Commission shall have jurisdiction upon the filing of a proper application therefor, and upon notice given as provided in subsection (a) above, to establish spacing rules for horizontally drilled oil wells whereby horizontally drilled oil wells may have well spacing units established of up to six hundred forty (640) acres plus tolerances and variances as allowed for gas wells pursuant to subsection (c) of this section.

Thus the law does provide the Commission authority to create units up to 640 acres for oil in order to provide for the proper development of oil producing common sources of supply utilizing horizontal drilling technology. The Commission rules also recognize that there could possibly be the necessity for multiple wells even at the time the horizontal unit is being established.

OAC-OCC Rule 165:10-3-28(e)(3) provides:

> (3) The Commission may create a non-standard horizontal well unit covering contiguous lands in any configuration or shape deemed by the Commission to be necessary for the development of a conventional reservoir or an unconventional reservoir by the drilling of one or more horizontal wells. A non-standard horizontal well unit may not exceed 640 acres plus the tolerances and variances allowed pursuant to 52 O.S. Section 87.1.

5) There was evidence presented that there had been establishment of 640-acre horizontal units for the oil spacing of the Mississippian zone and it is understood that additional horizontal wells would be necessary to fully develop the unit and the Mississippian common source of supply. Usually in these circumstances it is uncertain as to how many wells will be needed to develop the common source of supply or where they should be located. The Commission has found that when multiple horizontal wells are needed to develop a 640-acre unit the larger unit is necessary to provide the necessary flexibility to properly locate the horizontal wells to develop the common source of supply. There is a definite need for flexibility which is created by establishing larger than 640-acre horizontal units.

6) In Cause CD No. 201002870, Order No. 582934 established a 640-acre horizontal oil unit in the Mississippi Chat and Mississippi Lime in Section 30, T29N, R15W, Woods County, Oklahoma. The Order provided:

> ...The Applicants propose a well at what they contend is the optimum location. This well location would produce from the "setback areas" for the two 320-acre units. The "setback area" is created by the permitted well location in a standard 320-acre unit, being 660 feet from the unit boundary. The setback area for each of the 320-acre units can not be fully developed by drilling one or more wells within the permitted well location. It would also be economic waste to force the Applicants to drill a well in the setback area for each 320-acre unit, potentially subjecting each "setback" well to a production penalty, because the proposed well is estimated to drain across the unit boundary between the two 320-acre units. Correlative rights would best be protected without economic waste by having the owners in the two 320-acres units share what amounts to the fifth well in Section 30. The only way to share the well is to establish a 640-acre unit to overlay the existing 320-acre units. Thus, a 640-acre unit is necessary, despite the limited drainage, in order to prevent economic waste, protect correlative rights and increase ultimate recovery.

7) The 640-acre horizontal spacing requested by Sandridge for oil best affords the necessary flexibility in drilling the horizontal wells in this unit. The 320-acre units requested by Koch are too restrictive as the evidence reflected

that even the Kilian 1-7H well would not even drain the proposed 320-acre unit proposed by Koch. The evidence reflected that it would take two wells in each of the 320-acre units they were recommending to fully develop the same. If a third horizontal well is in fact needed to fully develop the Mississippian, the requested 320-acre units of Koch would not allow for the proper development of the land and in fact could cause waste while the requested 640-acre horizontal oil unit of Sandridge would allow the necessary flexibility to prevent that waste.

8) The Referee agrees with the opinions and conclusions stated by Sandridge in its Trial Brief of Sandridge Exploration and Production, L.L.C. filed on July 29, 2011, in the present cases:

> 38. Mr. Stromberg has estimated a drainage area for the Kilian 1-7H well of 112 acres to 159 acres. Mr. Davis thinks the Kilian 1-7H will drain 205 acres. The very fact that two engineers can disagree on this issue is additional evidence supporting the need to create a large enough unit to provide the maximum flexibility to locate the horizontal wells in such a manner so as to properly develop the common source of supply. If one believes Mr. Stromberg's calculations, it may take 4 or 5 horizontal wells to develop a 640-acre area. Again, at $3.5 million per well, the Commission needs to make sure that too many horizontal wells are not drilled. But if it took five horizontal wells, where would one locate the fifth well if 320-acre units were established? One would have the same problem of trying to place a well between the 320-acre units as one would with three horizontal unit wells.

9) The Commission must follow the procedure outlined in *Haymaker v. Oklahoma Corporation Commission*, 731 P.2d 1008 (Ok1.App. 1986) wherein the Court stated:

> ...Proper appraisal of the expert testimony requires observance of the following benchmark principle approved in *Downs v. Longfellow Corp.*, 351 P.2d 999 (Okl. 1960):
>
> > "The reasons given in support of the opinions [of an expert witness] rather than the abstract opinions are of importance, and the opinion is of no greater value than the reasons given in its support. If no rational basis for the opinion

> appears, or if the facts from which the opinion was derived do not justify it , the opinion is of no probative force, and it does not constitute evidence sufficient to...sustain a finding or verdict. "

Obviously, the ALJ followed that principle in weighing the expert opinions espoused before him. The ALJ had the opportunity to observe the demeanor of the various expert witnesses while they were testifying. Deference is given to the ALJ's opportunity to view the witnesses firsthand. See *Williams v. Volkswagenwerk Aktiengesellschaft, et al.*, 180 Cal.App. 3rd 1244, 226 Cal. Rpt. 306 (Cal.App. 2nd Dist. 1986).

10) The Oklahoma Supreme Court in *Calvert Drilling Company v. Corporation Commission of the State of Oklahoma,* 589 P.2d 1064 (Okl. 1979) determined:

> The appellant's argument then makes the assumption that the common source of supply, as defined in the statute, is limited not to the common formation in which the oil and gas is found, but to those portions of the formation to which a well may be drilled so as to produce in paying quantities. Under applicable statutes, the applicant for a spacing order need not establish the whole area is underlaid by a formation productive enough to support a well which would be economic in its own right; it is sufficient that the formation probably contains oil and gas capable of being withdrawn by a well on the drilling and spacing unit.

52 O.S. 86.1 states:

> 3. 'Common Source of Supply' comprises and includes that area which is underlaid or which, from geological or other scientific data, or from drilling operations, or other evidence, appears to be underlaid, by a common accumulation of oil or gas or both.

11) The issue therefore is whether there is substantial evidence showing that the prevention of waste and protection of correlative rights will be better accomplished by the granting of the Sandridge relief rather than the Koch relief. The ALJ determined the Sandridge relief would better accomplish the prevention of waste. The substantial evidence suggests that waste will occur if the 640-acre horizontal well unit is not created as requested by Sandridge. For the above stated reasons, the Referee finds that the ALJ's decision should be affirmed.

**RESPECTFULLY SUBMITTED THIS 21st day of December, 2011.**

Patricia D. MacGuigan
OIL & GAS APPELLATE REFEREE

PM:ac

xc: Commissioner Murphy
Commissioner Anthony
Commissioner Douglas
Jim Hamilton
ALJ Michael Porter
Roger Grove
Richard Grimes
Gregory Mahaffey
Michael Stack
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