

BEFORE THE INDUSTRIAL COMMISSION
OF THE STATE OF NORTH DAKOTA

IN THE MATTER OF THE HEARING CALLED ON A
MOTION OF THE COMMISSION TO CONSIDER THE
APPLICATION OF NORTH AMERICAN ROYALTIES,
INC., FOR A CHANGE IN THE PROPER SPACING
FOR THE DEVELOPMENT OF THE HEATH AND MADISON
POOLS IN THE DICKINSON FIELD, STARK COUNTY,
NORTH DAKOTA.

CASE NO. 566
ORDER NO. 609

ORDER OF THE COMMISSION

BY THE COMMISSION:

Pursuant to legal notice this cause came on for hearing at 9:30 a.m. on January 17th, 1963, at Bismarck, North Dakota before the Industrial Commission of North Dakota, hereinafter referred to as the "Commission".

NOW, on this 5 day of Feb., 1963, 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 geological and engineering evidence presented to the Commission bearing on the matter of well spacing indicates that the Dickinson-Heath and Dickinson-Madison pools, as reclassified and redefined by this order should be developed on a pattern of one well to 160 acres in order to drain efficiently the recoverable oil from said pools, assure orderly and uniform development, avoid the drilling of unnecessary wells, and prevent waste in a manner to protect correlative rights.

(3) That 160 acre spacing in the Heath and Madison Pools 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.

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

IT IS THEREFORE ORDERED:

(1) The Dickinson Field be and the same is hereby reclassified and redefined to include the following described tracts of land in Stark County, North Dakota, to wit:

Township 140 North, Range 96 West, 5th PM
All of sections 31 and 32, and the S/2 of sections 29 and 30.

Township 139 North, Range 96 West, 5th PM
The N/2 of sections 5 and 6.

together with those additional quarter sections or governmental lots corresponding thereto, as may be proven productive by wells drilled as direct offsets to wells included in the limits as set forth above, provided further that such extensions of the pool boundaries shall include only sufficient acreage to form a spacing unit for such wells.

(2) That the Dickinson-Heath pool be, and the same is hereby defined as that common source of supply of crude oil and/or natural gas found below the bottom of the Minnelusa and above the top of the Otter formations within the limits of the Dickinson field as defined in paragraph (1) above, and the Dickinson-Madison pool be and the same is hereby defined as that common source of supply of crude oil and/or natural gas found below the base of the Last Charles Salt and above the top of the Bakken Formation within the limits of the Dickinson Field as defined in paragraph (1) above.

(3) That effective this date 160 acres per well is established as the spacing for the development of the Dickinson Field.

(4) That all wells drilled in the Dickinson field shall be located approximately in the center of the southwest quarter-quarter sections (or governmental lots corresponding thereto), except that the proper location for a well in the SE/4 of Section 31, T. 140 N., R. 96 W., shall be in the NE/4 of that quarter section.

(5) That spacing units consist of any quarter section (or governmental lots corresponding thereto) containing not less than 140 acres as determined by, or in accordance with governmental survey.

(6) That no well shall be drilled or produced in said field except in conformity with the spacing pattern set forth above without special order of the Commission after due notice and hearing.

(7) That the following special field rules be, and the same are hereby enacted and shall apply to the subsequent drilling and operation of wells in the Dickinson Field.

(a) That the casing program of all wells drilled hereafter in said field shall include at least two strings of pipe set in accordance with the following program:

(i) That surface string shall consist of new or reconditioned pipe that has been previously tested to one thousand pounds (1000) per square inch. The casing shall be set and cemented at a point not higher than six hundred (600) feet below the surface of the ground. Cementing shall be by the pump and plug method, and sufficient cement shall be used to fill the annular space back of the pipe to the surface of the ground, or the bottom of the cellar. Cement shall be allowed to stand a minimum of twelve (12) hours before drilling the plug or instituting tests.

(ii) The producing or oil string shall consist of new or reconditioned pipe that has been previously tested to three thousand (3000) pounds per square inch. Cementing shall be by the pump and plug method, and sufficient cement shall be used to fill one and one-half (1 1/2) times the annular space between the shoe

and the top of the Amsden formation, but not less than 300 sacks of cement shall be used, and the cement shall be allowed to stand twenty-four (24) hours before drilling the plug or initiating tests.

(b) The producing or oil string shall be set at least as low as the top of the producing formation. The string shall be tested by either lowering the fluid level or by application of pump pressure. If the test is made by lowering the fluid level, the well shall be bailed dry at least to a point midway to the bottom of the string and the top of the cement behind the string, and shall be allowed to stand a minimum of two (2) hours. If, after that period the fluid level shows a rise equivalent to two (2) per cent of the distance bailed, the string shall be repaired so as to exclude water. Thereafter the casing shall be again tested in the same manner. If the test is made by application of pump pressure, a pressure of at least fifteen hundred (1500) pounds per square inch shall be applied. If, at the end of thirty (30) minutes this pressure drops one hundred and fifty (150) pounds per square inch or more, the string shall be repaired so as to exclude water. 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 christmas tree fittings and well head connections shall have a working pressure greater than any to which they are expected to be subjected.

(d) The gas-oil ratio of each well in the field shall be determined four times annually during the months of February, May, August, and November, and reported to the State Geologist within fifteen (15) days after the end of the month in which they are determined. All measurements shall be made under the supervision of the State Geologist or his designated representative.

(e) Any well with a gas-oil ratio of over two thousand (2000) cubic feet per barrel shall have the allowable oil production adjusted in accordance with Rule 506 in Industrial Commission's Order No. 1, General Rules and Regulations for the Conservation of Crude Oil and Natural Gas for the State of North Dakota.

(f) The reservoir pressure of all flowing wells, and the static and working fluid levels of all pumping wells shall be determined annually during the month of May. The results thereof shall be reported to the State Geologist on or before the 15th of June. All pressure determinations shall be measured at or adjusted to a datum of five thousand three hundred feet (5300) below sea level and after the well has been shut-in for a period of approximately forty-eight (48) hours. All reservoir pressure measurements of fluid level determinations shall be made under the supervision of the State Geologist or his designated representative, and by methods approved by the State Geologist.

(g) Wells in this pool shall be allowed to produce at the rate shown on the gas-oil ratio tests submitted to the State Geologist, provided a market exists for the oil so produced, unless otherwise stated in the applicable proration schedules.

(8) That dual completion of wells between the Heath and Madison common source of supply is authorized subject to the following conditions:

(a) An approved production packer is to be set between the two producing zones in such a manner as to fully isolate one from the other during all producing operations.

(b) The Madison formation is to be produced through a continuous tubing string extending from below the production packer to the surface.

(c) The Heath formation is to be produced through a parallel tubing string extending from within 100 feet of the upper perforations to the surface.

(d) An approved type well-head of a type which allows independent suspension and packing of the tubing shall be used.

(e) All tubing is to be of sufficient size to allow the use of a bottom-hole pressure gauge to obtain bottom-hole pressure measurements.

(9) That this order shall cover all the Dickinson Field, as hereinabove defined, and shall continue in full force and effect until further order of the Commission.

DONE, at Bismarck, North Dakota, this 5 day of Feb., 1963.

THE NORTH DAKOTA INDUSTRIAL COMMISSION



William L. Guy, Governor



Helgi Johanneson, Attorney General



Math Dahl, Commissioner of Agriculture & Labor

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

1201 (4-60)

SYMBOLS

DL=Day Letter

NL=Night Letter

LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

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JAN 15 1962 11:30 PM

K CMA075 PD=CASPER WYO 15 422P MST=

GOV WILLIAM L GUY NORTH DAKOTA STATE INDUSTRIAL COM
STATE CAPITOL BISMARCK NDAK=IREF CASE NUMBER 566 WE CONCUR WITH THE APPLICATION
OF NORTH AMERICAN ROYALTIES OR A CHANGE IN PROPER
APPLICATION=

R H SIMUNICK ATLANTIC REFINING CO

TELEPHONE NO. 1

15 11 30

Time

BY

ATTEMPTS

DELIVER

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

THIS FORM MUST BE FILLED OUT AND HANDED TO THE REPORTER IN
ATTENDANCE AT THE HEARING

STATE INDUSTRIAL COMMISSION

STATE OF NORTH DAKOTA

APPEARANCE

Place Bismarck, N.D. Date JAN 17 1963 Docket No. 566

Name Walter B. Offin vs. _____

Address Bismarck, N.D.

Appearing for North American Payroll, Inc.

THIS FORM MUST BE FILLED OUT AND HANDED TO THE REPORTER IN
ATTENDANCE AT THE HEARING

STATE INDUSTRIAL COMMISSION

STATE OF NORTH DAKOTA

APPEARANCE

Place Bismarck, N.D. Date 1-17-63 Docket No. 566

Name Walter Zraber vs. _____

Address Shreveport, La

Appearing for Placid oil Co & Hunt oil Co,

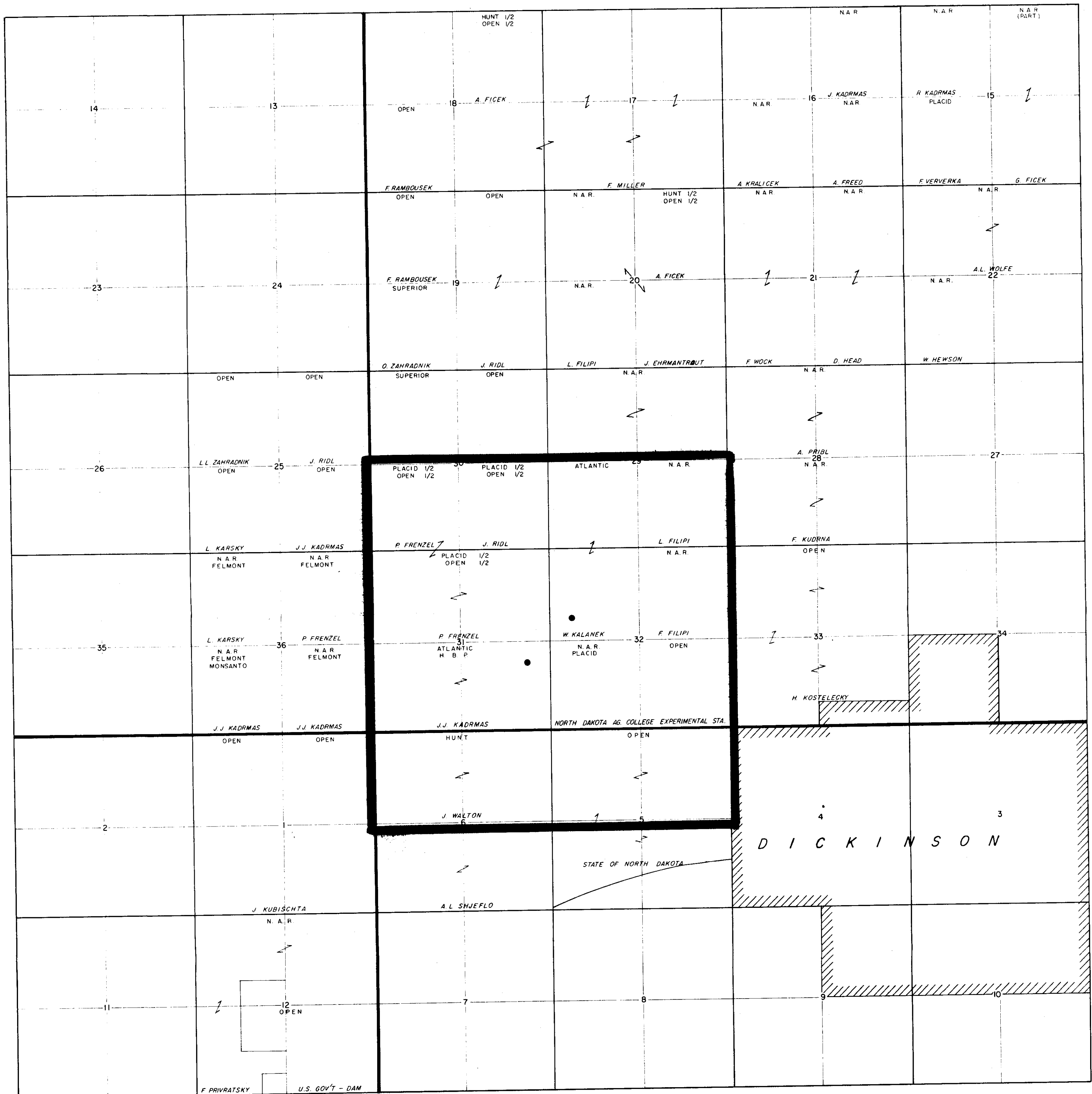
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INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA
JAN 17 1953
Date: _____ Case No. 566
Introduced by: *North American Royalties*
Exhibit: *A*
Identified by: *Mr. D. E. Ewer*

NORTH AMERICAN ROYALTIES, INC.

DICKINSON FIELD

STARK COUNTY, NORTH DAKOTA

SCALE: 3" = 1 MILE

Dec 17 1963 566

TESTIMONY OF HERBERT G. OFFICER
NORTH DAKOTA INDUSTRIAL COMMISSION CASE NO. 566
JANUARY 17, 1963

Identified by M. Deane

THE DICKINSON FIELD, LOCATED APPROXIMATELY TWO MILES NORTHWEST OF THE CITY OF DICKINSON IN STARK COUNTY, NORTH DAKOTA, WAS DISCOVERED BY THE LEACH OIL CORP. ET AL #1 KALANEK AT C-SW-NW SEC. 32-140N-96W. THIS WELL WAS DRILLED TO A TOTAL DEPTH OF 9100', IN THE MADISON FORMATION, AND WAS COMPLETED SEPTEMBER 22, 1957, PUMPING 140 BARRELS OF 25° API OIL, PLUS 10% SALT WATER DAILY. PRODUCTION WAS FROM MADISON PERFORATIONS 8690-8724', 8746-8766' AND 8800-8810', FOLLOWING SEVERAL ACID TREATMENTS. SHORTLY AFTER COMPLETION OF THIS WELL, THE DICKINSON-MADISON FIELD WAS OUTLINED AND TEMPORARY FIELD RULES PRESCRIBED BY INDUSTRIAL COMMISSION ORDER NO. 189. TEMPORARY 80-ACRE SPACING WAS ESTABLISHED FOR DEVELOPMENT OF THE MADISON POOL.

CONFIRMATION WELL FOR THE DICKINSON FIELD, AND THE ONLY OTHER DRILLING TO DATE WITHIN THE FIELD BOUNDARIES, WAS THE ATLANTIC ET AL #1 KADRMAS, C-NE-SE SEC. 32-140N-96W, A DIAGONAL SOUTHWEST OFFSET TO THE #1 KALANEK DISCOVERY. THE #1 KADRMAS WAS DRILLED TO A TOTAL DEPTH OF 8970', IN THE MADISON FORMATION, BUT WAS LOW STRUCTURALLY AND FAILED TO PRODUCE FROM THIS ZONE. A DST 7783-7827' HAD PREVIOUSLY INDICATED COMMERCIAL PRODUCTION FROM A HEATH SAND ZONE. THE #1 KADRMAS WAS COMPLETED JANUARY 29, 1958, PUMPING 300 BARRELS DAILY OF 35° API OIL, NO WATER, FROM HEATH SAND PERFORATIONS 7786-7816' FOLLOWING FRACTURE TREATMENT. INDUSTRIAL COMMISSION ORDER NO. 229 PRESCRIBED TEMPORARY FIELD RULES AND SPACING FOR THE DICKINSON-HEATH POOL OPENED BY THIS WELL. SUBSEQUENTLY, COMMISSION ORDER NO. 348 CONVERTED THE TEMPORARY 160-ACRE SPACING REGULATIONS AND FIELD RULES TO A "PROPER" STATUS.

THE #1 KALANEK WELL PRODUCED INTERMITTENTLY FROM THE MADISON FORMATION, CRUDE OIL EXHIBITING AN 85° POUR POINT AND PRESENTING NUMEROUS PRODUCTION DIFFICULTIES IN VIEW OF THIS CHARACTERISTIC. DURING SEPTEMBER, 1960, HIGH OPERATING COSTS, PLUS LACK OF SATISFACTORY MARKET FOR THE CRUDE OIL, REQUIRED THAT PRODUCTION FROM THE MADISON ZONE BE DISCONTINUED. CUMULATIVE MADISON OIL PRODUCTION FROM THE #1 KALANEK AMOUNTED TO 12,685 BARRELS OIL, PLUS 5,050 BARRELS SALT WATER. THE POOR MARKET OUTLET FOR HEATH PRODUCTION FROM THE #1 KADRMAS LIKEWISE REQUIRED THAT IT BE SHUT IN AT THIS TIME.

DURING THE SUMMER OF 1961, A NEW MARKET WAS NEGOTIATED FOR PRODUCTION FROM THE WELLS. WESTERN CRUDE MARKETERS INC., BEGAN PURCHASING OIL FROM BOTH PRODUCERS, PAYING \$1.73 PER BARREL AT THE TANKS, THE OIL THEN BEING TRANSPORTED BY TRUCK TO BAKER, MONTANA, NEARLY 140 MILES SOUTHWEST, WHERE IT IS BLENDED INTO A LIGHTER CRUDE OIL STREAM AND INJECTED INTO THE BUTTE PIPELINE. IN VIEW OF THIS MORE ATTRACTIVE MARKET OUTLET, THE #1 KALANEK WELL WAS PLUGGED BACK TO A TOTAL DEPTH OF 8600' AND RECOMPLETED THROUGH HEATH PERFORATIONS AT 7824-7861'. FOLLOWING FRACTURE TREATMENT, THE WELL SWABBED 12 BARRELS OIL PER HOUR AND HAS BEEN ON STEADY PRODUCTION SINCE RECOMPLETION. CUMULATIVE HEATH SAND PRODUCTION FROM THE #1 KALANEK TO JANUARY 1, 1963, HAS BEEN 46,640 BARRELS OIL, PLUS 921 BARRELS SALT WATER. CUMULATIVE HEATH SAND OIL PRODUCTION FOR #1 KADRMAS TO JANUARY 1, 1963, IS 69,938 BARRELS OIL, PLUS ONLY 10 BARRELS SALT WATER. THE #1 KALANEK PRESENTLY PUMPS 95 BARRELS OIL DAILY; THE #1 KADRMAS, 50 BARRELS PER DAY.

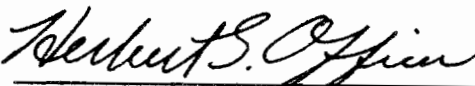
IT IS OUR HOPE TO ENCOURAGE ADDITIONAL DEVELOPMENT DRILLING IN THE DICKINSON FIELDS, BUT EXCESSIVE OPERATING COSTS NECESSITATED BY THE HIGH POUR POINT CRUDE

PRODUCTION HAVE RESTRICTED FURTHER INVESTMENT. THIS, COUPLED WITH THE VERY LOW WELLHEAD PRICE FOR THE CRUDE, HAS PRECLUDED DEVELOPMENT DRILLING TO DATE. AN ADDITIONAL COMPLICATION IS THE FACT THAT DICKINSON-MADISON FIELD RULES PRESCRIBED 80-ACRE SPACING WHEREAS THE DICKINSON-HEATH SAND RULES STIPULATED 160-ACRE SPACING. WE EXPECT FUTURE DEVELOPMENT WELLS TO BE PROJECTED TO THE MADISON FORMATION, IN WHICH CASE THEY SHOULD HAVE THE OPPORTUNITY TO BE COMPLETED AT HEATH DEPTH SHOULD THE MADISON BE NON-PRODUCTIVE. THE SIMPLEST WAY TO ACCOMPLISH THIS WILL BE TO SPACE BOTH HORIZONS ON 160-ACRE SPACING FOR ORDERLY DEVELOPMENT IN EITHER PRODUCTIVE POOL AT THE OPERATOR'S DISCRETION.

TO RELIEVE THE PRESENT SPACING DIFFICULTIES RESULTING FROM TWO DIFFERENT PATTERNS, WE MAKE THE FOLLOWING RECOMMENDATIONS:

1. TEMPORARY FIELD RULES AND REGULATIONS UNDER ORDER NO. 189 WITH RESPECT TO THE DICKINSON-MADISON RESERVOIR BE CONVERTED TO A "PROPER" CLASSIFICATION, WITH THE EXCEPTION THAT THE FIELD SPACING BE REVISED FROM ONE WELL PER 80 ACRES TO ONE WELL PER 160 ACRES; THE PATTERN LOCATION BE IN THE SOUTHWEST GOVERNMENTAL QUARTER-QUARTER SECTION.
2. FIELD RULES AND REGULATIONS FOR THE DICKINSON-HEATH RESERVOIR BE CONTINUED AS PRESENTLY WRITTEN UNDER ORDER NO. 348, WITH THE EXCEPTION THAT PATTERN LOCATIONS SHALL BE IN THE SOUTHWEST GOVERNMENTAL QUARTER-QUARTER SECTIONS. THE #1 KADRMAS SHOULD BE CLASSED AS AN "EXCEPTION" WELL, CONSTITUTING FULL DEVELOPMENT OF THE SE $\frac{1}{4}$ SECTION 31.

WE ASK YOUR FAVORABLE CONSIDERATION OF THESE MINOR REVISIONS IN PRESENT SPACING REGULATIONS.


 HERBERT G. OFFICER

THOMAS W. LEACH
PRESIDENT

HERBERT G. OFFICER
VICE PRESIDENT

NORTH AMERICAN ROYALTIES, INC.

PROVIDENT LIFE BUILDING

P. O. BOX 1476

BISMARCK, NORTH DAKOTA

Case # 566

December 20, 1962



North Dakota State Industrial Commission
State Capital Building
Bismarck, North Dakota

Re: Industrial Commission
Orders #189, 229 & 348
Dickinson Field
Stark County, N. D.

Gentlemen:

Your above described Industrial Commission Orders relate to field rules, well spacing, etc. in connection with the Dickinson-Madison and Dickinson-Heath Fields, located in Townships 139 & 140N-Range 96 W, Stark County, North Dakota. These Orders were issued following completion of the two producers in the field in 1957, and now present certain spacing problems as a result of subsequent developments.

We respectfully request an Industrial Commission hearing during January, 1963, at which time a review of the field spacing for the Dickinson-Heath and Dickinson-Madison reservoirs may be presented, with a view to minor revisions in the present spacing regulations.

Could you please advise me if it will be possible to arrange a hearing in January for this purpose.

Very truly yours,

NORTH AMERICAN ROYALTIES, INC.

Herbert G. Officer

By: Herbert G. Officer

HGO:gt

cc: Dr. Wilson M. Laird