

BEFORE THE INDUSTRIAL COMMISSION

OF THE STATE OF NORTH DAKOTA

CASE NO. 4279
ORDER NO. 4887

IN THE MATTER OF A HEARING CALLED ON A
MOTION OF THE COMMISSION TO CONSIDER THE
APPLICATION OF CONOCO, INC. FOR AN ORDER
EXTENDING THE FIELD BOUNDARIES OF THE
DICKINSON-HEATH FIELD, LOCATED IN STARK
COUNTY, NORTH DAKOTA, ESTABLISHING A ZONE
OF 160-ACRE SPACING WITHIN SAID FIELD, AND
ENACTING SUCH SPECIAL FIELD RULES AS MAY BE
NECESSARY.

ORDER OF THE COMMISSION

BY THE COMMISSION:

Pursuant to legal notice this cause came on for hearing at 9:00 a.m.
on the 20th day of May, 1987, in Bismarck, North Dakota, before an examiner
appointed by the Industrial Commission of North Dakota, hereinafter referred to
as the "Commission."

NOW, on this 12th day of June, 1987, the Commission, a quorum being
present, having considered the testimony adduced and the exhibits received
at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the
Commission has jurisdiction of this cause and the subject matter thereof.

(2) That there is an accumulation of oil and gas in the Dickinson Field
which is currently referred to by the Commission as the "Heath" Formation.

(3) That the Heath Formation does not exist in the Dickinson Field and
the correct terminology for this producing formation is the "Tyler"
Formation.

(4) That in an effort to more accurately describe the accumulation of
oil and gas in the Dickinson Field, references to the Dickinson-Heath Pool
should be changed to the Dickinson-Tyler Pool.

(5) That applicant is the owner of an interest in oil and gas leasehold
estates in the following tracts of land in Stark County, North Dakota:

TOWNSHIP 140 NORTH, RANGE 96 WEST, 5TH PM
ALL OF SECTION 18, THE S/2 OF SECTIONS 8 AND 9, AND THE NW/4
OF SECTIONS 17 AND 19.

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM
ALL OF SECTION 13 AND THE N/2 OF SECTIONS 23 AND 24.

(6) That applicant is desirous of an order extending the boundaries of
the Dickinson Field to include said lands.

(7) That said lands are within the buffer zone of the Dickinson-Heath
Pool and spacing for such area is one well per 320 acres.

(8) That evidence presented to the Commission relative to the matter of well spacing indicates that the Dickinson-Heath Pool should be developed on a pattern of one well to 160 acres in order to drain efficiently the recoverable oil from said pool, assure rapid development, avoid the drilling of unnecessary wells, and prevent waste in a manner that will protect correlative rights.

(9) That 160-acre spacing in the Dickinson-Heath Pool in this field will result in the efficient and economical development of the field as a whole and will operate so as to prevent waste and provide maximum ultimate recovery, will avoid the drilling of unnecessary wells, and will protect correlative rights.

(10) That under the provisions of Commission Order No. 1382, no well may be located closer than 660 feet from the Dickinson Heath Sand Unit boundary.

(11) That no well in the Dickinson-Heath Pool should be allowed to be located closer than 660 feet from the boundary of the Dickinson Heath Sand Unit.

(12) That there were no objections to this application.

(13) That this application should be granted.

(14) That certain special field rules are necessary to prevent waste and protect against the contamination and pollution of surface lands and fresh waters.

IT IS THEREFORE ORDERED:

(1) That the Dickinson Field is hereby redefined as the following described tracts of land in Stark County, North Dakota:

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM
THE N/2 OF SECTION 5 AND THE NE/4 OF SECTION 6.

TOWNSHIP 140 NORTH, RANGE 96 WEST, 5TH PM
ALL OF SECTIONS 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30,
31, 32 AND 33, THE S/2 OF SECTIONS 8 AND 9, THE SW/4 OF
SECTION 13, AND THE W/2 OF SECTION 27.

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM
ALL OF SECTION 2, THE N/2 OF SECTION 1, THE N/2 AND SE/4 OF
SECTION 3, AND THE NE/4 OF SECTION 4.

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM
ALL OF SECTIONS 13, 23, 24, 25, 26, 27, 33, 34, 35 AND 36, AND
THE SE/4 OF SECTION 22.

together with those additional quarter sections or governmental lots corresponding thereto as may be proven productive by wells drilled on lands within one mile of the boundaries of the field as set forth above, provided further that such extensions of the field boundaries shall include only sufficient acreage to form a spacing unit for such wells, and any intervening lands.

(2) That the Dickinson-Tyler Pool be, and the same is hereby defined as that accumulation of oil and gas found below the base of the Amsden Formation and above the top of the Otter Formation within the limits of the field as set forth above.

(3) That effective this date, the proper spacing for the development of

the Dickinson-Tyler Pool be, and the same is hereby set at one well to 160 acres.

(4) That all wells hereafter drilled to said pool shall be located not less than 500 feet from a spacing unit boundary nor closer than 1650 feet to a well permitted to or producing from the pool. Wells presently permitted to or producing from the pool that do not conform to this spacing pattern shall be considered exceptions.

(5) That all wells hereafter drilled to said pool shall be located at least 660 feet from the Dickinson Heath Sand Unit boundary. Wells presently permitted to or producing from the pool that do not conform to this spacing pattern shall be considered exceptions.

(6) That spacing units for the Dickinson-Tyler Pool shall consist of a governmental quarter section, or lots corresponding thereto, as determined by governmental survey.

(7) That no well shall be drilled hereafter in the Dickinson-Tyler Pool except in conformity with the regulations above without special order of the Commission after due notice and hearing.

(8) That the following rules concerning the casing, tubing and equipping of wells shall apply to the subsequent drilling and operation of wells in the Dickinson-Tyler Pool:

- (a) The surface casing shall consist of new or reconditioned pipe that has been previously tested to 1000 pounds per square inch. The casing shall be set and cemented at a point not less than 50 feet below the base of the Fox Hills Formation. Sufficient cement shall be used to fill the annular space outside the pipe to the surface of the ground or the bottom of the cellar, and sufficient scratchers and centralizers shall be used to assure a good cement job. Cement shall be allowed to stand a minimum of 12 hours before drilling the plug or initiating tests;
- (b) The producing or oil string shall consist of new or reconditioned pipe that has been previously tested to 2000 pounds per square inch. Casing shall be set and cemented at a point not higher than the top of the producing formation. Sufficient cement shall be used and applied in such manner as to adequately protect and isolate all formations containing oil and/or gas, protect the pipe through salt sections encountered, and to isolate the Dakota-Lakota Series. The cement shall be allowed to stand a minimum of 24 hours before drilling the plug or initiating tests. After cementing, the casing shall be tested by application of pump pressure of at least 2000 pounds per square inch. If, at the end of 30 minutes this pressure shall have dropped 150 pounds per square inch or more, the casing shall be repaired. Thereafter, the casing shall again be tested in the same manner. Further work shall not proceed until a satisfactory test has been obtained;
- (c) All well-head fittings and connections shall have a working pressure in excess of that to which they are expected to be subjected; and,
- (d) All wells shall be equipped with tubing; all tubing shall be of sufficient internal diameter to allow the passage of a bottom-hole pressure gauge for the purpose of obtaining

bottom-hole pressure measurements.

(9) That the gas-oil ratio of each well shall be measured during the months of May and November, and the reservoir pressure of flowing wells shall be measured in the months of May and November, and in pumping wells when the rods are pulled but at least once annually and reported to the Enforcement Officer within 15 days following the end of the month in which they are determined. Pressure measurements shall be made at or adjusted to a subsea datum of 5300 feet after the well has been shut in for 48 hours. All gas-oil ratio and reservoir pressure determinations shall be made under the supervision of and by methods approved by the Enforcement Officer. The Enforcement Officer is authorized to waive these requirements if the necessity therefor can be demonstrated to his satisfaction.

(10) That no salt water shall be stored in pits in this field, except in an emergency, and approved by the Enforcement Officer.

(11) That this order shall cover all of the Dickinson-Tyler Pool common source of supply of crude oil and/or natural gas as herein defined, and shall continue in full force and effect until further order of the Commission or until the last well in the pool has been plugged and abandoned.

Dated this 12th day of June, 1987.

INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA

/s/ George A. Sinner
George A. Sinner, Governor

Nicholas J. Spaeth, Attorney General

/s/ Kent Jones
Kent Jones, Commissioner of Agriculture

STATE OF NORTH DAKOTA
COUNTY OF BURLEIGH

AFFIDAVIT OF
MAILING

I, Evie Reisenauer, being duly sworn upon oath, depose and say: That on the 18th day of June, 1987, I enclosed in separate envelopes true and correct copies of the attached Order No. 4887 of the North Dakota Industrial Commission, and deposited the same with the United States Postal Service in Bismarck, North Dakota, with postage thereon fully paid, directed to the following persons, all of whom appeared at the hearing of the Industrial Commission in Case No. 4279:

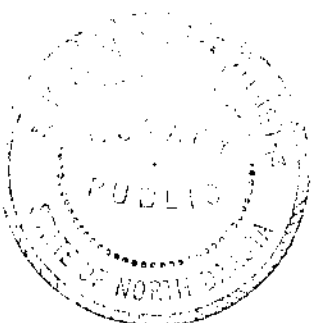
Anton V. Tuhy
Rte 2, Box 23
Dickinson, ND 58601

John W. Morrison
400 East Broadway, Suite 600
PO Box 2798
Bismarck, ND 58502

Evie Reisenauer
Evie Reisenauer
Oil & Gas Division

On this 23rd day of June, 1987, before me personally appeared Evie Reisenauer to me known as the person described in and who executed the foregoing instrument and acknowledged that (s)he executed the same as his/her free act and deed.

Sharon Huttenkust
Notary Public
State of ND County of Burleigh
My Commission expires 5-13-88



CONOCO
EXPLORATION AND PRODUCTION NORTH AMERICA
ECONOMICS OF PETROLEUM INVESTMENT CAPITAL
(EPIC)

PRODUCTION SUMMARY

	GROSS	NET
ESTIMATED PRODUCTION:		
OIL (MBL)	139.	111.
GAS (MMCF)	0.	0.
 TOTAL NET INVESTMENT	 457. (M-\$)	
MAXIMUM CASH EXPOSURE	457. (M-\$)	0 (PERIOD)
TOTAL NET AFIT CASH FLOW	417. (M-\$)	
 PROJECT LIFE	 13 (YEARS)	
YEAR FIRST PRODUCTION	1987 (YEAR)	
MAXIMUM PRODUCING WELLS	1.0	
 INTERNAL RATE OF RETURN	 24.78 (%)	
NET PRESENT VALUE AT 12.00% COST OF CAPITAL	144. (M-\$)	
PROFITABILITY INDEX AT 12.00% COST OF CAPITAL	1.32	
DISCOUNTED PAYBACK PERIOD AT 12.00% COST OF CAPITAL...	3.91 (YEARS)	
CONSTANT PURCHASING POWER RATE OF RETURN	19.06 (%)	

CALENDAR YR END DISCOUNTING BASE CASE PRICE AS OF 04/20/1987

Exhibit No. 2

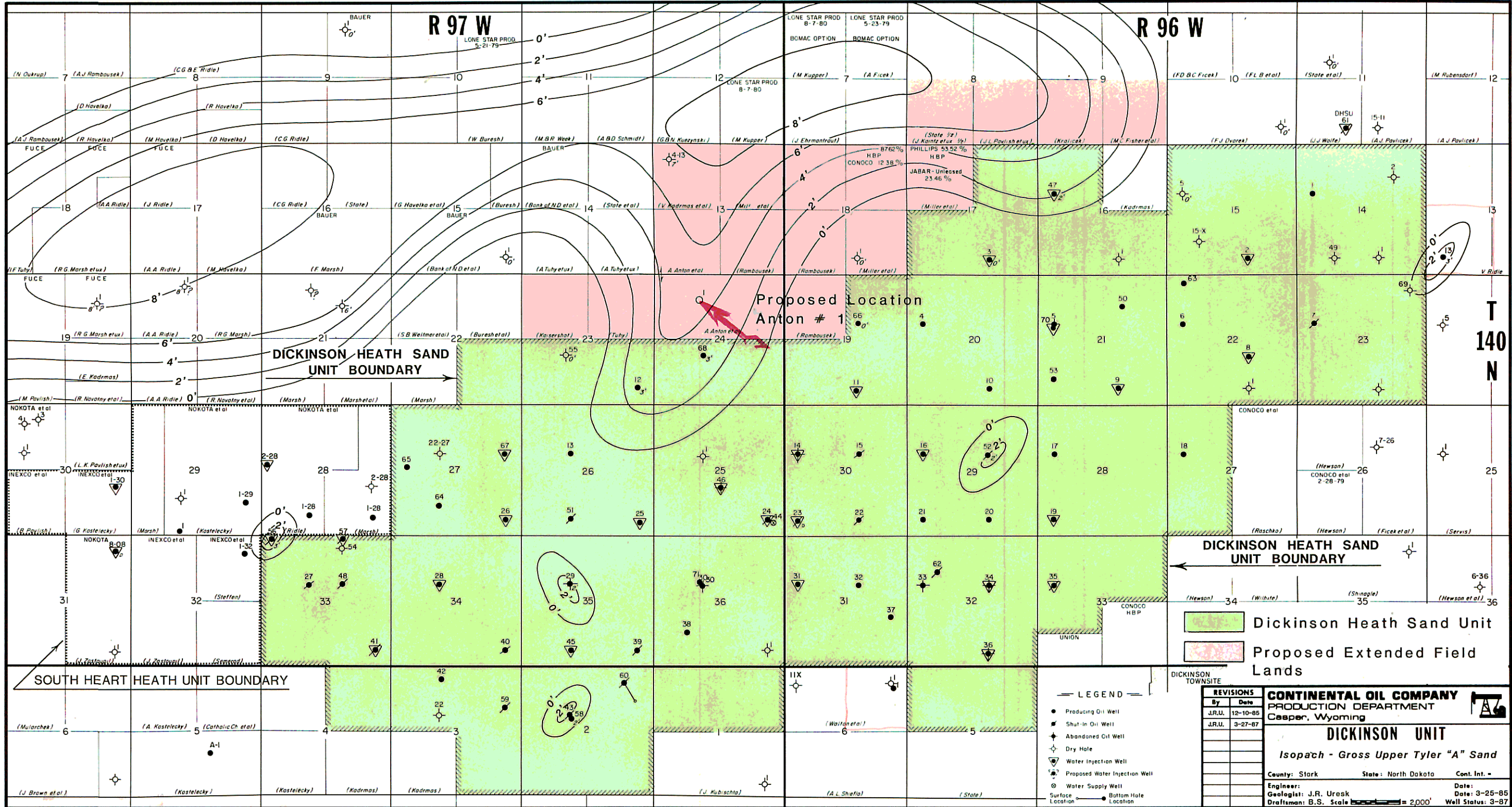
Base Crude Price \$15.75/BO

Probability of Success 75%

D&E TYPICAL WELL
DICKINSON NORTH FIELD
CASE 2 - 160 ACRES

PROJECT PNORTH160
USER SLD
C PROJECT NAP-
DIVISION CASPER

TIME 9:45
DATE 05/01/87
PAGE 1
EFFECTIVE DATE AUG 1987



BEFORE THE INDUSTRIAL COMMISSION
OF THE STATE OF NORTH DAKOTA



IN THE MATTER OF THE APPLICATION)
OF CONOCO, INC. FOR AN ORDER OF)
THE COMMISSION EXTENDING THE OUT-)
LINE OF THE DICKINSON-HEATH FIELD,)
LOCATED IN STARK COUNTY, NORTH)
DAKOTA, ESTABLISHING A ZONE OF)
160 ACRE SPACING WITHIN SAID FIELD,)
AND ENACTING SUCH SPECIAL FIELD)
RULES AS MAY BE NECESSARY.)

APPLICATION

COMES NOW the applicant, Conoco, Inc., and respectfully
alleges as follows:

1. That it is a working interest owner in lands within the
Dickinson-Heath Field and is also a working interest owner in
certain lands lying outside the limits of the Dickinson-Heath
Field, but adjacent thereto.

2. That it is of the opinion that the outline of the field
should be extended to include the following described lands, all
located in Stark County, North Dakota:

Township 140 North, Range 96 West

Section 8: S½
Section 9: S½
Section 17: NW¼

Section 18: all
Section 19: NW¼

Township 140 North, Range 97 West

Section 13: all
Section 23: N½
Section 24: N½

and such other lands as may be determined by the Commission.

1 3. That in its opinion, said lands are reasonably expected
2 to be productive from the same common source of supply as cur-
3 rently produces within the Dickinson-Heath Field.
4

5 4. That applicant is of the opinion that a 160 acre spacing
6 pattern is necessary in the above described lands to protect
7 correlative rights, prevent waste, and prevent the drilling of
8 unnecessary wells. Applicant is further desirous that the
9 Commission establish such special field rules as may be necessary
10 relating to the development of the zone of 160 acre spacing
11 requested hereby.

12 WHEREFORE, the applicant respectfully requests that this
13 matter be set for hearing in May, 1987, and that thereafter the
14 Commission enter its order granting the relief requested.

15 Dated this 23rd day of April, 1987.

16 CONOCO, INC.


17 FLECK, MATHER, STRUTZ & MAYER, LTD.
18 Attorneys for the Applicant
19 400 East Broadway, Suite 600
20 P.O. Box 2798
21 Bismarck, ND 58502

22 BY 

23 JOHN W. MORRISON


24 STATE OF NORTH DAKOTA)
25) ss.
26 COUNTY OF BURLEIGH)

 John W. Morrison, being first duly sworn on oath, deposes
and says that he is the attorney for the applicant herein named,
that he has read the above and foregoing application, knows the
contents thereof, and that the same is true to the best of this
affiant's knowledge, information and belief.


JOHN W. MORRISON

Subscribed and sworn to before me this 23rd day of April,
1987.

(SEAL)


Holly M. Rosenbrook, Notary Public
Burleigh County, North Dakota
My Commission Expires: 5/17/91

HOOLY M. ROSENBR00K
Notary Public, STATE OF NORTH DAKOTA
My Commission Expires MAY 17, 1991

CERTIFICATE OF PUBLICATION
THE DICKINSON PRESS
Dickinson, North Dakota

STATE OF NORTH DAKOTA, }

County of Stark. }

Marilyn Wanner, of said state and county, being first duly

sworn, on oath says: That s he is the Bookkeeper of the Dickinson Press, Inc., publisher of **THE DICKINSON PRESS**, a daily newspaper of general circulation, printed and published at Dickinson, in said county and state, and has been such during the time hereinafter

mentioned; and that advertisement headed _____

Legal--Notice of Publication...Case No. 4279

\$14.85

a printed copy of which is hereunto annexed, was printed and published in **The Dickinson Press**, and in the regular and entire issue of each and

every number 1 consecutive weeks, commencing on the 5th

day of May A.D. 19 87, and ending on the 5th

day of May A.D., 19 87 both inclusive.

Sworn to and subscribed to before me this 6th day of May A.D. 19 87.

Marilyn Wanner
ED J. HAUCK
Notary Public, STATE OF NORTH DAKOTA
My Commission Expires JUNE 7, 1991

PAID

NOTICE OF PUBLICATION
NORTH DAKOTA INDUSTRIAL
COMMISSION

BISMARCK, NORTH DAKOTA

The State of North Dakota by its Industrial Commission hereby gives notice pursuant to law and the rules and regulations of said Commission promulgated thereunder of the following public hearing to be held at 9:00 a.m. on May 20, 1987, Brynild Haugland Room, State Capitol Building, Bismarck, North Dakota. For the purpose of this hearing, the Commission, any member thereof acting as Examiner, or an Examiner appointed by the Commission will receive testimony and exhibits.

STATE OF NORTH DAKOTA TO:

All named parties and persons having any right, title, interest, or claim in the following cases and notices to the public. CASE NO. 4279: ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF CONOCO, INC. FOR AN ORDER EXTENDING THE FIELD BOUNDARIES OF THE DICKINSON HEALTH FIELD, LOCATED IN STARK COUNTY, NORTH DAKOTA, ESTABLISHING A ZONE OF 160-ACRE SPACING WITHIN SAID FIELD, AND ENACTING SUCH SPECIAL FIELD RULES AS MAY BE NECESSARY.

Signed by,
George A. Sinner, Governor
Chairman,
ND Industrial Commission
(Published May 5, 1987)

STATEMENT

The Dickinson Press

"THE VOICE OF TEDDY ROOSEVELT'S WEST"

DICKINSON, NORTH DAKOTA 58601

DATE May 5, 1987

ND Industrial Commission
 State Capitol
 Bismarck, ND
 58505

DETACH THIS STUB AND RETURN WITH YOUR REMITTANCE.

AMOUNT PAID \$

DATE	DESCRIPTION	CHARGES	TAX	CREDITS	BAL.
5-5-87	Legal--Notice of Publication... Case No. 4279	\$14.85			\$14.85
PAID					

STATEMENTS NOT ITEMIZED MORE THAN ONCE.

PAY LAST AMOUNT
IN THIS COLUMN →