

In the matter of the application of Curry & Thornton for a non-standard Proration Unit and, Unorthodox well location, Chaves County, New Mexico.

S.E. 1/4 Proration Unit assigned to Santa Fe Exploration Co. Holmstrom - Fed. No. 1

OFFICE OF THE COMMISSIONER
 OF LANDS AND MINES
 C&T Case No. 9
 Case No. 9617

Case Number _____

NORTH KING CAMP - DEVONIAN POOL
CHAVES COUNTY, NEW MEXICO

DEVONIAN

GROSS ISOPACHOUS MAP BASED ON

SEISMIC STRUCTURE

SUBSURFACE TIE TO WELL NO. 2

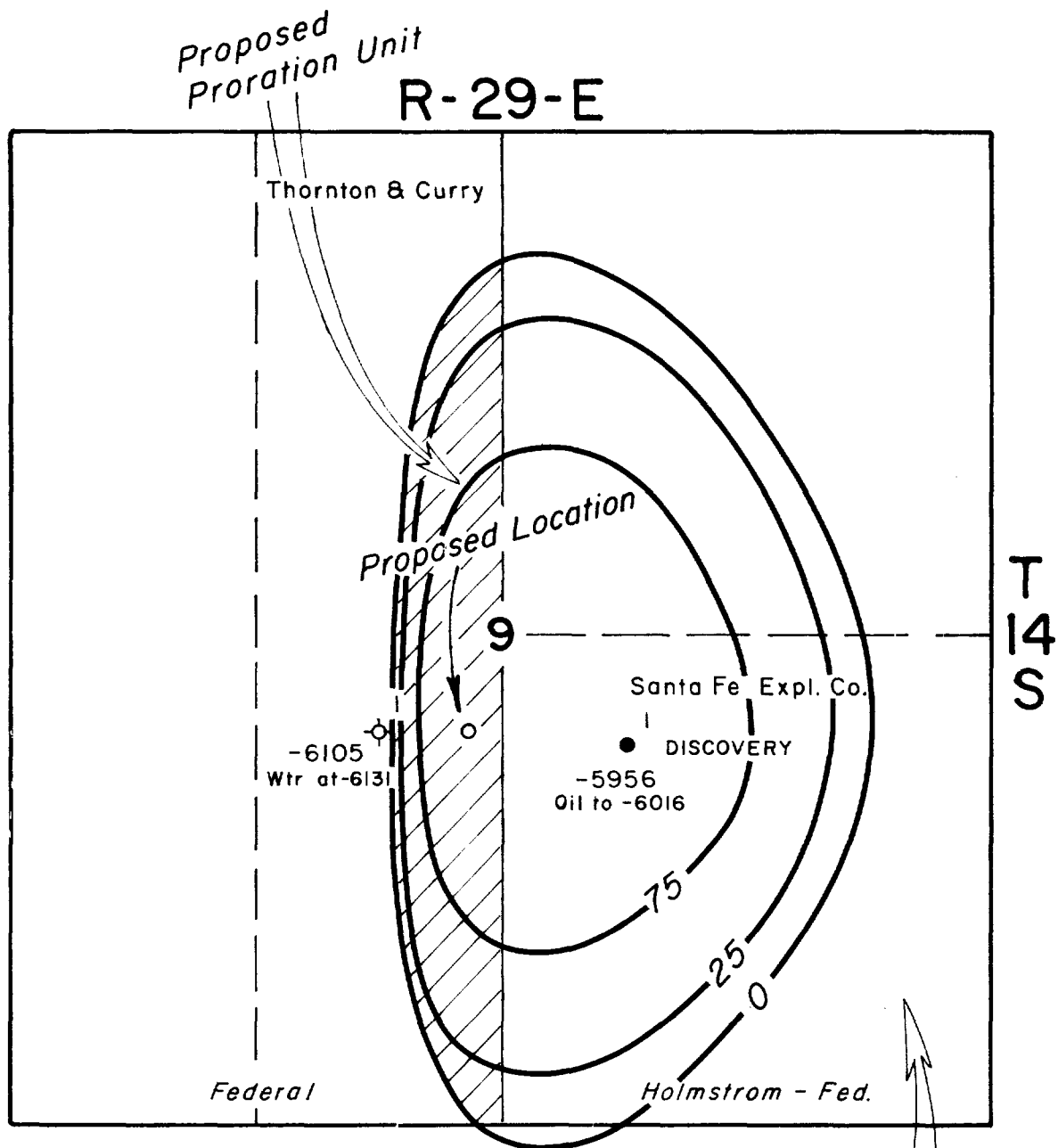
C.I. = 50'

0 1000' 2000'

SCALE

JACK AHLEN

February 1989



In the matter of the application
of Curry & Thornton for a
non-standard Proration Unit and,
Unorthodox well location,
Chaves County, New Mexico.

S.E. 1/4 Proration Unit
assigned to Santa Fe
Exploration Co.
Holmstrom - Fed. No. 1

CHAVES COUNTY, NEW MEXICO

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Case No. 9617

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NORTH KING CAMP - DEVONIAN POOL
CHAVES COUNTY, NEW MEXICO

DEVONIAN

GROSS ISOPACHOUS MAP BASED ON
SUBSURFACE STRUCTURE

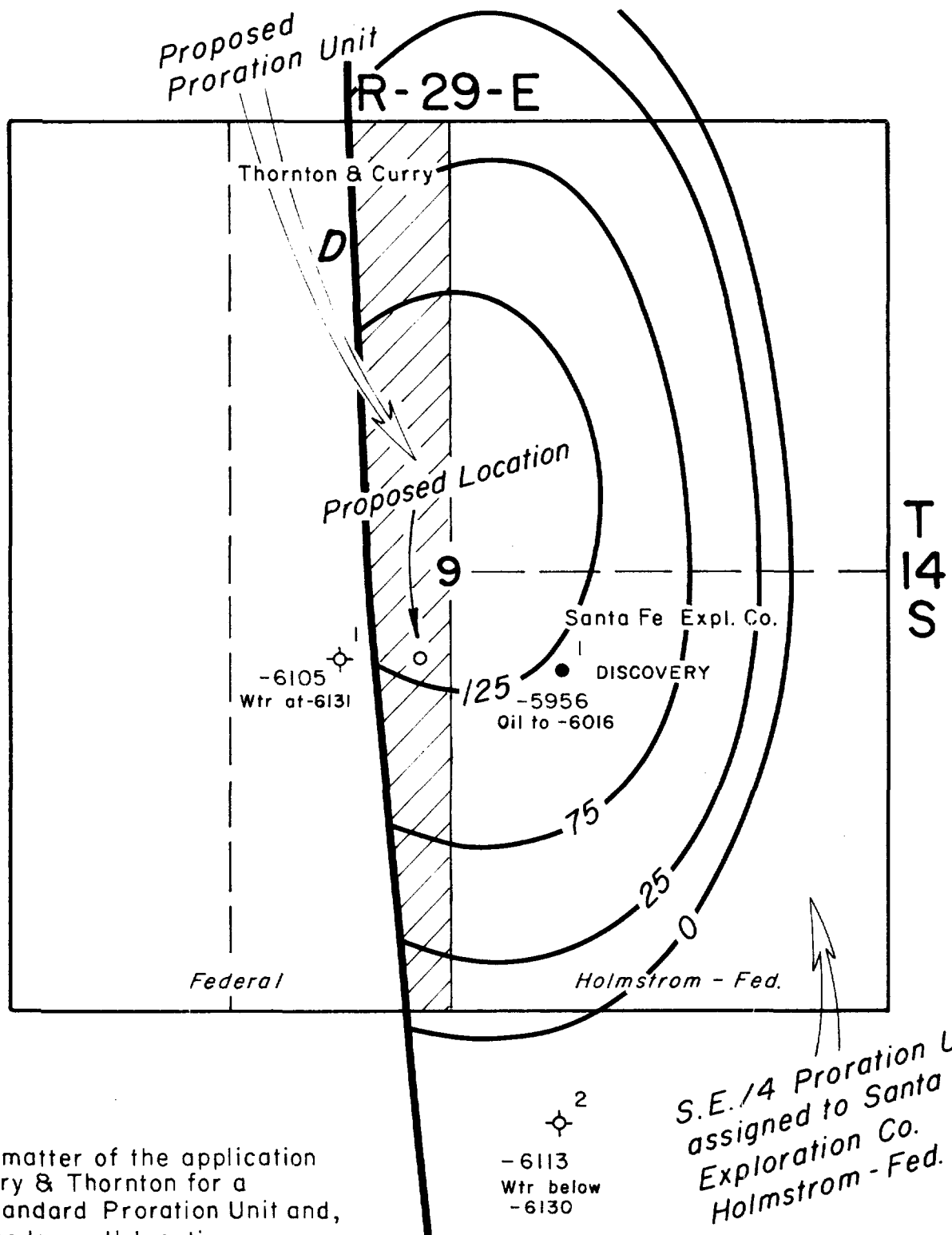
C. I. = 50'

0 1000' 2000'

SCALE

JACK AHLEN

February 1989



In the matter of the application of Curry & Thornton for a non-standard Proration Unit and, Unorthodox well location, Chaves County, New Mexico.

DEVELOPED BY LION

CHAVES COUNTY, NEW MEXICO

C&T Proration No. 11

Case No. 9617

Case Number

NORTH KING CAMP - DEVONIAN POOL
CHAVES COUNTY, NEW MEXICO

DEVONIAN

GROSS ISOPACHOUS MAP BASED ON

SEISMIC STRUCTURE

VELOCITY GRADIENT

APPLIED TO TIE WELL NO. 2

C.I. = 50'

0 1000' 2000'

SCALE

JACK AHLEN

February 1989

EXISTING WELL IN SE/4 WITH 515 BOPD ALLOWABLE

COMPARISON OF PRODUCTIVE AREAS/VOLUMES WITH CONSISTENT ALLOWABLES

SEC. 9 - TWP. 14S - RGE. 29E
NO. KING CAMP - DEVONIAN POOL
CHAVES COUNTY, NEW MEXICO

TYPE OF SUBSURFACE INTREPRETATION

	<u>CASE A</u>	<u>CASE B</u>	<u>CASE C</u>	<u>MEAN</u>
<u>AREA BASIS:</u>				
SE/4	104.0 AC.	103.0 AC.	97.8 AC.	102.0 AC.
E/2W/2	59.8 AC.	47.7 AC.	53.4 AC.	53.6 AC.
TOTAL	163.8 AC.	150.7 AC.	151.2 AC.	155.6 AC.
RATIO	0.575	0.462	0.546	0.525
CALCULATED ALLOWABLE	296 BOPD	238 BOPD	281 BOPD	271 BOPD
<u>VOLUME BASIS:</u>				
SE/4	6817 AF	5572 AF	5265 AF	5885 AF
E/2W/2	5859 AF	2804 AF	2824 AF	3829 AF
TOTAL	12676 AF	8376 AF	8089 AF	9714 AF
RATIO	0.859	0.503	0.536	0.651
CALCULATED ALLOWABLE	443 BOPD	259 BOPD	276 BOPD	335 BOPD

NOTES:

CASE A - SEISMIC STRUCTURE: LINEAR VELOCITY GRADIENT APPLIED TO TIE
SANTA FE EXPL. 2 FEDERAL HOLSRM TO SANTA FE EXPL. 1 FED.

CASE B - SEISMIC STRUCTURE: SUBSURFACE TIE TO SANTA FE EXPL. 2
HOLSTROM FEDERAL

CASE C - SUBSURFACE STRUCTURE BASED ON GEOLOGY

AC = Acres

AF = Acre Feet

BOPD = Barrels of Oil per Day

RATIO = Share of Reserves in E/2W/2 of Sec. 9

APPROVED BY	DATE
CHT	12
617	

TOTAL RESERVOIR CASE (Full development with wells in NE/4, SE/4, and E/2W/2. Total allowable for NE/4 and SE/4 combined = 1030 BOPD)

COMPARISON OF PRODUCTIVE AREAS/VOLUMES WITH CONSISTENT ALLOWABLES

SEC. 9 - TWP. 14S - RGE. 29E
NO. KING CAMP - DEVONIAN POOL
CHAVES COUNTY, NEW MEXICO

TYPE OF SUBSURFACE INTREPRETATION

	<u>CASE A</u>	<u>CASE B</u>	<u>CASE C</u>	<u>MEAN</u>
<u>AREA BASIS:</u>				
NE/4	115.0 AC.	61.9 AC.	64.4 AC.	80.4 AC.
SE/4	104.0 AC.	103.0 AC.	97.8 AC.	102.0 AC.
COMB. E/2	219.0 AC.	164.9 AC.	162.2 AC.	182.4 AC.
E/2W/2	59.8 AC.	47.7 AC.	53.4 AC.	53.6 AC.
TOTAL	278.8 AC.	212.6 AC.	215.6 AC.	236.0 AC.
RATIO	0.273	0.289	0.329	0.294
CALCULATED ALLOWABLE	281 BOPD	298 BOPD	339 BOPD	303 BOPD
<u>VOLUME BASIS:</u>				
NE/4	9319 AF	2975 AF	3119 AF	5138 AF
SE/4	6817 AF	5572 AF	5265 AF	5885 AF
COMB. E/2	16136 AF	8547 AF	8384 AF	11023 AF
E/2W/2	5859 AF	2804 AF	2824 AF	3829 AF
TOTAL	21995 AF	11351 AF	11208 AF	14852 AF
RATIO	0.363	0.328	0.337	0.347
CALCULATED ALLOWABLE	374 BOPD	338 BOPD	347 BOPD	358 BOPD

NOTES:

CASE A - SEISMIC STRUCTURE: LINEAR VELOCITY GRADIENT APPLIED TO TIE
SANTA FE EXPL. 2 FEDERAL HOLSROM TO SANTA FE EXPL. 1 FED.

CASE B - SEISMIC STRUCTURE: SUBSURFACE TIE TO SANTA FE EXPL. 2
HOLSTROM FEDERAL

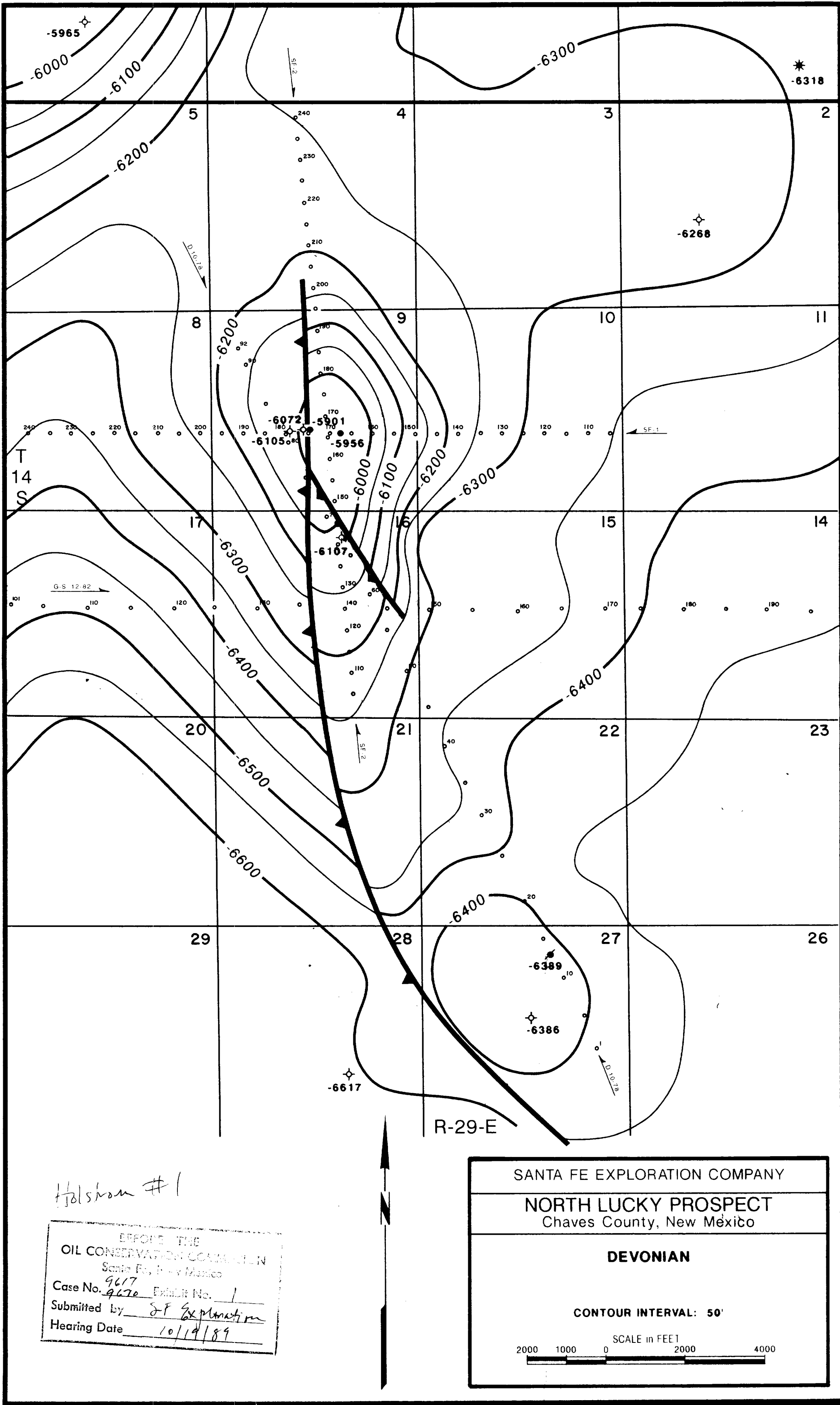
CASE C - SUBSURFACE STRUCTURE BASED ON GEOLOGY

AC = Acres

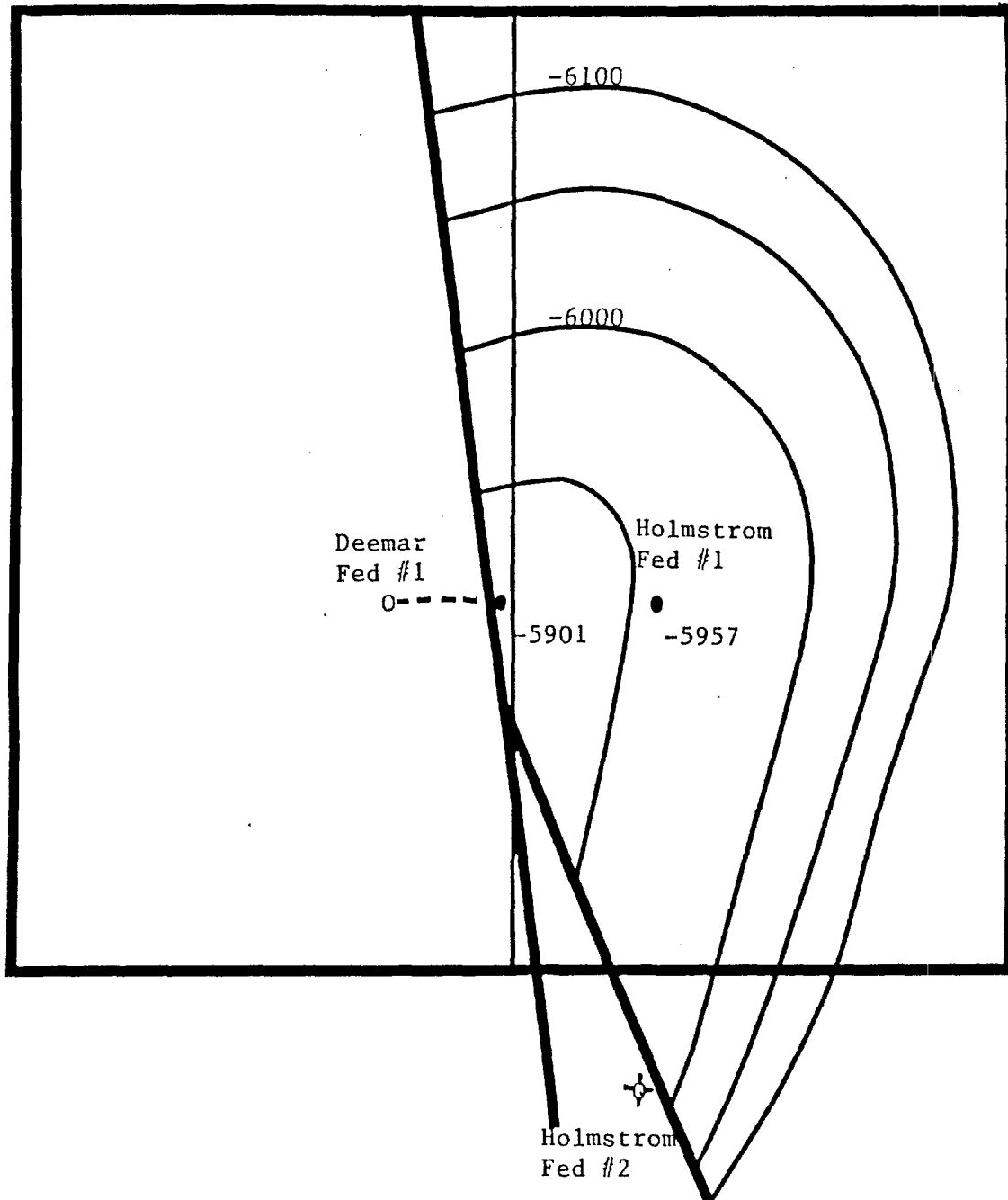
AF = Acre Feet

BOPD = Barrels of Oil per Day

RATIO = Share of reserves in E/2W/2 of Sec. 9



Sec. 9 TWP14S RNG29E



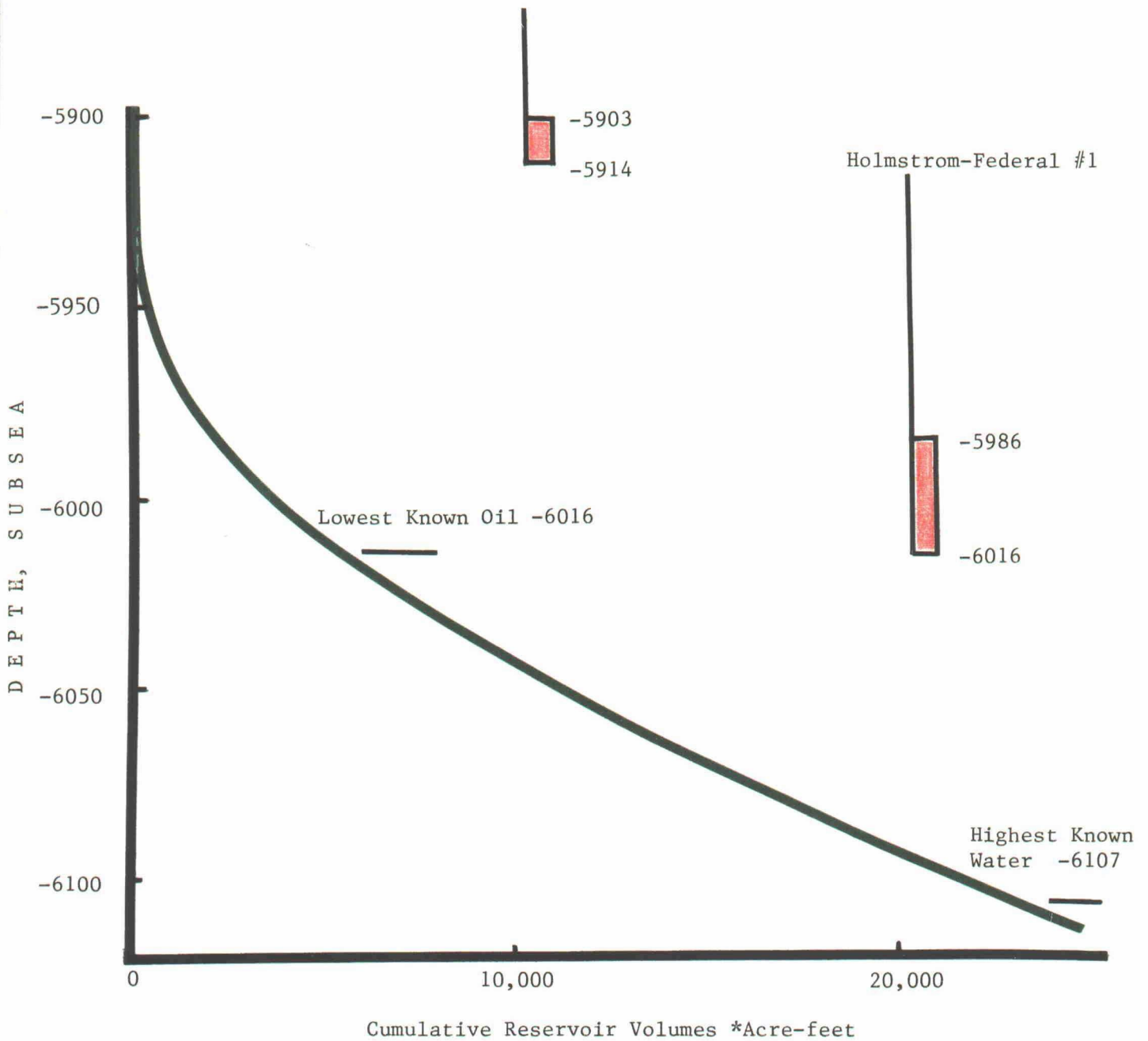
Structure Map
Top of Devonian
North King Camp Field

9617
9670
SF Exploration
10/19/89
2

Santa Fe Exploration
Exhibit _____
Docket No. _____

Spec 9a No. 2

Deemar Federal No. 1



*Assuming reservoir has 200+ feet of thickness

BEFORE THE
OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Case No. 9617 Exhibit No. 3

Submitted by SF Exploration

Hearing Date 10/19/89

Super No. 3

Santa Fe Exploration
Exhibit _____
Docket No. _____



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

August 28, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

Campbell & Black, P.A.
P.O. Box 2208
Santa Fe, New Mexico 87504-2208

Attention: William F. Carr

RE: Division Case No. 9670, Order
No. R-8917-A, Application of
Stevens Operating Corporation
to amend Division Order No. R-
8917, Directional Drilling and an
Unorthodox Oil Well Location,
Chaves County, New Mexico.

Dear Mr. Carr:

Upon reviewing the Eastman Christensen "Report of Sub-Surface Directional Survey" for the Stevens Operating Corporation Deemar Federal Well No. 1 located at a surface location 1974 feet from the South line and 1988 feet from the West line (Unit K) of Section 9, Township 14 South, Range 29 East, NMPM, North King Camp Devonian Pool, Chaves County, New Mexico, the following penalty shall be assessed against the top unit allowable for this well, as promulgated by Decretory Paragraph No. 5 of said Order No. R-8917-A.

At the bottom-most perforated interval of 9642 feet (TVD) the location of the wellbore was found to be 1948 feet from the South line and 2562 feet from the West line (Unit K) of said Section 9 or 78 feet from the East line of the proration unit. Therefore, P_1 equals 660 feet minus 78 feet divided by 660, or:

$$P_1 = 582/660 = 0.882.$$

The closest well to the subject wellbore is the discovery well (referred to in Finding Paragraph No. 4 of R-8917) which is located 1980 feet from the South and East lines (Unit J) of said Section 9 is 739 feet apart. Therefore, P_2 equals 1320 feet minus 739 feet divided by 1320 or:

$$P_2 = 581/1320 = 0.440.$$

Super No. 4

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
Case No. <u>9670</u>	Exhibit No. <u>4</u>
Submitted by <u>SF Exploration</u>	
Heard, Date <u>10/19/89</u>	

Campbell and Black, P.A.
August 28, 1989
Page 2

The top depth bracket allowable for a well in this pool is 515 barrels of oil per day (General Rule 505 (a)). Utilizing the penalty formula as described in said Order No. R-8917-A for this well:

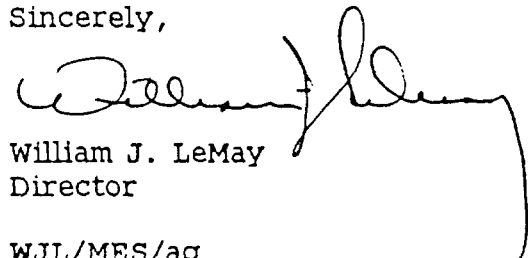
$$(1-P_1) \times (1-P_2) = (1-0.882) \times (1-0.440) = 0.0661 \text{ or } 6.61\%$$

This well shall be assigned a daily oil allowable as follows:

$$(0.0661)(515) = 34.04 \text{ barrels/day.}$$

The effective date for said penalty of this well's production shall be the date of first production.

Sincerely,

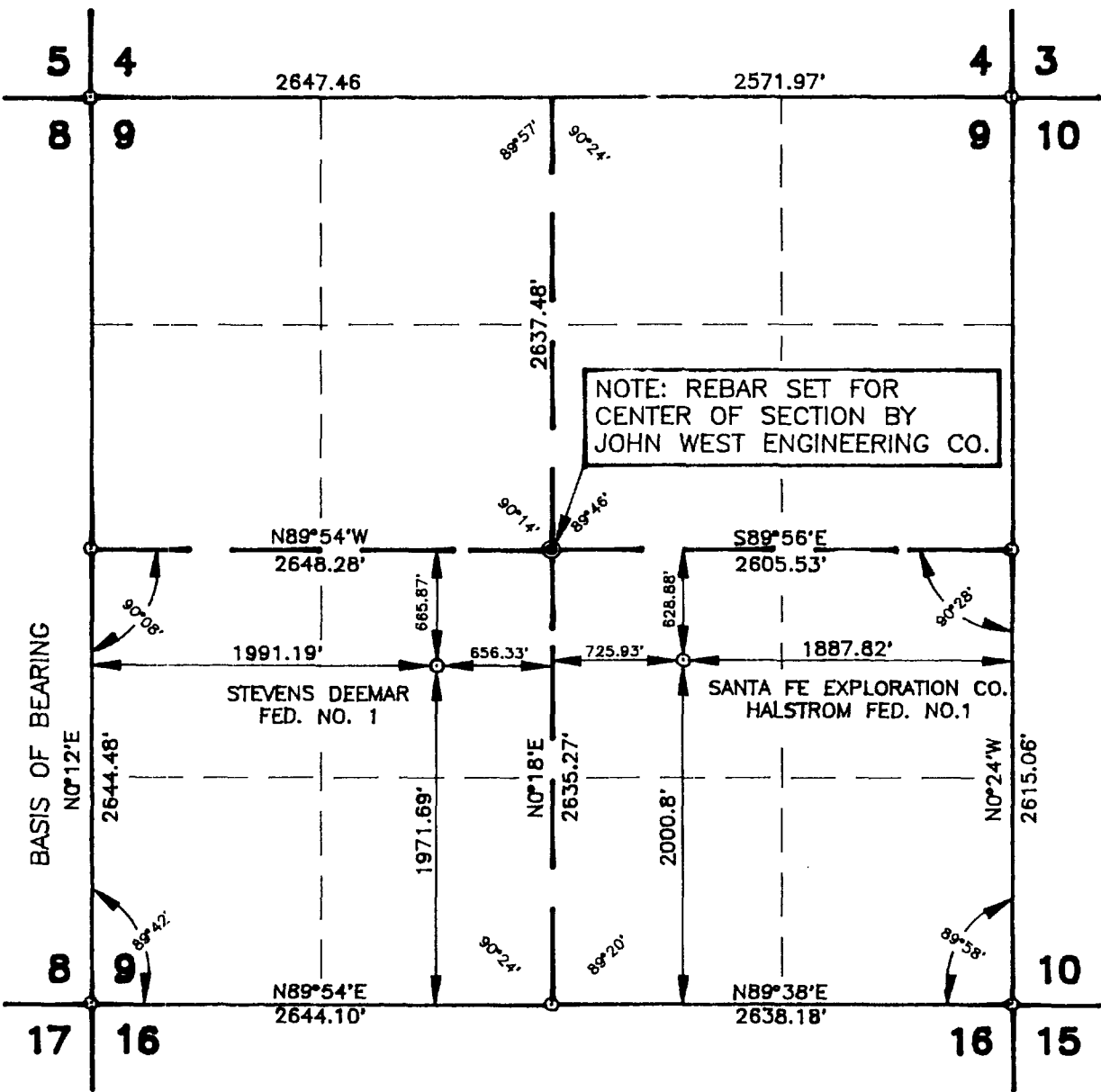


William J. LeMay
Director

WJL/MES/ag

cc: Oil Conservation Division - Artesia
Bob Stovall - Santa Fe
W. Thomas Kellahin - Santa Fe
~~Ernest L. Padilla - Santa Fe~~
Stevens Operating Corp. - Roswell

SECTION 9, TOWNSHIP 14 SOUTH, RANGE 29 EAST, N.M.P.M.
CHAVES COUNTY, NEW MEXICO



THIS PLAT REPRESENTS THE ANGLES AND DISTANCES MEASURED BETWEEN THE USGLO BRASS CAP MONUMENTS SET BETWEEN NOVEMBER 15, 1946 AND JANUARY 17, 1947, BY MR. CLARK GUMM. THE BEARINGS AND DISTANCES ALONG THE SUBDIVISION LINES HAVE BEEN ESTABLISHED BY THE RULES ESTABLISHED BY THE U.S. GENERAL LAND OFFICE (NOW KNOWN AS THE BUREAU OF LAND MANAGEMENT). THE LOCATIONS OF THE TWO OIL WELLS ARE SHOWN AS THEY EXIST ON THE GROUND, AND ARE TIED TO THE BOUNDARY LINES OF THE QUARTER SECTIONS IN WHICH THEY ARE LOCATED.

- DENOTES REBAR W/CAP SET FOR CORNER
- DENOTES EXISTING BRASS CAP SECTION CORNERS

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 9670 Exhibit No. 5

Submitted by SANTA FE

Hearing Date 10/19/89

I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD IN A BONA FIDE SURVEY MADE UNDER MY SUPERVISION AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

JOHN W. WEST, N.M. P.E. & TEXAS R.P.S.

REGISTERED LAND SURVEYOR
NO. 676
EXPIRATION DATE 12/31/94
JOHN W. WEST

SANTA FE EXPLORATION CO.

SURVEY OF SECTION 9,
TOWNSHIP 14 SOUTH, RANGE 29 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO.

JOHN W. WEST ENGINEERING COMPANY
CONSULTING ENGINEERS HOBBS, NEW MEXICO

Scale 1" = 1000'	Drawn By: S. STANFIELD
Date: 9-15-1989 CK.	Sheet 1 of 1 Sheets
Project Number 89-09-018	File Name 914S29E

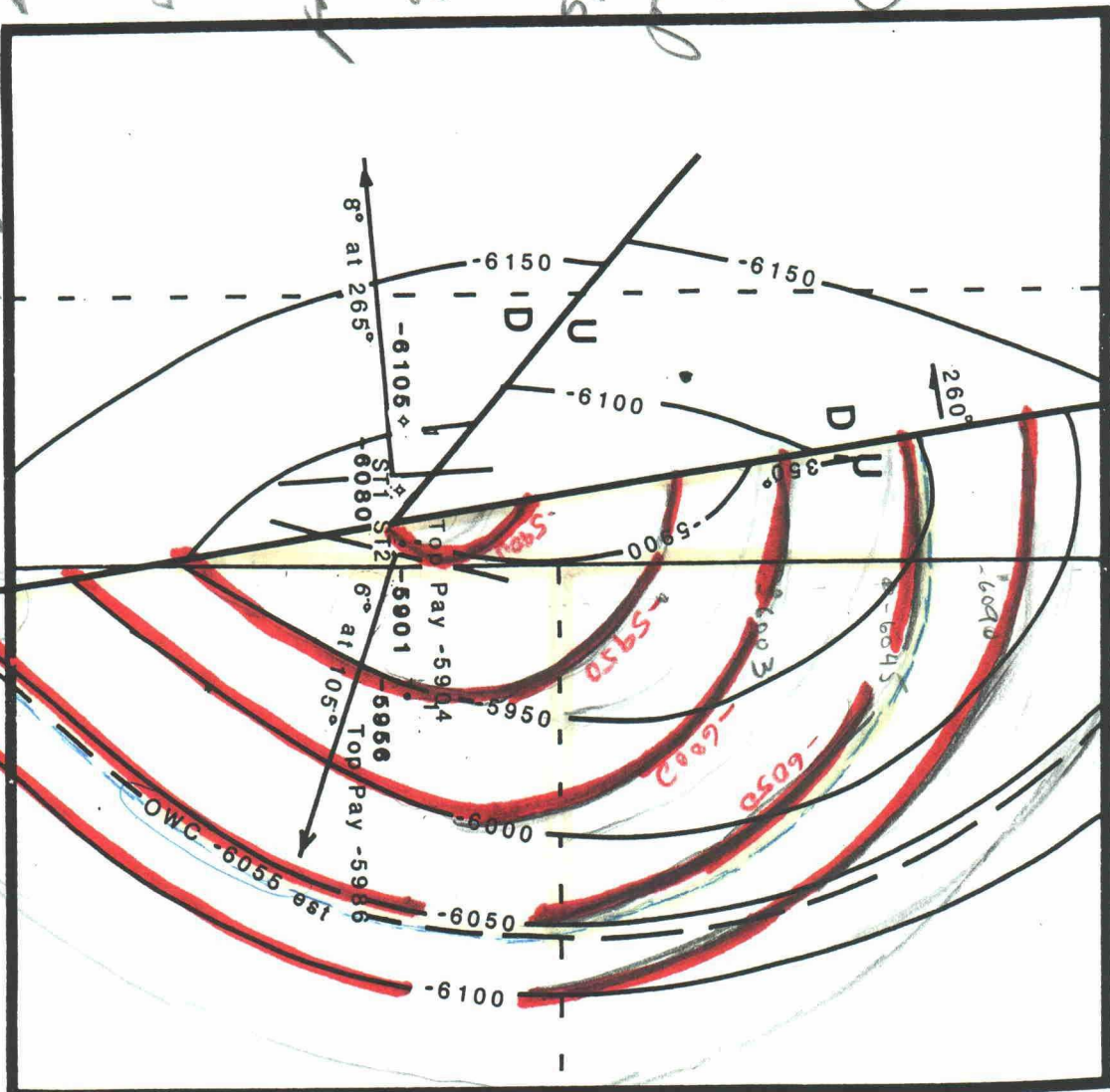
Revised Stevens Exhibit (Jack Allen)

however:

- 1) Fault trace established at pt. source (Stevens 2nd deviated hole) as per Allen's map
- 2) North dip established by seismic as per H. Strom's map (South is withers).
- 3) General agreement is to note dip to the east and south

to note 3 dip to the east and south

4) O.I. water entrapment - 6055 as testified to by Allen and not 43 p. by testimony of witness. Although not a scientific definite number, nevertheless, it is a significant aspect of the reservoir under test.



Total Production 1177, 2000

Curry & Thornton
Exhibits 1 through 12
Complete Set

2127



As

Michael E. Stagner

October 24, 1989

Known Area (160 acres) NE 1/4

Readings

0558

0558

0552

0555

0553

$$2776 \div 5 = 555.2$$

A₁ = Productive Acreage in the E 1/2 W 1/2

Readings

0106

0105

0100

0100

0100

$$511 \div 5 = 102.2$$

$$\left(\frac{160 \text{ acres}}{555.2} \right) = A_1 / 102.2$$

$$29.45 = A_1 = \underline{29.45 \text{ acres}}$$

A₂ = Productive Acreage in the NE 1/4

Readings

0199

0198

0198

0200

0194

$$989 \div 5 = 197.8$$

$$\frac{160 \text{ acres}}{555.2} = \frac{A_2}{197.8}$$

$$A_2 = \underline{57.00 \text{ acres}}$$

A₃ = Productive Acreage in the SE 1/4

Readings

0316

0317

0314

0317

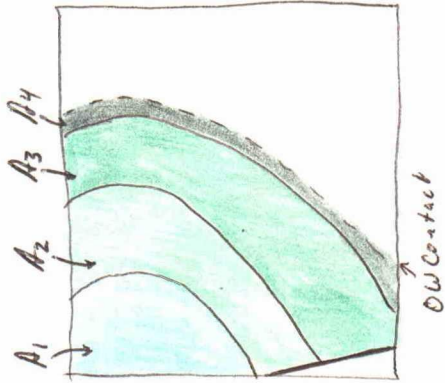
0312

$$1576 \div 5 = 315.2$$

$$\frac{160 \text{ acres}}{555.2} = \frac{A_3}{315.2}$$

$$A_3 = \underline{90.84 \text{ acres}}$$

SE/4 Section



A₁ Reading

0072
0069
0071
0070
0068
5) 350 = 70

$$\frac{160 \text{ acres}}{558.8} = A_1/70$$

$$A_1 = 20 \text{ acres}$$

A₂ Readings

0160
0157
0162
0160
0162
5) 801 = 160.2

$$\frac{160}{558.8} = A_2/160.2$$

$$A_2 = 45.9$$

$$A_1 = 20 \text{ acres } 20 \times 120 = 2,400$$

$$A_2 = 45.9 \text{ acres } 25.9 \times 80 = 2,072.00$$

$$A_3 = 83.3 \text{ acres } \left. \begin{array}{l} 44.2 \times 27.5 = 1,215.50 \\ 5,687.5 \end{array} \right\} \begin{array}{l} 0294 \\ 0290 \end{array}$$

$$A_4 = 90.1 \text{ acres } \left. \begin{array}{l} 5,687.5 \\ 0292 \\ 0290 \end{array} \right\}$$

$$5) \frac{0288}{1454} = 290.8$$

$$\frac{160 \text{ acres}}{558.8} = A_3/290.8$$

$$A_3 = 83.3$$

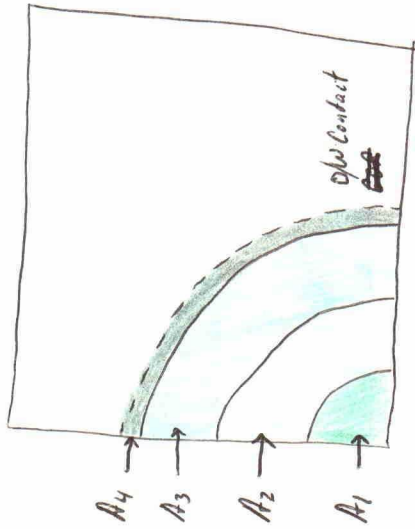
A₄ Readings

0317
0307
0315
0316
0318
5) 1573 = 314.6

$$\frac{160 \text{ acres}}{558.8} = A_4/314.6$$

$$A_4 = 90.1$$

NE 1/4 Section



A₁ Readings

0017
0011
0013
0014
0014

$$5 \overline{) 69} = 13.8$$

$$\frac{160 \text{ acres}}{558.8} = A_1 / 13.8$$

$$A_1 = 3.9 \text{ acres}$$

A₂ Readings

0076
0079
0070
0070
0069

$$5 \overline{) 364} = 72.8$$

$$\frac{160}{558.8} = A_2 / 72.8$$

$$A_2 = 20.8 \text{ acres}$$

A₃ Readings

0173
0173
0170
0175

$$A_1 = 3.9 \text{ acres } 3.9 \times 115 = 448.5$$

$$A_2 = 20.8 \text{ acres } 16.90 \times 80 = 1,352.00$$

$$A_3 = 49.5 \text{ acres } \left. \begin{array}{l} 35.6 \times 27.5 = 979.00 \\ 2,779.5 \end{array} \right\} \frac{865}{2,779.5} = 173$$

$$A_4 = 56.4 \text{ acres}$$

$$\frac{160 \text{ acres}}{558.8} = A_3 / 173$$

$$A_3 = 49.5 \text{ acres}$$

A₄ Reading

0198
0195
0199
0195
0198

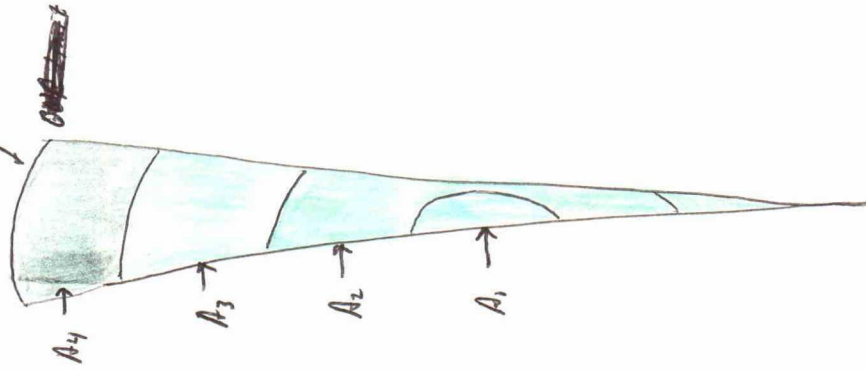
$$5 \overline{) 985} = 197$$

$$\frac{160 \text{ acres}}{558.8} = A_4 / 197$$

$$A_4 = 56.4 \text{ acres}$$

E/2 W/2 Section

O/W Contact



$$\begin{aligned}
 A_1 &= 2.06 \text{ acres} & 2.06 \times 160 &= 329.60 \\
 A_2 &= 10.4 \text{ acres} & 8.34 \times 130 &= 1,084.20 \\
 A_3 &= 17.6 \text{ acres} & 7.20 \times 80 &= 576.00 \\
 A_4 &= 26.9 \text{ acres} & 9.30 \times 27.5 &= 255.75 \\
 \hline
 & & & 2,245.55
 \end{aligned}$$

A₁ Readings

0005
0010
0005
0007
0009

$$5 \overline{) 36} = 7.2$$

$$\frac{160 \text{ acres}}{558.8} = A_1 / 7.2$$

$$A_1 = 2.06 \text{ acres}$$

A₂ Readings

0032
0040
0028
0048
0033
0046
0028

$$7 \overline{) 255} = 36.4$$

$$\frac{160 \text{ acres}}{558.8} = A_2 / 36.4$$

$$A_2 = 10.4 \text{ acres}$$

A₃ Readings

0059
0064
0061
0060
0063

$$5 \overline{) 307} = 61.4$$

$$\frac{160 \text{ acres}}{558.8} = A_3 / 61.4$$

$$A_3 = 17.6 \text{ acres}$$

A₄ Readings

0093
0094
0097
0094
0091

$$5 \overline{) 469} = 93.8$$

$$\frac{160 \text{ acres}}{558.8} = A_4 / 93.8$$

$$A_4 = 26.9$$

PENALTY CALCULATION *

- Productive acres in E/2 of W/2 - per Curry & Thornton - min. 47.7
- max. 59.8
- per Santa Fe - min. 25.5
- max. 41.5

Proposed well would be 75% closer to lease line than permitted.

$$\text{Acreage Factor} = \frac{\text{Productive Acres}}{160} \times (1 - 0.75)$$

<u>Productive Acres</u>	<u>ACREAGE FACTOR</u>	<u>Penalized** Allowable</u>
47.7	0.0745	38 BOPD
59.8	0.0934	48 BOPD
25.5	0.0398	21 BOPD
41.5	0.0648	33 BOPD

* from NMOC Order R-8339

** assuming 515 BOPD Top Allowable

Exxon
/