

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

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

March 14, 1990

Burk Royalty Company
P.O. Box BRC
Wichita Falls, TX 76307

Attention: Fred M. Lynch

RE: Injection Pressure Increase,
South Lucky Lake Queen Unit
Waterflood Project, Chaves
County, New Mexico.

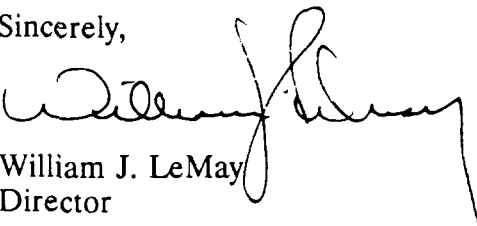
Dear Mr. Lynch:

Reference is made to your request dated February 5, 1990, to increase the surface injection pressure on seven injection wells located within the South Lucky Lake Queen Unit Waterflood Project. This request is based on a step rate test conducted on Well No. 7-1 on January 22, 1990. The results of this test have been reviewed by my staff and we feel that an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on seven wells as shown on Exhibit "A" attached hereto.

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,


William J. LeMay
Director

cc: Oil Conservation Division - Artesia
Case File - 8840
D. Catanach
T. Gallegos

*South Lucky Lake Queen Unit
Waterflood Project
Injection Wells*

South Lucky Lake Queen Waterflood Project Well No.	Location	Maximum Injection Pressure
Tract 1 Well No. 1	E-27-15S-29E	1000 PSIG
Tract 2 Well No. 1	L-22-15S-29E	1000 PSIG
Tract 2 Well No. 4	N-22-15S-29E	1000 PSIG
Tract 3 Well No. 1	F-22-15S-29E	1000 PSIG
Tract 4 Well No. 1	H-21-15S-29E	1000 PSIG
Tract 5 Well No. 1	M-15-15S-29E	1000 PSIG
Tract 7 Well No. 1	O-16-15S-29E	1000 PSIG



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

March 13, 1990
~~September 15, 1989~~

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

Burk Royalty Company
P.O. Box BRC
Wichita Falls, Texas 76307

Attention: Fred M. Lynch

Re: Injection Pressure Increase
South Lucky Lake Queen Unit
Waterflood Project
Chaves County, New Mexico

Dear Sir:

Reference is made to your request dated ~~August 24, 1989~~ *February 5, 1990*, to increase the surface injection pressure on seven injection wells located within the South Lucky Lake Queen Unit ~~a~~ Waterflood Project. This request is based on ~~step rate test~~ *a* conducted on ~~three of the wells during August, 1989~~. The results of the test ~~have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.~~

You are therefore authorized to increase the surface injection pressure on the seven wells as shown on Exhibit "A" attached hereto.

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

*Well No.
7-1 on
January 22,
1990*

Sincerely,

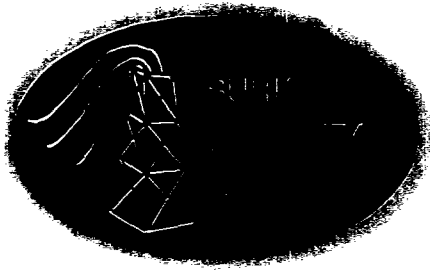
William J. Lemay
Director

xc: Oil Conservation Division-Artesia
Case File-8840

~~D. Catanach~~
T. Gallegos

SOUTH LUCKY LAKE QUEEN UNIT
WATERFLOOD PROJECT
INJECTION WELLS

South Lucky Lake Queen Waterflood Project Well No.	Location	Maximum Surface Injection Pressure
Tract 1-Well No. 1	E-27-15S-29E	700 PSIG
Tract 2-Well No. 1	L-22-15S-29E	700 PSIG
Tract 2-Well No. 4	N-22-15S-29E	1000 700 PSIG
Tract 3-Well No. 1	F-22-15S-29E	700 PSIG
Tract 4-Well No. 1	H-21-15S-29E	700 PSIG
Tract 5-Well No. 1	M-15-15S-29E	700 PSIG
Tract 7-Well No. 1	O-16-15S-29E	700 PSIG



1990 FEB 6 AM 8 48

February 5, 1990

State of New Mexico
Oil Conservation Division
Energy Minerals and Natural Resources Dept.
P. O. Box 2088
Santa Fe, New Mexico 87504

Attention: Mr. David Catanach

Dear Mr. Catanach:

Enclosed please find step rate tests for injection well #701 in the South Lucky Lake Unit. These tests indicate a break through at approximately 1060# to 1100# of pressure. Reference is made to my letter of December 27, 1989 to Mr. LeMay concerning this subject, which indicates the pressure of all of the wells in this Unit.

We, therefore, request a pressure of 1000 psig for all wells in the Unit. As mentioned in the letter Burk Royalty Co.'s Double "L" Queen Unit has been operating very successfully with a wellhead pressure of 960 psig. We, therefore, again request a wellhead pressure of 1000 psig for each injection well in this Unit in order that we may properly flood this reservoir.

Sincerely yours,

BURK ROYALTY CO.

Fred M. Lynch
Fred M. Lynch

FML/tl

■ Bottom Hole Pressure @ 1,770 Feet

△ Recorded Wellhead Pressure

○ Corrected Wellhead Pressure Based on 2 3/8" Tubing

2000

PSIG

1900

1800

BOTTOM HOLE PRESSURE

1700

1600

1500

1400

1300

1200

PSIG

WELLHEAD PRESSURE

1200

1100

1000

900

800

700

600

500

400

BURK ROYALTY COMPANY

South Lucky Lake Unit

Tract 7 Well No. 1

Step-rate Injection Test

B W P D

0

200

400

600

800

1000

1200

1400

1600

JOHN WEST ENGINEERING CO.
Step Rate Injection Test

Well Name South Lucky Lake Unit Tract 7 #1
CO. Name Burk Royalty Company

Date 1-22-90

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	Total
				Bomb Set @ 1770'				
	10:30	425.2		0	1195.40			
	10:35	450.80	48.96	.17	1222.00			
	10:40	466.10	54.72	.36	1236.70			
Rate 1	10:45	477.50	54.72	.55	1247.8	477.4	1.54	.066
	10:50	500.50	106.56	.92	1272.30			
	10:55	515.80	109.44	1.30	1287.90			
Rate 2	11:00	525.90	106.56	1.67	1299.80	525.7	3.14	.247
	11:05	579.30	167.04	2.25	1353.20			
	11:10	608.50	224.64	3.03	1383.10			
Rate 3	11:15	627.60	230.40	3.83	1402.60	626.8	6.05	.831
	11:20	681.20	288.00	1.0	1450.30			
	11:25	706.70	345.60	2.2	1484.00			
Rate 4	11:30	751.30	316.80	3.3	1508.80	749.5	9.24	1.821
	11:35	791.00	432.00	4.8	1566.30			
	11:40	833.10	432.0 0	6.3	1598.00			
Rate 5	11:45	843.30	403.20	7.7	1622.30	840.2	12.32	3.100
	11:50	912.20	576.00	9.7	1677.00			
	11:55	937.80	547.20	11.6	1706.70			
Rate 6	12:00	944.10	518.40	13.4	1730.30	939.1	15.96	5.005
	12:05	1013.10	748.80	16.0	1785.40			
	12:10	1047.60	691.20	18.4	1809.10			
Rate 7	12:15	1080.70	720.00	20.9	1829.80	1072.4	21.00	8.315
	12:20	1115.20	979.20	24.3	1867.70			
	12:25	1134.20	892.80	27.4	1888.50			
Rate 8	12:30	1160.90	950.40	30.7	1899.50	1147.3	27.44	13.639
	12:35	1170.90	1152.00	34.7	1912.00			
	12:40	1164.20	1123.20	38.6	1917.80			
Rate 9	12:45	1157.40	1152.00	42.6	1923.40	1137.9	33.32	19.533

JOHN WEST ENGINEERING CO.
Step Rate Injection Test

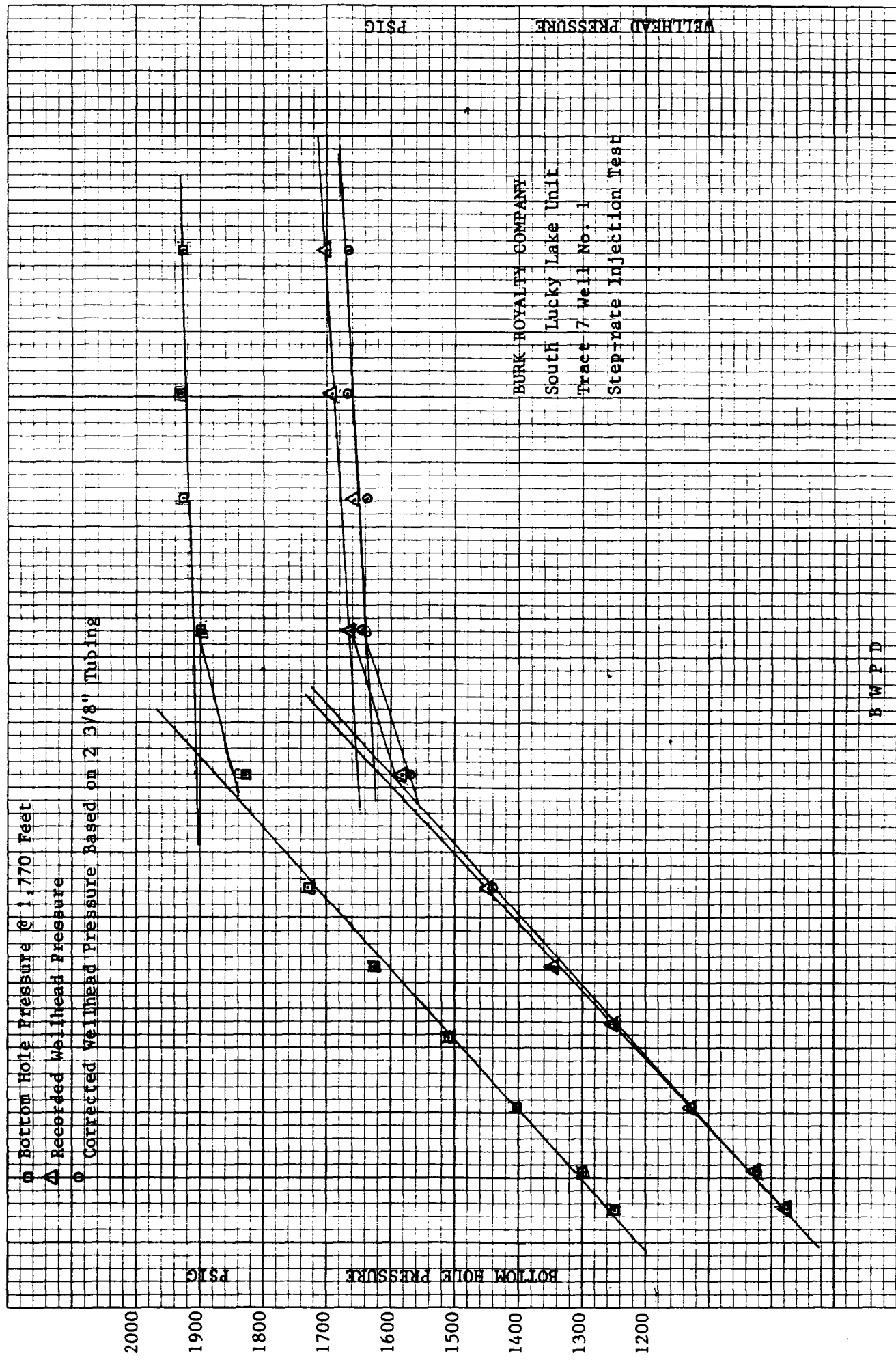
Well Name South Lucky Lake Unit Tract 7 #1

Date 1-22-90

CO. Name Burk Royalty Company

Page 2

[illegible]



JOHN WEST ENGINEERING CO.
Step Rate Injection Test

Well Name South Lucky Lake Unit Tract 7 #1

Date 1-22-90

CO. Name Burk Royalty Company

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	Total
				Bomb Set @ 1770'				
	10:30	425.2		0	1195.40			
	10:35	450.80	48.96	.17	1222.00			
	10:40	466.10	54.72	.36	1236.70			
Rate 1	10:45	477.50	54.72	.55	1247.8	477.4	1.54	.066
	10:50	500.50	106.56	.92	1272.30			
	10:55	515.80	109.44	1.30	1287.90			
Rate 2	11:00	525.90	106.56	1.67	1299.80	525.7	3.14	.247
	11:05	579.30	167.04	2.25	1353.20			
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Rate 3	11:15	627.60	230.40	3.83	1402.60	626.8	6.05	.831
	11:20	681.20	288.00	1.0	1450.30			
	11:25	706.70	345.60	2.2	1484.00			
Rate 4	11:30	751.30	316.80	3.3	1508.80	749.5	9.24	1.821
	11:35	791.00	432.00	4.8	1566.30			
	11:40	833.10	432.0 0	6.3	1598.00			
Rate 5	11:45	843.30	403.20	7.7	1622.30	840.2	12.32	3.100
	11:50	912.20	576.00	9.7	1677.00			
	11:55	937.80	547.20	11.6	1706.70			
Rate 6	12:00	944.10	518.40	13.4	1730.30	939.1	15.96	5.005
	12:05	1013.10	748.80	16.0	1785.40			
	12:10	1047.60	691.20	18.4	1809.10			
Rate 7	12:15	1080.70	720.00	20.9	1829.80	1072.4	21.00	8.315
	12:20	1115.20	979.20	24.3	1867.70			
	12:25	1134.20	892.80	27.4	1888.50			
Rate 8	12:30	1160.90	950.40	30.7	1899.50	1147.3	27.44	13.639
	12:35	1170.90	1152.00	34.7	1912.00			
	12:40	1164.20	1123.20	38.6	1917.80			
Rate 9	12:45	1157.40	1152.00	42.6	1923.40	1137.9	33.32	19.533

Step Rate Injection Test

Well Name South Lucky Lake Unit Tract 7 #1

Date 1-22-90

CO. Name Burk Royalty Company

Page 2

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

January 9, 1990

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

Burk Royalty Company
P.O. Box BRC
Wichita Falls, Texas 76307

Attention: Mr. Fred M. Lynch

Dear Mr. Lynch:

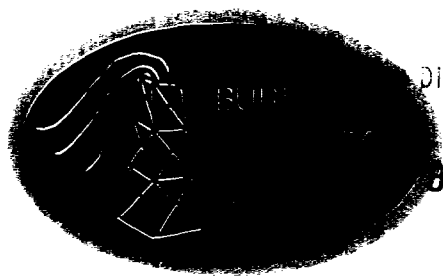
Reference is made to your request dated December 27, 1989, for an increase in injection pressure on those wells within the South Lucky Lake Queen Unit Waterflood Project. It is not the customary policy of the Division to authorize increased injection pressures without data to show that fracturing will not occur as a result of said increased pressure. An increase in injection pressure will only be considered after the conductance and submittal of one or more step rate tests which shows that fracturing will not occur at such higher pressures.

If you wish to discuss the matter further, please contact myself at (505) 827-5800.

Sincerely,

A handwritten signature in dark ink, appearing to read "David Catanach".

David Catanach
Engineer



DIVISION

03

December 27, 1989

State of New Mexico
Oil Conservation Division
Energy Minerals and Natural Resources Dept.
P. O. Box 2088
Santa Fe, New Mexico 87504

Attention: Mr. William J. LeMay
Director

Dear Mr. LeMay:

In a letter dated September 15, 1989 you granted us an increase in injection pressure for all injection wells in the South Lucky Lake Queen Unit to 700 psig. This increase in pressure did help our injection rates. I am enclosing a copy of our November 1989 engineering report showing the injection volumes of the wells in this unit.

We request administratively an increase in pressure to 1000 psig in order to obtain a good volume in these injection wells. Our flood has not responded properly since we are not injecting enough water. Jack McClellan Sulimar flood, which is two miles from us, was flooded at 1000 psig and was a very successful waterflood. Burk Royalty Co.'s Double "L" Queen Unit, which lies six miles from this flood, is operating at 960 psig and is also a very successful waterflood.

I sincerely hope that we can be granted this increase in pressure to properly flood this reservoir.

Sincerely yours,

BURK ROYALTY CO.

Fred M. Lynch

FML/tl
Enc.

BURK ROYALTY COMPANY
WATER INJECTION REPORT

DATE: 11/

SOUTH LUCKY LAKE QUEEN UNIT

WELL NO	DAYS PROD	DAILY AVERAGE VOL. INJECTED BARRELS WATER	AVG MONTHLY PRESSURE PSIG	LAST MONTH VOLUME	LAST MONTH PRESSURE PSIG	INCREASE OR DECREASE VOLUME	INCREASE OR DECREASE PRESSURE PSIG	MONTHLY VOLUME INJECTED	CUMULATIVE BARRELS
101	30	211	680	223	650	12-	30	6,341	47,596
201	30	405	570	393	550	12	20	12,158	79,886
204	30	99 *	700	116	700	17-		2,996	21,542
301	30	74 *	700	84	700	10-		2,230	23,258
401	30	410	520	393	450	17	70	12,324	103,234
501	30	144 *	700	145	700	1-		4,335	34,452
701	30	46 *	700	58	700	12-		1,395	19,493
		1,389	4,570	1,412	4,450	23-	120	41,779	329,461

A volume needed to be calculated



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

November 14, 1986

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Mr. Paul Cooter
Rodey, Dickason, Sloan,
Akin & Robb
Attorneys at Law
Post Office Box 1357
Santa Fe, New Mexico

Re: CASE NO. 8840
ORDER NO. R-8140-A

Applicant:

Burk Royalty Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced
Division order recently entered in the subject case.

Sincerely,

R. L. STAMETS
Director

RLS/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD _____

Other _____

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

September 15, 1989

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

Burk Royalty Company
P.O. Box BRC
Wichita Falls, Texas 76307

Attention: Fred M. Lynch

Re: Injection Pressure Increase
South Lucky Lake Queen Unit
Waterflood Project
Chaves County, New Mexico

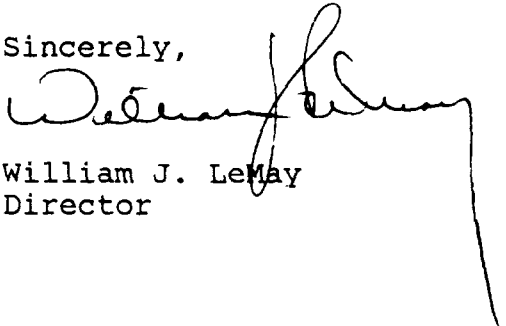
Dear Sir:

Reference is made to your request dated August 24, 1989, to increase the surface injection pressure on seven injection wells located within the South Lucky Lake Queen Unit Waterflood Project. This request is based on step rate tests conducted on three of the wells during August, 1989. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the seven wells as shown on Exhibit "A" attached hereto.

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. Lemay
Director

xc: Oil Conservation Division-Artesia
Case File-8840
D. Catanach
T. Gallegos

SOUTH LUCKY LAKE QUEEN UNIT
WATERFLOOD PROJECT
INJECTION WELLS

South Lucky Lake Queen Waterflood Project Well No.	Location	Maximum Surface Injection Pressure
Tract 1-Well No. 1	E-27-15S-29E	700 PSIG
Tract 2-Well No. 1	L-22-15S-29E	700 PSIG
Tract 2-Well No. 4	N-22-15S-29E	700 PSIG
Tract 3-Well No. 1	F-22-15S-29E	700 PSIG
Tract 4-Well No. 1	H-21-15S-29E	700 PSIG
Tract 5-Well No. 1	M-15-15S-29E	700 PSIG
Tract 7-Well No. 1	O-16-15S-29E	700 PSIG



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

August 14, 1989

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

Burk Royalty Company
P.O. Box BRC
Wichita Falls, Texas 76307

Attention: Fred M. Lynch

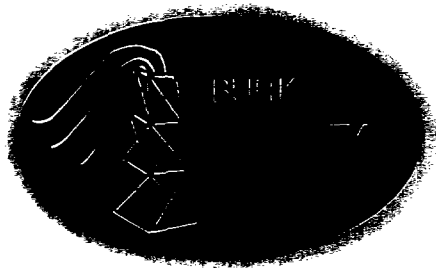
Dear Mr. Lynch:

I have received your letter dated July 26, 1989, whereby you requested an increase in injection pressure for injection wells within your South Lucky Lake Queen Unit Waterflood Project. As contained in the Division order which approved this project, injection pressures may only be increased by the Director upon a proper showing that said increase will not result in fracturing of the injection formation. This showing is usually in the form of a step rate test run on the injection wells. To date I have seen no such tests run on the wells within your unit. Inasmuch as this is the only way to obtain an increase in injection pressure, I suggest that step rate tests be conducted on these wells.

If you should have any questions regarding testing procedures, etc. or if you wish to discuss the situation further please contact myself at (505) 827-5800.

Sincerely,

David Catanach
Engineer



July 26, 1989

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE

State of New Mexico
Oil Conservation Division
Energy Minerals and Natural Resources Department
P. O. Box 2088
Santa Fe, New Mexico 87504

Attention: Mr. William J. LeMay, Director

Dear Mr. LeMay:

We initiated injection into the South Lucky Lake Queen Unit in Chaves County, New Mexico during the month of March 1989. We were limited to 2/10ths of depth for the surface pressure, which is approximately 350 psig. Three of the injection wells have dropped below an injection rate of 100 barrels per day and this is too small a volume for a successful flood.

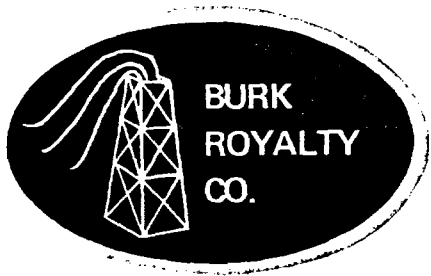
We would request some relief from these low pressures so that we may adequately flood this property. If some relief could be granted administratively this would enhance the recoveries in the flood and also save time, which is of the essence.

Sincerely yours,

BURK ROYALTY CO.

Fred M. Lynch
Fred M. Lynch

FML/tl



February 11, 1986

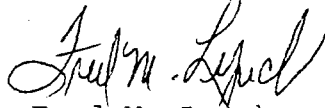
Working Interest Owners
Leasehold Operators
Surface Owners
South Lucky Lake Queen Unit
Chaves County, New Mexico

Gentlemen:

An application by Burk Royalty Co. to inject water into seven wells in the South Lucky Lake Field, Chaves County, New Mexico was recently sent to you. The Todhunter Federal #1 well was shown to be located 2,310' from the North line and 330' from the West line of Section 22. This is incorrect and should read 2,310' from the North line and 1650' from the West line.

Sincerely yours,

BURK ROYALTY CO.


Fred M. Lynch

FML/ks