BEFORE THE INDUSTRIAL COMMISSION

OF THE STATE OF NORTH DAKOTA

IN THE MATTER OF THE HEARING CALLED ON THE MOTION OF THE INDUSTRIAL COMMISSION OF NORTH DAKOTA TO CONSIDER THE TEMPORARY SPACING FOR THE DEVELOPMENT OF AN OIL POOL DISCOVERED BY KERR-McGEE OIL INDUSTRIES, INC., IN ITS ARLOT JOHNSON #1 WELL, LOCATED IN NE NW 34-162N-101W, DIVIDE COUNTY, NORTH DAKOTA, PRESCRIBE THE LIMITS OF SAID POOL, AND SUCH SPECIAL FIELD RULES AS MAY BE NECESSARY.

CASE NO. 215
ORDER NO. 236

TEMPORARY ORDER OF THE COMMISSION

BY THE COMMISSION:

Pursuant to legal notice this cause came on for hearing at 9:30 a.m. on May 15, 1958, at Bismarck, North Dakota, before the Industrial Commission of North Dakota, hereinafter referred to as the "Commission".

NOW, on this 21 day of May, 1958, 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:

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 Writing Rock Field, as classified and defined by this temporary order should, for a period not to exceed eighteen (18) months from date of this order, be developed on a patter of one well to 160 acres in order to drain efficiently the recoverable oil from said pool, assure orderly and uniform development, avoid the drilling of unnecessary wells, and prevent waste in a manner to protect correlative rights.

(3) That a temporary 160 acre spacing in the Ordovician 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.

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

IT IS THEREFORE ORDERED:

(1) That the Writing Rock-Ordovician Pool discovered by Kerr-McGee Oil Industries Inc., #1 Arlot Johnson well, located in the NE NW 34-162N-101W, Divide County, North Dakota, is hereby classified and defined as that common source of supply of crude oil and natural gas found in the Red River formation, in and under the following described tracts of land in Divide County, North Dakota, to wit:

Township 161 North, Range 101 West, 5th PM
All of sections 2, 3, and 4.

Township 162 North, Range 101 West, 5th PM
All of sections 26, 27, 28, 33, 34, and 35.

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 effective this date 160 acres per well is established as the temporary spacing for the development of the Writing Rock - Ordovician Pool.

(3) That all wells drilled in the Writing Rock-Ordovician Pool shall be located approximately in the center of the northeast quarter-quarter sections (or governmental lots corresponding thereto).

(4) 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.

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

(6) 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 Writing Rock-Ordovician Pool.

(a) That the casing program of all wells drilled hereafter in said pool 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 Ashern formation, but not less than 250 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) percent of the distance bailed the string shall be repaired so as to exclude water. Thereafter the casing shall again be 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 of at least five thousand (5000) pounds per square inch or a test pressure of at least ten thousand (10,000) pounds per square inch.

(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 semi-annually during the months of May and November. The results thereof shall be reported to the State Geologist on or before the 15th of the month following the month in which the measurements were made. All pressure determinations shall be measured at or adjusted to a datum of nine thousand and fifty feet (9050) below sea level and after the well has been shut in for a period of approximately forty-eight (48) hours. All reservoir pressure measurements, or 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.

(7) That this order shall cover all the Writing Rock - Ordovician common source of supply of crude oil and natural gas, as herein above defined, and shall continue in full force and effect for 18 months from the date hereof.

DONE, at Bismarck, North Dakota, this 31 day of May, 1958.

THE NORTH DAKOTA INDUSTRIAL COMMISSION

John E. Davis, Governor

Leslie R. Burgum, Attorney General

Math Dahl, Commissioner of Agriculture & Labor

#213 JUN 3 1958

May 29, 1958

Mr. George N. Lund
The First National Bank
Reserve, Montana

Dear Mr. Lund:

Acknowledgment is made of your letter of May 27, addressed to the chairman of the Oil Conservation Committee.

I am not the chairman of this committee. The governor of the state is and of course he is located in Bismarck. However, I am sending a copy of your letter to him for his consideration. The Commission now has the application for the Writing Rock Field under consideration, and I do not know what the decision will be relative to this matter at the moment.

Thank you for writing.

Very truly yours,

Wilson M. Laird
State Geologist

WML:mjs

cc: Governor

93-424

THE FIRST NATIONAL BANK

CAPITAL FUNDS OVER $200,000.00

GEO. N. LUND, PRESIDENT
HAROLD EVERSON, VICE PRES.

P. T. HOLM, CASHIER
OLIVE HANSEN, ASST. CASHIER

RESERVE, MONTANA

May 27, 1958

Chairman
Oil Conservation Committee
North Dakota Industrial Commission
Grand Forks, North Dakota

Dear Sir:

Re: Writing Rock Field No. 2

I understand that you have under consideration the spacing requirements in the field above referred to, one of the Kerr-McGee is the discovery well. It happens that I am interested in this field through the holding of acreage, being the only one I own in North Dakota and would like to urge that you require 80 acre spacings. I feel that the state, the land owner, and eventually the companies will profit more than if a 160 acre is allowed.

I hope, under the circumstances, that you will give consideration to an 80 acre spacing regulation.

Yours very truly,

Geo. N. Lund

GNL:ep

COPY COPY

May 26, 1958

Mr. John H. Kemp
Peterson Building
Plentywood, Montana

Dear Mr. Kemp:

Acknowledgement is made of your letter of May 19th addressed to the State Industrial Commission relative to the matter of the spacing in the Writing Rock field in Divide County, North Dakota. This letter will be placed before the Commission for their information when they come to decide this particular case.

Thank you for writing us.

Very truly yours,

Wilson M. Laird
State Geologist

WML:jjs

cc: Gov. Davis.

May 26, 1958

Honorable John E. Davis
Governor of North Dakota
State Capitol Building
Bismarck, North Dakota

Dear Governor Davis:

I am sending you herewith the letter which was addressed to the Industrial Commission and was forwarded to me for reply by Mr. Mohn. I would suggest that you place this in the hearing file on the case relative to the Writing Rock field. I think that you will find that the order that we have written gives them 160 acre spacing on a temporary basis.

Kindest personal regards, I remain

Very truly yours,

Wilson M. Laird
State Geologist

WML:jjs

Enc.

JOHN H KEMP
Oil Properties
PHONE 3-3288 - BOX 781
Billings, Montana
GLENDIVE, MONTANA

May 17, 1949

North Dakota Industrial Commission
Oil and Gas Division
Grand Forks, North Dakota

Gentlemen:

The Haystack-Pleistocene Information has stated that the operators of the #1 Arlet Johnson discovery have requested 320 acre spacing for Nine (9) sections of land designated as the Wedding Rock Field of Divide County, North Dakota.

In as much as the operator, namely Kerr-McGee Oil Industries, Inc., had great difficulty in completing the well and did so after thirty six days from the time their rig moved on, we as royalty owners feel that this test and the resulting potential gauge is not a true and accurate gauge of the existing reservoir conditions.

Realizing that the request you have received is for "temporary" spacing, we feel that this is not the time to designate any spacing and that the entire issue is premature. Since three companies participated in the drilling of this first well under what we understand to be a operating unit consisting of 960 acres, we would like at this time to request that you delay designating a spacing pattern until a confirmation well is drilled.

Thank you very kindly for your consideration.

Sincerely,

John H. Kemp

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

1220 (R 11-54)

SYMBOLS
DL=Day Letter
NL=Night Letter
LT=International Letter Telegram

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

MA081

1958 MAY 20 PM 1 25

M DVA122 DL PD=FAX DENVER COLO 20 1140AMM=

:DR WILSON M LAIRD STATE GEOLOGIST=

NORTH DAKOTA GEOLOGICAL SURVEY UNIVERSITY STATION

GRAND FORKS NDAK=

:RE: CASE NO. 215 - TEMPORARY SPACING ORDER WRITING ROCK FIELD, DIVIDE COUNTY, NORTH DAKOTA.

- q UNITED STATES SMELTING REFINING AND MINING COMPANY IS A MINERAL OWNER UNDERLYING OFFSETTING ACREAGE TO THE KERR MCGEE OIL INDUSTRIES INC. NO. 1 ARLOT JOHNSEN, DISCOVERY WELL, WRITING ROCK FIELD, WHICH ACREAGE IS INTENDED WITHIN PROPOSED FIELD LIMITS OF THE WRITING ROCK FIELD. IT HAS JUST COME TO OUR ATTENTION THAT 320 ACRE SPACING HAS BEEN PROPOSED FOR DEVELOPMENT OF THIS FIELD, AND IN VIEW OF THE LOW POROSITIES AND PERMEABILITIES REPORTED FOR THE ABOVE NAMED DISCOVERY WELL, IN OUR OPINION ONE WELL WILL NOT ADEQUATELY DRAIN 320 ACRES. WE THEREFORE RESPECTFULLY RECOMMEND TO THE COMMISSION THAT 80 ACRE SPACING BE ESTABLISHED FOR THIS FIELD, WHICH WOULD BE MORE IN ACCORD WITH DEVELOPMENT PATTERNS OF OTHER FIELDS WITHIN THE WILLISTON BASIN, WHICH PRODUCE FROM THE RED RIVER FORMATION=

GEORGE S ANDERSON MANAGER DENVER

OIL OPERATIONS UNITED STATES SMELTING REFINING & MINING CO==

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Case # 215

MAY 28 1958

JOHN H. KEMP

Oil Properties

PHONE 9-3255 P. O. BOX 783

Billings, Montana

PLENTYWOOD, MONTANA

PLEASE REPLY TO
PETERSON BUILDING
PLENTYWOOD, MONTANA

May 19, 1958

North Dakota Industrial Commission
Oil and Gas Division
Grand Forks, North Dakota

Gentlemen:

The May 16th "Petroleum Information" has stated that the operators of the #1 Arlot Johnson discovery have requested 320 acre spacing for Nine (9) sections of land designated as the "Riding Rock" field of Divide County, North Dakota.

In as much as the operator, namely Kerr-McGee Oil Industries, Inc., had great difficulty in completing this well and did so after thirty six days from the time their pipe was set, we as royalty owners feel that this test and the resulting potential guage is not a true and accurate guage of the existing reservoir conditions.

Realizing that the request you have received is for "temporary" spacing, we feel that this is not the time to designate any spacing and that the entire issue is premature. Since three companies participated in the drilling of this first well under what we understand to be a operating unit consisting of 960 acres, we would like at this time to request that you delay designating a spacing pattern until a confirmation well is drilled.

Thank you very kindly for your consideration.

Sincerely,

John H. Kemp

WRITING ROCK

Case #215
May 15,1958

Exibit #1 Schlumberger Laterolog
with all informa ion on well log
Exibit #2 Well Data, Casing Perforation test

" #3 Contour Map Top Charles, Lease ownership map
Several Letter and Telegrams

EXHIBIT NO. 2

INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA
Case No. 215
Date MAY 15 1958
Introduced by Kess-McAlee
Exhibit 2
Identified by

WELL DATA

Spudded: October 1, 1957

Set 10-3/4" OD 32.75#/Ft. H40 Casing at 661' with 650 sacks cement.

Total Depth: 11,782'

Set 5-1/2" OD 17, 20 and 23#/Ft., LT&C N-80 at 11,780' with 835 sacks cement.

Completion Interval: 11,256-80' and 11,312-26', Red River Formation

2-7/8" OD Tubing hung at 7040'.

Completion Test: April 21, 1958 Pumped 152 BOPD and 102 BWPD with 750 CF per bbl. GOR, 37.7° API.

CASING PERFORATION TESTS

No. 1 - Winnipeg Sand, 11,746-60'. Swabbed 1-3/4 BSWPH, Squeezed with 55 sx at 4000 PSI.

No. 2 - Red River, 11,371-90'. Acidized with 1000 gal. 15%. Swabbed approximately 6 BOPH with 55% salt water from 6200'. Squeezed with 72 sx at 3200 PSI.

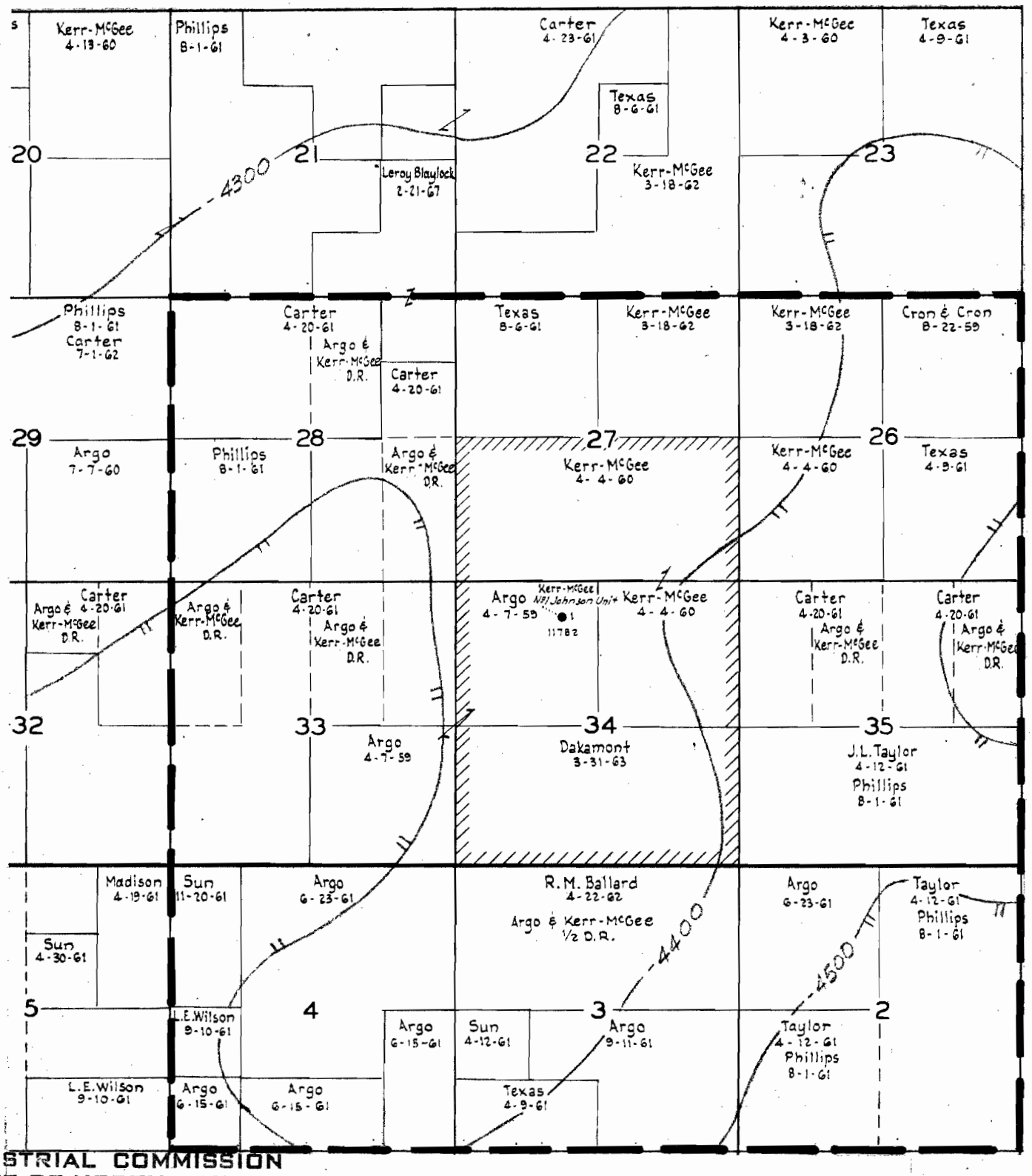
No. 3 - Red River, 11,336-46' and 11,305-26'. Acidized with 1000 gal. 15%. Swabbed 18.5 BOPH with 18% salt water for 12 hours from 5400'.

No. 4 - Red River, 11,256-91'. Set bridge plug below perforations and swabbed approximately 5 BOPH with 43% salt water for 10 hours. Squeezed perforations No. 3 and No. 4 with 140 sacks at 4500 PSI.

No. 5 - Red River, 11,256-80' and 11,312-26' (final perforations). Swabbed 8 BOPH with 15% water for 5 hours from 10,500'. Acidized with 500 gal. 15%. Swabbed 7.3 BOPH with 50% water for 8 hours from 7000' then flowed 2.3 BOPH with .4% water on 12/64" choke with 75-125 FTP for 8 hours. Shut in to move rig. Later opened on 1/4" choke with 625 PSI SIP, flowed one hour and died.

EXHIBIT # 3

R. 101 W.



INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA

Date MAY 15 1958 Case No. 215

Introduced by Kerr-McGee

Exhibit 3

Identified by CBT

PROJECT 456

JOHNSON UNIT

DIVIDE COUNTY, NORTH DAKOTA

SCALE: 2" = 1 MILE

DATE: 4-20-58

/// Working Interest Unit

▬▬ Proposed Drilling & Spacing Units - Red River

Contoured on Top Charles Fm.
Contour Interval: 100'

ARGO OIL CORPORATION
1700 BROADWAY
DENVER 2, COLORADO

R. R. ULLSTROM
VICE PRESIDENT, PRODUCTION

May 12, 1958

Re: Kerr-McGee Oil Ind., Inc.
No. 1 Johnson Unit
CNENW Section 34-162N-101W
Divide County, North Dakota

Dr. Wilson M. Laird
State Industrial Commission
Capital Building
Bismark, North Dakota

Dear Dr. Laird:

With reference to the spacing and field rules hearing for the above subject well and area, please be advised that the Argo Oil Corporation will support the testimony that Kerr-McGee Oil Industries, Inc., is to present at the May 15, 1958, hearing.

Argo Oil Corporation approves the 320 acre temporary spacing with wells to be located near the center of the $W\frac{1}{4}$ section of the $N\frac{1}{2}$ and near the center of the $E\frac{1}{4}$ section of the $S\frac{1}{2}$ of each section with a tolerance of 150'.

The Argo Oil Corporation has a 25% interest in the above subject well and has various interests in other acreage included in the proposed nine section arbitrary area.

Yours very truly,

R. R. Ullstrom

RSP:bm
cc: Dakamont Exploration Corporation
1077 San Jacinto Building
Houston 2, Texas

Kerr-McGee Oil Industries, Inc.
Kerr-McGee Building
Oklahoma City 2, Oklahoma

RECEIVED
MAY 15 1958
North Dakota Geological Survey
GRAND FORKS, N. DAK.