

**BEFORE THE
STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

Before Commissioners: Pat Apple, Chair
 Shari Feist Albrecht
 Jay Scott Emler

In the Matter of the Amended Application)	
of Lario Oil & Gas Company for an Order)	Docket No. 17-CONS-3516-CUNI
Authorizing the Unitization and Unit)	Conservation Division
Operations of the Feiertag Unit in Scott)	License No. 5214
County, Kansas.)	

UPDATED PREFILED REBUTTAL TESTIMONY

OF

BRENTEN E. BIRK

**ON BEHALF OF
LARIO OIL & GAS COMPANY**

PUBLIC VERSION

1 Q. Would you please state your name, title, and business address?

2 A. My name is Brenten E. Birk. I am an Operations Engineer with Lario Oil & Gas Company.

3 Our office is located at 301 S Market St., Wichita, Kansas 67202.

4 Q. Mr. Birk, did you submit pre-filed testimony on behalf of Lario Oil & Gas Company's

5 Feiertag Unit Amended Application?

6 A. Yes.

7 A. Have you reviewed the pre-filed testimony of Jim Hemmen in this matter?

8 A. Yes

9 Q. Regarding Mr. Hemmen's testimony at page 3, line 18 through page 4, line 4, he states that

10 he would like more information before he would be comfortable affirming that all of the

11 formations Lario seeks to unitize comprise part of a pool, as defined by K.S.A. 55-

12 1302(b). Does Lario have any additional information to offer on this issue?

13 A. Yes. Over approximately 25 years, the 11 proposed waterflood formations have been

14 artificially communicated through multi-zone completions and production techniques

15 throughout the unit area. To demonstrate the pressure communication, I have attached

16 Exhibit #14 (Bottom-hole Reservoir Pressure Table) and Exhibit #15.1 through #15.11

17 (Bottom-hole Reservoir Pressure Graphs). Exhibit #14 is a spreadsheet demonstrating the

18 reduction of bottom-hole reservoir pressures for all 11 formations through time. On the

19 left hand side of the table are all of the wells drilled inside our proposed Unit boundary

20 listed in chronological order and a few formation initial completion dates that did not occur

21 during the initial completion of a well. Along the top of the table is a list of all 11

22 formations that Lario is proposing to unitize and waterflood. Below each of those

23 formations are the Drill Stem Test (DST) shut-in pressures that were measured for each

1 zone when the wells were drilled. In addition, I have added some current bottom-hole
2 reservoir pressures based on shut-in fluid level measurements (an accepted engineering
3 practice). The DST shut-in pressures and shut-in fluid level measurements are a good
4 indication of bottom-hole reservoir pressures in that area of the reservoir. When reviewing
5 Exhibit #14, it is important to understand when each of the 11 proposed waterflood
6 formations was initially put on production, because this procedure initiates the process of
7 pressure depletion and artificial communication between the wells throughout the field.
8 Because of the importance of this data, we have added a yellow cell in each formation
9 column on the DST Table to show when that formation was initially completed and put on
10 production. As stated in my direct testimony, not all of the 11 producing formations were
11 perforated and put on production in the initial stage of development of the MSEOF
12 (Millrich Southeast Oilfield). Also, none of the wells inside the proposed Unit boundary
13 have produced oil from all 11 waterflood formations. However, all of the 11 formations
14 are productive in commingled wellbores and, as a whole, have been artificially
15 communicated into a single pressure system (pool).

16 To further demonstrate the pressure communication in the 11 waterflood
17 formations throughout the proposed Unit boundary, I have attached Exhibit #15.1 through
18 #15.11 (Bottom-hole Reservoir Pressure Graphs) to graphically display the declining
19 bottom-hole reservoir pressure of all 11 waterflood formations. These graphs show
20 depletion in the zones from the time the first bottom-hole reservoir pressure was tested
21 until the last DST, or shut-in fluid level, was taken in each zone. All eleven graphs show
22 the initial bottom-hole reservoir pressure and the decline of the reservoir pressure over
23 time, due to production of formation fluids in those zones. A marker for the date of first

1 production has been placed on each graph to identify when the reservoir initiated pressure
2 depletion. In addition, Lario has added calculated current bottom-hole reservoir pressures,
3 based on shut-in fluid level measurements, to select graphs in Exhibit #15 to demonstrate
4 the continued artificial pressure communication through multi-zone comingled production
5 in the producing wellbores.

6 The Oread "A" formation was not drill stem tested in many wells in the MSEOF.
7 Neither Lario nor the previous operator (McCoy) realized the Oread "A" formation was a
8 significant source of hydrocarbons until after the majority of the MSEOF wells had been
9 drilled. Because there are no DST bottom-hole reservoir pressure measurements for the
10 Oread "A" after substantial production, Lario has calculated the bottom-hole reservoir
11 pressure from overnight shut-in fluid level measurements taken during the initial
12 completions of the Oread "A" in the Feiertag "A" #2-15 and Feiertag Trust "A" #1-10.

13 One additional note, the Millrich SS (sandstone) pressure data is highly subjective
14 to the reduced permeability nature of the reservoir, as compared to the other carbonate
15 formations that have been targeted as part of the waterflood. However, the Millrich SS is
16 a very important formation in the Feiertag Unit proposal because it holds the largest volume
17 of recoverable secondary reserves (estimated at nearly 207,000 STBO {Stock Tank Barrels
18 of Oil}). Additionally, similar sandstone reservoirs are commonly waterflooded in SW
19 Kansas and typically yield very successful results. The Millrich SS is the only formation
20 requiring a fracture stimulation to be economically productive. Because of the low
21 permeability, the zone depletes at a slower rate. As you can see from Exhibit #15.10
22 (Millrich SS Bottom-hole Reservoir Pressure Graph), Lario initially completed the Millrich
23 SS in the Feiertag "A" #1-15 in March of 2004 (after Lario purchased this area from McCoy

1 in 2003). The original bottom-hole reservoir pressure in the Millrich SS was recorded
2 when the Feiertag A #1-15 was drilled in June of 1992. The bottom-hole reservoir pressure
3 was approximately 1000 psi. In August of 2005 (approximately a year and half after the
4 Feiertag A #1-15 was completed in the Millrich SS and put on production), the Feiertag
5 Trust "A" #1-10 was drilled. The Feiertag Trust "A" #1-10 Millrich SS bottom-hole shut-
6 in pressure was measured at 887 psi. This shows pressure depletion from the Feiertag "A"
7 #1-15 production. Subsequently, the Feiertag "A" #7-15 was drilled and tested in the
8 Millrich SS in June of 2006. The measured bottom-hole reservoir pressure in the Feiertag
9 "A" #7-15 was 538 psi, showing the acceleration of depletion due to pressure
10 communication from the completion of the first two wells (the Feiertag A #1-15 and
11 Feiertag Trust "A" #1-10). Proximity to offset producers and reservoir quality significantly
12 affects the rate of depletion in the Millrich SS because of the reduced permeability. All
13 reservoirs have permeability variations that influence depletion and pressure distribution
14 throughout a single oilfield pool.

15 In summary, the multiple producing zones in the MSEOF have developed an
16 interdependence as a single pressure system through the commingling of the formations in
17 the wellbores. The bottom-hole pressures of the 11 reservoirs deplete simultaneously in
18 the area and are equalizing into a single pressure system. Depletion is the common method
19 of production in the field. Production will continue to decline with depletion unless water
20 is injected into these area formations, which share a common point of depletion.

21 Q. Along the same topic, do you have any additional thoughts on how the waterflood operation
22 will continue to keep the proposed 11 formations operating as a single pressure system?

1 A. Yes. Wells that will be utilized for recovery will comingle production from the existing
2 productive zones and the targeted zones for each specific stage. However, as the stages
3 progress, deeper productive zones most likely will be squeezed or plugged back with a cast
4 iron bridge plug as they “water out”. Zones that have been waterflooded but are still
5 productive after the next stage is started will be left open to be produced, along with the
6 other zones in the wellbore. So, even though Lario is isolating the 11 formations in the
7 injection wells, the producing wells will continue to produce from all 11 comingled
8 formations and operate as a single pressure system.

9 Q. On page 5, line 20 through line 21, Mr. Hemmen stated that Lario had not addressed the
10 estimated annual operating costs associated with the project. Does Lario have any
11 additional information to offer on this subject?

12 A. Yes. The annual operating costs for the Feiertag Unit waterflood project have been
13 estimated at \$1,080,000 per year (or \$90,000 per month), once the waterflood is fully
14 operational. This is the total operating costs for the operation of the waterflood unit (not
15 just incremental costs). The increased operating costs take into account all of the additional
16 expenses of operating a waterflood unit (including running an injection system, water
17 supply well, increased lifting costs for producing wells, increased well servicing, remote
18 monitoring, increased personnel requirements, etc.). This operating expense was used in
19 the economics projection.

20 Q. On page 5, line 22 through line 23, Mr. Hemmen stated that Lario had not provided an
21 estimate of the barrels of oil expected to be recovered by the close of each stage. Does
22 Lario have any additional information to offer on this subject?

1 A. Yes. In my previous testimony, I stated that Lario calculated the secondary reserves for
2 the Feiertag Unit based on a 0.75 to 1 Secondary to Primary reserves recovery ratio for the
3 11 zones that are being targeted in the waterflood proposal. Cumulative Primary
4 Production and Estimated Ultimate Recovery have been allocated to each producing
5 formation to more accurately calculate the estimated secondary recovery. I have attached
6 a table as Exhibit #16 which shows the five waterflood stages and corresponding
7 formations that Lario is proposing to waterflood. Also included are the incremental barrels
8 of oil that Lario is estimating to be recovered from each stage of the waterflood.

9 Please note that the Millrich SS (sandstone) formation is listed in both Stage II and
10 Stage III of Exhibit #16, because the Millrich SS secondary reserves will be recovered
11 throughout both stages of the proposed waterflood process. We have extended the
12 waterflood process for the Millrich SS because of two primary reasons. First, the
13 permeability of the Millrich SS is lower than the other 10 waterflood formations, which
14 will reduce the rate at which it will allow injection fluid into the reservoir and extend the
15 time required to efficiently sweep the formation. Second, the average reservoir thickness
16 of the Millrich SS is typically two to three times as thick as the other 10 waterflood
17 formations, which will require additional time to efficiently sweep the formation with
18 injection fluid. Lario estimates the Millrich SS will recover nearly 207,000 STBO of
19 secondary reserves. This is the highest recoverable secondary reserves of all the 11
20 formations included in the proposed waterflood unit. Because of the high accumulation of
21 secondary reserves in the Millrich SS, Lario believes it will be a very successful waterflood
22 candidate. It would be a significant loss of secondary reserves if it was not included in the

1 waterflood unit. The inclusion of the Millrich SS will lead to a significant financial benefit
2 to all interest owners.

3 Q. On page 6, line 1 through line 18, Mr. Hemmen expressed concern that the proposed
4 waterflood operation could potentially extend beyond Lario's predicted life of
5 approximately 37 years and extend to as long as 50 years. Mr. Hemmen stated that Lario's
6 project seems unrealistic as a fair waiting period before achievement of the project's full
7 rate of return. Does Lario have any additional information to offer on this subject?

8 A. Yes. Attached as Exhibit #17 is a table showing multiple economic analysis projections
9 during the proposed five stages of development for the Feiertag Unit. The economic
10 projections were run at 5 different intervals to model the economic outcome if the unit was
11 stopped after each stage of development. The NYMEX oil price model, operating costs,
12 and tax rates were all held constant for all five economic projections displayed in Exhibit
13 #17. As you can see in Exhibit #17, each of the economic intervals has a positive rate of
14 return and return on investment. The cash flow figures are for the 100% working interest
15 owners and also include the deduction for the royalty payments to all the mineral interest
16 owners. A separate royalty and overriding interest cash flow estimate was not included in
17 the table, but can be provided if necessary.

18 I understand waterflooding a multi-zone field over a long period of time may seem
19 unusual. However, Lario is proposing the multi-stage waterflood process because of the
20 unusually high number of producing formations and the known certainty of significantly
21 reducing the overall waterflood efficiency and recovery of secondary reserves if the
22 waterflood was designed in a traditional multi-zone process. Waterflooding the 11
23 proposed zones individually is the best method to recover the maximum amount of

1 secondary reserves. It is also the best way to prevent waste of secondary reserves and loss
2 of revenue to interest owners. Lario is proposing waterflooding individual zones in multi-
3 stages in order to efficiently flood each zone to recover the most secondary reserves
4 possible. By doing so, we can recover at least 0.75 secondary barrels of oil to 1 barrel of
5 primary oil. On the other hand, if Lario had proposed a traditional multi-zone waterflood
6 (which would have a standard economics projection of 10 to 15 years), the secondary
7 recovery could be as low as 0.20 of secondary barrels to 1 barrel of primary oil production,
8 as was stated in Koudele and Willhite's publication "Rules of Thumb – Waterflooding in
9 Central Kansas". A traditional multi-zone waterflood is a waterflood process where more
10 than one formation is open in the injection wellbores, and the volume and rate of injection
11 fluid is not controlled or measured into each individual injection formation. The injection
12 fluid is allowed to take the path of least resistance. This method typically results in
13 premature abandonment of the waterflood, due to all of the injection fluid being cycled
14 through the most permeable zones, leaving the lower permeable zones with unrecovered
15 secondary reserves. To put that into perspective, Lario's current model is estimating
16 recovery of 1,519,630 STBO of secondary reserves. A traditional multi-zone waterflood
17 with a 0.20 to 1 secondary to primary recovery ratio would recover approximately 405,230
18 BO. So, Lario's multi-stage waterflood process would recover 275% more secondary
19 reserves, as compared to the traditional multi-zone waterflood process.

20 In summary, further economic evaluation of Lario's proposed multi-stage
21 waterflood process shows that each stage of the proposed Feiertag Unit substantially
22 exceeds the estimated additional cost incident to conducting such operations and is

1 economically attractive throughout all five stages of development, as demonstrated in
2 Exhibit #17.

3 Q. On page 8, lines 2 through line 12, Mr. Hemmen expressed concern about the proposed
4 tract participation factors for the waterflood operation. Lario's tract participation factors,
5 partly based on remaining primary reserves, is determined by combining all eleven
6 formations, rather than calculating a separate set of factors for each combination of
7 formations planned to be flooded during the five stages. Does Lario have any additional
8 information to offer on this subject?

9 A. Yes. Lario believes the proposed participation factors are fair and equitable to all parties.
10 Unitization of a pool of 11 highly productive zones is not a common circumstance in the
11 state of Kansas. As previously stated, both economic efficiency and oil recovery will
12 improve for all parties by developing the waterflood in stages. Simultaneous flooding of
13 every zone would cause economic waste by requiring all of the working interest owners to
14 unnecessarily drill several additional wells, lay additional lines, and increase facility size
15 and horse power for increased injection requirements.

16 The proposed tract participation factors take into consideration all of the relevant
17 characteristics of each individual lease. There are differences in cumulative oil production
18 history, number of wells and existing economic life. The first characteristic is an emphasis
19 on cumulative production and remaining primary reserves. Cumulative production is a
20 result of timing and/or quality of an oil field. Zones not flooded will continue to produce
21 in the commingled wellbores, recovering their primary reserves. A second characteristic
22 of all the tracts is the number of operational wells. The tracts Lario seeks to unitize have
23 several, one, or no usable wellbores. It is common for Mr. Hemmen to see a two-phase

1 formula system, with Phase I tract participation factors containing only remaining reserves
2 and current production. In this proposed unit's case, Tract 9 (Vulgamore lease) owners
3 would have to wait a very long time for any revenue, since the Feiertag and Haupt leases
4 have long economic lives. It would not be fair to tie up the Vulgamore leases, without
5 paying the Vulgamore lease owners any revenue for an extended period of time. Finally,
6 the characteristic of economic life has an overall influence of participation in this proposed
7 unit. For example, Tract 9 (the Vulgamore lease) has no economic life, because it has no
8 wellbores within its limit. The Hutchins and Metzger wells are at or near the end of their
9 economic life. The Hansen and Clawson leases have a much shorter economic life than
10 the Feiertag and Haupt leases. It would not be fair and equitable to the working interest
11 owners of the tracts with very little economic life to pay their portion of the initial
12 investment costs of the unit and then not receive an ownership percentage capable of
13 recovering their costs for many years, while the remaining primary reserves are recovered.
14 However, by utilizing these outside tracts (1, 7 – 10) and converting wells to injection
15 service within the Feiertag leases, a waterflood unit can be effectively constructed to
16 ultimately improve oil recovery and prevent waste.

17 It would not be feasible and would create unwanted consequences if Lario proposed
18 5 separate formulas based on the formations that were being waterflooded during each
19 operational stage. Under this formula, First stage owners will bear the burden of the
20 majority of the total capital costs. They would be paying for an upgraded tank battery, new
21 injection plant, new water supply system, upgraded production lines, and new injection
22 lines. When the second stage begins, the two first stage waterflood zones will still have
23 higher reservoir pressure and may continue to be open for production. This mix of natural

1 depletion along with higher reservoir pressure increase, due to water injection, will produce
2 at various rates in this interlaced pool as each stage matures. In addition, future stage
3 designs will be prone to change with the actual production response to injection and oil
4 price environment. In summary, if a 5 phase formula system was setup with pre-
5 determined ownership based on the remaining primary reserves of each lease at the start of
6 each stage, in my opinion there would be too many assumptions required to make accurate
7 ownership calculations.

8 Q. Do you have any additional thoughts on this subject?

9 A. Yes. Lario did consider proposing multiple formulas based on the start of each new stage
10 of development, but ultimately determined that there were too many potential drawbacks
11 to utilizing that method. For example, if new ownership was re-calculated at the end of
12 each stage of development using the same parameters and a predetermined weighting
13 system, the exact percentages for each individual owner would be unknown until that point
14 is reached. It is our opinion that our working and mineral interest owners take comfort in
15 knowing their exact ownership of the unit before they agreed to the unitization. Lario does
16 not believe that it would be fair and equitable to the working and mineral interest owners
17 to agree to a multi-phase formula system that would not determine ownership of each
18 subsequent stage until the previous stage is complete.

19 Along the same topic, Mr. Hemmen mentioned that the participation factors will be
20 giving credit to the tracts for having greater remaining primary reserves than will actually
21 remain by the time the shallower formations are flooded in the later stages. Lario did not
22 base the weighting in the formula for remaining primary vs cumulative production on the
23 St. Louis "B" and Marmaton "B" formations (Stage I waterflood formations) alone. The

1 weighting was based on the current cumulative production and remaining primary reserves
2 of all of the formations as they exist today. The current formula weighting was designed
3 to equalize the primary cumulative production versus remaining primary production for all
4 of the zones in each separate stage of development.

5 Q. On page 6, lines 20 through line 25, Mr. Hemmen questioned whether the implementation
6 costs associated with start-up of each stage of the project would be billed all at once at the
7 beginning of the project, or immediately preceding implementation of each stage. Does
8 Lario have any additional information to offer on this subject?

9 A. The answer is immediately preceding implementation of each stage. The entire cost of
10 \$4,185,000 will not be billed up front. The project will be billed as costs are occurred and
11 approved in each stage of the waterflood. Wells and projects will be submitted pursuant
12 to Authorizations for Expenditures or balloted under the terms in the proposed Unit
13 Operating Agreement.

14 Unitization of the MSEOF will significantly improve the recovery of oil from the
15 multi-zone single pressure system. An enhanced engineering strategy significantly
16 increases the feasibility of the project by increasing the recovery of secondary reserves and
17 reducing economic waste.

18 Q. Have you reviewed the pre-filed testimony of Cholla Production LLC in this matter??

19 A. Yes.

20 Q. Is it your opinion that using the Metzger #2-16 as an injection well for Lario's proposed
21 Feiertag Unit would cause less waste as compared to its use in some future Marmaton "C"
22 waterflood on Cholla's leasehold?

23 A. Yes.

1 Q. Why do you believe that?

2 A. According to William Goff and Emily Hundley-Goff's pre-filed testimony, Cholla is
3 proposing to use the Metzger #2-16 as an injection well in a waterflood that would only be
4 targeting the Marmaton "C" for secondary recovery. William Goff stated in his pre-filed
5 testimony on page 8, line 11 through line 12, that Cholla believes they could recover at the
6 minimum an additional 40,000 BO from the Marmaton C, with the potential for over
7 90,000 BO from a Marmaton "C" waterflood. Lario believes Cholla's estimated secondary
8 recoveries are significantly over-estimated and that subject will be addressed further in the
9 questions below. On the other hand, Lario's proposed Feiertag Unit is planning on using
10 the Metzger #2-16 as an injection well in a total of 8 waterflood formations and are
11 estimating to recover 1,519,630 STBO of secondary reserves.

12 Q. Do you agree with Cholla's in-house estimation of OOIP (Original Oil In Place) in the
13 Marmaton "C" formation that lies under parts of section 16 & 21 in T 31 S & R 33 W and
14 which Cholla claims is present in the Metzger #1-16, #2-16, and Vulgamore #1-21?

15 A. No.

16 Q. Why is that?

17 A. William Goff stated in his pre-filed testimony on page 8, line 9 through line 11, that

18

19

20 leasehold. The typical hydrocarbon-bearing, Pennsylvanian age reservoir in western and
21 central Kansas will recover 15% to 20% of OOIP in primary recovery, from a combination
22 of solution gas and fluid expansion drive. Emily Hundley-Goff stated in her pre-filed
23 testimony that current cumulative production for Cholla's Metzger lease is 31,606 BO

1 (Barrels of Oil) and the Vulgamore lease is 3,464 as of July 2017. Lario estimates that the
2 remaining primary production for the Metzger lease is approximately 2,010 BO and that
3 the Vulgamore lease has zero remaining primary reserves because it has reached its
4 economic limit, based on the limited information provided by Cholla. This would give us
5 a total primary estimated ultimate recovery of 33,616 BO for the Metzger lease and 3,464
6 BO for the Vulgamore lease. And, together, that would give you a total primary recovery
7 of 37,080 BO from both of Cholla's leases. Assuming all of the 37,080 BO have been
8 produced from the Marmaton "C" formation, this would yield 4.5% of OOIP from ultimate
9 primary recovery. However, Cholla has stated in their pre-filed testimony that the Metzger
10 #2-16 only produces from the Cherokee formation. Lario estimated that the Metzger #2-
11 16 produced 8,624 BO as of 10/1/2016 from public oil sales data and had 390 BO of
12 remaining primary reserves at that time. Cholla has never disputed Lario's cumulative
13 production or remaining primary reserves estimate for the Metzger #2-16. In addition,
14 when Lario asked Cholla to provide allocated oil production volumes for the two Metzger
15 wells, with production well testing records to support the production allocation, Cholla
16 responded that they did not perform regular production well testing and only had a few rare
17 tests. If you remove the oil production of the Metzger #2-16 {an EUR (Estimated Ultimate
18 Recovery) of 9,014 BO} from the EUR of the combined Metzger and Vulgamore leases,
19 you get a Marmaton "C" EUR of 28,066 BO (3.4% of Cholla's Marmaton "C" OOIP).

20 Furthermore, I have attached Exhibit #18, which is Cholla's "Metzger 1-16 Well
21 Report". As stated on page #2 and #3 of the well report, Cholla ran a total of three DSTs
22 while drilling the Metzger #1-16. The second and third DSTs covered the Marmaton
23 formations in the Metzger #1-16. DST #2 covered the base of the Lansing-Kansas City

1 down to the base of the Marmaton "B" formation. DST #3 covered primarily the Marmaton
2 "C" formation. DST #2 and #3 both showed good quality permeability with large fluid
3 recoveries, no water recovery, and virgin reservoir pressure. DST #2, covering the
4 Marmaton "A" and "B", actually recovered 461ft more fluid than DST #3 (an additional
5 51% of fluid as compared to DST #3). However, Cholla initially completed only the
6 Marmaton "C" formation in the Metzger #1-16 and left the Marmaton "A" & "B"
7 formations behind pipe. Then, moving forward on Exhibit #18 to page #10 through page
8 #12, Cholla preformed a workover on the Metzger #1-16 in October of 2013 to complete
9 the Marmaton "A" and "B" formations that were originally left behind pipe. However,
10 Cholla states in its entry on November 1, 2013, that the original completion (of the
11 Marmaton "C") appears to have drained the upper zone behind pipe. Taking Cholla's
12 statement into consideration, you have to assume that some portion of the oil production
13 that was produced from the Metzger #1-16 well came from the Marmaton "A" and "B"
14 formations.

15 With that in mind, the known volume of oil that has been produced from the
16 Marmaton "C" formation from Cholla's leasehold can be reduced even further, potentially
17 pushing the actual total ultimate primary oil production below 2% of Cholla's in-house
18 estimate of Marmaton "C" OOIP. As you can tell from the analysis above, there is
19 significant uncertainty about the cumulative volume of oil production from Cholla's
20 Marmaton "C" formation due to inconsistent information provided by Cholla, as well as
21 lack of information to support Cholla's claims. Thus, for those reasons, I believe that
22 Cholla has significantly over-estimated the OOIP in the Marmaton "C" formation.

1 Q. In William Goff's pre-filed testimony on page #8, line #11 through #12, he stated that

2 [REDACTED]
3 [REDACTED] Do you believe Mr. Goff is referring to the volume of
4 secondary reserves that he believes Cholla would recover from a Marmaton "C" waterflood
5 that he has described on the Cholla leasehold?

6 A. Yes.

7 Q. Do you agree with Cholla's estimate of secondary reserves [REDACTED]
8 [REDACTED]

9 A. No, I believe that Cholla's estimate for secondary reserves is significantly over-estimated.
10 As I have stated before, a well-designed single zone waterflood in central and western
11 Kansas will typically have a secondary to primary recovery ratio between 0.75 to 1.0 and
12 1 to 1. However, Cholla's proposal would not be considered a well-designed waterflood
13 for three separate reasons. The first reason is that Cholla is only injecting fluid into one
14 injection location. Very little incremental oil production will be recovered from areas of
15 the reservoir that are not in between the injection well and the producing wells. The second
16 problem is the proximity of the producing wells to the injection well. The Metzger #1-16
17 and Vulgamore #1-9 are both over 2285 feet away from the Metzger #2-16 (the proposed
18 injection well). As a comparison, the primary producing wells that the Metzger #2-16
19 would support as an injection well in the proposed Feiertag Unit is the Feiertag "A" #10-
20 15, at approximately 1050 feet away and the Feiertag "A" #5-15 at approximately 1660
21 feet away. The third reason is the low permeability of the Marmaton "C" in the Metzger
22 #2-16. Cholla states in Exhibit #18 (Metzger #2-16 well report) on page #3 that DST #3
23 on the Marmaton "C" formation results indicate a relatively low perm oil reservoir.

1 Considering all three of these factors listed above, it is my opinion that the secondary to
2 primary recovery ratio for Cholla's Marmaton "C" waterflood would be below 0.5 to 1.

3 In summary, Lario would estimate that the secondary reserves for Cholla's
4 proposed waterflood of the Marmaton "C" are significantly less than the [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 Q. In Exhibit #10 of William Goff's pre-filed testimony he shows an estimated capital
9 investment for Cholla proposed Marmaton "C" waterflood of [REDACTED] Would you agree
10 with that estimate?

11 A. Without seeing more details on the estimate, I cannot agree or disagree with that initial cost
12 estimate. However, the cost description did not include the costs of setting up an injection
13 plant, injection pump system, high pressure injection pipelines, water supply pipelines,
14 upgrading the tank battery for increased fluid handling capability, labor costs, a remote
15 monitoring system, and other related expenses. My feeling is that some of those costs have
16 not been included and could create a substantial increase in the initial investment.

17 Q. Do you agree with Cholla's economic projection shown in Exhibit #10 of William Goff's
18 pre-filed testimony?

19 A. No.

20 Q. Why do you disagree?

21 A. Primarily I disagree with Cholla's economic projection because I believe they have
22 significantly over-estimated the secondary reserves that would be recovered in their
23 proposed Marmaton "C" waterflood, as I have detailed in my previous responses.

1 Additionally, I believe that Cholla has potentially under estimated the initial investment
2 required to setup a their proposed Marmaton “C” waterflood. Furthermore, reviewing
3 Cholla’s economic projection, it appears that they have over-estimated the volume of
4 secondary reserves they would recover in the first year of the waterflood. [REDACTED]

5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED] Additionally, a waterflood typically takes several months
11 and even potentially years after it begins to respond before it reaches the max producing
12 rate, which would further reduce the volume of secondary reserves recovered in the first
13 year. For those reasons, I believe that Cholla has substantially over-estimated the economic
14 potential of their proposed Marmaton “C” waterflood.

15 Q. What effects would it have on Lario’s proposed waterflood if Tracts #8 and #9 (Metzger
16 and Vulgamore) were not included in the proposed Feiertag Unit?

17 A. If Lario was unable to include Tracts #8 and #9 in the proposed Feiertag Unit waterflood
18 it would have a substantially negative effect on the volume of secondary reserves to be
19 recovered from the proposed Unit. In that scenario, Lario would be forced to convert the
20 Feiertag “A” #10-15 to an injection well to efficiently recover secondary reserves in the
21 southwest corner of the proposed Unit. Currently, the Feiertag “A” 10-15 and Feiertag
22 “A” #5-15 are two of the top three highest producing oil wells inside the Unit boundary
23 and have a combined estimated ultimate primary oil recovery of over 375,000 BO (10 times

1 the estimated ultimate primary oil recovery of Cholla's Metzger and Vulgamore leases)
2 with approximately 97% of that oil coming from the proposed 11 waterflood zones. In
3 addition, the Feiertag "A" #10-15 and Feiertag "A" #5-15 have a high degree of pressure
4 communication. So much so, that if one of the two producing wells goes down the other
5 well will increase in total fluid production within a few days. So if Lario was forced to
6 convert the Feiertag "A" #10-15 to an injection well, it would create a high risk of
7 prematurely watering out the Feiertag "A" #5-15 production and potentially abandoning a
8 significant portion of the secondary and remaining primary reserves in that area of the field.
9 In addition, if Lario is required to convert the Feiertag "A" #10-15 in to an injection
10 (because Tracts #8 & #9 are no longer included the Unit), the Unit would lose a significant
11 volume of secondary reserves west of the Feiertag "A" #10-15 wellbore.

12 Q. Mr. Birk, you have reviewed the pre-filed testimony of Staff witness Jim Hemmen. Is
13 that correct:

14 A. Yes.

15 Q. Can you address his concerns regarding K.S.A. § 55-1305 and the percentage of approval
16 by both working interest owners who will be paying for the costs of operation of the
17 Feiertag unit and royalty owner percentage of approval?

18 A. Yes. Lario is proceeding under the standards set out in K.S.A. § 55-1305(a)(2), which we
19 believe requires a minimum of 63% of the working interest owners' approval and at least
20 75% of the royalty owner interest approval of the unit agreement and agreement for unit
21 operations.

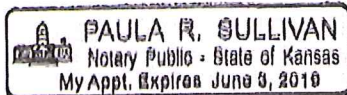
22 Q. What is the percentage of approval that Lario has obtained as of the date of the filing of
23 your rebuttal testimony?

- 1 A. As shown on Exhibit 19 to this testimony, 95.58% of the royalty owner interests and
2 92.64% of the working owner interests have signed and agreed to the proposed unit.
3 Therefore, clearly we have exceeded the statutory minimums of K.S.A. § 55-1305(a)(2).
- 4 Q. Does this conclude your testimony?
- 5 A. Yes.

VERIFICATION

STATE OF KANSAS)
) ss:
COUNTY OF SEDGWICK)

Brent Birk, of lawful age, being first duly sworn upon my oath, state that I am an Operations Engineer with Lario Oil & Gas Company; that I have read the above prefiled rebuttal testimony; that I know the contents thereof and declare that the statements made therein are true and correct to the best of my knowledge and belief.



Brenten Birk

Brenten Birk

SUBSCRIBED AND SWORN to before me this 6th day of September, 2017.

Paula R. Sullivan

Notary Public

My Appointment Expires:

6-3-19

Bottom-Hole Reservoir Pressure History

Lease	Date	Oread "A"		LKC "A"		LKC "B"		LKC "C"		LKC "H"		LKC "I"		LKC "J"		LKC "L"		Marm "B"		Millrich SS		St. Louis "B"	
		BHP		BHP		BHP		BHP		BHP		BHP		BHP		BHP		BHP		BHP		BHP	
Hutchins #1	12/21/1985					989								1121				1132					
Feiertag A #8-15 RE	3/25/1986									1126										1113			
Feiertag A #1-15	6/11/1992			1089		1002				1099		1147		1157		1157		1196		1002		1031	
Feiertag A #2-15	7/22/1993	973		1032		1020		1050		1070		1070		1130		1130		374				1110	
Feiertag A #3-15	11/6/1993			1081		1062		1103		1103		1167		1224				460					
Haupt A #1-15	5/10/1994					1006				850		888		1130		1130				735			
Feiertag A #4-15	6/7/1994					1000				849								395					
Feiertag A #5-15	6/18/1994			979		1040		689		1080		919								1120			
Feiertag A 2-15 - LKC A Completion	3/17/1995			1032																			
Feiertag A #4-15 - LKC B Completion	3/23/1995					1000																	
Feiertag A #6-15 D&A	8/15/2000					500				587		833						371					
Feiertag A #1-15 - Millrich Completion	3/31/2004																			1002			
Feiertag Trust #1-10	8/15/2005	932																		887		401	
Feiertag A #7-15	5/27/2006									431								240		538			
Haupt A #3-15 D&A	8/20/2007			901														190				497	
Hansen #1-9	9/3/2007																			880			
Feiertag Trust #2-10	7/28/2008																						
Mietzger #2-16	3/19/2011					595																	
Collingwood Unit 1-15	9/25/2013			800				270		235		479		871		556				1046		564	
Feiertag A #9-15	10/14/2013					211						543		841									
Feiertag Tr A #3-10	11/26/2013																					286	
Feiertag A #10-15	12/11/2013					355				489		466		698		573		298					
Feiertag Trust A #1-10 Oread Completion	8/16/2013	932																					
Feiertag A #2-15 Completion	7/22/1993	366																					
Clawson #1-22	11/6/2015			806														286		1089			
Clawson #1-22 - Millrich Shut-in Fluid Level	8/30/2017																			290			
Feiertag A #10-15 - LKC A Shut-in Fluid Level	9/1/2017			104																			
Feiertag A 7-15 - Millrich Shut-in Fluid Level	9/1/2017																			100			

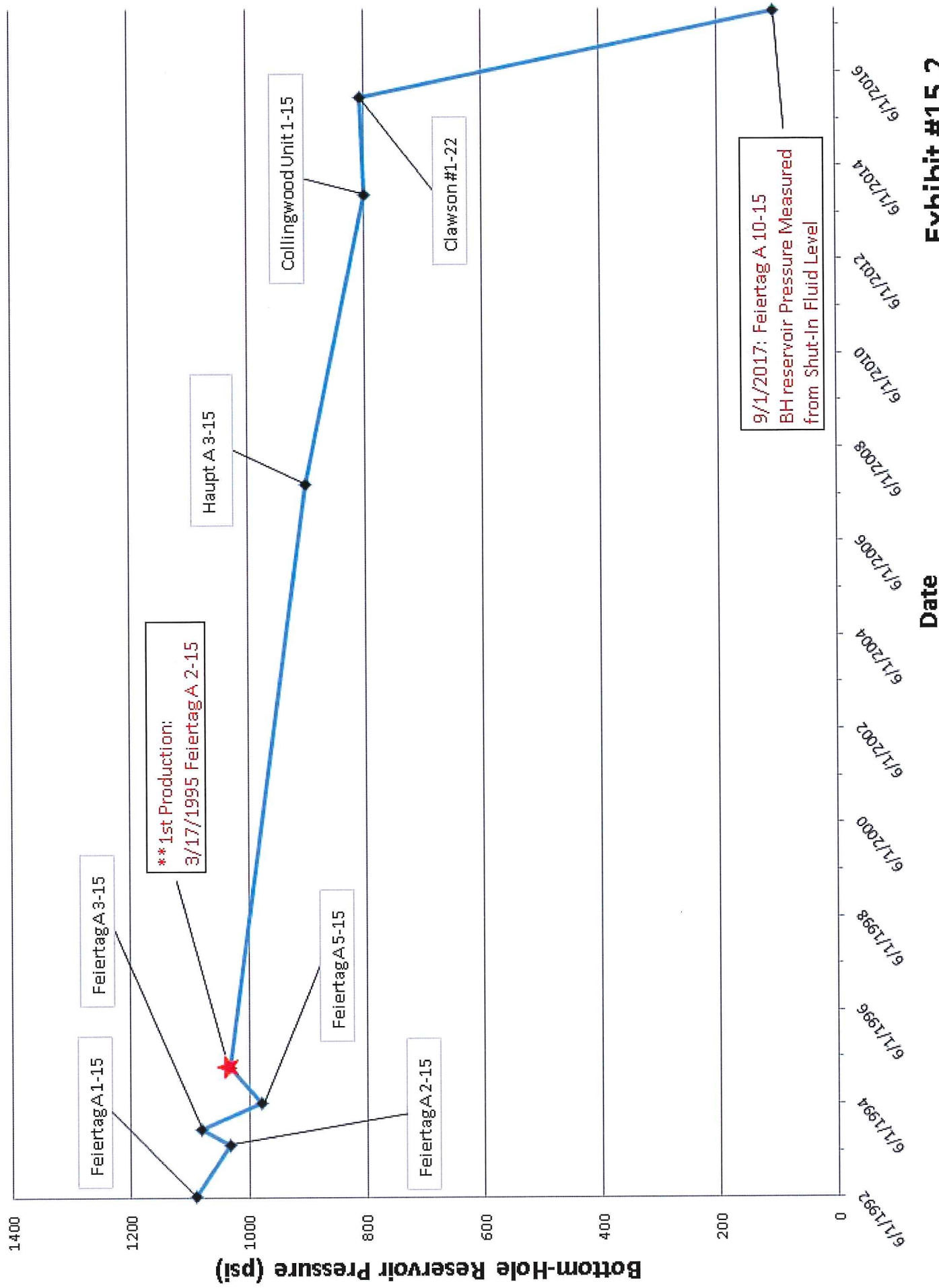
BHP (Bottom-Hole Reservoir Pressure)

When Zone Initially Began Production

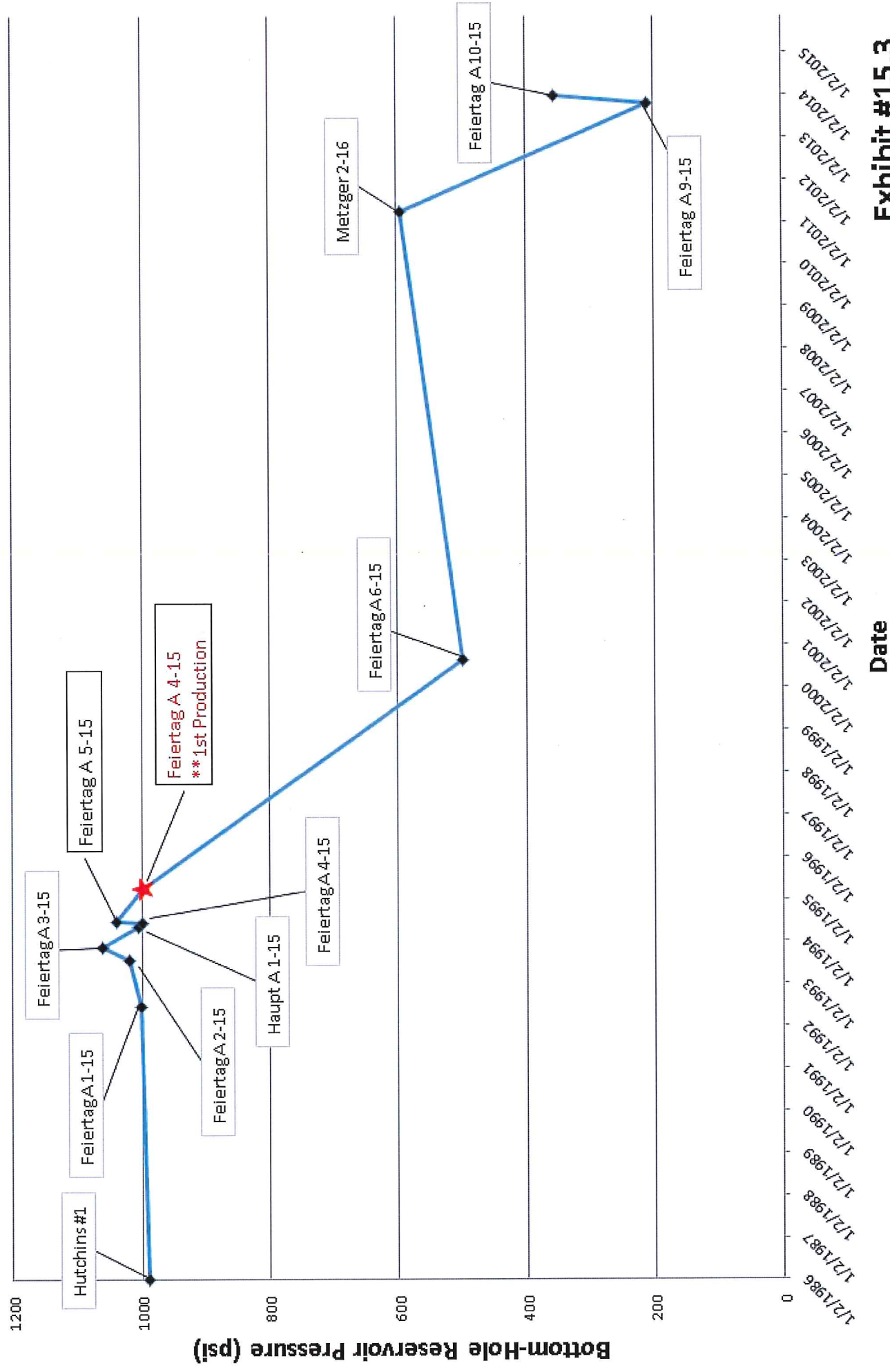
Oread "A" Bottom-Hole Reservoir Pressure



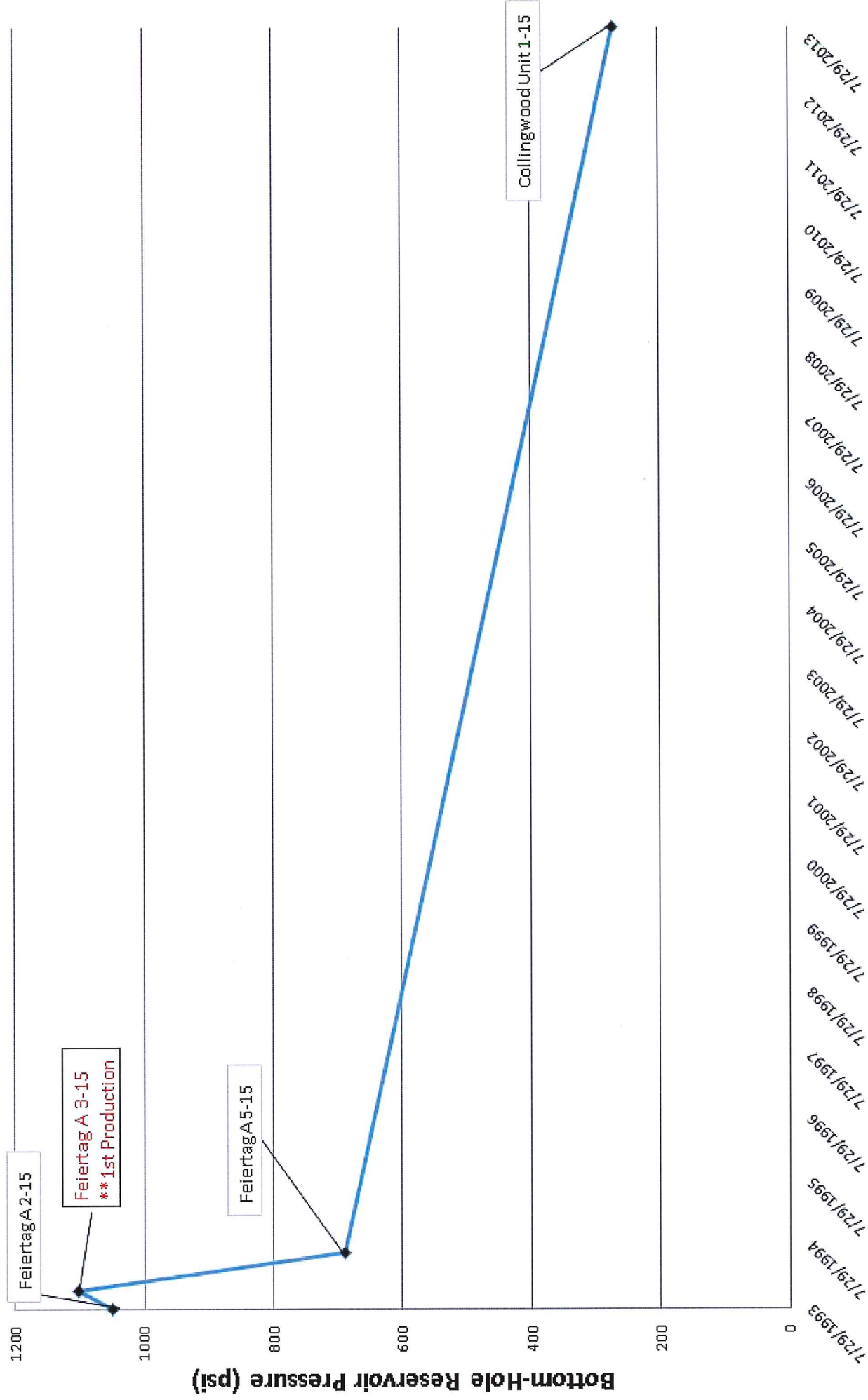
LKC "A" Bottom-Hole Reservoir Pressure



LKC "B" Bottom-Hole Reservoir Pressure



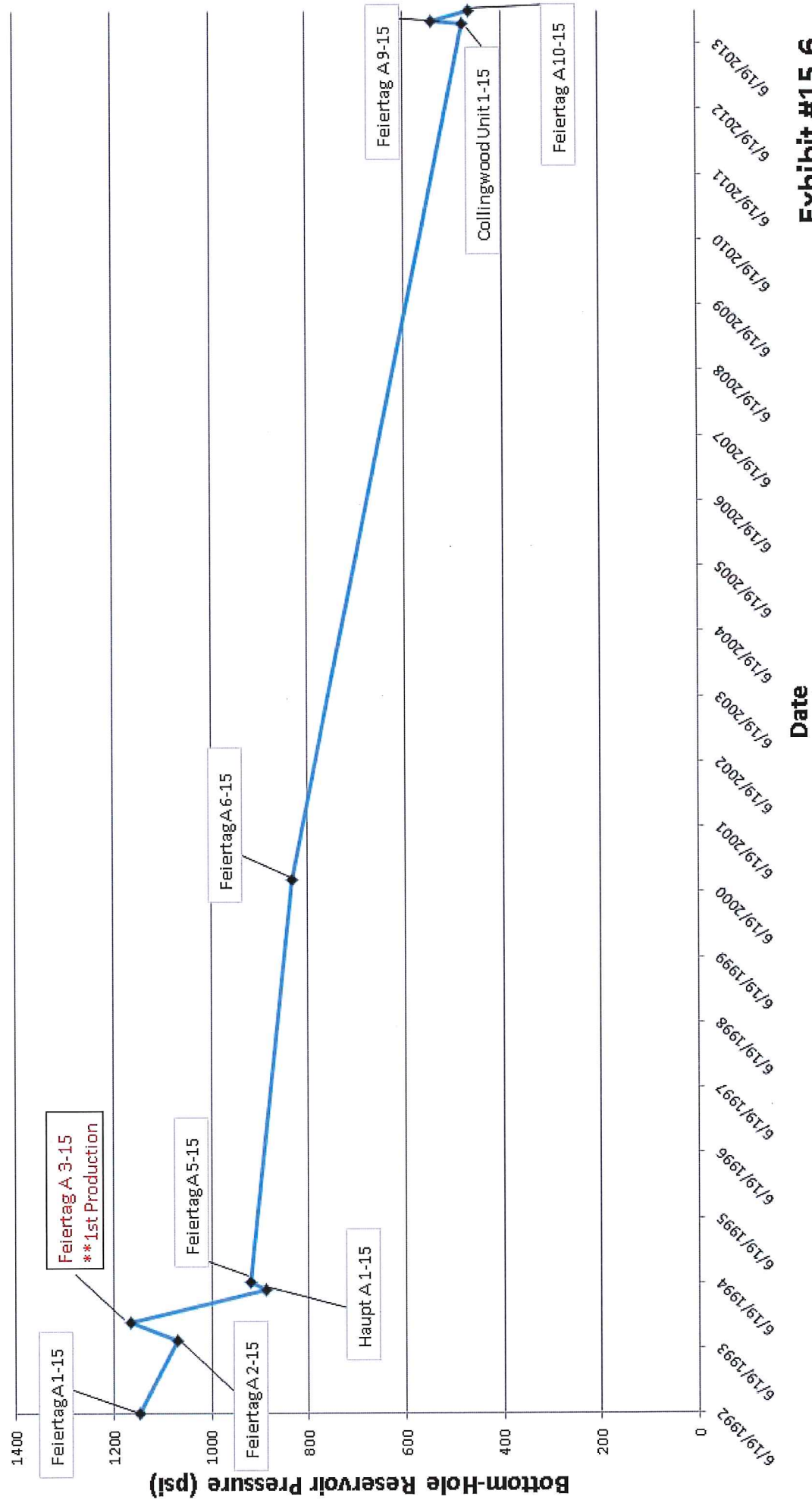
LKC "C" Bottom-Hole Reservoir Pressure



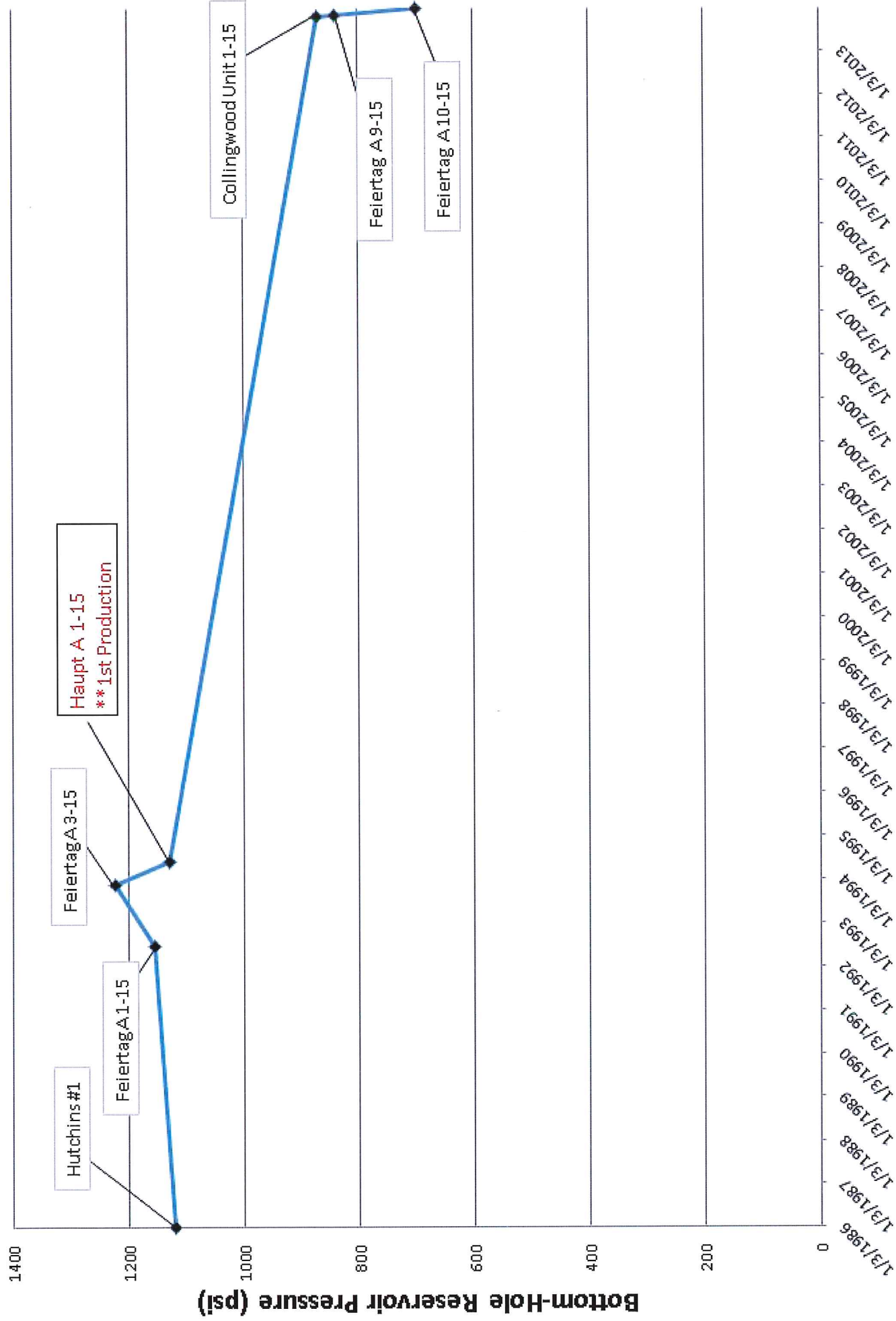
LKC "H" Bottom-Hole Reservoir Pressure



LKC "I" Bottom-Hole Reservoir Pressure



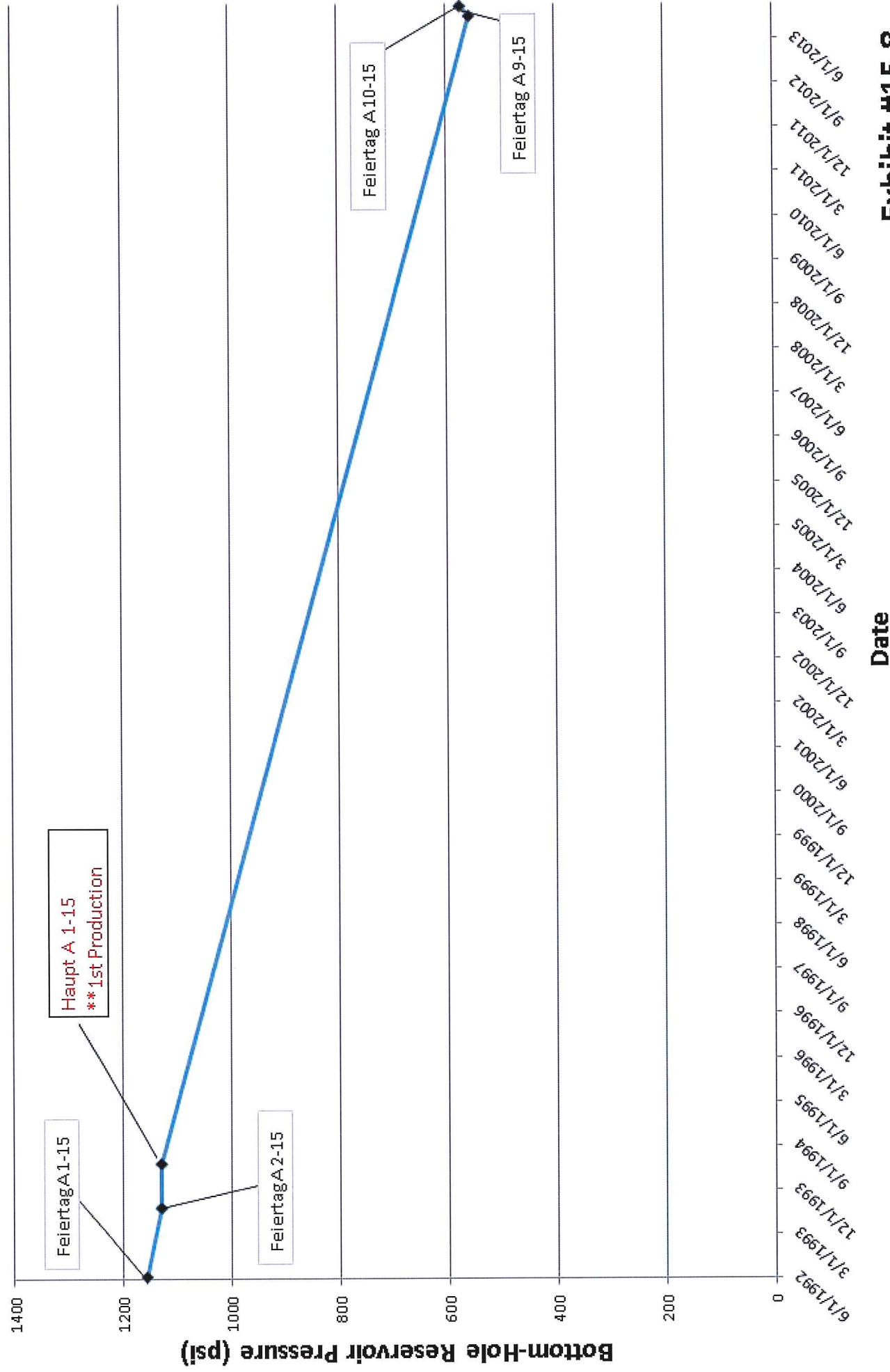
LKC "K" Bottom-Hole Reservoir Pressure



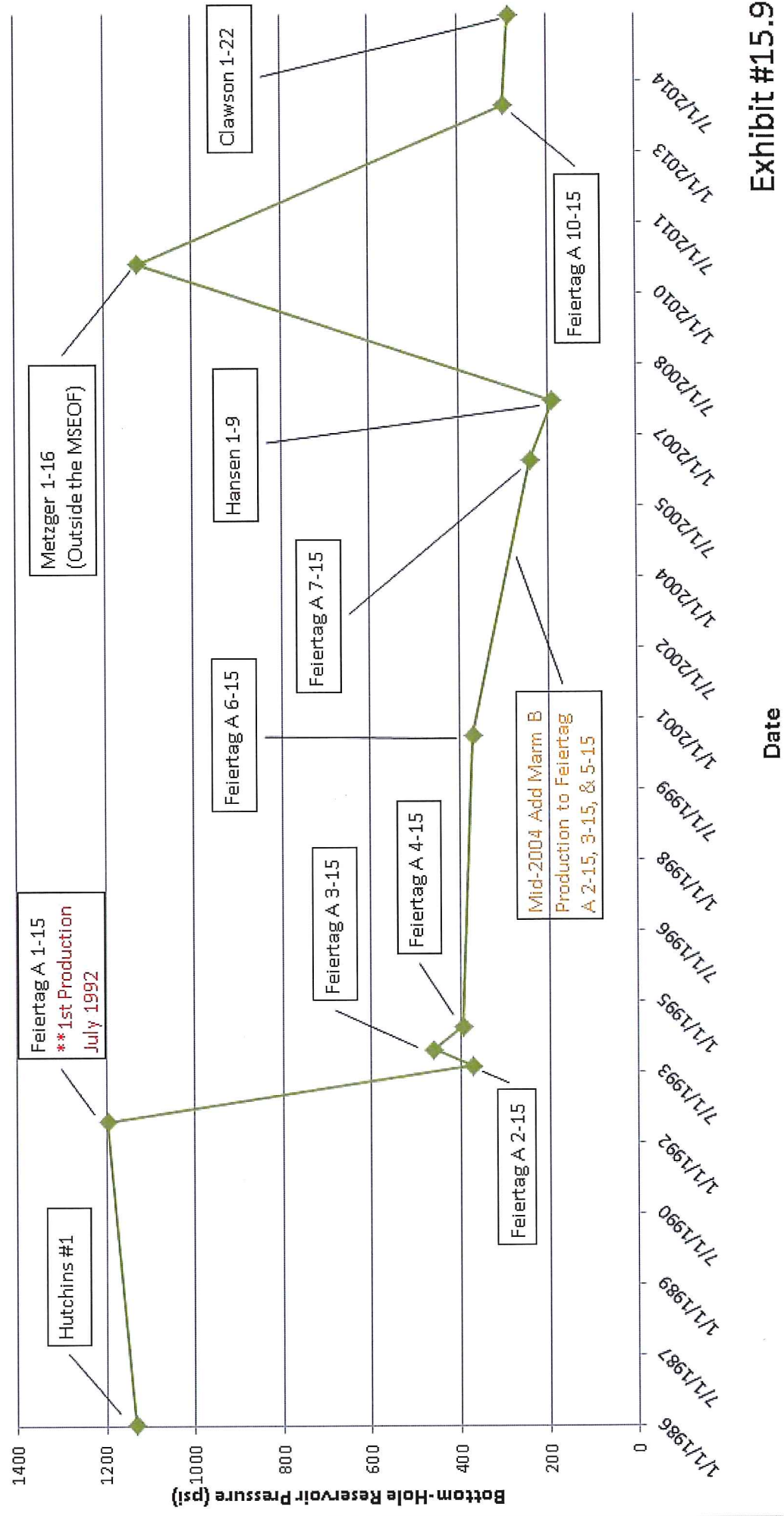
Date

Exhibit #15.7

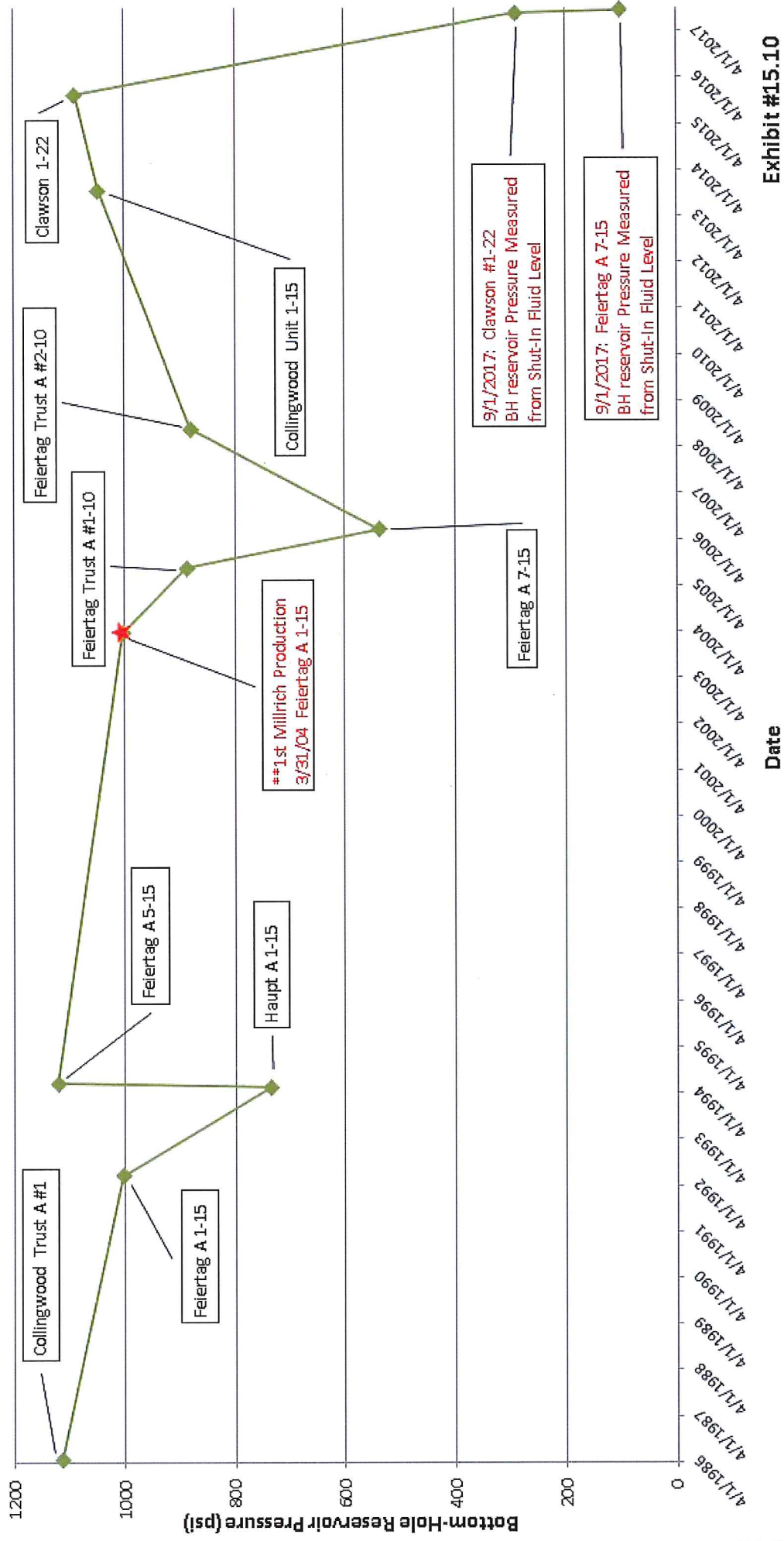
LKC "L" Bottom-Hole Reservoir Pressure



Marmaton B Bottom-Hole Reservoir Pressure



Millrich SS Bottom-Hole Reservoir Pressure



St. Louis "B" Bottom-Hole Reservoir Pressure



Feiertag Unit Secondary Reserves Estimate per Waterflood Stage

Waterflood Stage	Formations	Estimated Secondary Reserves per Stage (STBO)
Stage I	St. Louis "B"	343,589
	Marmaton "B"	
Stage II	Millrich SS	338,543
	LKC "L"	
	LKC "K"	
Stage III	Millrich SS	325,902
	LKC "I"	
	LKC "H"	
Stage IV	LKC "C"	273,681
	LKC "B"	
Stage V	LKC "A"	237,915
	Oread "A"	
Total		1,519,630

Feiertag Unit Economic Projection - Breakdown					
Economic Projection Timeframe	Rate of Return	Undiscounted Return on Investment	Cumulative Years to Payout	Estimated Duration (years)	100% WI Total BFIT Net Cashflow (After CAPEX Payout)
Stage 1 Only	20.3%	1.9	3.5	6	\$2,125,660
Stage 1 - 2	29.2%	3.7	4.5	12	\$8,693,460
Stage 1 - 3	30.6%	5.3	4.9	19	\$15,456,910
Stage 1 - 4	30.9%	6.0	5.2	23	\$19,478,540
Stage 1 - 5	30.7%	7.5	5.7	37.1	\$26,992,460

Cholla Production, LLC

METZGER No. 1-16

Sec. 16-T19S-R33W

Scott County, Kansas

Elevation: 2965' Gr.; 2970' KB

07-28-10: Fall and Associates Stake location. 2675' FEL and 1730' FSL. Sec. 16-T19S-33W. Elevation: 2965' GR. Moved location 120' due west to clear power lines. Final location staking is 2795' FEL and 1730' FSL.

07-29-30: Discussed access into well with landowner David Metzger. Will have to access location from south through corn field. Some crop damage will result from this access.

08-2-10: Discussed water well plans with Scott City, numerous farmers etc. Finally decided to get water from feedlot.

08-12-10: Pfeffer Dozer MI and building location and dig fresh water pit.

08-18-10: Current Operations: TD 257', Drilling out from surface. MIRU WW Drlg Rig # 2. 1345 hrs spud 12 ¼" surface hole. Received & unloaded 6 jts 8 5/8", 23#, LS csg (253' OA) from Midwestern Supply. 1615 hrs TD 12 ¼" @ 257'. CTCH ¼ hr – drop survey & TOOH for csg. Unable to work csg deeper than 70'. LD 2 jts csg and TIH to ream & circ hole. 1039 hrs ran 5 jts 8 5/8" csg (250'); strapped & welded connections. 2045 RU Allied to cmt – pumped 175 sks class A w/2% gel, 3% CaCl. Had excellent returns. Displaced w/15 BFW & SI @ 2115 hrs. WOC 8 hrs minimum before drlg out. Set pipe @ 257' - Known Cost Allied \$5,975 (before discount)

08-19-10: Current Operations: TD 2440', Drilling. Last 24 hours made 2183'. Bit no. 2; Smith 7 7/8" F-27. MW 9.1; vis 28. Anhydrite Top: 2205 (+765); Base 2225' (+745). Prognosis Base (+748). Will mud up at 3400'.

08-20-10: Current Operations: TD 3290', Drilling. Last 24 hours made 860 in 22.75 rotating hours. Hours on bit No. 2 - 47.75. Footage on bit 3033'. MW 9.2; vis 30; Cl 47,000; LCM 1#.

08-21-10: Current Operations: TD 3915', Drilling. Last 24 hours made 625', in 24 rotating hours. Hours on bit 70.25. Footage on bit 3658'. MW 8.9; vis 55; LCM 2#. Displaced mud at 3445' – 800 bbls. Lost 50 bbls at 3580'. Tops Heebner 3845 (-875); Toronto 3861 (-841); Lansing 3893' (-923'). Running 7' low to prognosis at this time. Shows: Toronto, wh fxln, vp por, possibly frac por, faint odor, poor SFO, drilling break 3-4 min/ft to 2 min/ft. Low quality show from zone that rarely produces in area. Drilling ahead.

08-22-10: Current Operations: TD 4216', Running DST No. 1. Last 24 hours made 301', in 16 rotating hours. Hours on bit 86.25. Footage on bit 3959'. MW.9.0; vis 50; CI 3000; LCM 2#. Drilled to 4216'; CCTH (.45 hrs) for samples in Stark interval. Short trip 30 stands (1.75); TOOH for DST No. 1. (5 hrs); Rig maintenance (.5 hrs). Tops Stark 4190' (-1520); Running 7' low to prognosis at this time. Shows: Stark, wh, f-m xln, p-f por, possibly frac por, fair-good odor, p-f stain, poor SFO, good streaming cut, dull yellow fl, drilling break 4-5 min/ft to 2 min/ft. Fair quality show from zone that commonly produces in area. Decide to run test No. 1. Pipe strap 0.62' short to board.

08-23-10: Current Operations: TD 4356', Running DST No. 2 (Marmaton). Last 24 hours made 140', in 9 rotating hours. Hours on bit 94.75; Footage on bit 4099'. MW 8.9; vis 58; CI 3200; LCM 2#. Drilled to 4356'; Running DST no. 1 and CCTH, GIH for DST No. 2 Marmaton (14.75 hrs); Rig maintenance (.25 hrs).

DST No. 1 Lansing-Kansas City Stark interval. (4192'-4216'); Times 10-40-40-120.

Initial Open – 10" – 12-59 psi; 3" Bldg blow

Initial Shut In – 40" – 933.41 psi; no returns

Final Open – 40" – 61-124 psi; BOB in 36 minutes

Final Shut In – 120" – 931 psi; no return

Recovery: 240' MW; 40% Mud, 60 %Water

Tops: Marmaton 4326' (-1356); Flat to Prognosis

Marmaton Show Description: CR-WH; fossiliferous, vg-ex vuggy porosity with shows from 4320-4340 samples; some vugs w/ free oil show visible with naked eye; strong odor, vg SFO, cut and fluorescence.

Early test results have strong blow BOB in 3" on open and building blow to BOB in 20" on returns during initial shut-in. Start out with Test at 1:05 CST.

08-24-10: Current Operations: TD 4394', POOH w/ DST no. 3. Last 24 hours made 38', in 2.25 rotating hours. Hours on bit 97.00; Footage on bit 4137'. MW 9.1; vis 58; WL 8.8 CI 4800; LCM 3#. POOH w/ DST no. 2. Reversed to the pits. TIH, C&CTH hole for 1 hour, resume drilling. Drilled to 4394'; Circ for samples in Marmaton "B" zone. POOH for DST no. 3. GIH with test, run test Times 10-40-40-120 POOH w/ DST No. 3.

DST No. 2 Marmaton (4282'-4356') Times 10-40-40-120

Initial Open – 10" – 98-220 psi; SB BOB in 3 min.

Initial Shut In – 40" – 1122 psi; Return steady building blow BOB in 20 min.

Final Open – 40" – 226-482 psi; SB BOB in 3 min.

Final Shut In – 120" – 1134 psi; SB BOB in 3 min.

IHP – 2113 psi FHP – 2119 psi

Recovery 1488' GIP; 1361' GCMO; no water recovery or ground out.

DST No. 3 Marmaton "B" (4356'-4394') Times 10-40-40-120

Initial Open – 10" – 26-101 psi; SB BOB in 4 min.

Initial Shut In – 40" – 1102 psi; Return steady building blow BOB in 29 min.

Final Open – 40" – 122-302 psi; SB BOB in 5 min.

Final Shut In – 120" – 1088 psi; SB BOB in 36 min.

IHP – 2155 psi FHP – 2112 psi

Recovery: 900' GIP, 900' Total Fluid, 32' GO 30% G/70% O, 186' GMCO, no %, 682' GO, 35% G/65% O. NW. Grav. 25.

08-25-10: TD 4634', Current operations: Drilling. Last 24 hours made 240', in 15.5 rotating hours. Hours on bit 112.5; Footage on bit 4377'. MW 9; vis 59; WL 10.4; CI 5000; LCM 3#. Circulated samples in Morrow.

Tops: Morrow Shale 4603 (-1633)

Morrow SS: 4618 (-1648); vf-fg qtz ss, clr, well strtd., mod. well cmted., light show free oil, very faint odor, 4' drill break 4-5 mpf to 1 mpf., decision made to evaluate on logs.

11 Am: 4700'. Circulating samples in St. Louis. Will TD at 4730'. Will log tonite.

Tops: St. Genevieve: 4651 (-1681)

St. Louis: 4692 (-1722). 5' drill break from 4 mpf to 2 mpf.

08-26-10: TD 4730', Current operations: LDDP. Last 24 hours made 96'. Hours on bit 115.25; Footage on bit 4473. MW 9.1; vis 60; WL 10; CI 4100; LCM 3#. At 1445 hrs RD 7 7/8" hole @ 4730'. Circ ¼ hr – 1500 hrs short trip 8 stds. 1530 hrs CTCH 1 1/2 hrs; drop survey. 1715 hrs TOOH for logs. 1900 hrs RU Weatherford to log; LTD 4728'. 2330 hrs RD Weatherford. Receive from Jayhawk and unload & tally 125 jts 4 ½", 10.5#, J-55 csg (approx 4835')

08-27-10: TD 4730', Current operations: Rig released at 8:45 PM 8/26/10. Ran 123 jts 4 ½", 10.5#, J-55, STC csg (4731' w/DV tool). Used 11 centralizers, float shoe, latchdown baffle, 2 cmt baskets & DV tool. Broke circ @ 2900'; 1145 hrs circ on btm 2 ½ hrs while WO & RU Basic to cmt. 1430 hrs pump 500 gals mud flush, 150 sks AA-2 blend; washed pump & lines to pit; released plug & displaced w/40 bbls kcl wtr & 35 bbls drlg mud. Landed plug @ 1515 hrs; psi tested @ 1600#. Released psi and float held. Dropped DV opening tool & let fall to spot; 1530 hrs psi 850#. DV tool opened-circ 2 ½ hrs w/rig pump. 1730 hrs plug RH & MH w/30 & 20 sks cmt. 1800 hrs pump via csg & DV 475 sks A-conn blend with excellent returns. Washed pump & lines to pit; released closing plug & closed DV tool @ 1845 hrs. Psi tested @ 1800# tool held. Released psi with cellar stdg full (no fall back). Pipe set @ 4730', PBDT 4692', DV tool @ 2230'. RD Basic and set slips, cleaned pits & released rig @ 2100 hrs.

COMPLETION OPERATIONS:

09-03-10: TD 4830', Current operations: MIRU Post & Mastin Well Service completion rig & rev circ unit – EDC \$1,015

09-07-10: TD 4830', Current operations: Received & unloaded from Sunrise Supply 148 jts new 2 3/8", J-55, EUE tbg (4834' OA). Tally & RIH w/ 3 7/8" bit SN & 69 jts. Tagged DV tool @ 2238' – drld out DV tool – RIH & tagged btm @ 4675' w/144 jts tbg. Picked up power swivel & cleaned out 11' to 4686'. Circ hole clean. TOO H w/ tbg and bit. SN & SDON – EDC Post & Mastin \$4,251, Supervision \$625 – total \$4,676 – CC \$5,891

09-08-10: TD 4830', Current operations: RU LogTech to run GRC, CCL, CBL from 4684' to 3750'. Found TOC @ 3935' & PBTD @ 4686' with very good to excellent bond throughout. Ran csg swab – swab down to 3000'. RIH w/3 1/8" expendable gun & perf Morrow sand interval from 4616' to 20' w/8 spf – all charges fired. TIH w/pkr, SN & 141 jts tbg. Set pkr @ 4583'. Ran tbg swab and found FL 2800'. Tbg swab dry w/no shows. Wait 1/2 hr and rec 50' fluid w/show of oil. Wait 1 hr swab 90' fluid – 50% dirty wtr & 50% emulsified oil. Tbg dry next 1 1/2 hrs. SI & SDON. – EDC Post & Mastin \$2,750, Supervision \$595, LogTech \$4,200 – total \$7545 – CC \$13,436

09-09-10: TD 4830', Current operations: 14 hr SITP lite blow – FL 4000' (620'). Rec 2 BF (90% oil) w/1 swab run; 2nd swab run was dry. RU Swift Co. to treat w/250 gals 7 1/2% NEFE HCL containing 1% musol & 10% zylene. Tbg loaded w/18 1/2 bbls. Psi to 1000#; psi bled back; maintained 1000# for 1/4 hr with acid on perfs. Psi to 1700# @ 1/2 BPM – inj @ 1700# @ 1/2 BPM; psi broke back to 950# @ 1/2 BPM. Increased rate to 3 1/2 BPM @ 1500#. ISIP 500# - down to 425# in 15 minutes. Released psi – flow back 1/2 BF with 23 BTL. Tbg swab dry. Rec 1 BF in 2 hrs. Tbg dry last hr. LD swab. TOO H w/141 jts tbg & pkr. RU LogTech and RIH w/4' gas gun. Spotted & fired gun across perfs (4616-20') – no change in FL after firing gun (3175') – TIH w/pkr, SN & 141 jts tbg – set pkr @ 4583'. Ran swab finding FL 3000'. Tbg swabbed dry. Rec 1/3 BF. EDC Rig \$2,800, Swift \$1,900, Supervision \$595, LogTech \$2,800 – total \$8,095 CC \$21,531

09-10-10: TD 4830', Current operations: ONFU 3800'(820'); SITP lite blow; fluid 90% clean gassy oil and 10% spent acid water. Swab test Morrow perforations recovering 3.5 BTF 85% oil, in w/2 swab runs; 3 hrs. 3rd swab run was dry; no free wtr in samples; swabbed 1/2 BF next 2 1/2 hrs; SI & SD for over weekend fill up and possible frac job on Monday. EDC Rig \$1,200, Supervision \$390 – total \$1,590 – CC \$15,026.

9-11-10: TD 4830', Current operations: MI & set 500 bbl frac tank & filled w/FW

09-13-10: TD 4830', Current operations: Prepare to frac well. SITP 20 psi. Over-weekend FU of 2300' oil and trace of acid treatment water. Rec 7 BF w/3 swab runs; free wtr in samples TSTM. Swab 1/2 BF next 3 hrs. MI Heat Waves hot oil unit & heated KCl frac wtr to approx 80 degrees. MIRU Gore frac equipment. Pumped via tbg 142 bbls gel

wtr pad. Tbg loaded w/17 ½ bbls. Pressure slowly climbed to 2500# @ 9 BPM & leveled off. Stage 2: 48 bbls w/1/2# sand in perfs @ 9 BPM @ 2250# avg psi. Stage 3: 50 bbls w/1# sand in perfs @ 9 BPM @ 2150# avg. Stage 4: 80 bbls w/2# sand in perfs @ 9 BPM @ 2000# avg. Stage 5: 25 bbls w/2 ½# sand & 25 bbls w/3# sand (made decision to increase sand to 3# last ½ of stage 5) in perfs @ 1900#. Displaced w/19 bbls gel wtr @ 9 BPM @ 2050# avg – ISIP 822# down to 460# in 15 minutes. 378 BTL (liquid) & 15,200# sand. SI well. RD & release Gore Co. SDON. EDC Rig \$2,000. Gore \$23,170, Heat Waves \$1,250, Supervision \$610 – total \$27,030 CC \$42,056

9-14-10: TD 4830', Current operations: SITP vac with FL @ 900'. Swabbed 18 BW in 1 hr. FL 1500'. Released pkr & POOH w/2 jts letting pkr swing @ 4520'. Resume swabbing. FL 1100'; swabbed 153 BLW in 11 hrs w/ 9 BPH avg last 3 hrs. FL 4100' last 2 ½ hrs. Small trace of sand first 10 hrs – no sand last hr. SI & SDON. 271 BL to recover. EDC Rig \$2,500, Hub of Syracuse \$1,900 (tank & wtr) Supervision \$300; Total Daily Cost: \$4,700 – Cum Cost \$ 46,756.

9-15-10: TD 4830', Current operations: Preparing to move up hole to Marmaton "B" zone. 12 hr SITP 15#, CP lite vac. FL 2500' – swabbed 83 BLW in 10 hrs w/ 5 BPH average last 2 hrs; 15% oil in samples; last 5 hrs. no trace and all day. FL 4350' last 3 hrs w/ noticeable increase in chlorides (to taste) last ½ of day. SI & SDON. Lack 188 BHLR. DC Rig \$2,300, Supervision \$595 – total daily cost - \$2,895 – CC \$49,651.

9-16-10: TD 4830', Current operations: Preparing to acidize Marmaton "B" perfs in morning. SITP 5# w/ lite vac on csg. Lowered tbg 4 1/3 jts & tagged top of sand fill @ 4656' indicating 36' rathole. POOH & set tbg @ 4520' with packer hanging. Ran swab: FL 1250'; 120' oil on top. Swabbed 35 BF in 1 ¼ hrs pulling level down to 3000'. Set pkr @ 4520' to re-run swab. FL in tubing at 2700'. Swabbed 18 ½ bbls in 1 ½ hr; 7 bbls last hr pulling FL down to 4250'. 12% oil in samples last hr w/53 ½ bbls total today. Lack 134 BHLR from Morrow perfs. Samples will be picked up by Jacam Chemical and analyzed for oil and water properties. Released pkr & TOOH w/tbg & tools. RU LogTech. RIH & set 4 ½" CIBP @ 4580'. RIH w/3 1/8" expendable gun & perf intervals from 4364 to 72' & 4374 to 78' w/4 spf and 90 degree phasing. All charges fired. No change in FL after perfs (3200'). TIH w/ redress 4 ½" pkr, SN & 133 jts tbg. Set pkr @ 4325'. Ran swab finding FL @ 3100'. Swab tbg dry w/3 swab runs – wait /2 hr – recovered 160' very gassy oil. Made 2nd ½ hr swab and rec 130' gassy oil. No free wtr in samples. Tubing full of gas w/ vac behind swab. Rec ¾ bbl total w/2 swab runs. SI & SDON – EDC Rig \$2,800, LogTech \$4,800, Supervision \$600 - total daily cost \$8,200 CC \$57,951.

9-17-10: TD 4830', Current operations: Preparing to run rods and pump for Marmaton "B" completion Monday morning. 13 hr SITP 20#, CP 0# w/ FL @ 2600'. Swabbed 6 BO w/3 swab runs w/ last swab dry. Made 2 - ½ hr swab runs, rec ½ BO in one hr. RU Heat Waves to acidize w/1250 gals NEFE 15% HCL (heated). Tbg loaded w/16.5 bbls. Psi built up slowly to 2100# then SD pump. Bumped psi up to 2000# a couple of times to get acid on perfs. Psi broke back to 1500# @ 1 BPM. Increased rate as psi broke back to 3.6 BPM @ 1500#. Saw no ball action. Ended job with injection rate @

3.6 BPM and 1300#. ISIP 600#. Well on vacuum in 3 minutes. Ran swab; FL @ 1000' w/ 47 BTL. Recovered 27 BF in 1 hr pulling FL to 2700' w/ no free water on last swab run. Swabbed 121 BO next 7 ½ hrs @ 16 ¼ BPH avg last 4 hrs. (Avg FL standing @ 2800' (@ 4 swab runs per hr). Did not run swab below 4000'. No free wtr in samples and oil was very gassy. Rec 148 bbls total since acid job. SI & SDON. EDC: Rig \$2,450, Heat Waves \$2,500, Supervision \$640, CF Supply \$1,400 (pkr rental & redress) – Total Daily Cost -\$6,990: Cum Completion Cost: \$64,941.

9-18-10: TD 4830', Current operations: GIH with tubing. SITP 10#, CP 0#; FL @ 2000'. Swabbed 10 BO w2 swab runs w/ ending FL @ 2400'. Released pkr and lowered tbg 7 jts to 4333'. Swabbed to evacuate completion fluid water (from RH & annulus). Rec 24 BF with no free wtr on last 2 swab runs. TOOH w/tbg & pkr. TIH w/SN, 4jts 2 3/8" tbg, 4 ½" TAC & 132 jts 2 3/8" tbg . Set TAC @ 4290' w/14,000# tension. SN @ 4420'. Prep to run pump & rods. SI & SD for weekend. Total Daily Cost – Rig \$2,000, Supervision \$ 625 – total \$2,625 Cum Completion Cost - \$67,566.

Note: Fluid analysis of Morrow sandstone from Jacam Chemical. Cl – 44,000 ppm; oil gravity 29 at 90 deg; 0.9% emulsion, no asphaltenes and only a trace of paraffin. Salinity indicates significant formation contribution to fluid stream. Morrow chlorides in area are up to 80,000 ppm. Production from this zone would have a significant water cut.

9-20-10: TD 4830', Current operations: SI WO Pumping unit and tank battery. SITP 5#, CP lite blow. RIH w/2" X 1 ½" X 14' RWBC pump (6" strainer), 176 ¾" rods, 1 ¼" X 22' polish rod w/10' liner. Spaced & seated pump. Longstroked & tested pump action. Released rig but too windy to rig down. EDC Rig \$1,500, Supervision \$ 525 – total \$2,045 CC \$69,611 does not include tangible equipment.

9-23/30-10: TD 4830', Current operations: Setting equipment, prep location. Bojack roustabout Service build pad, set new Sentry 114-64" stroke pumping unit. Lay 3" PVC flowline to tank battery location at Metzger yard. Build tank battery pad and dikes, WO tank battery delivery. Move swab oil to stock tanks, roughly 130 BO.

10-6-10: TD 4830', Current operations: Setting Tank Battery. Hess Services, Inc. set 280 BBL Gun Barrel with immersion heat coils, 2-250 BBL stocks, 200 BBL FBRG SW tank. Battery completely plumbed in waiting on electricity.

10-12-10: TD 4830', Current operations: Electrification of lease. J&S Electric and Wheatland on location. J&S hook up variable speed controller and pumping unit. Start well late afternoon. Add some produced water from Miller well for pad in gun barrel to accelerate fill. Well pumped up in one hour.

10-13-10: TD 4830', Current operations: Filling gun barrel. Well shut in for part of day to equalize stocks.

10-14-10: TD 4830', Current operations: Finish filling gun Barrel.

10-15-10: TD 4830', Current operations: Pumping. Gun barrel full and 54 BO produced into stocks. Plains pick up first load of oil.

10-16-10: TD 4830', Current operations: Pumping. Produced 98 BO in 24 hours.

10-17-10: TD 4830', Current operations: Pumping. Produced 92 BO in 22 hours. Well on production, final report. IP for well 95 BOPD, 0 BWPD, Marmaton "B".

OPERATING HISTORY

10/11/11: Current Operations: Gabel Lease Service shoot fluid level. 128 jts or 3968'.

02/14/12: Current Operations: Pump change/Rod Part. MI Post & Masten Well Service. POOH with rods. Found rod part. SD WO fishing tools.

02/16/12: Current Operations: Pump change/Rod Part. Fished rods out of hole, found to rod parts (rods had unscrewed). POOH with pump, found pump stuck closed. GIH with swab line found FL 350' above SN. Shop pump, run new pump and 176 ¾" rods. Hung well back on. Note: all rods and pump were clean from recent hot oil treatment.

WORKOVER REPORT

08/10/12: Current Operations: Prep for workover to clean up Marmaton "B" perfs (4364-72' & 4374-78'). Spot Post & Mastin Rig #40 on location.

08/13/12: Current Operations: Swab test Marmaton "B" (4364-72'; 4374-78'). RUCT. Unseated pump and pulled 2 rods. RU Heat Waves. Pumped 30 barrels hot lease oil down tubing, to clean rods and inside of tubing of paraffin. POOH with rods and pump. Released tubing anchor. POOH with tubing. Heavy scale build up on outside of tubing. RIH with B&B Tools 4 ½" PKR on 2 ¾", 8rd, EUE tubing. Set PKR at 4325'. RIH with tubing swab. 1000' FIH. Recovered 2.90 BO on swab down. Inside of tubing rough. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>BO</u>	<u>BSW</u>	<u>Comments</u>
1	4	4.64	20	.93	3.71	Water is gray; iron sulfide odor.

Shut down at 1730 hrs. Will test CIBP over Morrow in AM, and acidize to clean up FE.

08/14/12: Current Operations: WO Gelled acid to Break. SITP 0 psi. RIH with tubing swab. 400' FIH (100' oil and 300' water). Recovered 2.32 BF on swab down. Released PKR and reset at 4390'. Swabbed tubing down. Tested CIBP for leakage. Swabbed dry. Released PKR and rest at 4325'. Swabbed tubing down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>BO</u>	<u>BSW</u>	<u>Comments</u>
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1	4	3.48	8	.28	3.20	Gray water
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RU Pro-Stim. Treated with 750 gal 15% NE DFE gelled acid 3.5 BPM on vacuum. Job completed at 11:00 a.m. Total load 36 barrels. RU Heat Waves. Loaded annulus with 26 barrels 2% KCL water. Pressure tested to 300 psi. Held. No casing leak. RIH with tubing swab. 525' FIH. Recovered 1.16 BLW on swab down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>BO</u>	<u>BLW</u>	<u>Comments</u>
1	5	4.06	NA			Gassy emulsified oil
2	4	3.34	30	1.00	2.34	Gassy clean oil. 1000' GIP
3	4	1.74	44	.77	.97	Gassy clean oil
4	4	1.74	40	.70	1.04	Gassy clean oil
5	4	2.03	60	1.22	.81	21.93 barrels short of load

RU Pro-Stim. Retreated with 1750 gal 20% SGA FE acid and 1250 gal gelled 2% KCL water overflush @ 3.5 BPM on vacuum. Job completed at 1830 hrs. Total load 71.5 barrels. SION, overnight to let gel break.

08/15/12: Current Operations: Return to production in Marmaton "B" (4364-72'; 4374-78'). SITP 0 psi. RIH with tubing swab. 475' FIH. Recovered 1.16 BLW on swab down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>BO</u>	<u>BLW</u>	<u>Comments</u>
1	4	4.06	62	2.52	1.54	Gassy clean oil. 750' GIP
2	4	4.06	79	3.21	.85	Gassy clean oil. 750' GIP
3	4	2.03	75	1.52	.51	Gassy clean oil. 1000' GIP

Released PKR. POOH with tubing and PKR. RIH with tubing as follows: (top to bottom)

132 jts - 2 3/8" 8rd, EUE tubing	4286.98'
1 - 4 1/2" rebuilt tubing anchor	3.00'
4 jts - 2 3/8" 8rd, EUE tubing	130.08'
1 - 2 3/8" API seat nipple	1.10'
1 jt - 2 3/8" 8rd, EUE slotted tubing mud anchor	15.00'
KB Adjustment	5.00'

Tubing set at 4441'; Seat nipple at 4420'; Tubing anchor at 4287'; Average jt length 32.48'. RIH with rebuilt 2" x 1 1/2" x 14' RWBC pump (6' strainer), 176 - 3/4" x 25' steel rods, 1 1/4" x 22' polish rod with 10' liner. Seated pump. Longstroked plunger. Loaded tubing Hung well on. Start pumping at 1815 hrs.

08/20/12: Current Operations: Well pumping all water. After returning to production, found no oil production despite the swab results, suspect a casing leak. Will move Post and Masten back over well on 08/22.

08/21/12: Current Operations: Prep to GIH to test casing. Well pumping 100% water. MIRU Post&Mastin Rig #40. POOH with rods and pump. Released tubing anchor. POOH with tubing. SDON.

08/22/12: Current Operations: Found holes, prep for squeeze. RIH with B&B Tools RBP and PKR. Set RBP at 4240'. Set PKR at 4170'. Tested tubing and tools to 1500 psi. Tested annulus. Established injection rate of 1.5 BPM at 400 psi. Moved PKR to locate holes in casing at 3450' and 2300'. The lower hole could be pumped into. The upper hole would bleed off from 500 psi to 100 psi in 1 min. Ran PKR to bottom. Spotted 1 sack of sand on top of RBP. Pulled PKR to 2155'. RIH with tubing swab. Fluid at 1750' from surface. Swabbed 1 hr, recovering 7 BSW. SDON.

08/23/12: Current Operations: Pressure up on squeeze. RIH with tubing swab. Fluid at 1750' from surface. RU Swift Services. Squeezed holes in casing with 250 sacks Class A cement. Displaced cement to 2125'. Max squeeze pressure 1000 psi. Released PKR. Circulated tubing clean. Pulled 5 jts. Reset PKR at 1995'. Pressure squeeze to 500 psi. SDON.

08/24/12: Current Operations: Drilling cement. POOH with tubing and PKR. RIH with 3 7/8" bit on 2 3/8" tubing. Tagged cement at 2155'. RU Quality Plus Oilfield Services mud pump and swivel. Established circulation. Drill cement from 2155' to 2380'. Circulated hole clean and shut down.

08/25/12: Current Operations: Drilling cement. Continued drilling from 2380' to 2605'. Circulated hole clean and shut down.

08/27/12: Current Operations: Drilling cement. Continued drilling from 2605' to 3255'. Shut down at 5:45 p.m.

08/28/12: Current Operations: Prep to run rods and tubing. Continued drilling from 3255' to 3418'. Circulated hole clean. Pressure tested casing to 500 psi. Held. Ran bit to bottom. Circulated sand off RBP. POOH with tubing and bit. RIH with RBP catcher. Retrieved RBP. Started out of hole with tubing. Power tongs broke. Shut down at 7:45 p.m.

08/29/12: Current Operations: Start well up. POOH with tubing and RBP. RIH with production tubing. RIH with tubing swab. 100' FIH. Recovered oily water. RIH with rebuilt pump and rods. Seated pump. Loaded tubing with water. Hung well on. Resumed pumping.

08/30/12: Current Operations: Pumping oil and water. Last 24 hrs contributed 11 BO to lease.

Marmaton "A" Recompletion Operations

10/23/13: Current Operations: Swab test Marm "A" (4326-30; 4347-49'). RU Pioneer Wireline Services; PBTD 4514'; **Perforated the Marmaton 'A' zone 4326'- 30' and 4347'- 49'** with 4 JHPF. RIH with B&B Tools 4 ½" RBP and PKR on 2 ¾" tubing. Set RBP at 4356' and PKR at 4336'; isolating the lower perms. Swabbed tubing down and swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	2	.29	100	Very heavy oil
2	2	.29	10	Water was green in color

Released PKR and reset at 4316'. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	2	.19	15	Heavy oil and muddy water
2	2	0		Both runs were dry

SDON 1745 hrs.

10/24/13: Current Operations: Swab test Marm "A" (4326-30; 4347-49'). SITP 0 psi. RIH with tubing swab; 35' FIH; recovered 0.14 BF (watery oil) on swab down. Released PKR; spotted acid on perms; reset PKR. RU Pro-Stim Chemical; treated with 300 gal 15% MCA acid at 2.5 BPM on vacuum. Job completed at 0930 hrs. TLTR 24 barrels. RIH with tubing swab; 200' FIH. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	6	2.32	5	100' of gas ahead of each run
2	6	1.16	5	

Released PKR. Retrieved RBP. Reset RBP at 4390' and PKR at 4316', combining the Marmaton 'A' and 'B' perms. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	6	1.62	7	100' of gas ahead of each run
2	6	1.81	7	
3	6	1.81	7	

SDON at 1600 hrs.

10/25/13: Current Operations: Swab test Marm "A" and "B" (4326-30; 4347-49'). SITP 0 psi. RIH with tubing swab; 200' GIP and 75' FIH (25' oil and 50' water). RU Pro-Stim Chemicals; treated with 600# diverting material mixed in 10 barrels 2% KCL water, 700 gal 15% SGA acid, 600# diverting material mixed in 400 gal acid, followed with 400 gal acid and flushed tubing with 19 barrel 2% KCL water. No plugging/diverting action occurred. AIR 4.6 BPM at 80 psi. Max pressure 90 psi. Job completed at 0930 hrs. TLTR 79 barrels. SI well for 2 hrs. RIH with tubing swab. 515' FIH. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	6	5.43	0	load water with muddy foam
2	6	3.62	0	same
3	6	3.62	0	same
4	6	3.62	0	same
5	6	1.81	0	same

SION at 1700 hrs.

10/26/13: Current Operations: SDWKND.

10/28/13: Current Operations: Swab test Kansas City (4274-78; 4284-86'). SITP 0 psi. RIH with tubing swab. 125' FIH (100% heavy oil). Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	5	1.81	21	Heavy oil

Released PKR & Retrieved RBP. Reset RBP at 4320'. POOH with tubing and PKR. Dump water down casing to perforate. RU Pioneer Wireline Services; **perforated the LKC 4274'-78' and 4284'-86' with 4 JHPF.** RIH with PKR. Set PKR at 4252'. RIH with tubing swab. 1650' FIH. Swabbed down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	7	5.40	3	Gassy oil
2	7	7.24	3	

SDON at 1730 hrs.

10/29/13: Current Operations: Swab test Kansas City (4274-78; 4284-86'). SITP 5 psi. RIH with tubing swab; 2050' FIH (saltwater 38,000 ppm chlorides with trace of oil). Recovered 9.05 BF on swab down. 1 run after swab down recovered 350' saltwater with trace of oil. Released PKR. Reset PKR at 4281', isolating the lower perms. Swabbed tubing down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>Comments</u>
.5	2	0	both runs dry

Released PKR. Reset at 4252'. Swabbed tubing down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>
1	7	9.05	2
2	7	9.05	2

Released rig crew at 1315 hrs. RU Pro-Stim Chemicals. Treated with 110 gal Recheck with activator to shut off water flow. Displaced tubing with 2% KCL water. Max pressure 2000 psi. SDON at 1945 hrs.

10/30/13: Current Operations: Swab test Kansas City (4284-86'). SITP 0 psi. Tubing was standing full of water. Released PKR. RIH with tubing swab. Tagged fluid at 1300'. Recovered 41.63 BF on swab down. Swab test as follows:

<u>Hr</u>	<u>Runs</u>	<u>BF</u>	<u>% Oil</u>	<u>Comments</u>
1	7	7.24	tstm	1 st run 350', 7 th run 75'
2	2	.38	tstm	50' each run

Attempted to reset PKR. PKR would not set after several attempts. POOH with tubing and PKR. Ran new PKR; set at 4281', isolating the lower KC perfs. Swabbed tubing dry. Pumped 200 gal 15% MCA acid and 2% KCL water. Pressured to 300 psi. SDON at 1730 hrs.

10/31/13: Current Operations: Unable to acidized, dump acid into Marmaton; Kansas City (4274-78; 4284-86'). SITP 150 psi; RU Pro-Stim Chemicals; attempted to break down lower perfs with a max pressure of 1350 psi. Swabbed tubing down to acid at 3000'; released PKR. Reset at 4252', above all perfs. Attempted to break down with max pressure of 1750 psi; no go; released PKR; latched onto RBP but could not release. Wait on toolman. Released RBP. Dumped fluid into Marmaton perfs to purge wellbore, on vacuum. Reset RBP. Set PKR above LKC. Swabbed dry. Retrieved RBP. POOH with tubing and tools. Shut down at 1745 hrs.

11/01/13: Current Operations: Release Rig, start well up Marm "A" and "B" (4326-30; 4347-49'). Rerun tubing rods and pump, produce from both Marmaton zones. The original completion appears to have drained the upper zone behind pipe. Both zones have treated on strong vacuum, we were unable to divert treatment using large salt plugs indicating exceptional perm. Will review the waterflood potential using existing wells.

EXHIBIT 19

8/30/2017

Interest Owner	Type	Tracts	Unit WI	Unit NRI	Approved	Percentage
Royalty Interests						
Brent A Haupt & Deidra A Haupt,	RI	4, 5		0.00296452	0.00296452	
Cedric Ellison	RI	1, 8, 9		0.00007640	0.00007640	
Chris V Hansen	RI	1		0.00029050	0.00029050	
Clawson Land Partnership	RI	10		0.00278976		
David Metzger Trust dtd 4/1/16, David M	RI	7, 8		0.00183723	0.00183723	
Deric T Ellison	RI	7		0.00003727	0.00003727	
Donald J Hansen	RI	1		0.00087149		
Eric A Hansen	RI	1		0.00029050		
Eric C Ellison	RI	1, 7, 8, 9		0.00011366		
Gary L Haupt & Nina A Haupt, H/W	RI	4, 5		0.02075165	0.02075165	
James D Turner & Jennifer L Turner,	RI	4, 5		0.00296452	0.00296452	
Jeffrey T Ellison	RI	1, 7, 8, 9		0.00011366		
Jennifer A Adams	RI	1, 7, 8, 9		0.00011366		
Joann Whitham, Life Estate	RI	1		0.00029050		
Kurt L Hansen	RI	1		0.00029050	0.00029050	
Larry G Vulgamore	RI	9		0.00007863	0.00007863	
Larry G Vulgamore or Judith A Vulgamor	RI	9		0.00007863	0.00007863	
Sarah C Feiertag Trust	RI	2,3,4,6		0.13387531	0.13387531	
Taylor G Haupt	RI	4, 5		0.00296452		
				0.17079291	0.16324515	95.58%
Overriding Royalty Interests						
A.A. & Mary E Hammersmith Revoable T	ORR	7, 8		0.00001999	0.00001999	
Barbara J Deenihan	ORR	7, 8		0.00003998		
Cholla Production, LLC	ORR			0.00000959		
Danny J McCarty	ORR	7, 8		0.00003998	0.00003998	
David Munro	ORR	1, 2		0.00029042	0.00029042	
Deborah E Brinegar Revocable Trust dtd	ORR	7, 8		0.00003598	0.00003598	
Diane L Huffman	ORR	7, 8		0.00003998	0.00003998	
Diane L Huffman Trust	ORR	8		0.00001613	0.00001613	
Emily Hundley Goff	ORR	7, 8		0.00002994		
Eric D Stinson Trust	ORR	1,2,3,4,5,6		0.00156800	0.00156800	
Estate of Thomas E Ray	ORR	3,4,5,6		0.00103364	0.00103364	
F Louise Brinegar Revocable Trust dtd 6/	ORR	7, 8		0.00003598	0.00003598	
Glen D Gamble	ORR	7, 8		0.00002399	0.00002399	
Hanging Rock, Inc.	ORR	1,2,3,4,5,6		0.01405327	0.01405327	
Hastings Oil & Gas Properties, LLC	ORR	1, 2		0.00058084	0.00058084	
James L. Downing	ORR	7, 8		0.00004797		
Jay G Schweikert	ORR	1, 2		0.00029042	0.00029042	
Jennings Living Trust dtd 12/12/05	ORR	7, 8		0.00005597		
Jon R Stewart	ORR	7, 8		0.00003998	0.00003998	
K & E Drilling, Inc	ORR	7, 8		0.00003998		
Kirby W Schmitz	ORR	8		0.00002994		
Kraft Oil Properties LLC	ORR	3,4,5,6		0.00077523	0.00077523	
Lario Oil & Gas Company	ORR	2		0.00048788		
Mark S Jennings	ORR	7, 8		0.00003998		
Pamela Rappard	ORR	7, 8		0.00029983	0.00029983	
Paula Sullivan	ORR	1		0.00004648		
Robert E O'Dell	ORR	1,2,3,4,5,6		0.01405327	0.01405327	
Sandra L Henson	ORR	7, 8		0.00005611	0.00003998	
William Miller	ORR	8		0.00002994		
William T Goff	ORR	8		0.00005988		
				0.03417055	0.03323689	97.27%
Working Interests						
Cholla Production, LLC	WI	8, 9	0.00202663	0.00172151		
Dyret Energy, LLC	WI	8	0.00029942	0.00023909		
Eugene Saloga	WI	1,2,3,4,5,6	0.00234863	0.00183216	0.00234863	
Jan E Helen	WI	8	0.00029942	0.00023909		
JD Resources, LLC	WI	8	0.00029942	0.00023909		
Kenneth R Lang Sr.	WI	7, 8	0.01000269	0.00821392		
KyKon Oil & Gas Inc.	WI	8	0.00044914	0.00035863		
Lario Oil & Gas Company	WI	1,2,3,4,5,6,10	0.92401511	0.73511323	0.92401511	
Roaring River Resources, LLC	WI	8	0.00029942	0.00023909		
Sweetman Investments LLC	WI	1,2,3,4,5,6	0.05636702	0.04397168		
Western Interior Energy, Inc.	WI	8	0.00029942	0.00023909		
Wexford Resources, Inc.	WI	8	0.00029942	0.00023909		
Wood Energy, Inc.	WI	8	0.00299424	0.00239088		
			1.00000000	0.79503655	0.92636374	92.64%

provisions of such existing agreements conflict with the provisions of this Agreement.

**ARTICLE 20
SUCCESSORS AND ASSIGNS**

20.1 **Successors and Assigns.** This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.


**ARTICLE 21
EXECUTION**

21.1 **Original, Counterpart, or Other Instrument.** This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification, or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the land within the above-described Unit Area.

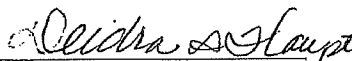
21.2 **Joinder in Dual Capacity.** In the event any of the parties hereto own both Working Interest and Royalty Interests, it shall not be necessary for such party to execute this Agreement in both capacities in order to commit both classes of interest. Execution hereby by any such party in one capacity shall also constitute execution in the other capacity.

IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS



Brent A Haupt



Deidra A Haupt

Cedric Ellison

Chris V Hansen

Dedric T Ellison

Donald J Hansen

Eric A Hansen

Eric C Ellison

Gary L Haupt

Nina A Haupt

James D Turner

Jennifer L Turner

Jeff Ellison

Jeffrey T Ellison

provisions of such existing agreements conflict with the provisions of this Agreement.

ARTICLE 20
SUCCESSORS AND ASSIGNS

20.1 Successors and Assigns. This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.

ARTICLE 21
EXECUTION

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IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS

Brent A Haupt

Deidra A Haupt
Deidra A Haupt

Cedric Ellison

Chris V Hansen

Dedric T Ellison

Donald J Hansen

Eric A Hansen

Eric C Ellison

Gary L Haupt

Nina A Haupt

James D Turner

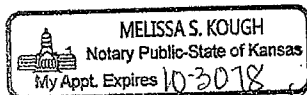
Jennifer L Turner

Jeff Ellison

Jeffrey T Ellison

STATE OF Kansas }
COUNTY OF Scott } ss

The foregoing instrument was acknowledged before me this 22 day of February, 2016, by **Brent A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

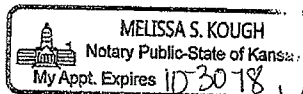


My commission expires: 10-30-18

Melissa S. Kough
Notary Public

STATE OF Kansas }
COUNTY OF Scott } ss

The foregoing instrument was acknowledged before me this 22 day of February, 2016, by **Deidra A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.



My commission expires: 10-30-18

Melissa S. Kough
Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Cedric Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Chris V. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

provisions of such existing agreements conflict with the provisions of this Agreement.

**ARTICLE 20
SUCCESSORS AND ASSIGNS**

20.1 **Successors and Assigns.** This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.

**ARTICLE 21
EXECUTION**

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21.2 **Joinder in Dual Capacity.** In the event any of the parties hereto own both Working Interest and Royalty Interests, it shall not be necessary for such party to execute this Agreement in both capacities in order to commit both classes of interest. Execution hereby by any such party in one capacity shall also constitute execution in the other capacity.

IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS

Brent A Haupt

Cedric Ellison
Cedric Ellison
KOG # 4114 2
DK - 2976 Hørsholm
CVK. 37166421

Dedric T Ellison

Eric A Hansen

Gary L Haupt

James D Turner

Jeff Ellison

Deidra A Haupt

Chris V Hansen

Donald J Hansen

Eric C Ellison

Nina A Haupt

Jennifer L Turner

Jeffrey T Ellison

Notary Public

provisions of such existing agreements conflict with the provisions of this Agreement.

**ARTICLE 20
SUCCESSORS AND ASSIGNS**

20.1 Successors and Assigns. This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.

**ARTICLE 21
EXECUTION**

21.1 Original, Counterpart, or Other Instrument. This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification, or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the land within the above-described Unit Area.

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IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS

Brent A Haupt

Cedric Ellison

Dedric T Ellison

Eric A Hansen

Gary L Haupt

James D Turner

Jeff Ellison

Deidra A Haupt



Chris V Hansen

Donald J Hansen

Eric C Ellison

Nina A Haupt

Jennifer L Turner

Jeffrey T Ellison

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Brent A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Deidra A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Cedric Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

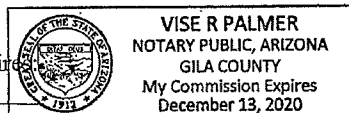
My commission expires: _____

Notary Public

STATE OF Arizona }
 } ss
COUNTY OF Gila }

The foregoing instrument was acknowledged before me this 30th day of January, 2017, by **Chris V. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: Dec 13, 2020



Vise R. Palmer
Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

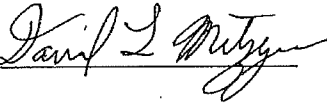
By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By:  _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

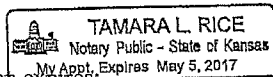
Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

STATE OF KANSAS }
 } ss
COUNTY OF Scott }

The foregoing instrument was acknowledged before me this 26 day of JANUARY, 2016, by **David L. Metzger, Trustee of the David L. Metzger Trust dated April 1, 2016**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.



My commission expires: _____

Tamara L. Rice
Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Dedric T. Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Donald J. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Eric A. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

provisions of such existing agreements conflict with the provisions of this Agreement.

ARTICLE 20 SUCCESSORS AND ASSIGNS

20.1 Successors and Assigns. This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.

ARTICLE 21 EXECUTION

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IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

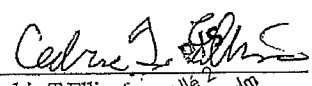
ROYALTY OWNERS

Brent A Haupt

Deidra A Haupt

Cedric Ellison

Chris V Hansen



Cedric T Ellison

Donald J Hansen

Eric A Hansen

Eric C Ellison

Gary L Haupt

Nina A Haupt

James D Turner

Jennifer L Turner

Jeff Ellison

Jeffrey T Ellison

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **David L. Metzger, Trustee of the David L. Metzger Trust dated April 1, 2016**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

Notary Public

The foregoing instrument was acknowledged before me this 1 day of February, 2016, by **Dedric T. Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

[Signature]
Notary Public
Inspiricos P/S
Kogler Alley 2nd Flr P/S witness
DK-2970 Hørsholm
CVR. 37166421

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Donald J. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

Notary Public

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Eric A. Hansen**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

Notary Public

provisions of such existing agreements conflict with the provisions of this Agreement.

**ARTICLE 20
SUCCESSORS AND ASSIGNS**

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IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS

Brent A Haupt

Deidra A Haupt

Cedric Ellison

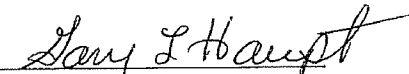
Chris V Hansen

Dedric T Ellison

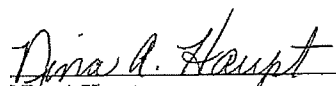
Donald J Hansen

Eric A Hansen

Eric C Ellison



Gary L Haupt



Nina A Haupt

James D Turner

Jennifer L Turner

Jeff Ellison

Jeffrey T Ellison

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Eric C. Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

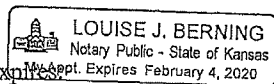
My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Scott } ss

2017 The foregoing instrument was acknowledged before me this 22 day of Feb, 2016, by **Gary L. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

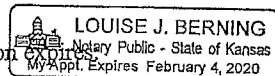


Louise J. Berning
Notary Public

STATE OF Kansas }
COUNTY OF Scott } ss

2017 The foregoing instrument was acknowledged before me this 22 day of Feb, 2016, by **Nina A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____



Louise J. Berning
Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **James D. Turner**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

provisions of such existing agreements conflict with the provisions of this Agreement.

**ARTICLE 20
SUCCESSORS AND ASSIGNS**

20.1 Successors and Assigns. This Agreement shall extend to, be binding upon, and insure to the benefit of the parties hereto and their respective heirs, devisees, legal representatives, successors, and assigns, and shall constitute a covenant running with the lands, leases and interests covered thereby.

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IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

ROYALTY OWNERS

Brent A Haupt

Deidra A Haupt

Cedric Ellison

Chris V Hansen

Dedric T Ellison

Donald J Hansen

Eric A Hansen

Eric C Ellison

Gary L Haupt

Nina A Haupt

James D Turner

Jennifer L Turner

Jeff Ellison

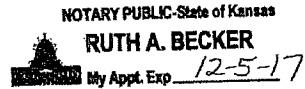
Jeffrey T Ellison

STATE OF Kansas }
 } ss
COUNTY OF Scott }

The foregoing instrument was acknowledged before me this 22nd day of February, 2016, by Jennifer L. Turner, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires:
12-5-17

Ruth A. Becker
Notary Public



STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Jeff Ellison, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Jeffrey T. Ellison, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by Jennifer A. Adams, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Eric C. Ellison**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Gary L. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Nina A. Haupt**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Scott } ss

The foregoing instrument was acknowledged before me this 22nd day of February, 2016, by **James D. Turner**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: 12/5/17

Ruth A. Becker
Notary Public

NOTARY PUBLIC-State of Kansas
RUTH A. BECKER
My Appt. Exp. 12/5/17

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L. Hansen
Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/d 3/7/1996

By: _____

By: *B. Vulgamore, Trustee*

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, _____ of Clawson Land Partnership, on behalf of said
entity for the uses and purposes set forth therein.


My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Scott } ss

The foregoing instrument was acknowledged before me this 9th day of Feb, 2016,
by Brian Vulgamore, Trustee of the Vulgamore Trust u/t/d 3/7/1996, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires:
2-25-20

Karen A. Rumpf
Notary Public


STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the Sarah C. Feiertag Trust, on behalf of said entity for
the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the AA & Mary Hammersmith Revocable Trust dated
7/19/01, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: 

By: _____

INTRUST Bank, N.A., Trustee
Robert A. Francis
Senior Trust Advisor

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____ of Clawson Land Partnership, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the Vulgamore Trust u/t/d 3/7/1996, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

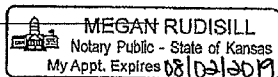
STATE OF Kansas }
 } ss
COUNTY OF Sedgwick }

The foregoing instrument was acknowledged before me this 10th day of February, 2016,
by Robert A. Francis, Trustee of the Sarah C. Feiertag Trust, on behalf of said entity for
the uses and purposes set forth therein.

My commission expires:

Megan Rudisill

Notary Public



STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the AA & Mary Hammersmith Revocable Trust dated
7/19/01, on behalf of said entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: Sarah C. Feiertag

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, _____ of Clawson Land Partnership, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the Vulgamore Trust u/t/d 3/7/1996, on behalf of said
entity for the uses and purposes set forth therein.

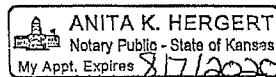
My commission expires:

Notary Public

STATE OF Kansas }
COUNTY OF Sedgwick } ss

The foregoing instrument was acknowledged before me this 7th day of February, 2019,
by Sarah C. Feiertag, Trustee of the Sarah C. Feiertag Trust, on behalf of said entity for
the uses and purposes set forth therein.

My commission expires:
8/7/2020



Anita K. Hergert
Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the AA & Mary Hammersmith Revocable Trust dated
7/19/01, on behalf of said entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust w/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

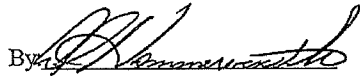
David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: 

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, _____ of **Clawson Land Partnership**, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Trustee of the Vulgamore Trust u/t/d 3/7/1996**, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Trustee of the Sarah C. Feiertag Trust**, on behalf of said entity for
the uses and purposes set forth therein.

My commission expires: _____

Notary Public

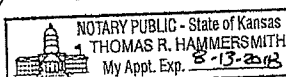
STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this 31 day of JANUARY, 2016,
by Thomas R. Hammersmith, **Trustee of the AA & Mary Hammersmith Revocable Trust dated**
7/19/01, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

8-13-2018

Notary Public



STATE OF KANSAS }

COUNTY OF: RENO

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust w/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

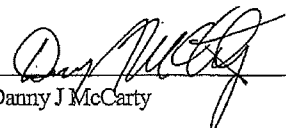
By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan


Danny J McCarty

David Munro

Deborah B Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Barbara J Deeniham**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF Texas }
COUNTY OF Montgomery } ss

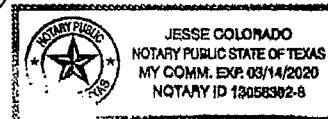
9 The foregoing instrument was acknowledged before me this 31 day of January, 2018, by **Danny J. McCarty**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

3/14/2020

Notary Public

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss



The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **David Munro**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____, **Trustee of the Deborah E. Brinegar Revocable Trust** dated **8/24/06**, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

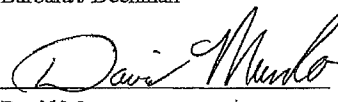
OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty


David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

COUNTY OF _____ } ss
}

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Barbara J Deeniham**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss
}

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Danny J. McCarty**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

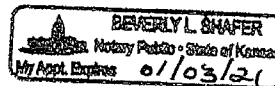
STATE OF KANSAS }
COUNTY OF SEDGWICK } ss
}

The foregoing instrument was acknowledged before me this 30th day of January, 2017, by **David Munro**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

1/03/21

Beverly L. Shafer
Notary Public



STATE OF Kansas }

COUNTY OF Sedgwick }

} ss
}

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____, **Trustee of the Deborah E. Brinegar Revocable Trust dated 8/24/06**, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: Deborah E Brinegar Trustee

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

COUNTY OF _____ } ss
}

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Barbara J Deenham**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
} ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Danny J. McCarty**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF KANSAS }
} ss
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **David Munro**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

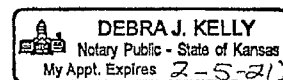
My commission expires: _____

Notary Public

STATE OF Ks }

COUNTY OF Sedgwick }

} ss
}



The foregoing instrument was acknowledged before me this 23 day of Jan, 2016, ¹²¹⁶ 2017 by Deborah E. Brinegar Trustee of the **Deborah E. Brinegar Revocable Trust** dated 8/24/06, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

2-5-202

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust w/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

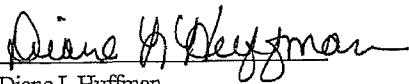
Barbara J Deenihan

Danny J McCarty

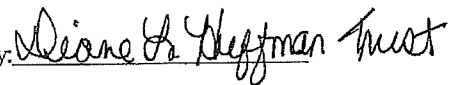
David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____


Diane L Huffman

Diane L Huffman Trust

By: 

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

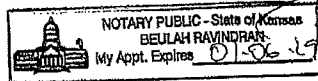
Estate of Thomas E Ray

By: _____

STATE OF Kansas }
COUNTY OF Johnson } ss

The foregoing instrument was acknowledged before me this 27 day of January, 2017, by **Diane L. Huffman**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: 01-06-19



Beulah Ravindran
Notary Public

STATE OF Kansas }
COUNTY OF Johnson } ss

The foregoing instrument was acknowledged before me this 27 day of January, 2016, 2017 by Diane L. Huffman Trustee of the **Diane L. Huffman Trust**, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: 01-06-19



Beulah Ravindran
Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Emily Hundley Goff**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Eric D. Stinson**, Trustee of the **Eric D. Stinson Trust** dated 1/27/09, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: 
12/8/09

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Diane L. Huffman**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____, **Trustee of the Diane L. Huffman Trust**, on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

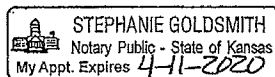
The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Emily Hundley Goff**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this 31st day of January, 2016, by **Eric D. Stinson**, **Trustee of the Eric D. Stinson Trust dated 1/27/09**, on behalf of said entity for the uses and purposes set forth therein.



My commission expires: 4-11-2020

Stephanie Goldsmith
Notary Public

Jennifer A Adams

Jennifer Adams

Joann Whitham, Life Estate

Kurt L Hansen

Taylor G Haupt

Clawson Land Partnership

Vulgamore Trust u/t/d 3/7/1996

By: _____

By: _____

Sarah C Feiertag Trust

David L Metzger Trust dated 4/1/16

By: _____

By: _____

OVERRIDING ROYALTY OWNERS

AA & Mary Hammersmith Revocable
Trust dtd 7/19/01

By: _____

Barbara J Deenihan

Danny J McCarty

David Munro

Deborah E Brinegar Revocable
Trust dtd 8/24/06

By: _____

Diane L Huffman

Diane L Huffman Trust

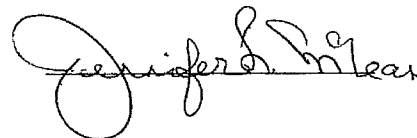
By: _____

Emily Hundley Goff

Eric D. Stinson Trust dtd 1/27/09

Estate of Thomas E Ray

By: _____

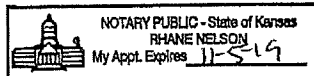


STATE OF Kansas }
COUNTY OF Seelye } ss

The foregoing instrument was acknowledged before me this 23 day of January, 2016, ²⁰¹⁷
by Janet McLean, Executor/Administrator of the Estate of Thomas E. Ray, on behalf
of said entity for the uses and purposes set forth therein.

Rhane Nelson
Notary Public

My commission expires:
11-5-19



STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the F. Louise Brinegar Revocable Trust dated 6/28/04,
on behalf of said entity for the uses and purposes set forth therein.

My commission expires:

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by Glen D. Gamble, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires:

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____ of Hanging Rock, Inc. on behalf of said entity for the
uses and purposes set forth therein.

My commission expires:

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: *F Louise Brinegar*
Trustee

Hanging Rock, Inc.

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jon R Stewart

Kirby W Schmitz

Pamela Rappard

Robert E O'Dell

Sandra L Muller

William T Goff

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

Jay G Schweikert

K&E Drilling, Inc.

By: _____

Kraft Oil & Gas Properties LLC

By: _____

Mark S Jennings

Paula Sullivan

Sandra K Henson

William Miller

WORKING INTEREST OWNERS

Lario Oil & Gas Company

By: *E D Stinson*
E. D. Stinson
Senior Vice President – Land & Legal

Sweetman Investments, LLC

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

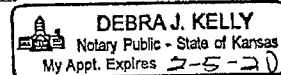
The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Executor/Administrator of the Estate of Thomas E. Ray**, on behalf
of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Sedgwick } ss

The foregoing instrument was acknowledged before me this 27 day of Jan, 2016, 2017
by Louise F Brinegar Trustee of the **F. Louise Brinegar Revocable Trust** dated 6/28/04,
on behalf of said entity for the uses and purposes set forth therein.



My commission expires: 2-5-20

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by **Glen D. Gamble**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, _____ of **Hanging Rock, Inc.** on behalf of said entity for the
uses and purposes set forth therein.

My commission expires: _____

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

By: _____

James L. Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jon R Stewart

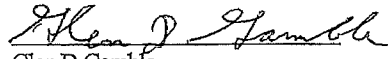
Kirby W Schmitz

Pamela Rappard

Robert E O'Dell

Sandra L. Muller

William T Goff


Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

Jay G Schweikert

K&B Drilling, Inc.

By: _____

Kraft Oil & Gas Properties LLC

By: _____

Mark S Jennings

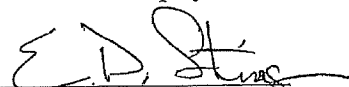
Paula Sullivan

Sandra K. Henson

William Miller

WORKING INTEREST OWNERS

Lario Oil & Gas Company

By: 
E. D. Stinson
Senior Vice President – Land & Legal

Sweetman Investments, LLC

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Executor/Administrator of the Estate of Thomas E. Ray**, on behalf
of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

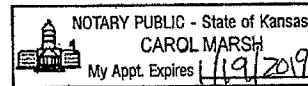
STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Trustee of the F. Louise Brinegar Revocable Trust dated 6/28/04**,
on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Sedgwick } ss



2017 The foregoing instrument was acknowledged before me this 23 day of January,
2017, by **Glen D. Gamble**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires: _____

1/19/2019

[Signature]
Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, _____ of **Hanging Rock, Inc.** on behalf of said entity for the
uses and purposes set forth therein.

My commission expires: _____

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

By: Timothy H. Pierce

James L Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jon R Stewart

Kirby W Schmitz

Pamela Rappard

Robert E O'Dell

Sandra L Muller

William T Goff

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

Jay G Schweikert

K&E Drilling, Inc.

By: _____

Kraft Oil & Gas Properties LLC

By: _____

Mark S Jennings

Paula Sullivan

Sandra K Henson

William Miller

WORKING INTEREST OWNERS

Lario Oil & Gas Company

By: E. D. Stinson
E. D. Stinson
Senior Vice President - Land & Legal

Sweetman Investments, LLC

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Executor/Administrator of the Estate of Thomas E. Ray**, on behalf
of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, **Trustee of the F. Louise Brinegar Revocable Trust dated 6/28/04**,
on behalf of said entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by **Glen D. Gamble**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires: _____

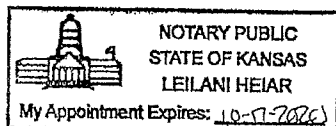
Notary Public

STATE OF Kansas }
COUNTY OF Sedgewick } ss

The foregoing instrument was acknowledged before me this 14th day of February, 2017,
by Imelda Perez, President of Hanging Rock, Inc. on behalf of said entity for the
uses and purposes set forth therein.

My commission expires: _____

Notary Public



F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jon R Stewart

Kirby W Schmitz

Pamela Rappard

Robert E O'Dell

Sandra L Muller

William T Goff

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: 

Jay G Schweikert

K&E Drilling, Inc.

By: _____

Kraft Oil & Gas Properties LLC

By: _____

Mark S Jennings

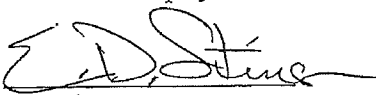
Paula Sullivan

Sandra K Henson

William Miller

WORKING INTEREST OWNERS

Lario Oil & Gas Company

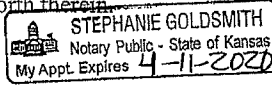
By: 
E. D. Stinson
Senior Vice President – Land & Legal

Sweetman Investments, LLC

By: _____

STATE OF KANSAS }
 }
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this 6th day of February, 2016,
by **John Hastings, Member of Hastings Oil & Gas Properties, LLC**, on behalf of said entity
for the uses and purposes set forth therein.



Stephanie Goldsmith
Notary Public

My commission expires:
4-11-2020

STATE OF _____ }
 }
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by **James L. Downing**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires:

Notary Public

STATE OF KANSAS }
 }
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by **Jay G. Schweikert**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires:

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.


Jay G Schweikert
K&B Drilling, Inc.

By: _____

By: _____

Kraft Oil & Gas Properties LLC

Jon R Stewart

By: _____

Kirby W Schmitz

Mark S Jennings

Pamela Rappard

Paula Sullivan

Robert E O'Dell

Sandra K Henson

Sandra L Muller

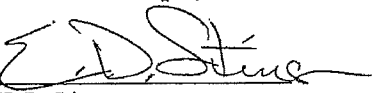
William Miller

William T Goff

WORKING INTEREST OWNERS

Lario Oil & Gas Company

Sweetman Investments, LLC

By: 
E. D. Stinson
Senior Vice President – Land & Legal

By: _____

STATE OF KANSAS }
 }
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by **John Hastings, Member of Hastings Oil & Gas Properties, LLC**, on behalf of said entity
for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 }
COUNTY OF _____ }

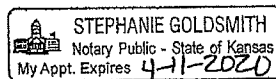
The foregoing instrument was acknowledged before me this _____ day of _____,
2016, by **James L. Downing**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires: _____

Notary Public

STATE OF KANSAS }
 }
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this 30th day of January,
2016, by **Jay G. Schweikert**, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.



My commission expires:
4-11-2020

Stephanie Goldsmith
Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

James L Downing


Jennings Living Trust dtd 12/12/05.

By: _____

Jay G Schweikert

K&B Drilling, Inc.

By: _____


Jon R Stewart

By: _____

Kraft Oil & Gas Properties LLC

By: _____

Kirby W Schmitz

Mark S Jennings

Pamela Rappard

Paula Sullivan

Robert E O'Dell

Sandra K Henson

Sandra L Muller

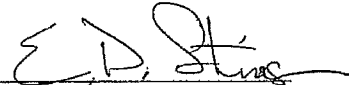
William Miller

William T Goff

WORKING INTEREST OWNERS

Lario Oil & Gas Company

Sweetman Investments, LLC

By: 
E. D. Stinson
Senior Vice President - Land & Legal

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____, Trustee of the Jennings Living Trust dated 12/12/05, on behalf of said
entity for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by _____ of K & E Drilling, Inc., on behalf of said entity for the
uses and purposes set forth therein.

My commission expires: _____

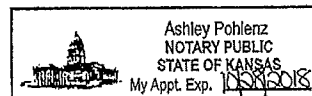
Notary Public

STATE OF Kansas }
COUNTY OF Sedgwick } ss

The foregoing instrument was acknowledged before me this 18 day of February,
2016, by Jon R. Stewart, known to me to be the person whose name is subscribed to the
foregoing instrument and who executed the same in my presence for the uses and purposes set
forth therein.

My commission expires:
10/28/2018

Ashley Pohlenz
Notary Public



STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016,
by Marvin E. Kraft, Member of Kraft Oil & Gas Properties, LLC, on behalf of said entity
for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jon R Stewart

Kirby W Schmitz

Pamela Rappard

Robert E O'Dell

Sandra L Muller

William T Goff

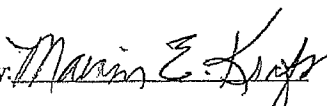
Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

Jay G Schweikert

K&E Drilling, Inc.

By:  _____

Kraft Oil & Gas Properties LLC

By: _____

Mark S Jennings


Paula Sullivan

Sandra K Henson

William Miller

WORKING INTEREST OWNERS

Lario Oil & Gas Company

By:  _____

E. D. Stinson
Senior Vice President – Land & Legal

Sweetman Investments, LLC

By: _____

4-11-2020

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

Jay G Schweikert

K&B Drilling, Inc.

By: _____

By: _____

Kraft Oil & Gas Properties LLC

Jon R Stewart

By: _____

Kirby W Schmitz

Mark S Jennings

Pamela Rappard
Pamela Rappard

Paula Sullivan

Robert E O'Dell

Sandra K Henson

Sandra L Muller

William Miller

William T Goff

WORKING INTEREST OWNERS

Lario Oil & Gas Company

Sweetman Investments, LLC

By: *E. D. Stinson*
E. D. Stinson
Senior Vice President – Land & Legal

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Kirby W. Schmitz**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
COUNTY OF _____ } ss

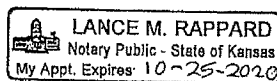
The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Mark S. Jennings**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Sedgewick } ss

The foregoing instrument was acknowledged before me this 25th day of January, 2016, by **Pamela Rappard**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.



My commission expires:
10-25-2020

[Signature]
Notary Public

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Paula Sullivan**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

By: _____

Jay G Schweikert

K&E Drilling, Inc.

By: _____

Jon R Stewart

By: _____

Kraft Oil & Gas Properties LLC

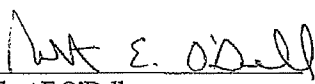
By: _____

Kirby W Schmitz

Mark S Jennings

Pamela Rappard

Paula Sullivan


Robert E O'Dell

Sandra K Henson

Sandra L Muller

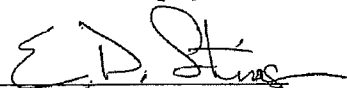
William Miller

William T Goff

WORKING INTEREST OWNERS

Lario Oil & Gas Company

Sweetman Investments, LLC

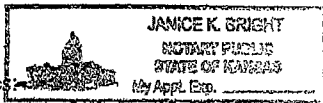
By: 
E. D. Stinson
Senior Vice President – Land & Legal

By: _____

STATE OF KANSAS }
 }
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this 6TH day of FEBRUARY, 2017, by **Robert E. O'Dell**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: 03-26-17



Janice K. Bright
Notary Public

STATE OF _____ }
 }
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Sandra K. Henson**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 }
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Sandra L. Muller**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF _____ }
 }
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **William Miller**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

F Louise Brinegar Revocable
Trust dtd 6/28/04

By: _____

Hanging Rock, Inc.

Glen D Gamble

Hastings Oil & Gas Properties, LLC

By: _____

By: _____

James L Downing

Jennings Living Trust dtd 12/12/05.

Jay G Schweikert

K&E Drilling, Inc.

By: _____

By: _____

Kraft Oil & Gas Properties LLC

Jon R Stewart

By: _____


Kirby W Schmitz

Mark S Jennings

Pamela Rappard

Paula Sullivan

Robert E O'Dell


Sandra L Henson

William Miller

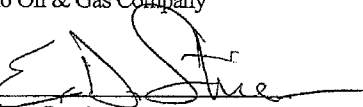
William T Goff

WORKING INTEREST OWNERS

Lario Oil & Gas Company

Sweetman Investments, LLC

By: _____


E. D. Stinson

Senior Vice President - Land & Legal

By: _____

STATE OF KANSAS }
 } ss
COUNTY OF SEDGWICK }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Robert E. O'Dell**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

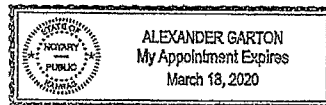
Notary Public

STATE OF Kansas }
 } ss
COUNTY OF Sedgwick }

The foregoing instrument was acknowledged before me this 23 day of February, 2016, by **Sandra L. Henson**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: 3-18-20

Alexander Garton
Notary Public



STATE OF _____ }
 } ss
COUNTY OF _____ }

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **William Miller**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

ARTICLE 26
UNLEASED INTERESTS

26.1 **Treated as Leased.** If a Working Interest Owner owns in fee all or a part of the Oil and Gas Rights in any Tract within the Unit Area which are not subject to any oil and gas lease, or other contract in the nature thereof, such Working Interest Owner shall be deemed to own a Working Interest in such Tract to the extent of seven-eighths (7/8ths) of its interest therein and a Royalty interest with respect to the remaining one-eighth (1/8th) interest therein.

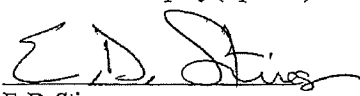
ARTICLE 27
JOINDER IN DUAL CAPACITY

28.1 **Joinder in Dual Capacity.** In the event that the parties hereto own both Working interest and Royalty Interests, it shall not be necessary for such party to execute this Agreement in both capacities in order to commit both classes of interests. Execution hereby by any such party in one capacity shall also constitute execution in the other capacity.

IN WITNESS WHEREOF, this Agreement is approved on the dates of execution, but effective as of the Effective Date.

Lario Oil & Gas Company (Operator)

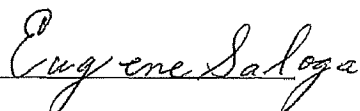
Sweetman Investments, LLC

By: 
E. D. Stinson
Senior Vice President – Land & Legal

By: _____

Eugene Saloga

Cholla Production, LLC



By: _____

Dyret Energy, LLC

Jan E. Helen

By: _____

Kenneth R. Lang, Sr.

JD Resources, LLC

By: _____

Kylon Oil & Gas Inc.

Roaring River Resources, LLC

By: _____

By: _____

Western Interior Energy, Inc.

Wexford Resources, Inc.

By: _____

By: _____

Wood Energy, Inc.

By: _____

Eugene Saloga
Eugene Saloga

Cholla Production, LLC

By: _____

Kenneth R. Lang, Sr.

Jan E. Helen

Dyret Energy, LLC

JD Resources, LLC

By: _____

By: _____

Kylon Oil & Gas Inc.

Roaring River Resources, LLC

By: _____

By: _____

Western Interior Energy, Inc.

Wexford Resources, Inc.

By: _____

By: _____

Wood Energy, Inc.

By: _____

STATE OF _____ }
COUNTY OF _____ } ss

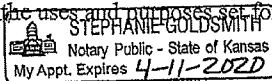
The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **William T. Goff**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

My commission expires: _____

Notary Public

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this 13th day of January, 2016, by **Eric D. Stinson, Senior Vice President – Land & Legal of Lario Oil & Gas Company**, on behalf of said entity for the uses and purposes set forth therein.



Stephanie Goldsmith
Notary Public

My commission expires: 4-11-2020

STATE OF KANSAS }
COUNTY OF SEDGWICK } ss

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by **Adam Sweetman**, _____ of **Sweetman Investments, LLC**, on behalf of said entity for the uses and purposes set forth therein.

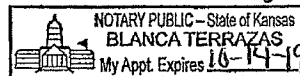
My commission expires: _____

Notary Public

STATE OF Kansas }
COUNTY OF Finney } ss

The foregoing instrument was acknowledged before me this 20 day of January, ~~2016~~ 2017, by **Eugene Saloga**, known to me to be the person whose name is subscribed to the foregoing instrument and who executed the same in my presence for the uses and purposes set forth therein.

Blanca Terrazas
Notary Public



My commission expires: OCT. 14 2019