

ANNUAL SECONDARY RECOVERY AND REPRESSURING QUESTIONNAIRE (1976)

Please return to: Kansas Geological Survey, 1930 Ave. A - West Campus
Lawrence, KS 66044

(Records will be permanently filed with Conservation Division, State
Corporation Commission of Kansas, 245 North Water, Wichita, KS 67202

FEB 22 1977

FIELD NAME: Westhusin; OPERATOR NAME: Murfin Drilling

PREVIOUS OWNER, IF PROPERTY WAS PURCHASED: _____

TYPE OF PROJECT (Please check one):

☐ Controlled Waterflood (W) ☐ Dump Flood (D) ☐ Air Injection (A)
☒ Pressure Maintenance (P) ☐ Steam Flood (S) ☐ Fire Flood (F)

PROJECT OR UNIT NAME: Hrabe Waterflood KCC NUMBER: C-17200

IS PROJECT UNITIZED? No

LEASE NAME AND LEGAL DESCRIPTION:

LEASE NAME AND LEGAL DESCRIPTION:	S.	T.	R.	County
Hrabe "A" SW/4	1	9s	17W	Rooks
Hrabe "B" W/2 NW/4	1	9s	17W	Rooks
Hrabe "C" E/2 NW/4	1	9s	17W	Rooks

CURRENT ACREAGE IN PROJECT: 160; DEPLETED ACREAGE: 0

OIL PRODUCING ZONE:

Name: LKC Depth to top: 3150 ft.; Thickness: 15 ft.

OIL PRODUCING WELLS (in 1976):

Avg. number producing: 7; Inactive: 0;
Number drilled: 0; Abandoned: 0.

INJECTION WELL DATA (for 1976):

Has injection been continuous? Yes X; No _____. If not, explain _____

Avg. number now injecting: 1; Inactive: 0;
Number drilled: 0; Abandoned: 0.
Pattern of injection wells (Please check one -- See pattern below):
☐ 4-spot ☐ 5-spot ☐ 7-spot ☐ Line drive (Line)
☐ Peripheral or perimeter (Peri) ☒ Irregular or random (Irreg)

○	○	○	○	○	●	●	●	●	●
●		●		○	●	○		○	○
○	○		○	○	○	○	○	○	○
○	○		○	○	○	○	○	○	○
4-spot	5-spot		7-spot		Line drive				

KEY: ● - oil well; ○ - water input

Avg. well-head inj. pressure, Gray psi; water inj., 75 bbls;
or air or gas injected, _____ MCF, per well, per day. (Over)

CO-11F-1977

SOURCE OF INJECTED WATER:

Produced water: ☒ Yes ☐ No ☐ Part

Water source other than produced water:

Formation, zone, or source: _____

Depth to top: _____ ft.; Thickness: _____ ft.

TYPE OF INJECTED WATER (Please check one):

☐ Fresh (F) ☐ Mixture of fresh water and brine (M)
☒ Treated brine (T) ☐ Untreated brine (U)
☐ Special additive (Surfactant (S), Polymer (P), Micellar Solution (MS), etc. Indicate type of additive.)

DATE OF FIRST INJECTION, Month: _____ Year: 1974.GIVE PRINCIPAL OIL PRODUCTION MECHANISM Before SECONDARY RECOVERY OR REPRESSURING EFFORT (Please check one):

☐ Water drive (Wat) ☐ Gas expansion (or gas cap) drive (Gas Exp)
☒ Solution gas drive (S Gas) ☐ Gravity drainage (Grav)
☐ Other, or combination of above (please list): _____

GIVE OIL-WATER RATIO PRIOR TO START OF FLOOD: Oil 1; Water 4OIL GRAVITY: 36 API°; OIL VISCOSITY, cp @ 60°F.: ?

PRODUCTION AND INJECTION DATA - 1976

(Enter a zero if no oil was produced, and if no water or gas was injected. Estimate production and injection data if records are incomplete.)

	1976	Cumulative
Fluid injected or dumped into producing zone (bbls):	27,375	78,475
Gas or air injected into producing zone (MCF):		
Oil production from project area (bbls):	9,196	229,295
Amount attributed to enhanced recovery methods (bbls):		

Name, title, and address of person completing this questionnaire:

Name: Larry M. Jack; Title: Production EngineerCompany: Murfin DrillingStreet, RFD, or Box No.: 617 Union CenterCity: Wichita; State: Kansas Zip: 67202Date: February 3, 1977

MURFIN
DRILLING
COMPANY



CONTRACTORS AND PRODUCERS

January 18, 1974

State Corporation Commission
Conservation Division
P. O. Box 17027
3830 South Meridian
Wichita, Kansas 67217

RECEIVED
STATE CORPORATION COMMISSION
JAN 21 1974
CONSERVATION DIVISION
WICHITA, KANSAS

Attention: Mr. Frank Broadfoot

RE: Westhusin Field
Hrabe "A", "B", "C" Leases
Form CO-11

Gentlemen:

Attached please find an amended original and two copies of the first page of the above referenced Application.

Paragraph 7 is being amended to delete "Dakota" and substitute "Permian and Pennsylvanian brines". It is our understanding that Mr. George P. Crawford will withdraw his objection to this Application due to this amendment.

By copy of this letter, we are furnishing an amended first page to the current offset operators. Please note that we have been advised that Krueger Oil Company no longer operates properties within 1/2 mile of the lease boundaries.

Sincerely,

MURFIN DRILLING COMPANY

James R. Daniels

JRD/rml

cc: George P. Crawford, P. O. Box 93, Natoma, Kansas
Sierra Petroleum Co., Inc., 211 N. Broadway, Wichita, Kansas 67202
Terra Resources, Inc., 5416 S. Yale, Tulsa, Oklahoma 74135

FORM CO-11

**APPLICATION FOR FLUID REPRESSURING AND WATER FLOODING
OF PRODUCING FORMATIONS**

TO

STATE CORPORATION COMMISSION,
CONSERVATION DIVISION,
P. O. Box 17027
3830 S. Meridian
Wichita, Kansas 67217

Field Name..... Westhusin

Lease Owned by..... Murfin Drilling Company, et al

Lease or Unit Name..... Hrabe "A", "B", "C"

Legal Description of lease or unit.....
..... W/2

of Sec..... 1 Twp..... 9S Rge..... 17 (X) (W)

County..... Rooks , Kansas.

Application for a Fluid Repressuring and Water Flooding Order under Rules 82-2-500-505, of the Commission's General Rules and Regulations is herein submitted in triplicate as follows:

1. Production map showing all wells and leases within one-half mile radius of the lease boundaries as described above is attached.
2. It is desired to repressure the Lansing-Kansas City formation with perforations ~~open hole~~ from a depth of 3120 feet to a bottom depth of 3336 feet.
3. Repressuring is desired to be made into well No. "C" 1, located 330 feet from the south line and 990 feet from the east line of the NW/4 of Sec. 1, Twp. 9S, Rge. 17 (X) (W), in Rooks County, Kansas, (a) and into any well or wells on or that may be drilled on the above described leases.
4. Elevations as required under Rule 82-2-502 "B" are:
(a) Shown on the production map; (sub-sea)
~~(b) Shown on a schedule attached~~
~~(c) Not available~~
5. Repressuring well log(s) as required under Rule 82-2-502 "B":
(a) Attached;
~~(b) To be filed on completion of repressuring well(s)~~
6. Casing information as required under Rule 82-2-501 is as follows:

SIZE	TOTAL LENGTH	SEAT DEPTH	CONDITION	CEMENTED OR MUDDIED	ESTIMATED FEET ENCASED CEMENT	NUMBER SACKS CEMENT USED
8 5/8"	166'	169'	good	cemented	166' (circ. to surf)	135
5 1/2"	3427'	3424'	good	cemented	3424'	150 + 600 sacks squeezed

7. Liquid desired to be used for repressuring is (salt) ~~(fresh)~~ water produced or obtained from Permian & Pennsylvanian brines and recycled water from any well or wells on or that may be drilled on the following described leases: (formation/s)

LEASE OWNER	NAME OF LEASE	DESCRIPTION OF LEASE	
Murfin Drilling Co.	Hrabe "A"	SW/4 Sec. 1-9S-17W	Lansing-K.C.
Murfin Drilling Co.	Hrabe "B"	W/2 NW/4 Sec. 1-9S-17W	Lansing-K.C.
Murfin Drilling Co.	Hrabe "C"	E/2 NW/4 Sec. 1-9S-17W	Lansing-K.C.

estimated at 25 barrels per day, per well, minimum to 500 barrels per day, per well, maximum, to be introduced at gravity pressure at the well head:

(a) or if necessary at 50 pounds minimum pressure to 1000 pounds maximum pressure at the well head.

copy of this application with map attached, has been mailed or personally delivered to all operators of producing or drilling wells within one-half mile radius from:

- (a) input well; (if only one well is to be used for input).
- (b) the boundaries of the leases described in Paragraph 3; (if more than one input well is to be used).

OFFSET OPERATOR'S CORRECT NAME

MAILING ADDRESS

George P. Crawford
Sierra Petroleum Company
Terra Resources, Inc.
Krueger Oil Company

P. O. Box 93, Natoma, Kansas
211 North Broadway, Wichita, Kansas 67202
5416 South Yale, Tulsa, Oklahoma 74135
209 Circle Drive, Hays, Kansas 67601

- 9. Regulations on HEARINGS UPON OBJECTIONS OR COMPLAINTS, are made a part of this application and are listed at the bottom of this page.
- 10. The Order requested by this application will not become fully effective until the following has been received by the Conservation Division:
 - (a) a complete formation log of the input well or wells
 - (b) complete casing and cementing information
 - (c) notification of the date water was first injected.
- 11. Supplemental information:

Injection to be through tubing and packer

I hereby certify that the statements herein are true and correct to the best of my knowledge and belief.



[Signature]
Applicant or Duly Authorized Agent

James R. Daniel

Subscribed and sworn to before me this 31st day of October, 1973

[Signature]
Barbara Cole

Notary Public.

My Commission expires September 5, 1976

Address all correspondence to: Murfin Drilling Company

Address: 617 Union Center, Wichita, Kansas 67202

REGULATIONS ON HEARINGS UPON OBJECTIONS OR COMPLAINTS

Rule 82-2-502

- "F" Objections or complaints, stating the reasons why the proposed plan as contained in the application may cause damage to oil, gas, or fresh water resources must be filed within ten days after the application is filed.
- "G" In the event any such objection or complaint is filed or the Commission on its own motion deems that there should be a hearing on the application, a hearing shall be had after reasonable notice of the time, place and subject matter of such hearing has been given to the parties in interest.
- "H" Orders approving the flooding plan will not be made within ten days of the filing of the application unless the written consent of all persons entitled to notice is filed with the Commission within such time.

Note: Complete Rules and Regulations for Fluid Representing and Water Flooding are printed on the reverse side of this sheet.

SUPPLEMENT TO REPRESSURING APPLICATION

Form No. CO-11B
(Revised April, 1973)

TO:

STATE CORPORATION COMMISSION
CONSERVATION DIVISION
P. O. Box 17027
Wichita, Kansas 67217FIELD NAME WesthusinLEASE OPERATOR Murfin Drilling CompanyLEASE OR UNIT NAME Hrabe "A", "B", "C"

LEGAL DESCRIPTION OF LEASE OR UNIT _____

W/2of Sec. 1, Twp. 9S, Rge. 17WCOUNTY, Rooks, KANSAS.

1. Present daily oil production of lease or unit from formation to be repressured.
35 barrels.
2. Number of presently producible wells on lease or unit producing from formation to be repressured. 8 wells. (Include the well to be used as input, if producing or dry and abandoned.)
3. Number of injection wells ultimately to be used in repressuring the lease or unit.
2 wells.
4. Number of wells, completed in formation to be repressured, to be converted to input wells. 2 wells.
5. Number of wells to be drilled for input wells. 0 wells.
6. Number of oil wells to be drilled to formation to be repressured on lease or unit.
0 wells.
7. Estimate of maximum daily oil production on lease or unit from formation to be repressured. 150 barrels.
8. Project will ultimately be: a five spot _____, a peripheral _____, or an irregular X flood.
9. Supplemental information for additional producing formations other than formation to be repressured.

FORMATION NAMENUMBER OF PRODUCIBLE WELLSDAILY OIL PRODUCTION

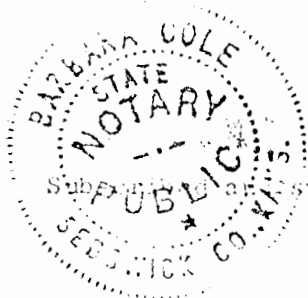
None

None

None

NOTE: If estimated maximum daily average oil produced per well is more than 50 barrels, this application will be set for Hearing.

I hereby certify that the statements herein are true and correct to the best of my knowledge and belief.

James R. Danie
Applicant or Duly Authorized Agent James R. DanieSubscribed and sworn to before me this 31st day of October, 1973Barbara Cole
Barbara Cole Notary PublicMy Commission expires September 5, 1976Address all correspondence to: Murfin Drilling CompanyAddress: 617 Union Center, Wichita, Kansas 67202

WELL LOG

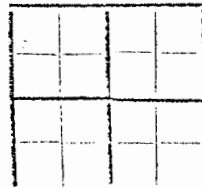
COMPANY Murfin Drilling Co. - R. A. Comeau

SEC. 1 T. 9S R. 17W

FARM HRABE "C" NO. One

LOC. SW SE NW

TOTAL DEPTH 3425'
COMM. 8/3/62 COMP. 8/10/62
SHOT OR TREATED No
CONTRACTOR Murfin Drilling Company - Rig #8
ISSUED

COUNTRY Rooks
KANSAS

CASING

20 10
15 8 5/8" 169' with 135 sacks.
12 6
13 5 1/2" 3425'

ELEVATION 1981' KB

PRODUCTION Oil

FIGURES INDICATE BOTTOM OF FORMATIONS

40' Clay
169' Shale
870' Shale & Shells
980' Sand
1270' Red Bed & Shale
1306' Anhydrite
1815' Shale - Shells
1925' Shale - Lime
2466' Lime & Shale
2920' Shale & Lime
3085' Lime
3165' Lime & Shale
3425' Lime
3425' Rotary Total Depth

ELECTRIC LOG TOPS:

Anhydrite	1270'	+711
Base/Anhydrite	1306'	+675
Topeka	2866'	-885
Heebner	3081	-1100
Toronto	3102'	-1121
Lansing/Kansas City	3122'	-1141
Base/Kansas City	3347'	-1366'
Conglomerate	None	
Arbuckle	Not Reached	
Total Depth	3425'	

DST #1 3147'-3220' Open 1 hr. Recovered
120' mud, scum of free oil, considerable oil
in tool. FBHP 900#/20 min. IBHP 1000#/20 min.

DST #2 3288'-3345' Open Recovered
120' mud, show of free oil. IBHP 850#/20 min.
FBHP 800#/20 min.

State of Kansas
County of Sedgwick } ss:

I, Fred Murfin of the Murfin Drilling Company

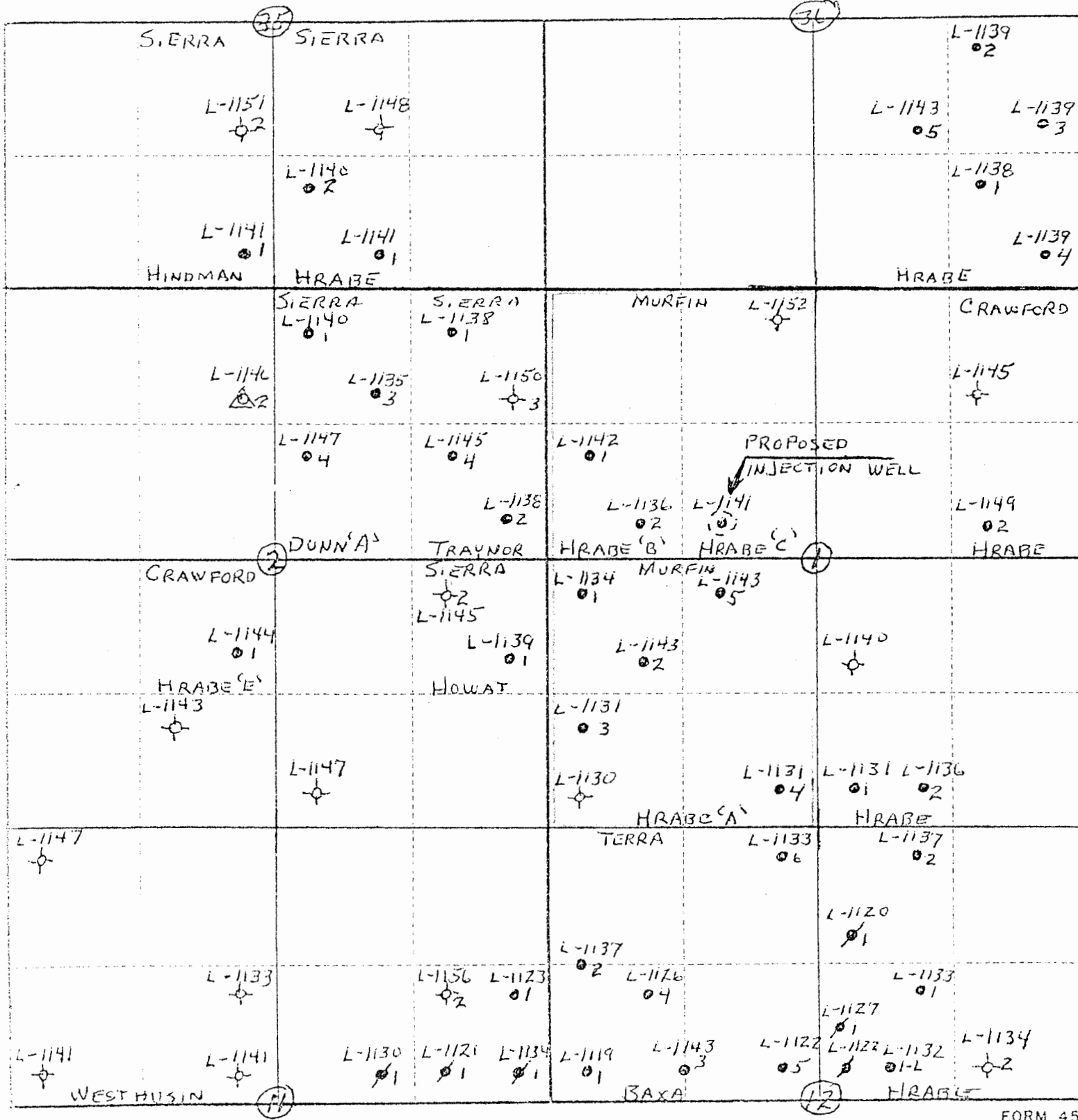
upon oath state that the above and foregoing is a true and correct copy of the log of the HRABE "C" #1 well.

Subscribed and sworn to before me this 14th day of August 1962

My Commission Expires: June 14, 1964

Fred Murfin
May Ann Blum
NOTARY PUBLIC

Township 8S&9S Range 17 W County ROCKS State KANSAS



BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

Before Commissioners: Dale E. Saffels, Chairman
Jules V. Doty
Vernon A. Stroberg

In the matter of the application of the)
MURFIN DRILLING COMPANY, ET AL for an) DOCKET NO. 99,991-C
order permitting the repressuring with) (C-17,200)
salt water into their Well No. "C"-1)
which is on their HRABE "A", "B", AND)
"C" LEASES, covering the W/2 of Section)
1, Township 9 South, Range 17 West) CONSERVATION DIVISION
in the) PERMITTING:
WESTHUSIN FIELD)
in)
ROOKS COUNTY, KANSAS) REPRESSURING WITH SALT WATER

O R D E R

Now on this 6th day of March, 1974, the above-entitled matter comes before the Commission for further consideration and disposition. The Commission, having examined the application and recommendations thereon, and being advised of field conditions, finds:

THE COMMISSION FINDS: (1) That the production map shows the proposed repressuring well is located in the Westhusin Field;

(2) That it is desired to repressure the Lansing-Kansas City formation with perforations from a depth of approximately 3120 feet to a bottom depth of approximately 3333 feet;

(3) That it is desired to repressure Well No. "C"-1, located 330 feet from the South line and 990 feet from the East line of the NW/4 of Section 1, Township 9 South, Range 17 West, Rooks County, Kansas; and any well or wells on or that may be drilled on the leases described in the caption of this order;

(4) That elevations in this area are shown on the production map;

(5) That a complete log of the repressuring well is attached to the application;

(6) That complete casing information as required under Rule 82-2-501 is as follows:

<u>SIZE</u>	<u>LENGTH</u>	<u>SEAT DEPTH</u>	<u>CONDITION</u>	<u>CEMENTED OR MUDDIED</u>	<u>EST. FT. ENCASED IN CEMENT</u>	<u>SACKS CEMENT USED</u>
8 5/8"	166	169	Good	Cemented	166	135
5 1/2"	3427	3424	Good	Cemented	3424	150 + 600 sacks squeezed

(7) That fluid desired to be used for repressuring is salt water produced from the Permian and Pennsylvanian Brines formations and recycled water from any well or wells on or that may be drilled on the following described leases;

<u>LEASE OWNER</u>	<u>LEASE NAME</u>	<u>LEASE DESCRIPTION</u>
Murfin Drilling Company	Hrabe "A"	SW/4 Sec. 1-9S-17W
Murfin Drilling Company	Hrabe "B"	W/2 NW/4 Sec. 1-9S-17W
Murfin Drilling Company	Hrabe "C"	E/2 NW/4 Sec. 1-9S-17W

MURFIN DRILLING COMPANY ET AL (C-17,200)

REPRESSURING WITH SALT WATER

estimated at 25 barrels per day, per well, minimum to 500 barrels per day, per well, maximum, to be introduced at gravity pressure at the well head; or, if necessary, under pump pressure ranging from 50 pounds minimum pressure to 1000 pounds maximum pressure;

(8) That a copy of this application, together with a copy of regulations on HEARINGS UPON OBJECTIONS OR COMPLAINTS, has been mailed or personally delivered to all operators of producing or drilling wells within one-half mile of the leases to be repressured as listed below:

OPERATOR'S CORRECT NAME

MAILING ADDRESS

George P. Crawford
Sierra Petroleum Company
Terra Resources, Inc.

P. O. Box 93, Natoma, Kansas
211 North Broadway, Wichita, Kansas 67202
5416 South Yale, Tulsa, Oklahoma 74135

(9) That the application should be granted subject, however, to the following conditions: (a) Additional input wells should be completed in like manner as Well No. "C"-1 described herein; (b) Before additional input wells on the described leases are put into use, notice should be given to the Conservation Division of the Commission, a recent plat of the leases should be furnished showing the producing and input wells, together with complete casing information as required in paragraph (6) of the application herein as it pertains to the additional input wells; (c) That production should be subject to and limited by the applicable provisions of the Commission's monthly oil proration orders.

IT IS, THEREFORE, BY THE COMMISSION ORDERED: That the Murfin Drilling Company et al be, and it is hereby permitted to repressure with salt water the Lansing-Kansas City formation with perforations from a depth of approximately 3120 feet to a bottom depth of approximately 3336 feet into Well No. "C"-1 described in paragraph (3); and into any well or wells on or that may be drilled on the leases described in the caption of this order, provided however, that applicant complies with the terms and conditions set out in paragraph (9) hereof, salt water to be produced from the Permian and Pennsylvanian Brines formations, and recycled water from any well or wells on or that may be drilled on the leases described in paragraph (7), estimated at 25 barrels per day, per well, minimum to 500 barrels per day, per well, maximum, to be introduced at gravity pressure at the well head; or, if necessary, under pump pressure ranging from 50 pounds minimum pressure to 1000 pounds maximum pressure, as provided for in the Rules and Regulations of the Commission.

IT IS FURTHER BY THE COMMISSION ORDERED: That if the recipient of the repressuring authority herein assigns, sells or transfers his interest in the lease or leases described in this order, the repressuring authority herein shall become null and void as of the date of assignment, sale or transfer.

THE COMMISSION HEREBY RETAINS JURISDICTION OF THE SUBJECT matter hereof and the parties hereto for the purpose of issuing from time to time such further orders, amendments, rules and regulations as may be necessary in connection with the above entitled matter if not specifically provided for in the Rules and Regulations of the Commission applying to Repressuring and Waterflooding.

BY THE COMMISSION IT IS SO ORDERED:

Saffels, Chmn.; Doty, Com. and Stroberg, Com.

APPROVAL RECOMMENDED:

J. Lewis Brock
J. LEWIS BROCK, ADMINISTRATOR

THELMA M. KNUTSON, SECRETARY

ATTEST.

DATE MAILED *3-18-74* TRUE COPY

Thelma M. Knutson

SECRETARY, STATE CORPORATION
COMMISSION, STATE OF KANSAS