

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

IN THE MATTER OF THE APPLICATION	)	DOCKET NO. 17-CONS-3532-CUNI
OF BEREXCO LLC FOR AN ORDER	)	
AUTHORIZING UNITIZATION AND UNIT	)	CONSERVATION DIVISION
OPERATION OF THE KANE UNIT IN KIOWA	)	
COUNTY, KANSAS.	)	LICENSE NO. 34318

SUBMISSION OF PREFILED TESTIMONY

COMES NOW the Applicant, BEREXCO LLC, and submits to the Commission herewith the prefiled testimony of Jesse Fendorf, Landman, and Dana G. Wreath, Vice President of BEREXCO LLC in support of its Application in this docket.

WHEREFORE, Applicant requests that the Commission admit the accompanying testimony into evidence and that the same be included in the record of this proceeding.

Respectfully submitted,



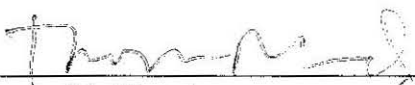
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VERIFICATION

STATE OF KANSAS)
) SS:
COUNTY OF SEDGWICK)

Thomas M. Rhoads, of lawful age and being first duly sworn upon his oath, deposes and states: That he is the Attorney for the Applicant in the above-captioned action; that he has read the above and foregoing Submission of Prefiled Testimony, knows and understands the contents thereof, and states that the statements and allegations therein contained are true and correct according to his knowledge, information, and belief.



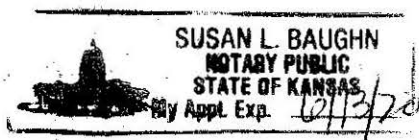
Thomas M. Rhoads

SUBSCRIBED AND SWORN TO before me, the undersigned authority, this 14th day of September, 2017.

My commission expires:



Notary Public



BEFORE THE CORPORATION COMMISSION
OF THE STATE OF KANSAS

BEFORE COMMISSIONERS: PAT APPLE, CHAIRMAN
 SHARI FEIST ALBRECHT, COMMISSIONER
 JAY SCOTT EMLER, COMMISSIONER

IN THE MATTER OF THE APPLICATION OF	)	DOCKET NO. 17-CONS-3532-CUNI
BEREXCO LLC FOR AN ORDER AUTHORIZING	)	
UNITIZATION AND UNIT OPERATION	)	CONSERVATION DIVISION
OF THE KANE UNIT IN KIOWA COUNTY,	)	
KANSAS	)	LICENSE NO. 34318

PREFILED TESTIMONY

OF

DANA G. WREATH
VICE PRESIDENT
ON BEHALF OF
BEREXCO LLC
MAY 18, 2017

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

2 A My name is Dana G. Wreath. I am a Vice President with BEREXCO LLC. Our
3 office is at 2020 N. Bramblewood, Wichita, Kansas 67206.

4 Q How long have you practiced your profession?

5 A Since 1989.

6 Q Have you appeared before this commission on prior occasions and been qualified as
7 an expert Petroleum Engineer to give testimony regarding applications being held by
8 this commission?

9 A Yes, I have appeared before the KCC and have been qualified as an expert in
10 petroleum engineering a number of times. I have testified with respect to various
11 applications before this commission.

12 Q Are you familiar with the application filed by BEREXCO LLC, for the Unitization
13 and Unit Operation of the Kane Unit?

14 A Yes.

15 Q As an engineer working for BEREXCO, is Kiowa County part of your area of
16 responsibility?

17 A Yes.

18 Q Have you made or supervised the engineering studies and the exhibits regarding this
19 Application to prepare yourself to testify today in support of this Application?

20 A Yes, I have reviewed all of the drilling reports, drill stem tests, electric logs,
21 completion reports, and production reports in preparation for this hearing.

22 Q Have you prepared, or caused to be prepared under your supervision and direction,
23 exhibits prefiled in this docket?

1 A Yes, a number of Exhibits were prepared under my supervision. These include a map
2 showing the 11 tracts within the proposed Kane Unit boundary (Exhibit #1). Exhibit
3 #2 shows the spud dates of the wells in the Kane Field area. Exhibit #3 is a type log
4 showing the Marmaton through Mississippian G zone interval being unitized. Also
5 included is an Upper Mississippian Depth Converted Time Structure Map (Exhibit
6 #4). Exhibit #5 is an oil decline curve for the leases in the proposed Kane Unit
7 showing the total oil production performance of the field from 1956 through the end
8 of 2015. Exhibit #6 is the same curve also showing the estimated remaining primary
9 and the anticipated secondary recovery from the project. The proposed Kane Unit
10 injection pattern, waterflood facilities, and the planned pipeline layout is shown in
11 Exhibit #7.

12 Q Would you please explain Exhibit #1?

13 A Exhibit #1 is a plat that shows the area of the proposed Kane Unit and the 11 Tracts
14 we propose to put into this Unit. It includes the following land in Kiowa County,
15 Kansas:

16 The West Half (W/2) of Section 19 and the Northwest Quarter (NW/4) of
17 Section 30, in Township 30 South, Range 18 West, the South Half (S/2) of
18 Section 11, the Northwest Quarter (NW/4) and the South Half (S/2) of Section
19 13, All of Section 14, the Northeast Quarter (NE/4) of Section 23, All of
20 Section 24, and the North Half (N/2) of Section 25, in Township 30 South,
21 Range 19 West, Kiowa County, Kansas.

22 Q Would you briefly explain the history of this area?
23

1 A The discovery well for the Kane Field was the "Alford 1" well in June 1944 in
2 the SE SE SW Sec. 14-30S-19W in Kiowa County, Kansas (as shown in Exhibit 2).
3 This well was drilled by Lion Oil Company in June 1944 and was completed in the
4 Upper Miss and had an initial potential of 4,000 MCFD with and no water. Evidently
5 there were not any gas lines in this area at this time and this well was plugged in
6 1948.

7 The Kane Unit area oil well discovery was the Anschutz "Miller 1." It was
8 drilled in January 1956 in the SE SE NW Sec. 14-30S-19W. The well was initially
9 completed in the MISS F zone with an IP of 40 BOPD. It was later recompleted in
10 the U MISS for 16 BOPD & 100 MCFD in October 1959. The three well CA Miller
11 lease has a cumulative production of 169,343 BO and 1.4 BCF though 12/31/2015.

12 The Graham-Michaelis "Kane 1-13" was an oil and gas producer, which was
13 drilled in October 1963 in the NE SW SW Sec. 13-30S-19W. This well was initially
14 very close to the gas-oil contact of a gas cap that exists on the northern and northeast
15 part of the field. Cumulative Kane #1-13 well production is 18,248 BO and 5.24 BCF
16 as of 12/31/2015.

17 The Graham-Michaelis "Kane 1-24," located in the SE NW Sec. 24-30S-19W in
18 Kiowa County, Kansas was drilled in July 1964. The well was completed in the
19 MISS F zone with an IP of 203 BOPD. Cumulative Kane 24 Lease production is
20 546,941 BO and 4.6 BCF as of 12/31/2015 from all six wells as of 12/31/2015.

21 The Graham-Michaelis "Greenleaf #1-19," located in the SW NW Sec. 19-30S-
22 18W in Kiowa County, Kansas was drilled in August 1964. This well was again near
23 the gas cap and has produced 4,539 BO and 4.6 BCF as of 12/31/2015.

1
2 The Graham-Michaelis "Thompson #1-30," located in the SE NW NW Sec. 30-
3 30S-18W in Kiowa County, Kansas, was drilled in January 1965. This well was
4 completed in the U MISS with an IP of 50 BOPD. It produced most of the lease's
5 cumulative oil production of 60,185 BO as of 12/31/2015.

6 In October 1965, Anadarko Production Company drilled the "Ward A-1" in the
7 SW NE Sec. 25-30S-19W. The well was completed in the U MISS with an IP of 40
8 BOPD. Cumulative production as of 12/31/2015 was 94,603 BO.

9 In February 1966, Graham-Michaelis drilled the "Crowe 2-23" in the SE NE
10 Sec. 23-30S-19W. The well was completed in the U MISS with an IP of 180 BOPD.
11 The four producers on the Crowe lease have produced 151,296 BO and 1.2 BCF
12 through 12/31/2015.

13 Graham-Michaelis drilled the "Dunn 1-11" in the SW SW Sec. 11-30S-19W in
14 June 1966. Cumulative production for the Dunn Lease was 58,366 BO and 1.2 BCF
15 from the U Miss and the Miss F as of 12/31/2015.

16 Graham-Michaelis drilled the "CA Miller 2-14" in the SW NW Sec. 14-30S-
17 19W in May 1966. The well was completed in the U MISS with an IP of 5,200
18 MCFD and the MISS F with an IP of 140 BOPD. In November 1966, Graham-
19 Michaelis drilled the "CA Miller 3-14" in the SE NW Sec. 14-30S-19W. The well
20 was completed in the MISS F with an IP of 62 BOPD.

21 Graham-Michaelis drilled the "Hayse 1-14" in June 1966 in the NW SW Sec. 14-
22 30S-19W. It was completed in the MISS F with an IP of 77 BOPD. The "Hayse 2-

1 14" was drilled by Graham-Michaelis in September 1966 in the NE SW Sec. 14-30S-
2 19W. The well was completed in the MISS F with an IP of 192 BOPD. These two
3 wells were plugged in 1993 and 1995. Cumulative Hayse lease production was
4 189,849 BO and 1.8 BCF from the two wells.

5 Beren Corporation drilled the "Ward A #2" dry hole in the NW NE Sec. 25-30S-
6 19W in March 1973. The well was washed down in July 1984 and converted to a
7 shallow SWD.

8 The "Kane 3-24" was drilled by Graham-Michaelis in April 1974 in the NW NW
9 Sec. 24-30S-19W. The well was completed in the MISS F with an IP of 36 BOPD.
10 Graham-Michaelis drilled the "Kane 4-24 B" in July 1974. The U MISS was treated
11 with 10,000 gallons of acid and completed with an IP of 30 BOPD.

12 Graham-Michaelis drilled the "Crowe 3-23" in April 1975 in the NE NE Sec. 23-
13 30S-19W. It was completed in the U MISS with an IP of 120 BOPD. The "Crowe 2-
14 14" was drilled by Graham-Michaelis in September 1975 in the SE SE Sec. 14-30S-
15 19W. The MISS F had an IP of 25 BOPD. The U MISS was perforated June 2000
16 with little affect.

17 In May 1981, Beren Corp. drilled the "Ward B-1" in the SE NW Sec. 25-30S-
18 19W. The well was completed in the U MISS with an IP of 18 BOPD. The
19 Altamont was perforated in January 2002, which initially produced only 1.5 BOPD.
20 The Altamont and MISS were comingled in November 2002. Cumulative
21 Production as of 12/31/2015 was 17,332 BO.

1 Graham-Michaelis drilled the "Kane 5-24" in October 1981 in the SE NW NE
2 Sec. 24-30S-19W. The well was acidized and flowed 0.6 BOPH and 530 MCFD
3 from the MISS F.

4 Graham-Michaelis drilled the "Kane 2-13" dry hole in August 1982 in the NW
5 NW SE Sec. 13-30S-19W. The result of a DST of the U MISS/MISS F was 120'
6 GCM with a FSIP of only 296 psi. The well was plugged.

7 Berexco, Inc. drilled the "Kane 6-24" in September 2001 in the SW SE Sec. 24-
8 30S-19W. This U MISS well was acidized and had an IP of 5 BOPD and 18 MCFD.

9 Berexco, Inc. drilled the "Greenleaf GMC #3-19A" well in November 2002 in
10 the NW NE NW Sec. 19-30S-18W. The Altamont and MISS were acidized and
11 commingled and had an IP of 7 BOPD and 8 MCFD. Cumulative Greenleaf GMC
12 #3-19A production was 1,625 BO as of 12/31/2015.

13 The McCoy "Hill 'A' 1-23" was drilled in March 2008 in the N2 NE SW Sec. 23-
14 30S-19W. DSTs of both the U MISS and MISS F had FSIPs of over 1150 psi
15 indicating that this area is not in pressure communication with the wells within the
16 proposed Kane Unit.

17 Castelli Exploration Inc. drilled the "Thompson 1-30" in April 2012 in the W/2
18 SW NE Sec. 30-30S-18W. Cumulative Thompson Lease production is 60,185 BO as
19 of December 31, 2015 (including the production from the original Thompson #1-30 U
20 MISS well plugged in 1991).

21 The last well drill in the proposed Kane Unit area was the Berexco LLC "Crowe
22 4-23" in November 2012 in the SW SW NE Sec. 23-30S-19W. The well had an IP
23 of 13 BOPD & 23 MCFD from commingled Altamont and U MISS perfs.

1 Q Please explain Exhibit #3.

2 A This is an electric log from the Kane #6-24 well located in the SW SE of Section 24,
3 Township 30 South, Range 19 West, Kiowa County, Kansas. It shows that the
4 Unitized Formation is the subsurface portion of the Unit area described as the
5 stratigraphic equivalent of the Marmaton through the base of the Mississippian
6 formation, as same is encountered between 4,895 feet to 5,175 feet, inclusive, below
7 the surface (KB) in this well. The U MISS is shown as the MISS, and the MISS F
8 and MISS G are also shown. The Marmaton, Altamont, and Mississippian are the
9 only intervals that have produced oil and gas within the proposed Kane Unit area.
10 These intervals are in communication in several wellbores and therefore the Unitized
11 Formation for the proposed Kane Unit needs to include all these intervals.

12 Q Please explain Exhibit #4.

13 A Exhibit 4 is a Depth Converted Time Map of the Mississippian (U MISS) based on a
14 recent 3D shoot over much of the Kane Unit area. This map shows the Mississippian
15 structure. The highest areas are where the gas cap originally existed.

16 Q Did you prepare Isopach Maps?

17 A No, the log data was not of sufficient quality to make such a map, and reservoir
18 volume was not a unitization parameter.

19 Q Please explain the total Kane Unit performance curve shown in Exhibit #5.

20 A This decline curve represents the total oil production performance from the
21 producing wells in the proposed Kane Unit area. These wells peaked at an average of
22 7,896 BOPM in 1967, and had declined down to just under 900 BOPM in 2015.
23 Total oil production was 1,313,524 STBO as of December 31, 2015.

24 Q Please explain the Kane Unit performance curve shown in Exhibit #6.

1 A Exhibit #6 shows the total estimated remaining primary oil from the active wells
2 which will add 43,196 STBO, making the total ultimate oil production 1,356,720
3 STBO. In addition to the remaining primary performance of the proposed Kane Unit
4 wells, Exhibit #6 also shows the projection of the estimated incremental secondary
5 oil, which we believe will be recovered over approximately 12 years by the
6 installation of this waterflood. It is estimated that installing the Kane Unit waterflood
7 will increase the total recovery by about 162,800 STBO.

8 Q How was the estimate of secondary oil recovery determined?

9 A The secondary recovery estimate was determined through utilization of a ratio of
10 secondary to primary recovery and analogy. The presence of the gas cap in both the
11 U MISS and MISS F reduced the expected Secondary to Primary ratio to 12%.

12 Q How did you arrive at 12%?

13 A Normally we would use a higher number, but the fact that nine former producing oil
14 wells were already plugged made it more difficult to project a higher secondary to
15 primary ratio. Also the presence in the reservoir of a gas cap drive combined with a
16 partial water drive caused us to estimate a secondary to primary ratio of 12%.

17 Q What does Exhibit #7 show?

18 A Exhibit #7 shows the planned waterflood pattern, injection lines, and the location of
19 the consolidated tank battery and injection plant near the Kane #1-24 well. The
20 pattern will involve the conversion of the four existing wells to water injection and
21 the conversion of two existing SWD wells to salt water supply wells. The proposed
22 injection wells have sufficient casing and cement to protect the useable water zones in
23 this area. This plan will utilize nine existing wells as producers.

24 Q In the proposed operations, what injection rates and pressures do you recommend?

1 A Target rates for initial injection are 200 - 250 BWIPD per well. The injection rates
2 may be later increased up to 500 BWIPD per well depending on performance. It is
3 anticipated that the injection pressure would be 1,200 psi, or below, at the wellheads.
4 In no event would the injection pressure exceed the fracture gradient of the U MISS
5 or MISS F formations in this area.

6 Q What is the estimated investment required to install the proposed Kane Unit
7 waterflood, and does the estimated incremental secondary oil justify this investment?

8 A It is estimated it will cost \$788,500 to install this project. Economic runs indicate the
9 waterflood project will result in a net BFIT income that totals over \$2,508,300.

10 Q Is it your further testimony that the proposed operations are economically feasible,
11 and are necessary to prevent waste and protect correlative rights?

12 A Yes.

13 Q Have you reviewed the Unit Agreement and Unit Operating Agreement which have
14 been filed with this Commission?

15 A Yes.

16 Q In your opinion, do these agreements provide fair, reasonable and equitable
17 provisions for the efficient unitized management and control of the further
18 development and operation of the proposed Kane Unit area for the recovery of oil
19 from the common source of supply?

20 A Yes.

21 Q How was the tract participation determined?

22 A A two phase formula was used to protect current income. Phase I is based on 50%
23 Current Barrels of Oil Equivalent (BOE) Production for the Period January 1, 2015
24 through December 31, 2015, and 50% Remaining Primary Reserves in Barrels of Oil

1 Equivalent (BOE) after December 31, 2015. Phase I will be in effect until the Kane
2 Unit has produced 49,359 BOE of oil after December 31, 2015. Gas is converted to
3 BOE at a ratio of 6 MCF per BOE.

4 Q What is Phase II participation based on?

5 A Phase II is based on 90% Cumulative Oil Production as of December 31, 2015 and
6 10% Useable Wellbores.

7 Q Are the participation formulas for Phase I and Phase II consistent with participation
8 formulas for other similar waterfloods?

9 A Yes. The formulas used for Kane Unit are similar to formulas used for other similar
10 type waterfloods in Kansas.

11 Q Do you know what percentage of the interests have executed these agreements?

12 A It is my understanding that 100% of the working interest owners and over 76% of the
13 royalty owners have signed (excluding overriding royalty) on both Phases.

14 Q Is it your opinion that the provisions of these agreements are fair and equitable to all
15 working interest owners and royalty owners in the proposed Kane Unit area?

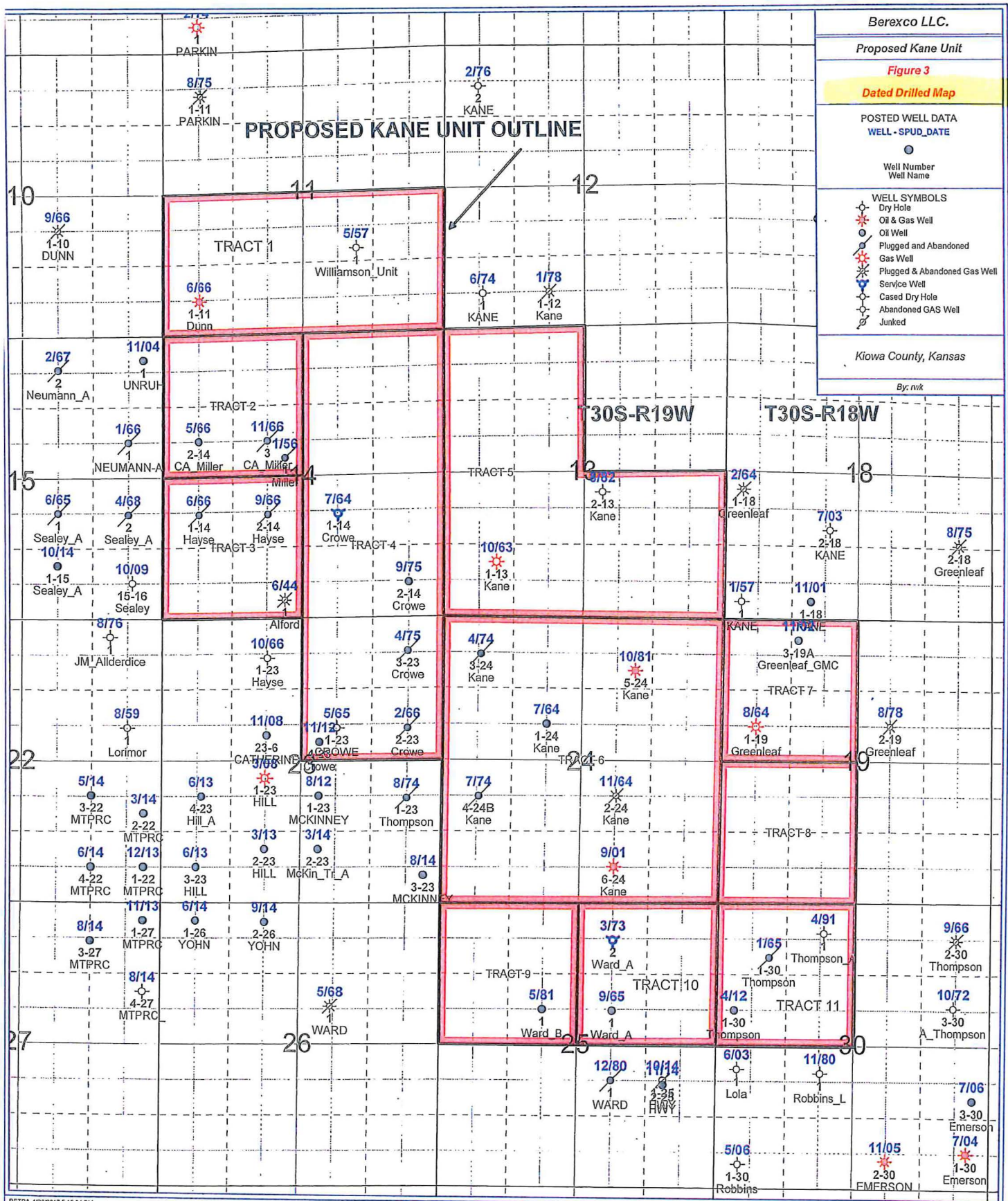
16 A Yes.

17 Q Based on all of your studies, the exhibits you have provided, and your testimony here
18 today, are you recommending that the Commission grant this application?

19 A Yes

20 Q I have no further questions for Mr. Wreath.

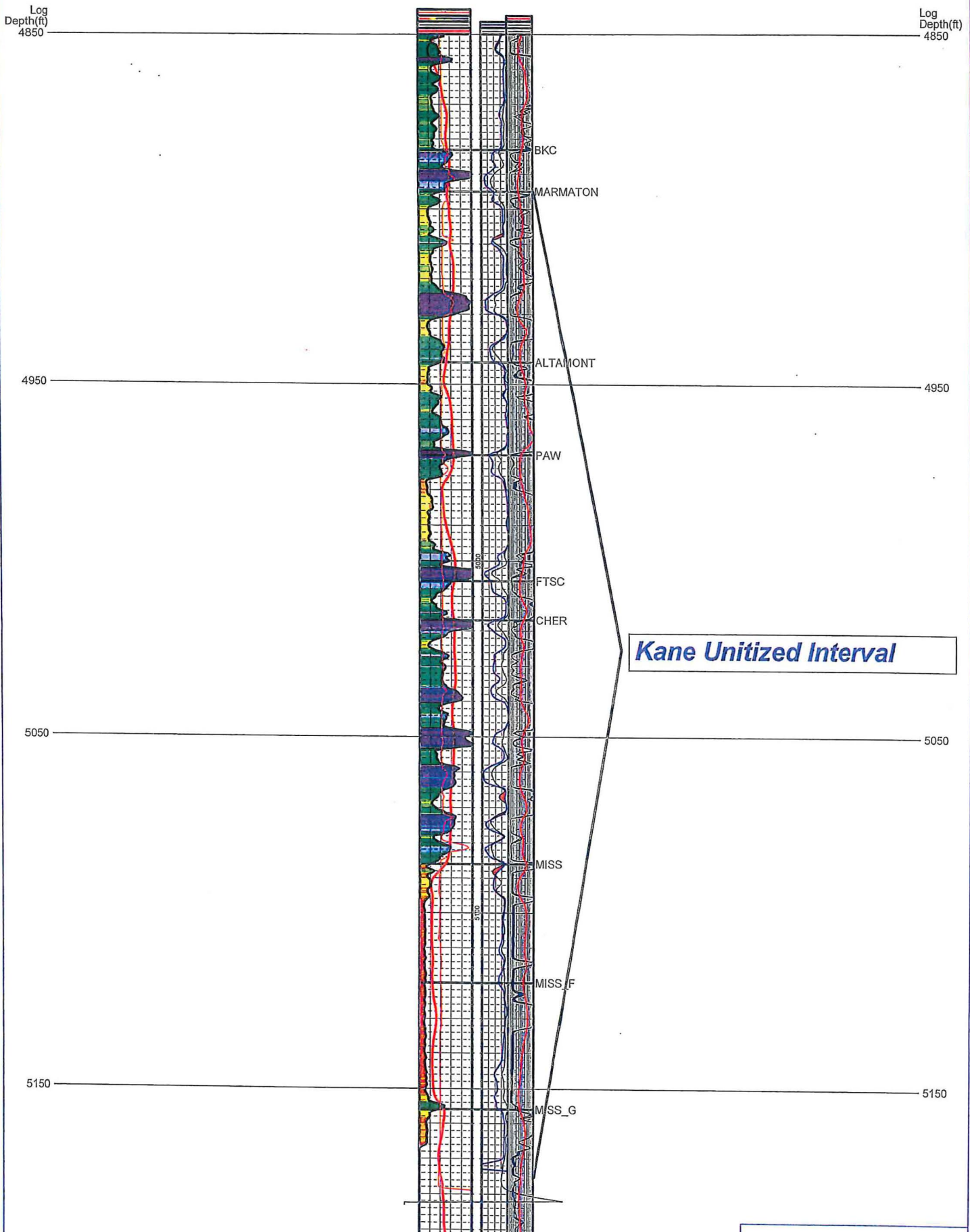
Exhibit #2
DOCKET NO. 17-CONS-3532-CUNI
LICENSE NO. 34318



Kane
6-24
KANE 6-24
Bersco
C SW SE
T30S R19W S24
ELEV_KB : 2,254

SPUD_DATE : 9/01

Exhibit #3
DOCKET NO. 17-CONS-3532-CUNI
LICENSE NO. 34318



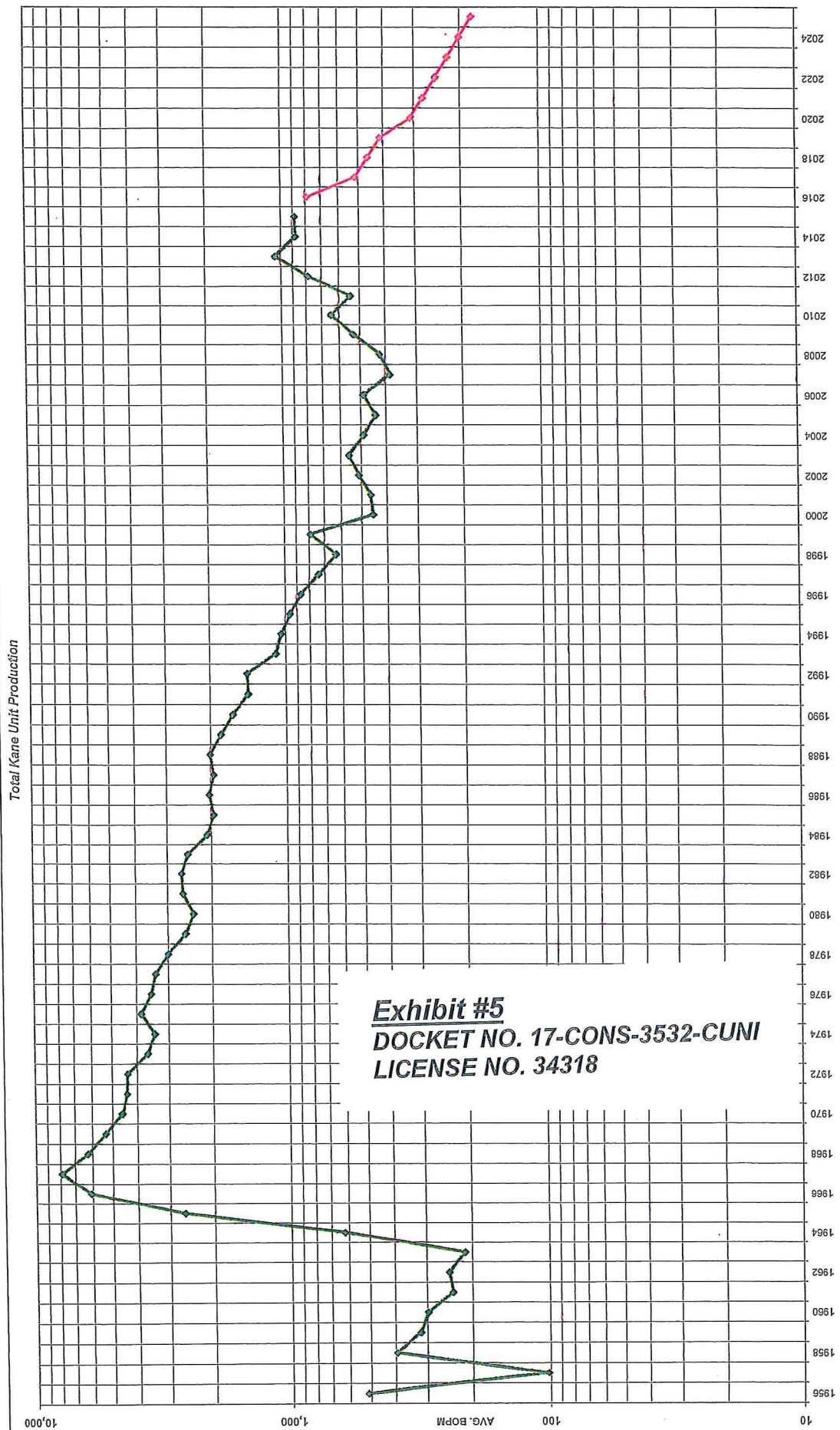


Exhibit #5
DOCKET NO. 17-CONS-3532-CUNI
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Figure 8

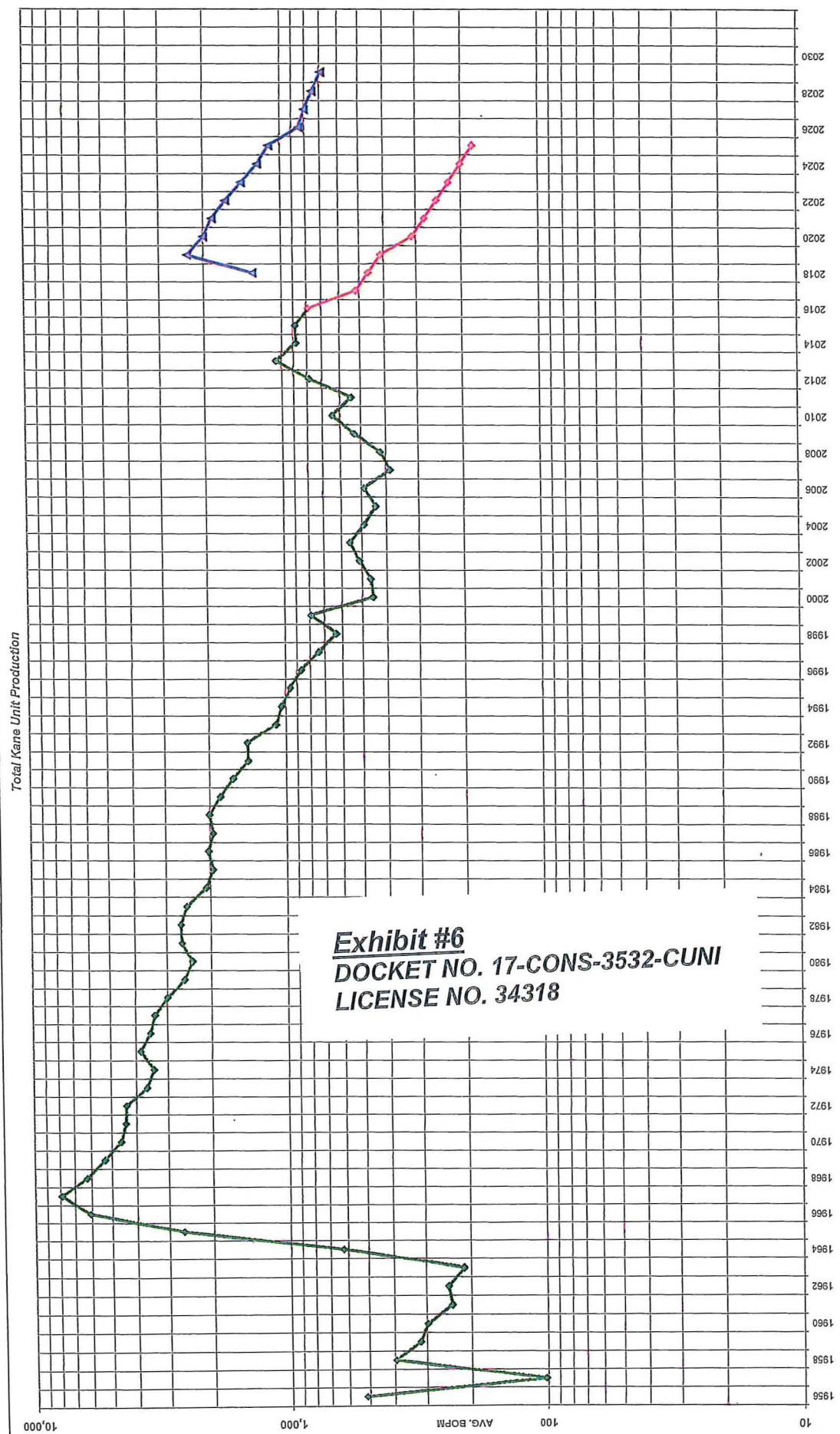


Figure 11

