KELLAHIN, KELLAHIN AND AUBREY
ATTORNEYS AT LAW
EL PATIO BUILDING
117 NORTH GUADALUPE
POST OFFICE BOX 2265
SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN
KAREN AUBREY

CANDACE HAMANN CALLAHAN

JASON KELLAHIN
OF COUNSEL

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

March 29, 1990

HAND DELIVERED

RECEIVED
MAR 29 1990
OIL CONSERVATION DIVISION

Mr. William J. LeMay
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Re: Application of Meridian Oil, Inc.
for Temporary Well Testing Allowable
for the Parkway-Delaware Oil Pool,
Eddy County, New Mexico
NMOCD Case No. 9889

Dear Mr. LeMay:

On behalf of Meridian Oil, Inc., the Applicant in the referenced case which is now set for hearing on the Division Examiner's docket of April 18, 1990, I wish to withdraw the Application and request that the case be dismissed without prejudice.

Very truly yours,

W. Thomas Kellahin

WTK/tic

xc: Regular Mail

All parties shown on mailing
list attached to Application

Mo Gaddis
Meridian Oil, Inc.
P.O.Box 4289
Farmington, New Mexico 87499-4289

Sally McDonald, Esq.
Meridian Oil, Inc.
P.O. Box 4239
Houston, Texas 77210

Sealy H. Cavin, Jr., Esq.
Modrall, Sperling, Roehl,
Harris & Sisk, P.A.
P.O. Box 2168
Albuquerque, New Mexico 87103

Randolph M. Richardson, Esq.
P.O. Box 2424
Roswell, New Mexico 88202

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 9882, CASE 9888, CASE 9889, CASE 9892

CASE 9893, CASE 9881, CASE 9894, CASE 9895

CASE 9897, CASE 9898, CASE 9884, CASE 9885

EXAMINER HEARING

IN THE MATTER OF:

CONTINUED AND DISMISSED CASES

TRANSCRIPT OF PROCEEDINGS

BEFORE: MICHAEL E. STOGNER, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

March 21, 1990

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL
Attorney at Law
Legal Counsel to the Divison
State Land Office Building
Santa Fe, New Mexico

EXAMINER STOGNER: This hearing will come to order for Docket 9-90. Today is March 21, 1990. I'm Michael E. Stogner, appointed hearing officer for today's cases. I call all the continued and dismissed cases at this time. First I'll call Case No. 9882.

MR. STOVALL: Application of Controlled Recovery, Inc., for an oil treating plant permit, for surface water disposal, and an exception to Order No. R-3221, Lea County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9882 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9888.

MR. STOVALL: Application of Conoco, Inc., for compulsory pooling, Lea County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9888 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9889.

MR. STOVALL: Application of Meridian Oil, Inc., for temporary well testing allowable for certain wells in the Parkway-Delaware Pool, Eddy County, New Mexico.

Applicant requests this case be continued to April 18, 1990.

EXAMINER STOGNER: Case No. 9889 will be so continued.

* * * * *

EXAMINER STOGNER: Second page. I'll call Case No. 9892.

MR. STOVALL: Application of Pacific Enterprises Oil Company (USA) for compulsory pooling, Eddy County, New Mexico.

Applicant requests this case be dismissed.

EXAMINER STOGNER: Case No. 9892 will be dismissed.

* * * * *

EXAMINER STOGNER: Call next case, No. 9893.

MR. STOVALL: Application of Pacific Enterprises Oil Company (USA) for compulsory pooling, Eddy County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9893 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9881.

MR. STOVALL: Application of Richmond Petroleum, Inc., for compulsory pooling, unorthodox coal gas well location, and a non-standard gas spacing and proration unit, San Juan and Rio Arriba Counties, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9881 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9894.

MR. STOVALL: Application of Richmond Petroleum, Inc., for compulsory pooling, unorthodox coal gas well location, and a non-standard gas spacing and proration unit, San Juan and Rio Arriba Counties, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9894 will be so

continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9895.

MR. STOVALL: Application of Richmond Petroleum, Inc., for compulsory pooling and an unorthodox coal gas well location, San Juan and Rio Arriba Counties, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9895 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9897.

MR. STOVALL: Application of Siete Oil & Gas Corporation for a waterflood project, Eddy County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9897 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9898.

MR. STOVALL: Application of Doyle Hartman for compulsory pooling, a non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9898 will be so continued.

* * * * *

EXAMINER STOGNER: Call next case, No. 9884.

MR. STOVALL: Application of OXY USA, Inc., for compulsory pooling, non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico.

Applicant requests this case be dismissed.

EXAMINER STOGNER: Case 9884 will be dismissed.

* * * * *

EXAMINER STOGNER: Call next case, No. 9885.

MR. STOVALL: Application of Doyle Hartman for compulsory pooling, a non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico.

Applicant requests this case be continued to April 4, 1990.

EXAMINER STOGNER: Case No. 9885 will be so continued.

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Carla Diane Rodriguez, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL March 21, 1990.

Carla Diane Rodriguez
CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9889, heard by me on 21 March 1990.

, Examiner
Oil Conservation Division

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

'90 JAN 23 AM 8 32

1701 N. CONGRESS | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

January 19, 1990

MR. DAVID CATANACH
NEW MEXICO OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87504

RE: DATA FOR MER HEARINGS

Dear Mr. Catanach:

I am enclosing copies of some letters sent to operators authorizing testing for MER hearings. I am also enclosing copies of two Examiner's Reports prepared after hearing at Exxon's requests for MER's. I hope this information is helpful to you.

Please feel free to call anytime if you have any questions.

Sincerely,

Donna Chandler

Donna K. Chandler
Technical Examiner

Enclosures

DKC:as59

This copy may be helpful in this case
DKC

CASE FILE
9889

3-93555

EXXON COMPANY, U.S.A.
IV GREENSPOINT PLAZA • 16945 NORTHCHASE DRIVE • P.O. BOX 4707 • HOUSTON, TEXAS 77210-4707

PRODUCTION DEPARTMENT

CENTRAL DIVISION
JOINT INTEREST/REGULATORY AFFAIRS

June 27, 1989

Request for MER Hearing and
Permission to Test Wells
In Excess of the Assigned
Allowable
Thompson, SW. (Miocene 12-B) Field
Fort Bend County, Texas
RRC District #3 - OIL

Mr. Felix Daily
Railroad Commission of Texas
Oil and Gas Division
P.O. Drawer 12967-Capitol Station
Austin, Texas 78711

Dear Mr. Daily:

Exxon Corporation respectfully requests that a hearing be scheduled on August 22, 1989 or as soon thereafter as the docket allows, for the purpose of hearing Exxon's application for adoption of a per well MER not to exceed 300 B/D for wells in the Thompson, SW. (Miocene 12-B) field, Fort Bend County, Texas. In addition, we request permission to test Lockwood & Sharp -B- Wells 39,66 and 77 in this field at rates in excess of their currently assigned allowables of 84 B/D. We anticipate starting the well testing program on or about July 10, 1989, with the test period to end no later than August 7, 1989. The test data may provide us with information necessary to support a specific per well MER rate.

We estimate that the maximum overproduction accruing to each well during the test period will not exceed 4500 barrels. This maximum overage equals 53.6 days of actual assigned allowable to each well. Of course, we understand that if our application is withdrawn or an increase in allowable is denied by the Commission, then any over-production accrued during the testing period must be made up. As part of our application, we will request that any increase in allowable approved by the Commission be assigned retroactive, to cover the overproduction accrued during the test.

RECEIVED
R.R.C. OF TEXAS

JUN 30 1989

AUSTIN, TEXAS

Mr. Felix Daily

June 27, 1989

Since Exxon is the only operator in this field, no notification to other parties is required. If you have any questions regarding this application, please contact Mr. Robert E. Dreyling at (713) 775-6299. Your consideration of our request is sincerely appreciated.

Yours very truly,

H. H. Trusseff, Jr.
Regulatory Affairs Coordinator

HHT/dl

c: Mr. Guy M. Grossman
Railroad Commission of Texas
Oil and Gas Division
13201 Northwest Freeway, Suite 701
Houston, Texas 77040-6008

Mr. James W. Walker, Jr.
Railroad Commission of Texas
Oil and Gas Division
P.O. Drawer 12967-Capitol Station
Austin, Texas 78711-2967

3-93555

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

1701 N. CONGRESS | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

July 3, 1989

H. H. Trussell, Jr.
Exxon Company, U. S. A.
P. O. Box 4707
Houston, Texas 77210-4707

Re: Application of Exxon Corp. for an MER for 3 Wells in the Thompson, SW. (Miocene 12-B) Field, Fort Bend County, Tex. Test Authority for the Lockwood and Sharp "B" Well Nos. 39, 66 and 77 in Excess of Their Assigned Allowable.

Dear Mr. Trussell:

In response to your letter of June 27, 1989 concerning the referenced application, temporary authority is granted to conduct production test for a period of thirty (30) days on the Lockwood & Sharp Well Nos. 39, 66 and 77. This testing should cover a daily oil production rate from 252 barrels to a maximum rate of 1500 barrels to obtain data for the subject hearing.

All production over the current top yardstick allowable will be counted as overproduction and must be made up unless relief from such make-up is granted subsequent to the hearing. This authority is granted for the period from July 10, 1989 to August 7, 1989 and total overproduction shall not exceed 13,500 barrels.

Further, this authority assumes that the hearing will be timely scheduled and processed. Any request to postpone the hearing by any operator must be directed to my attention.

Sincerely,

George F. Singletary, Jr.
Senior Staff Engineer

GFS:mne

cc: Jim Morrow
Willis Steed
James W. Walker, Jr.
Kim Holtzendorf
Proration - 3 - Oil
RRC-Houston

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

1701 N. CONGRESS | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

August 31, 1989

OIL AND GAS DOCKET NO. 3-93,555

THE APPLICATION OF EXXON CORPORATION TO CONSIDER AN MER FOR THE THOMPSON, S.W. (MIOCENE 12-B) FIELD, FORT BEND COUNTY, TEXAS.

HEARD BY: Donna Chandler on August 17, 1989

APPEARANCES:

David Jackson — for Applicant
Lawrence Walker
Robert Dreyling

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Exxon Corporation requests that a per well MER allowable of 175 barrels of oil per day (BOPD) be assigned to wells in the Thompson, S.W. (Miocene 12-B) Field in Fort Bend County, Texas. This application was unprotested and the examiner recommends approval.

DISCUSSION OF EVIDENCE

The Thompson, S.W. (Miocene 12-B) Field was discovered in November, 1956. Currently, there are five wells in the field, all of which are on the Lockwood & Sharp -B- Lease operated by Exxon.

Cumulative production from the field to date has been 2.7 million barrels of oil, one billion cubic feet of gas, and 15.7 million barrels of water. The bottom hole pressure in the field has only dropped 129 pounds per square inch (psi), from 1,720 psi initially to 1,591 psi measured in late 1987.

Currently, the top allowable for wells in the field is 84 barrels of oil per day (BOPD), based on the 1947 yardstick. Current production from the wells on the Lockwood and Sharp -B- Lease is 295 BOPD and 180 thousand cubic feet of gas per day (MCFD). Water production is approximately 92% of total liquid production.

The subject reservoir had an original oil-water contact at a subsea depth of -3,790 feet, but no gas-oil contact has been determined. The reservoir is bounded to the north and east by faults. Net pay is seen to vary from less than 20 feet up to 60 feet, as depicted on a net sand isopach map submitted in the hearing.

Exxon conducted variable rate tests on three wells in the field to determine the MER. The No. 39 Well was initially tested at 93 BOPD, with increases to approximately 147 BOPD and approximately 175 BOPD. At these various rates, neither water-oil ratio or gas-oil ratio increased. Similar tests of the other two wells indicated no increases in water-oil ratio or gas-oil ratio. The highest rate attained in the No. 66 Well was 121 BOPD; the highest rate attained in the No. 77 Well was 139 BOPD. The No. 61 and No. 17 Wells were not tested for hearing purposes. However, Exxon submitted the historical production from these two wells since completion in the 12-B field. This data shows that water cut steadily increased since completion of the wells, regardless of oil producing rate. Exxon believes that this data indicates that allowing production at up to 175 BOPD will not cause waste by increased gas-oil ratio or water-oil ratio.

A total of 11 wells has produced from this field since 1957. Two of these wells have watered out and four of the wells have been plugged and abandoned due to mechanical problems. Of the four wells plugged, three wells were plugged due to casing failure. According to Exxon's testimony, there have been numerous casing problems in the history of the Thompson fields. The casing failures are believed to be the result of fault movement in the Frio and Miocene. In the immediate area of the subject Thompson field, Exxon determined that of 36 wellbores which experienced casing failure, 13 of the problems were associated with Fault C, which bounds the Miocene 12-B field to the north. Also, of the 36 wellbores studied, 11 wellbores have "destructive" casing problems which prevent the well from being completed in the Miocene 12-B. Ten of the 36 wellbores experienced "non-destructive" casing failures which permit possible completion in the Miocene 12B. From a tabulation of the 36 wells, virtually all wells drilled prior to 1970 have experienced some type of casing failure. Since two of the existing wells in the field have already experienced "non-destructive" casing failures in the 1970's, Exxon believes that the requested MER is necessary to recover reserves before wellbores must be abandoned due to casing failures.

FINDINGS OF FACT

1. Proper notice of this hearing was given to all persons entitled to notice at least ten days prior to the date of hearing.

2. The Thompson, S.W. (Miocene 12-B) Field was discovered in November, 1956.

3. A total of eleven wells has produced from the field. Currently, five wells produce from the field, all on the Lockwood and Sharp -B- Lease operated by Exxon.

4. Cumulative production from the field to date has been 2.7 million barrels of oil, one billion cubic feet of gas, and 15.7 million barrels of water.

5. Currently, the top allowable for wells in the field is 84 BOPD, based on the 1947 yardstick.

6. Current lease production is approximately 295 BOPD and 180 MCFD; water production is approximately 92% of total liquid production.

7. The reservoir produces under a strong water drive, having lost only 129 psi of pressure after producing 2.7 million barrels of oil.

8. Production histories and variable rate testing of wells in the field indicate that producing gas-oil ratios and water-oil ratios do not vary with increased rates of production of up to 175 BOPD.

9. An MER of 175 BOPD will allow reserves to be recovered before wellbores must be abandoned due to casing failures which are common in this area. Many of the casing failures are apparently the result of fault movement in the Frio and Miocene.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was given as set out in the provisions of all applicable codes and regulatory statutes.

2. All things have occurred or been accomplished to give the Railroad Commission jurisdiction to decide this matter.

3. The establishment of a most efficient rate of oil production for wells in the Thompson, S.W. (Miocene 12-B) Field will not cause waste of hydrocarbons.

RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends the attached order approving an MER for the wells in the Thompson S.W. (Miocene 12-B) Field of 175 BOPD per well.

Respectfully submitted,

Donna Chandler

Donna Chandler
Technical Hearings Examiner

DC:as27

Date of Commission Action: 9-11, 1989.

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKET
NO. 3-93,555

IN THE THOMPSON, S.W. (MIOCENE 12-B) FIELD
FORT BEND COUNTY, TEXAS

FINAL ORDER
ESTABLISHING THE MOST EFFICIENT RATE OF PRODUCTION
FOR THE THOMPSON, S.W. (MIOCENE 12-B) FIELD
FORT BEND COUNTY, TEXAS

The Commission finds that after statutory notice in the above-numbered docket heard on August 17, 1989, the presiding examiner has made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiner's report and recommendation, the findings of fact and conclusions of law contained therein, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is ordered by the Railroad Commission of Texas that effective August 1, 1989, the most efficient rate of production at the current time for the Thompson, S.W. (Miocene 12-B) Field, Fort Bend County, Texas, is established at 175 barrels of oil per day.

Done this 11th day of September, 1989.

RAILROAD COMMISSION OF TEXAS

CHAIRMAN

COMMISSIONER

COMMISSIONER

ATTEST:
Secretary

DC:as21

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

JAMES E. (JIM) NUGENT, Chairman
KENT HANCE, Commissioner
JOHN SHARP, Commissioner

JIM MORROW, P.E.
Director
FELIX DAILEY, P.E.
Director,
Technical Hearings

1701 N. CONGRESS | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

January 19, 1989

Mr. H. H. Trussell, Jr.
Exxon Company, U. S. A.
P. O. Box 4358
Houston, Texas 77210-4358

Re: MER Hearing and Authority to Test Wells in Excess of Their Assigned Allowable in the Livingston (Wilcox 7060) Field, Polk County, Texas

Dear Mr. Trussell:

In response to your letter of January 18, 1989 concerning the referenced application, temporary authority is granted to conduct production test for a period of 30 days on the C. B. Granbury wells 90 and 95 in the Livingston (Wilcox 7060) Field. This testing should cover a daily oil production rate from 160 barrels to a maximum rate of 500 barrels to obtain data for the subject hearing.

All production over the current top yardstick allowable for each well will be counted as overproduction and must be made up unless relief from such make-up is granted subsequent to the hearing. This authority is granted for the period from January 30, 1989 to March 1, 1989 and total overproduction shall not exceed 10,000 barrels for a well.

Further, this authority assumes that the hearing will be timely scheduled and processed. Any request to postpone the hearing by any operator must be directed to my attention.

Sincerely,

Felix Dailey, P. E.
Director, Technical Hearings

FD:mne

cc: Jim H. Morrow
James W. Walker, Jr.
Kim Holtzendorf
Proration - 3 - Oil
RRC District Office-Houston
Attn: Guy M. Grossman

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

KENT HANCE, Chairman
JOHN SHARP, Commissioner
JAMES E. (JIM) NUGENT, Commissioner

JIM MORROW, P.E.
Director
FELIX DAILEY, P.E.
Director,
Technical Hearings

1701 N. CONGRESS | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

March 30, 1989

OIL AND GAS DOCKET NO. 3-92,948

THE APPLICATION OF EXXON COMPANY, U.S.A. FOR ADOPTION OF A PER WELL MER FOR THE LIVINGSTON (WILCOX 7060) FIELD, POLK COUNTY, TEXAS.

HEARD BY: Donna Chandler on March 15, 1989

APPEARANCES:

John M. Clayton — for Applicant
Robert Dreyling
Steven Smith
David Jackson

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Exxon Company, U.S.A. requests that the Commission adopt an MER of 200 BOPD per well for wells completed in the Livingston (Wilcox 7060) Field. This application was unprotested and the examiner recommends approval.

DISCUSSION OF EVIDENCE

The Livingston (7060) Field was discovered in April, 1987 upon completion of the C.B. Granbury Well No. 90 by Exxon Corporation. Exxon has subsequently completed three additional wells in the field, all on the Granbury lease. Currently, the top allowable in the field is 160 BOPD per well. In April, 1989, the top allowable will drop to 120 BOPD per well based on the 1965 yardstick.

The subject reservoir is located entirely on the C.B. Granbury lease. The reservoir is bounded by faults on two sides and is bounded downdip by an oil-water contact at a subsea depth of 6,835 feet. The fault block is part of a complexly faulted anticlinal structure believed to be associated with a deep seated non-piercement type salt dome. A smaller 50 foot fault cuts the reservoir but pressure data confirms that the smaller fault is not sealing.

From log analysis, the reservoir has average porosity of 22% and average water saturation is 16%. Average net oil pay thickness is 58 feet. From core analysis, the average permeability of the reservoir is 50 md. The original reservoir pressure in the No. 90 well was 3,009 psi. The current reservoir pressure is 2,954 psi after production of 250,000 barrels of oil, indicating a very strong water drive.

When the Granbury No. 90 was completed, it was tested at 937 BOPD and 470 MCFD. In September, 1987, the Granbury No. 91 was completed with an initial potential of 305 BOPD and 363 MCFD. The third well, the Granbury No. 94, was completed in January, 1988 with an initial potential of 757 BOPD and 336 MCFD. The final well, the Granbury No. 95 was completed in May, 1988 and produced 181 BOPD and 57 MCFD on initial test.

Beginning in February, 1989, the No. 90 Well was tested at various rates ranging from 120 BOPD to 400 BDPD. At the various rates, the producing GOR remained constant at 500-700 cu-ft./bbl. Water production also remained constant at 10-15% of total liquid production. Exxon believes this data indicates that producing the wells at 200 BOPD will not cause waste by increased GOR or water production.

Exxon also presented production histories of the No. 94, No. 95, and No. 91 wells. Since January, 1988, the No. 94 Well has been produced at various rates ranging from 130 BOPD to 200 BOPD. The producing GOR did not fluctuate significantly from approximately 500 cu-ft/bbl. The water production from this well has increased slightly over time but shows no relationship with varied producing rates. This well is the lowest well on the structure so the increase in water production over time was not unexpected. The production history of the No. 95 Well indicates that the well has produced at rates ranging from 140 BOPD to 280 BOPD. This well has produced no water to date and the producing GOR has ranged only from 300-500 cu-ft./bbl. No relationship is indicated between rate of oil production and producing GOR. It is apparent from data on these two wells that producing at a rate of 200 BOPD does not result in waste. The No. 91 well has very seldom been produced at rates over 200 BOPD. This well has always had a higher GOR than other wells in the field even though it is not the highest well in the field. Exxon does not believe the well is coning gas since the GOR has not increased at all over time.

Exxon pointed out that the Livingston (Wilcox) Field has an MER which is equal to the sum of the W-10 tests for all of the wells in the field. This field was originally assigned a field-wide MER of 2,700 BOPD in 1948. The W-10 MER was made effective in 1980 after hearing.

FINDINGS OF FACT

1. Proper notice of this hearing was given to all parties entitled to notice at least ten days prior to the date of hearing.

2. The Livingston (7060) Field was discovered in April, 1987 upon completion of the C.B. Granbury No. 90 by Exxon Corporation. There are currently four wells producing from the field, all of which are operated by Exxon.

3. Wells in the field currently receive a discovery allowable of 160 BOPD. Wells will begin receiving the 1965 yardstick allowable of 120 BOPD in April, 1989.

4. The entire Livingston (Wilcox 7060) reservoir is contained on the C.B. Granbury lease.

5. The subject reservoir operates under a strong water drive, having lost only 50 psi of pressure after the production of 250,000 BO.

6. Initial potentials of wells in this field ranged from 181 BOPD to 937 BOPD.

7. Production histories and special testing of wells in this field indicate that the producing GOR's remain constant at various producing rates and water production does not vary with producing rates, indicating no detrimental affect to the reservoir if wells are produced at rates higher than 160 BOPD.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was given as set out in the provisions of all applicable codes and regulatory statutes.

2. All things have occurred or been accomplished to give the Railroad Commission jurisdiction to decide this matter.

3. The establishment of a most efficient rate of oil production from wells in the Livingston (Wilcox 7060) Field will not cause waste of hydrocarbons.

RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends the attached order approving an MER for the wells in the Livingston (Wilcox 7060) Field of 200 BOPD per well.

Respectfully submitted,

Donna Chandler

Donna Chandler
Technical Hearings Examiner

DC:as16

Date of Commission Action: April 10, 1989.

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

OIL AND GAS DOCKET
NO. 3-92,948

IN THE LIVINGSTON (WILCOX 7060) FIELD
POLK COUNTY, TEXAS

FINAL ORDER
ESTABLISHING THE MOST EFFICIENT RATE OF PRODUCTION
FOR THE LIVINGSTON (WILCOX 7060) FIELD
POLK COUNTY, TEXAS

The Commission finds that after statutory notice in the above-numbered docket heard on March 15, 1989, the presiding examiner has made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiner's report and recommendation, the findings of fact and conclusions of law contained therein, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is ordered by the Railroad Commission of Texas that effective April 1, 1989, the most efficient rate of production at the current time for the Livingston (Wilcox 7060) Field, Polk County, Texas, is established at 200 barrels of oil per day per well.

Done this 10th day of April, 1989.

RAILROAD COMMISSION OF TEXAS

CHAIRMAN

COMMISSIONER

COMMISSIONER

ATTEST:
Secretary

DC:as16

(1)

EXXON COMPANY, U.S.A.
POST OFFICE BOX 4358 • HOUSTON, TEXAS 77210-4358

PRODUCTION DEPARTMENT

CENTRAL DIVISION
REGULATORY AFFAIRS

3-92948 2/24

January 18, 1989

Application of Exxon Company USA
~~Requests~~ for MER ~~Hearing and~~ Per Well
~~Permission to Test Wells in Excess of the Assigned Allowable~~ for the
Livingston (Wilcox 7060) Field
Polk County, Texas
~~District #3 - Oil~~

Mr. Felix Daily
Railroad Commission of Texas
Oil and Gas Division
P.O. Drawer 12967 - Capitol Station
Austin, Texas 78711

Dear Mr. Daily:

Exxon Corporation respectfully requests that a hearing be scheduled on March 15, 1989, or as soon thereafter as the docket allows, for the purpose of hearing Exxon's application for adoption of a per well MER not to exceed 500 B/D for wells in the Livingston (Wilcox 7060) Field, Polk County, Texas. In addition, we request permission to test C. B. Granbury wells 90 and 95 in this field at rates in excess of their currently assigned allowables of 160 B/D. We anticipate starting the well testing program on or about January 30, 1989, with the test period to end no later than March 1, 1989. The test data may provide us with information necessary to support a specific per well MER rate.

We estimate that the maximum overproduction accruing to each well during the test period will not exceed 10,000 barrels. This maximum overage equals 62.5 days of actual allowable assigned to each well. Of course, we understand that if our application is withdrawn or an increase in allowable is denied by the Commission, then any overproduction accrued during the testing period must be made up. As part of our application, we will request that any increase in allowable approved by the Commission be assigned retroactively to cover the overproduction accrued during the test.

dkd 54193620 Oil

Notify (1)

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Since Exxon is the only operator in this field, no notification to other parties is required. If you have any questions regarding this application, please contact Mr. Robert E. Dreyling at (713) 775-6299. Your consideration of our request is sincerely appreciated.

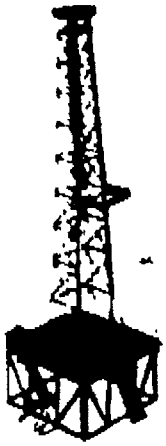
Sincerely,

H. H. Trussell, Jr.

RED/dg

cc: Mr. Guy M. Grossman
Railroad Commission of Texas
Oil and Gas Division
13201 Northwest Freeway, Suite 701
Houston, Texas 77040-6008

Mr. James W. Walker, Jr.
Railroad Commission of Texas
Oil and Gas Division
P.O. Drawer 12967 - Capitol Station
Austin, Texas 78711-2967



MERIDIAN OIL

21 Desta Drive, Midland, Texas 79705

FAX NO. 915/686-5605

DATE: 1/15/90 TIME: _____

TO: Tom Kellahin

COMPANY: _____

CITY/STATE _____

FAX NO. 505-982-2047

FROM: Mo Gaddis PHONE: 915/686-5~~600~~ 5784

NO. OF PAGES (INCLUDING THIS COVER SHEET) 3

MERIDIAN OIL

January 12, 1990

New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. William J. LeMay, Director

Subject: Temporary Well Testing
Parkway Delaware Field
Eddy County, New Mexico

Gentlemen:

Meridian Oil Inc. is requesting by this letter permission to perform a series of special, extended period flow tests on selected wells operated by Meridian in the Parkway Delaware Field. We are requesting a temporary test period of 90 days beginning February 1, 1990 for the Apache 'A' Federal No. 1, No. 2, No. 3 and No. 4.

The purpose of the flow tests will be to determine the most efficient producing rate for these wells and in effect, allow the reservoir to be produced at a rate that is conducive to optimum recovery efficiency. The proposed testing procedure for the wells is outlined as follows:

FLOW RATE BOPD	FLOW PERIOD DAYS
400	15
340	15
280	15
220	15
160	15
100	15

MPG:nak.362.1

We will keep accurate measurements of all volumes of oil, water and gas produced and flowing tubing pressures for use in our analysis of the data. If you have any questions concerning this testing, please contact M. P. Gaddis at (915) 686-5784 or T. H. Olle at (915) 686-5618.

If you are in agreement with the testing procedure as outlined for the subject wells, please sign in the space provided below.

Yours very truly,

J. S. Buchanan
Regional Operations Manager

CONCURRENCE: _____
William J. LeMay, Director
New Mexico Oil Conservation Division

MPG:nak.362.2

Memo

From
DAVID CATANACH
Petroleum Engineer

To

+ NMER +

Andy Taylor -

- Examiner -

Austin

NMER

Maximum Efficient Rate

+ 512 - 463 - 6762 + Legal Ent Section

Oil Conservation Division Santa Fe, New Mexico 87504
(505) 827-5807

rates, reduces the ultimate recovery of oil. It is generally recognized that the most effective method of controlling the displacement mechanism for increased ultimate oil recovery is to restrict the oil-production rate.

Control of the rate of oil production alone will not necessarily suffice to ensure production by a displacement drive. It is necessary also to control the progressive movement of the displacing gas or water and to prevent their premature dissipation. Excessive production of gas and water not only impairs the effective displacement of oil but leads to an actual loss in ultimate recovery. Conservation measures taken to prevent waste of gas and ineffective use of available water drive are essential adjuncts to proper control of reservoir performance.

Maximum Efficient Rate

Definition. The ultimate oil recovery from most pools is directly dependent on the rate of production. This dependence is such that for the chosen dominant mechanism for each reservoir there is a maximum rate of production that will permit reasonable fulfillment of the basic requirements for efficient recovery. Increase in the rate of production beyond the maximum commensurate with efficient recovery will usually lead to rapidly increasing loss of ultimate recovery. Reduction in rate below this maximum will not materially increase the ultimate oil recovery. From these considerations there has developed the concept of the *maximum efficient rate*[24] of production, commonly referred to as the MER. The maximum efficient rate for an oil reservoir is defined as the highest rate that can be sustained for an appreciable length of time without damage to the reservoir, and which if exceeded would lead to avoidable underground waste through loss of ultimate oil recovery.

General Criteria for Determination of Maximum Efficient Rates. The concept of MER has a sound basis as an engineering principle in reservoir technology. The MER is not an invariable characteristic of a reservoir but is dependent on the recovery mechanism employed as well as on the physical nature of the reservoir, its surroundings, and its contained fluids. For the same reservoir it will be different for one recovery process than for another, and for the same mechanism the MER may vary with the degree of depletion. It is possible through technical study of the reservoir and its behavior to determine the MER, provided adequate geologic and operating information on the reservoir is available.

In establishing the maximum efficient rate for a reservoir, two independent physical conditions must be satisfied:

1. The rate must not exceed the capabilities of the reservoir.
2. The individual well rate must not be excessive.

A third condition, this one economic, must also be satisfied: the individual well rate must not be so low as to prohibit profitable operation.

In the early stages of development of a new field, the maximum efficient rate is usually limited by the efficient rate for the individual wells. After development is essentially complete, there is usually a sufficient or even an excessive number of wells to produce in the aggregate the reservoir MER without simultaneously exceeding the capabilities of the individual wells to produce efficiently. Hence, in the later stages of development, the controlling limitation on the MER becomes the reservoir's efficient capacity. In any case, the smaller of the two capacities, either of the reservoir or of the individual wells, fixes the MER for the field.

Determination of Maximum Efficient Rate

Dissolved-gas-drive Reservoirs. When a reservoir is operated under a dissolved-gas drive, the only displacing agent utilized is the gas released from solution, with no other source of gas and no water being effectively employed. This type of drive is inefficient because the dissolved gas is released everywhere throughout the reservoir, is not segregated (in reservoirs having flat structures or where the force of gravity is not utilized to permit effective segregation of gas upstructure), and cannot be prevented from escaping through the producing wells during production operations. Both the

rate of oil flow and the ultimate oil yield depend primarily on the degree of exhaustion of the gas.

Determination of the maximum efficient rate for a reservoir apparently operating under a dissolved-gas drive requires first that the reason for the dominance of recovery in that reservoir by the process of dissolved-gas drive be understood. Secondly, it should be established whether or not other factors are present that might be utilized to provide a more efficient recovery mechanism if the rate of production were properly restricted. Accordingly, the determination of the MER must take into consideration the following three classifications of dissolved-gas-drive reservoirs:

Class 1. Those reservoirs in which there is potentially available free gas or water that might, under different operating conditions, be employed to change the dominant recovery mechanism to a more efficient type of drive

Class 2. Those reservoirs in which no free gas or water is potentially available but whose physical properties and fluid characteristics are favorable for segregation of gas within the reservoir

Class 3. Those reservoirs having no displacing fluid potentially available other than dissolved gas and whose characteristics are so unfavorable as to permit no reasonable modification of recovery efficiency through control of the rate of production

Pools in class 1 are those which initially contained sufficient free gas to provide a gas-cap drive, or into which sufficient influx of water could take place if operating conditions were properly modified. These pools operate by dissolved-gas drive most frequently as a result of improper reservoir control. This may entail (1) dissipation of free gas through production of gas-cap wells or upstructure wells having high gas-oil ratios; (2) dissipation of water through excessive production of water by edge wells; (3) excessive rates of oil production, such that oil is depleted by dissolved-gas drive substantially faster than oil can be replaced by migration ahead of an expanding gas cap or advancing water. The MER of a class 1 reservoir is the rate that will permit a more efficient mechanism to replace the dissolved-gas-drive mechanism; it is the MER of the substituting mechanism. It must be recognized that a gas-cap drive MER or a water-drive MER would be applicable only if it were feasible physically, administrative-wise, and economically to institute the necessary corrective measures to make a gas-cap or water-drive operation a practical reality. New fields in which a sufficient quantity of oil has not been produced to permit determination of the type of drive should be restricted in accordance with the limitations required for water-drive fields. In this way it would be possible to detect a water drive should one be available or develop, and damage to the reservoir may be prevented.

Class 2 pools operate under dissolved-gas drive because the sole displacing agent naturally available is dissolved gas. However, pools in this category have physical structures, reservoir-rock properties, and oil viscosities that are favorable for the employment of gas or water in an efficient manner as a displacing fluid. In these reservoirs the less efficient dissolved-gas drive may be completely modified by the injection of gas or water. Gas may be injected into the crest of the structure to create artifically an expanding gas cap. Under this type of operation the MER would then be the MER of a gas-cap drive. Another alternative would be to inject water through properly located wells to create an artificial water drive or flood. Here, the MER would be that operative under the water-drive mechanism employed. A third alternative would be to use only the dissolved gas naturally available within the reservoir but to operate the reservoir in such manner that the force of gravity is utilized to permit effective segregation of the liberated gas in the upper portion of the reservoir. In this type of operation the rate of production is reduced to a sufficiently low value so that movement of oil downstructure is brought about by gravity, rather than pressure gradient, and the gas released from solution moves up-dip where it can be retained as a secondary gas cap to displace additional oil. Here the resultant increase in ultimate oil recovery is directly attributable to the controlled and reduced rate of oil production that changed an inefficient dissolved-gas drive to an efficient gravitational segregation process. Under this type of modified drive, the MER is the rate that will permit the gas released from solution to be retained in the reservoir by a process of selective segregation. An outstanding example of the additional oil

recovery possible under the influence of gravity drainage may be observed in the later stages of oil production from the Oklahoma City field,[25] as a result of reduced rates following earlier depletion by dissolved-gas drive.

Dissolved-gas-drive pools in class 3 have reservoir and fluid characteristics so unfavorable that reduction in rate of oil production would have no appreciable effect on ultimate oil recovery. Reservoirs placed in this category may have thin formations of little structural relief, low formation permeability, high oil viscosity, or extreme lenticularity or irregularity of the producing formation. For pools having no free gas cap, no potential water drive, and physical conditions that prevent segregation of fluids by gravity, it has not been demonstrated that reduction in rate of production can bring about any improvement in the recovery efficiency. It is doubtful, according to current understanding, that a pool of this sort has an MER.

Gas-cap-drive Reservoirs. An efficient gas-cap drive requires continuous maintenance, throughout the recovery process, of a distinct segregation between an enlarging gas-invaded zone containing reduced oil saturation and a shrinking oil zone containing high oil saturation. The recovery efficiency of this mechanism is very sensitive to the rate of oil production for two reasons: (1) gas is not an effective oil-displacement agent, and (2) without any restraining factors, encroachment of free gas through the oil zone would take place through only the most permeable channels, leaving the oil undisplaced in the remainder of the formation. At high rates of production the pressure gradients caused by flow of oil dominate the fluid movements in the reservoir, and the ultimate recovery is fixed largely by the formation properties and the reservoir fluid characteristics. Excessive rates lead to rapid encroachment of free gas throughout the oil zone with a relatively low displacement efficiency. Segregation of free gas under these conditions is impossible, the entire free gas content is dissipated, the reservoir pressure is rapidly lowered, and the recovery process reverts to the less efficient dissolved-gas drive.

On the other hand, a high degree of desaturation of the oil zone may be accomplished by gas-cap drive if all fluid movements in the reservoir are dominated by the force of gravity instead of by pressure gradients. The required suppression of pressure gradients may be obtained through reduction of the rate of oil production.

An efficient rate of production under gas-cap drive must be a rate such that gravity will dominate the oil flow to maintain continuously an advancing gas front behind which the oil saturation will be reduced to a satisfactory low value in regions of low as well as high permeability. The recovery must be conducted at such a rate that oil migrates into the lower portions of the reservoir by gravity drainage instead of being compelled to migrate by expanding gas forcing its way into the oil zone in response to a pressure differential between high pressure in the gas cap and low pressure in the oil zone. The pressure in the oil zone actually should remain higher than the pressure in the gas cap, with free gas merely expanding to fill space vacated by the oil migrating downward. The chief function of the gas is to maintain the pressure level at which gravity drainage proceeds. The higher the pressure, the lower is the oil viscosity and the more rapid the drainage.

At sufficiently low rates of production, a gas-cap drive of this sort is capable of yielding very high recovery efficiency. Determination of the MER requires quantitative calculation of the relationship between rate of production and the amount of residual oil saturation in all parts of the reservoir at various successive stages of depletion. The MER is directly dependent on the formation permeability, the permeability distribution, the relative permeability–saturation relationships to gas and oil, the angle of formation dip, the fluidity of the oil, and the size of the gas cap available to maintain pressure and act as the displacing medium. Since low oil viscosity is desirable, there is an advantage to conducting the drainage at the highest possible level of reservoir pressure. Return of all produced gas to the crest of the structure often assists maintenance of pressure. To achieve a uniform advance of the gas-oil contact, it is necessary that wells be properly located and completed on the structure, that upstructure wells be progressively shut in as they go to gas, and that oil be selectively produced from wells completed in the lower portions of the reservoir. It is desirable that individual well rates be restricted to minimize coning and fingering of gas. Careful conservation of gas through workovers, allowable transfers, or gas return is necessary to obtain maximum effectiveness of the gas-cap drive.

Water-drive Reservoirs. Control of the rate of production exerts a marked influence upon the effectiveness with which a water drive may be employed as the dominant displacing mechanism for oil recovery. The first condition required for a water drive is that the net water influx into a reservoir be substantially equal volumetrically to the oil withdrawal. The rate at which water can invade the reservoir at any time is directly proportional to the pressure differential between aquifer and the oil zone. The faster the rate of oil production the higher must be the pressure differential between the water and oil zones for the water influx to keep pace with the oil withdrawal. Unless the water influx does keep pace, other mechanisms come into play in the displacement, and water drive may cease to be the dominant mechanism. At very high rates of production, the predominant type of drive may actually be converted and the reservoir produce by dissolved-gas drive with its inherently low recovery efficiency.

Determination of the MER for a normal water-drive reservoir requires that certain criteria for efficient operation under this type of drive be taken into account. The first of these criteria is the reservoir pressure. The reservoir pressure, one of the most direct and useful indications of production efficiency, serves in a water-drive field to indicate quantitatively the degree to which water influx is able to keep pace with withdrawals. A proper level of reservoir pressure must be maintained throughout the production history. This pressure level is usually taken to be one that will not permit dissolved gas to be released in sufficient quantity to build up within the oil zone a free gas saturation large enough to allow flow of the liberated gas. Maintenance of pressure at 75 to 80 per cent of the original reservoir pressure or of the saturation pressure of the oil generally has been found adequate to prevent the accumulation of gas released from solution in the oil to the point where high gas-oil ratios and dissolved-gas-drive conditions result. Greater decreases in reservoir pressure usually result in increased oil viscosity, increased gas saturation, decreased permeability to oil, and flow of liberated gas within the reservoir. Reduced pressures also cause additional shrinkage of residual oil in the reservoir, resulting in a direct loss of equivalent stock-tank oil to be recovered.

To determine the MER for a water-drive field, it is thus first necessary to estimate the rate of oil production, together with the attendant production of gas and water, that will maintain the pressure at the required level throughout the life of the field. This MER determination requires basically a quantitative relationship between the reservoir pressure and the rate of water influx. Such a relationship may be calculated through use of the volumetric-balance concept and the unsteady-state radial-flow equation, together with adequate information on reservoir pressures, oil, gas, and water production, and reservoir formation and fluid characteristics. Factors which influence the rate of water influx are (1) the permeability of the formation, (2) the uniformity of the productive horizon, (3) the reservoir structure and zone of water entry, (4) the areal extent of the reservoir and formation thickness, (5) the stage of reservoir depletion, and (6) the pressure decline.

In some water-drive reservoirs having gas caps overlying the oil zone, evaluation of the gas-cap behavior may reveal that, in spite of a high degree of pressure maintenance, withdrawal of excess free gas may lead to shrinkage of the gas cap, resulting in migration of oil into the cap and ultimate loss of oil. In many strong water-drive fields very little free-gas production can be tolerated.

The MER for a water-drive reservoir must also be such a rate that provides reasonably uniform advance of the water-oil interface and uniform flushing of the oil behind that interface in the regions invaded by water. Control of the uniformity of the advancing water front, as in the case of the advancing gas front, is dependent upon the balance between the component of gravity in the direction of flow and the pressure gradients induced by flow. An indication of the uniformity of advance of the water-oil contact can be obtained by observation of the production performance of individual wells.

An additional requirement for the efficient recovery of oil in water-drive fields is that the flooded portions of the reservoir be uniformly flushed. Because of the variations in permeability of the reservoir rock there is a natural tendency for the flow of both water and oil to take place primarily in the more permeable channels and to take place reluctantly in the less permeable portions of the formation. However, in

heterogeneous formations of variable permeabilities, it is possible to take advantage of capillary forces that cause water selectively to enter regions of low permeability and to eject oil into the more permeable sections of the formation. Hence, if an entire sand section is to be flushed uniformly by water, the rate of advance of the water must be slow enough to permit the water to penetrate the less permeable sands and to expel oil from those tighter sands into the more permeable channels where it may be flushed upstructure by the advancing water front. If the pressure gradients caused by production are too high for this capillary action to take place concurrently with the advance of the water front, the displacement becomes irregular, water tends to bypass the less permeable zones, and oil recovery is reduced.

In summary, the maximum efficient rate of production for a water-drive field involves, then, the following aspects:

1. Control of the rate of oil withdrawal to such a degree that the oil may be volumetrically replaced by water at a desirable level of reservoir pressure
2. Control of oil withdrawal such that the force of gravity may keep reasonably uniform the advancing water-oil interface
3. Control of the rate of water advance such that advantage may be taken of capillary effects that allow water to penetrate and expel oil from the tight sands as well as the more permeable sands, thereby flushing oil uniformly from all portions of the formation as the water-oil interface advances
4. Control of the production of water and gas to prevent their premature dissipation and ineffective use

Effect of Rate on Recovery in Presence of Free Gas

Several investigators[26,27,28] have studied in the laboratory the effect of the presence of a free-gas saturation upon the quantity of oil which remains trapped as residual oil following flooding with water. Some found that, for the systems they used, the residual oil remaining after waterflooding was decreased by the presence of gas. Others observed that in homogeneous sands the presence of free gas over a fairly wide range of saturation during the displacement by water resulted in only a small increase in ultimate oil recovery.

The speculation has been advanced[29] that the operation of many water-drive reservoirs below their bubble point might result in tangible increases in oil recovery due to improved displacement efficiency claimed to be attained by the creation of a free-gas saturation during flooding. To establish the desired gas saturation requires that production rates be maintained sufficiently high to cause the reservoir pressure to decline below the bubble point. This procedure necessarily then becomes a factor to be considered in establishing the MER for water-drive fields.

Application of such practice to production operations, however, involves consideration of other attendant factors from the reservoir standpoint that may adversely affect the recovery should the production of oil and the establishment of a gas saturation in the formation be accomplished by severe reduction in pressure below the bubble point. The indicated benefits of gas evolution on the oil-displacement efficiency by water drive may be minimized or eliminated by such conditions as a high-shrinkage oil, reduction in relative permeability to oil and the ensuing reduction in mobility of the unswept region which may adversely affect the sweep-out pattern, and the effects of high-viscosity oils. In addition to these, uneven advance of water and nonuniform flushing of the formation may occur during the attempt to attain the desired gas saturation prior to water advance. Further, in heterogeneous sands, gas in the form of bubbles may diffuse from the tight to the more permeable sands, leading to nonuniform recovery. If the gas is present in a continuous phase throughout the reservoir, oil may imbibe into the tight sands and expel gas into the permeable strata. This situation can actually lead to an increased tendency for water to channel through the more permeable zones and to a reduction in oil recovery from the over-all formation. It would appear, then, in establishing a program of production from a specific field that the influence of gas saturation during recovery by water drive cannot be generalized but must be specified for each individual operation with all factors considered.

Effect of Rate on Oil Recovery by Waterflooding

In recent years there has been a rapid increase in the application of secondary waterflooding as a means of obtaining additional oil from substantially pressure-depleted pools. Concurrently, an extensive search has been conducted for a better understanding of the factors that affect the recovery of oil by this process and contribute to the success of a waterflood. The effect of rate of water advance on ultimate recovery of oil by waterflooding has been a subject of much discussion and investigation. Claims have been made that restriction of water-injection or oil-production rates during the course of waterflooding operations has resulted in loss in ultimate oil recovery. Counteracting these claims are the results of extensive examination of the performance of actual floods, and of theoretical and laboratory studies of the fundamental physical factors involved that support the following conclusions:[28]

1. High rates of injection with capacity production are not necessary to obtain maximum ultimate oil recovery from secondary waterfloods.
2. Waterfloods can be curtailed without loss of oil recovery.
3. In natural reservoirs, which usually comprise heterogeneous formations, reduction in the rate of water advance may enhance recovery as a result of the action of capillary forces to produce more uniform flooding.

Efficient Well Performance

Efficient reservoir production also demands efficient operation of the wells tapping the reservoir. The maximum efficient rate for a reservoir cannot exceed the combined efficient rates of the individual wells. Thus the determination of the efficient capacity of a reservoir to produce makes it imperative that an investigation of the capabilities and limitations of each well to produce its proportionate share be conducted. One of the most useful tools in determining the productive capacity of a well is the flow test. From the flow test are determined the productivity factor and the specific productivity factor of the well. These data give directly the total pressure drop and the pressure drop per unit of formation section open to a well during flow at a given production rate. The productivity test permits quantitative evaluation of the maximum rate at which a well may be produced to avoid excessive localized pressure drops around the well, to maintain high oil saturation, and to prevent or minimize fingering or coning of gas and water into the well. Well-potential tests, production tests at regular intervals, and continuous records of well-production histories also give information which has value in the proper assigning of efficient producing rates to the individual wells.

Summary

From an accumulation of knowledge regarding the fundamental nature of oil-recovery processes and through observations of field and well performance, certain concepts have developed concerning the efficient operation of oil reservoirs. Recognition of the characteristics of the different mechanisms by which oil may be recovered has defined the factors that exert an influence upon the efficiency with which oil may be recovered from the underground porous rock. It has been found that the amount of oil which may be recovered from a reservoir is, in large measure, subject to the controls that may be exercised by the operator. Proper control of reservoir performance requires that the operator identify early the type of recovery mechanism naturally available, choose a dominant recovery technique to be employed, and so conduct the development and operation of the reservoir as to assure the maximum possible efficiency in oil recovery.

Experience has proved that one of the most essential factors in meeting the requirements for efficient oil recovery is control (and by control is meant restriction) of the rate of oil production. Control of excessive production of oil and gas is also necessary to prevent premature dissipation of these displacing agents. The ultimate oil recov-

ery from most pools is directly dependent on the rate of production. For each reservoir producing under its chosen dominant mechanism there is a maximum rate of production that will permit reasonable fulfillment of the requirements for efficient recovery. From this has developed the concept of maximum efficient rate of production, or MER. The concept of MER has a sound basis as an engineering principle in reservoir technology.

The MER is dependent upon the recovery mechanism employed as well as on the physical nature of the reservoir, its surroundings, and its contained fluids. For each of the three types of drive, dissolved-gas, gas-cap, or water drive, certain criteria must be considered in the determination of the MER specific for the reservoir under consideration. The MER must not exceed the capabilities of the reservoir, and at the same time individual well rates must not be excessive. Through technical study of the behavior of the reservoir and its individual wells, it is possible to determine the MER, provided adequate geologic and operating information is available.

References

1. *World Oil*, vol. 148, no. 3, p. 118, Feb. 15, 1959.
2. Cutler, W. W., Jr.: Estimation of Underground Oil Reserves by Oil-well Production Curves, *USBM Bull.* 228, p. 89, 1924.
3. Miller, H. C., and R. V. Higgins: Review of Cutler's Rule of Well Spacing, *RI* 3497, *USBM*, November, 1939.
4. Keller, W. O., and F. H. Callaway: Critical Analysis of the Effect of Well Density on Recovery Efficiency, *J. Pet. Tech.*, vol. 2, p. 269, September, 1950.
5. Herold, S. C.: Jamin Action—What It Is, and How It Affects Production of Oil and Gas, *Bull. AAPG*, vol. 12, no. 5, p. 659, 1928.
6. Moore, T. V., R. J. Schilthuis, and W. Hurst: The Determination of Permeability from Field Data, *API Prod. Div. Proc. Bull.*, vol. 211, p. 4, 1933.
7. Hurst, W.: Unsteady Flow of Fluids in Oil Reservoirs, *Physics*, vol. 5, p. 20, 1934.
8. Muskat, M.: The Flow of Compressible Fluids through Porous Media and Some Problems in Conduction. Encroachment of Water into an Oil Sand, *Physics*, vol. 5, p. 71, 1934.
9. Bruce, G. H., D. W. Peaceman, H. H. Rachford, Jr., and J. D. Rice: Calculations of Unsteady-state Gas Flow through Porous Media, *Trans. AIME*, vol. 198, p. 79, 1953.
10. Wyckoff, R. D., and H. G. Botset: The Flow of Gas-liquid Mixtures through Unconsolidated Sands, *Physics*, vol. 7, p. 325, 1936.
11. Muskat, M., and M. W. Meres: The Flow of Heterogeneous Fluids through Porous Media, *Physics*, vol. 7, p. 346, 1936.
12. Botset, H. G.: Flow of Gas-liquid Mixtures through Consolidated Sands, *Trans. AIME*, vol. 136, p. 91, 1940.
13. Bell, J. S., and J. M. Shepherd: Pressure Behavior in the Woodbine Sand, *Trans. AIME*, vol. 192, p. 19, 1951.
14. Rumble, R. C., H. H. Spain, and H. E. Stamm, III: A Reservoir Analyzer Study of the Woodbine Basin, *Trans. AIME*, vol. 192, p. 331, 1951.
15. Anders, Jr., E. L.: Mile Six Pool—An Evaluation of Recovery Efficiency, *Trans. AIME*, vol. 198, p. 279, 1953.
16. Craze, R. C., and J. W. Glanville: Plan Your Well Spacing Early, *Oil and Gas J., Mid-year Rept.*, vol. 54, no. 65, p. 216, July 30, 1956. Also, *Well Spacing*, Humble Oil & Refining Company, September, 1955.
17. Keplinger, C. H.: How to Determine Most Efficient Pattern of Well Spacing for a Field, *Oil and Gas J.*, vol. 53, p. 126, Oct. 4, 1954.
18. Craze, R. C.: Spacing of Natural Gas Wells, *Trans. AIME*, vol. 213, p. 213, 1958.
19. Craze, R. C.: Performance of Limestone Reservoirs, *Trans. AIME*, vol. 189, p. 287, 1950.
20. Elkins, L. F.: Reservoir Performance and Well Spacing—Silica Arbuckle Pool, Kansas, *Drill. and Prod. Prac., API*, 1946, p. 109.
21. Barnes, K. B.: Well Interference Studies Are Important in Spacing, *Oil and Gas J.*, vol. 45, p. 120, May 18, 1946.
22. Elkins, L. F.: Reservoir Performance and Well Spacing, Spraberry Trend Area Field of West Texas, *Trans. AIME*, vol. 198, p. 177, 1953.
23. Craze, R. C., and S. E. Buckley: A Factual Analysis of the Effect of Well Spacing on Oil Recovery, *Drill. and Prod. Prac., API*, 1945, p. 144.
24. Buckley, S. E.: *Petroleum Conservation*, p. 151, AIME, 1951.

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March 19, 1990

RECEIVED
MAR 19 1990
OIL CONSERVATION DIVISION

HAND DELIVERED

Mr. William J. LeMay
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

Re: Application of Meridian Oil Inc.
for Temporary Well Testing Allowable
for the Parkway-Delaware Oil Pool,
Eddy County, New Mexico
NMOCD Case 9889

Dear Mr. LeMay:

On behalf of Meridian Oil Inc., this letter is to confirm my request to continue the referenced case from the Examiner's docket of March 21, 1990 to the Examiner's docket of April 18, 1990.

We are in the process of conducting meetings and evaluations with the various operators in the Pool to determine the method and procedures for the well testing programs and, accordingly, need to have more time to complete this process.

Very truly yours,

W. Thomas Kellahin

WTK/tic

xc: Mo Gaddis

Dockets Nos. 10-90 and 11-90 are tentatively set for April 4 and 18, 1990. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 21, 1990

8:15 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Michael E. Stogner, Examiner, or David R. Catanach, Alternate Examiner:

CASE 9882: (Readvertised)

Application of Controlled Recovery, Inc. for an oil treating plant permit, for surface water disposal, and an exception to Order No. R-3221, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority for construction and operation of the surface waste disposal facility and an oil treating plant for the purpose of treating and reclaiming sediment oil and for the collection, disposal, evaporation or storage of produced water, drilling fluids, drill cuttings, completion fluids and other oil field related waste in unlined surface pits, at a site in the S/2 N/2 and the N/2 S/2 of Section 27, Township 20 South, Range 32 East. This site is located on either side of U.S. Highway 62/180 at Mile Marker No. 66.

CASE 9880: (Continued from March 7, 1990, Examiner Hearing)

Application of Merrion Oil & Gas Corporation for a waterflood project, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks approval to institute a waterflood project on its Papers Wash Cooperative Agreement Unit Area underlying portions of Sections 15 and 16, Township 19 North, Range 5 West, by the injection of water into the Papers Wash-Entrada Oil Pool through the Navajo Alloted "15" Well No. 3 located 2310 feet from the South line and 2000 feet from the West line (Unit K) of said Section 15. Said project area is located approximately 22 miles northwest of San Luis, New Mexico.

CASE 9863: (Continued from February 21, 1990, Examiner Hearing)

Application of Hixon Development Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Fruitland Coal Gas Pool underlying Lots 1 through 4 and the E/2 W/2 of Section 7, Township 25 North, Range 12 West, forming a standard 317.28-acre gas spacing and proration unit for said pool, to be dedicated to a well to be drilled at a standard coal gas well location in the SW/4 of said Section 7. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 5 miles south-southwest of El Paso Natural Gas Company's Chaco Plant.

CASE 9887: Application of Hixon Development Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Fruitland Coal Gas Pool underlying the E/2 of Section 17, Township 25 North, Range 12 West, forming a standard 320-acre gas spacing and proration unit for said pool, to be dedicated to a well to be drilled at a standard coal gas well location 790 feet from the North and East lines (Unit A) of said Section 17. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 6 miles south by west of El Paso Natural Gas Company's Chaco Plant.

CASE 9888: Application of Conoco Inc. for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the North Dagger Draw-Upper Pennsylvanian Pool underlying the SE/4 of Section 36, Township 19 South, Range 24 East, forming a standard 160-acre oil spacing and proration unit for said pool, to be dedicated to its existing Dee State Well No. 1 located at a standard oil well location 1980 feet from the South and East lines (Unit J) of said Section 36 (said well is presently completed in the Cemetery-Morrow Gas Pool). Also to be considered will be the cost of re-entering, recompleting, equipping and operating said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in re-entering and recompleting said well. Said unit is located approximately 13 miles west by north of Seven Rivers, New Mexico.

~~CASE 9889~~: Application of Meridian Oil, Inc. for temporary well testing allowable for certain wells in the Parkway-Delaware Pool, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to conduct a special 90-day flow test on selected wells in the Parkway-Delaware Pool located in all or portions of Sections 26, 35, and 36, Township 19 South, Range 29 East, and Section 31, Township 19 South, Range 30 East, for the purpose of gathering data to determine the most efficient producing rate for said pool. This subject area is located approximately 14 miles south by west of Loco Hills, New Mexico.

CASE 9890: Application of Bird Creek Resources, Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Delaware formation underlying the NE/4 NE/4 of Section 15, Township 23 South, Range 28 East, forming a standard 40-acre oil spacing and proration unit for any and all formations and/or pools developed on statewide 40-acre oil spacing within said vertical extent, which includes but is not necessarily limited to the Undesignated Loving-Cherry Canyon Pool and Undesignated East Loving-Delaware Pool. Said unit is to be dedicated to a well to be drilled at a standard location 535 feet from the North and East lines (Unit A) of said Section 15. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 2.5 miles northeast of Loving, New Mexico.

CASE 9891: Application of Bird Creek Resources, Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Delaware formation underlying the NE/4 SE/4 of Section 15, Township 23 South, Range 28 East, forming a standard 40-acre oil spacing and proration unit for any and all formations and/or pools developed on statewide 40-acre oil spacing within said vertical extent, which includes but is not necessarily limited to the Undesignated Loving-Cherry Canyon Pool and Undesignated East Loving-Delaware Pool. Said unit is to be dedicated to a well to be drilled at a standard location 2105 feet from the South line and 560 feet from the East line (Unit I) of said Section 15. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 2 miles east-northeast of Loving, New Mexico.

CASE 9892: Application of Pacific Enterprises Oil Company (USA) for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from a depth of 5000 feet down to the top of the Mississippian Chester Limestone formation, or to a depth of 11,200 feet, whichever is deeper, underlying the E/2 of Section 12, Township 17 South, Range 29 East, forming a standard 320-acre gas spacing and proration unit for any and all formations and/or pools developed on 320-acre spacing within said vertical extent, which presently includes but is not necessarily limited to the Undesignated Anderson-Pennsylvanian Gas Pool. Said unit is to be dedicated to a well to be drilled at a standard gas well location 2180 feet from the North line and 1980 feet from the East line (Unit G) of said Section 12. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 3.25 miles northwest of Loco Hills, New Mexico.

CASE 9893: Application of Pacific Enterprises Oil Company (USA) for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Atoka and Morrow formations underlying the W/2 of Section 28, Township 18 South, Range 27 East, forming a standard 320-acre gas spacing and proration unit for any and all formations and/or pools developed on 320-acre spacing within said vertical extent, which presently includes but is not necessarily limited to either the Undesignated Red Lake-Pennsylvanian Gas Pool or the Undesignated Red Lake Atoka-Morrow Gas Pool. Said unit is to be dedicated to its Trigg "28" Federal Well No. 1 to be drilled at a standard gas well location 2030 feet from the North line and 1980 feet from the West line (Unit F) of said Section 28. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located approximately 4 miles west by north of the Old Illinois Oil Camp.

CASE 9881: (Readvertised)

Application of Richmond Petroleum, Inc. for unorthodox coal gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for an unorthodox coal gas well location for its Federal 31-4-32 Well No. 2 to be drilled 617 feet from the South line and 1939 feet from the West line (Unit N) of Section 32, Township 31 North, Range 4 West, Basin-Fruitland Coal Gas Pool, the W/2 of said Section 32 to be dedicated to said well to form a standard 320-acre gas spacing and proration unit for said pool. Said unit is located approximately 10 miles south of Mile Corner No. 233 located on the New Mexico/Colorado Stateline.

CASE 9894: Application of Richmond Petroleum, Inc. for compulsory pooling, unorthodox coal gas well location, and a non-standard gas spacing and proration unit, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Fruitland Coal Gas Pool underlying Lots 1 through 4 and the S/2 N/2 of Irregular Section 11, Township 32 North, Range 6 West, forming a non-standard 232.80-acre gas spacing and proration unit for said pool, said unit to be dedicated to a well to be drilled at a non-standard coal gas well location 1130 feet from the North line and 760 feet from the West line (Unit E) of said Section 11. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is bounded to the north by the State of Colorado for one-half mile of either side of Astronomical Monument No. 8 located on the stateline.

CASE 9895: Application of Richmond Petroleum, Inc. for compulsory pooling and an unorthodox coal gas well location, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Fruitland Coal Gas Pool underlying the S/2 of Irregular Section 11, Township 32 North, Range 6 West, forming a standard 320-acre gas spacing and proration unit for said pool, said unit to be dedicated to a well to be drilled at a non-standard coal gas well location 1800 feet from the South line and 230 feet from the West line (Unit L) of said Section 11. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well. Said unit is located 1/2 mile south of Astronomical Monument No. 8 located on the Colorado/New Mexico Stateline.

CASE 9896: Application of Siete Oil & Gas Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Scottsdale Federal Lease underlying the NE/4 of Section 27, Township 18 South, Range 31 East, by the injection of water into the Shugart Yates-Seven Rivers-Queen-Grayburg Pool through the perforated interval from approximately 2475 feet to 3707 feet in its Scottsdale Federal Well No. 2 located 330 feet from the North line and 990 feet from the East line (Unit A) of said Section 27. Said well is located approximately 10 miles southeast of Loco Hills, New Mexico.

CASE 9897: Application of Siete Oil & Gas Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Sackett Federal Lease underlying the S/2 SW/4 and SW/4 SE/4 of Section 29, Township 17 South, Range 29 East, by the injection of water into the Grayburg Jackson Pool through the perforated interval from approximately 2300 feet to 3220 feet in its Sackett Federal Well No. 2 located 660 feet from the South line and 1650 feet from the West line (Unit N) of said Section 29. Said well is located approximately 7 miles west by south of Loco Hills, New Mexico.

CASE 9898: Application of Doyle Hartman for compulsory pooling, a non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Eumont Gas Pool underlying the SE/4 SW/4 and SE/4 of Section 5 and the NE/4 NE/4 and NE/4 NW/4 of Section 8, all in Township 20 South, Range 37 East, forming a non-standard 280-acre gas spacing and proration unit for said pool. The applicant proposes to dedicate all production from the Eumont Gas Pool to the existing Britt-Laughlin Com. Well No. 5 (formerly the Oxy USA, Inc. Laughlin "B" Well No. 5) located 330 feet from the South line and 2310 feet from the East line (Unit O) of said Section 5 and to the existing Britt-Laughlin Com. Well No. 1 (formerly the Britt "B-8" Well No. 1) located 660 feet from the North line and 1980 feet from the West line (Unit C) of said Section 8 and to a third well to be drilled at an undetermined location in the SE/4 of said Section 5. Applicant further seeks to be designated operator of the non-standard gas proration unit so created and be entitled to recover out of the production therefrom his costs of drilling, completing and equipping a new infill well, plus a 200% risk factor for drilling, completing and equipping such new infill well, and an equitable and proper percentage of the value of the existing wellbores of applicant's Britt-Laughlin Com. Well Nos. 1 and 5, and all costs of supervision and operation of such non-standard gas proration unit, and that such order also provide for any other relief which may be deemed equitable and proper. The subject area is located approximately 2.25 miles south of Monument, New Mexico.

CASE 9884: (Continued from March 7, 1990, Examiner Hearing)

Application of OXY USA, Inc. for compulsory pooling, non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Eumont Gas Pool underlying the SE/4 of Section 5 and the NE/4 NE/4 of Section 8, all in Township 20 South, Range 37 East, forming a non-standard 200-acre gas spacing and proration unit for said pool, said unit to be simultaneously dedicated to the existing Laughlin "B" Well No. 5 located 330 feet from the South line and 2310 feet from the East line (Unit O) of said Section 5, and to the plugged and abandoned Laughlin "B" Well No. 1 to be re-entered and recompleted in the Eumont Gas Pool at a standard gas well location 1980 feet from the South and East lines (Unit J) of said Section 5. Also to be considered will be the cost of re-entering and recompleting the Laughlin "B" Well No. 1 and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the unit and a charge for risk involved in the re-entering and recompletion of said well. Said unit is located approximately 2.25 miles south of Monument, New Mexico.

CASE 9885: (Continued from March 7, 1990, Examiner Hearing)

Application of Doyle Hartman for compulsory pooling, a non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Eumont Gas Pool underlying either the SE/4 SW/4 of Section 5 and the E/2 W/2 of Section 8, Township 20 South, Range 37 East, forming a non-standard 200-acre gas spacing and proration unit for said pool, or IN THE ALTERNATIVE, the SE/4 SW/4 of said Section 5 and the N/2 NE/4 and NE/4 NW/4 of said Section 8, forming a non-standard 160-acre gas spacing and proration unit for said pool. In either instance the applicant proposes to dedicate all production from the Eumont Gas Pool to the existing Britt "B-8" Well No. 1 located 660 feet from the North line and 1980 feet from the West line (Unit C) of said Section 8 and to a second well to be drilled at a standard gas well location within the applicable non-standard unit. Applicant further seeks to be designated operator of the non-standard gas proration unit so created and be entitled to recover out of the production therefrom its cost of drilling, completing and equipping a new infill well, plus a 200% risk factor for drilling, completing and equipping such infill well, plus an equitable and proper percentage of the value of the existing wellbore of said Britt "B-8" Well No. 1, and all costs of supervision and operation of such unit, and that such order also provide for any other relief which may be deemed equitable and proper. The subject area is located approximately 2.25 miles south of Monument, New Mexico.

GEORGE L. SCOTT, JR.
FRANK S. MORGAN
JAMES G. McCLELLAND

STRATA PRODUCTION COMPANY

648 PETROLEUM BLDG.
ROSWELL, N.M. 88201
(505) 622-1127
(505) 622-5891

'90 MAR 8 AM 8 57

March 5, 1990

Meridian Oil
Attn: T.H. Olle
21 Desta Drive
Midland, Texas 79705

Case 9589
MS

RE: Temporary Increased Allowable
Parkway Delaware Field
Eddy County, New Mexico

Dear Mr. Olle:

On behalf of Strata Production, R. M. Richardson and MorOilCo Inc., be advised that we, as offset lease owners/operators, do not agree to Meridian's proposed testing program for increasing the allowable of Delaware production in the Parkway field. We will appear at the hearing to protest any test program in that regard. Below is a short paragraph outlining our position on this matter.

Geologically, the two main Delaware reservoirs produce from combination structural and stratigraphic traps, both of which have demonstrable oil water contacts. Strata Production knew in advance that we might penetrate the oil column in a relatively low position, but we believed we could make commercial wells before our acreage could be drained by structurally higher wells in Section 35 (owned by Meridian Oil and Siete Oil and Gas). We based our economics and reservoir engineering on the fact that the updip wells could produce no more than 80 BOPD. Should the field allowables be changed, our acreage will be drained more rapidly by structurally updip wells, thereby reducing the ultimate production and return on investment from our lease. To date, Strata Production Company has drilled two wells and has tentative plans to drill two to three more wells.

Operators knew of the 80 barrel-a-day allowable for Delaware production at Parkway field in advance of drilling. In the case of Strata Production, we feel it is unfair to reverse the allowable ruling to benefit those operators with structurally high wells, if it will adversely affect those operators with structurally low wells.

Respectfully yours,

George L. Scott

George L. Scott Jr.
President

cc: William J. LeMay, Director NM - OCD
Sealy Cavin
R. M. Richardson

KELLAHIN, KELLAHIN AND AUBREY
ATTORNEYS AT LAW
EL PATIO BUILDING
117 NORTH GUADALUPE
POST OFFICE BOX 2265
SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN
KAREN AUBREY

CANDACE HAMANN CALLAHAN

JASON KELLAHIN
OF COUNSEL

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

February 27, 1990

Mr. William J. LeMay
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87504

HAND DELIVERED

9887

Re: Application of Meridian Oil, Inc. for Temporary Well Testing Allowable for Certain Wells in Parkway Delaware Oil Pool, Eddy County, New Mexico

Dear Mr. LeMay:

On behalf of Meridian, Inc. please find enclosed our application in the referenced matter which we would appreciate being set for hearing at the next available Examiner's locket of March 21, 1990.

By copy of this Application and letter, sent by certified mail return receipt we are notifying all operators within the pool and all operators within one mile of the outer boundary of said pool of this Application of their right to appear at the hearing and to participate in this hearing, including the right to present evidence either in support of or in opposition to this Application.

Very truly yours,

W. Thomas Kellahin

WTK/dm
Encl.

xc: Meridian

Certified Mail Return Receipt
All Parties listed on
Exhibit B to Application

RECEIVED

FEB 27 1990

OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION OF MERIDIAN OIL, INC. FOR A TEMPORARY WELL TESTING ALLOWABLE FOR CERTAIN WELLS IN THE PARKWAY DELAWARE OIL POOL, EDDY COUNTY, NEW MEXICO

CASE NO. 9889

A P P L I C A T I O N

COMES NOW, MERIDIAN OIL INC., by and through its attorneys, Kellahin, Kellahin & Aubrey, and applies to the New Mexico Oil Conservation Division for a Temporary Well Testing Allowable for certain wells in the Parkway Delaware Oil Pool, Eddy County, New Mexico, as more specifically described as follows:

1. By Order R-8455, dated June 15, 1987, the Division created the Parkway Delaware Pool, whose vertical limits encompass the entire Delaware formation and whose current horizontal limits comprise all of Section 35 and the W/2 of Section 36, T19S, R29E, N.M.P.M., Eddy County, New Mexico.

2. Applicant is the operator of the following wells in the Pool:

(1) Apache "A" Federal #1 Well, Unit C of Section 35
(2) Apache "A" Federal #2 Well, Unit B of Section 35
(3) Apache "A" Federal #3 Well, Unit A of Section 35
(4) Apache "A" Federal #4 Well, Unit D of section 35

3. The location of the wells in the Pool is as set forth on Exhibit A attached hereto.

4. There are currently fifteen wells completed in and producing from the Pool of which eleven are currently capable of producing in excess of a top unit allowable for the Pool which is 80 barrels of oil per day.

5. Applicant seeks authority to conduct a special 90-day flow test on selected Meridian Oil, Inc. operated wells in the Pool for the purpose of gathering data to determine the most efficient producing rate for this particular reservoir.

6. The proposed testing procedure for each of the subject wells is as follows:

Flow Rate BOPD/Well	Flow Period Days
400	15
340	15
280	15
220	15
160	15
100	15

7. The names and addresses of the Operators in the Pool to whom notice has been sent by a copy of this Application are set forth on Exhibit B to this Application.

8. That the proposed Temporary Well Testing Allowable is necessary in order to obtain data from which to determine the most efficient rate of production for the proper development and depletion of the pool thereby preventing waste and protecting correlative rights.

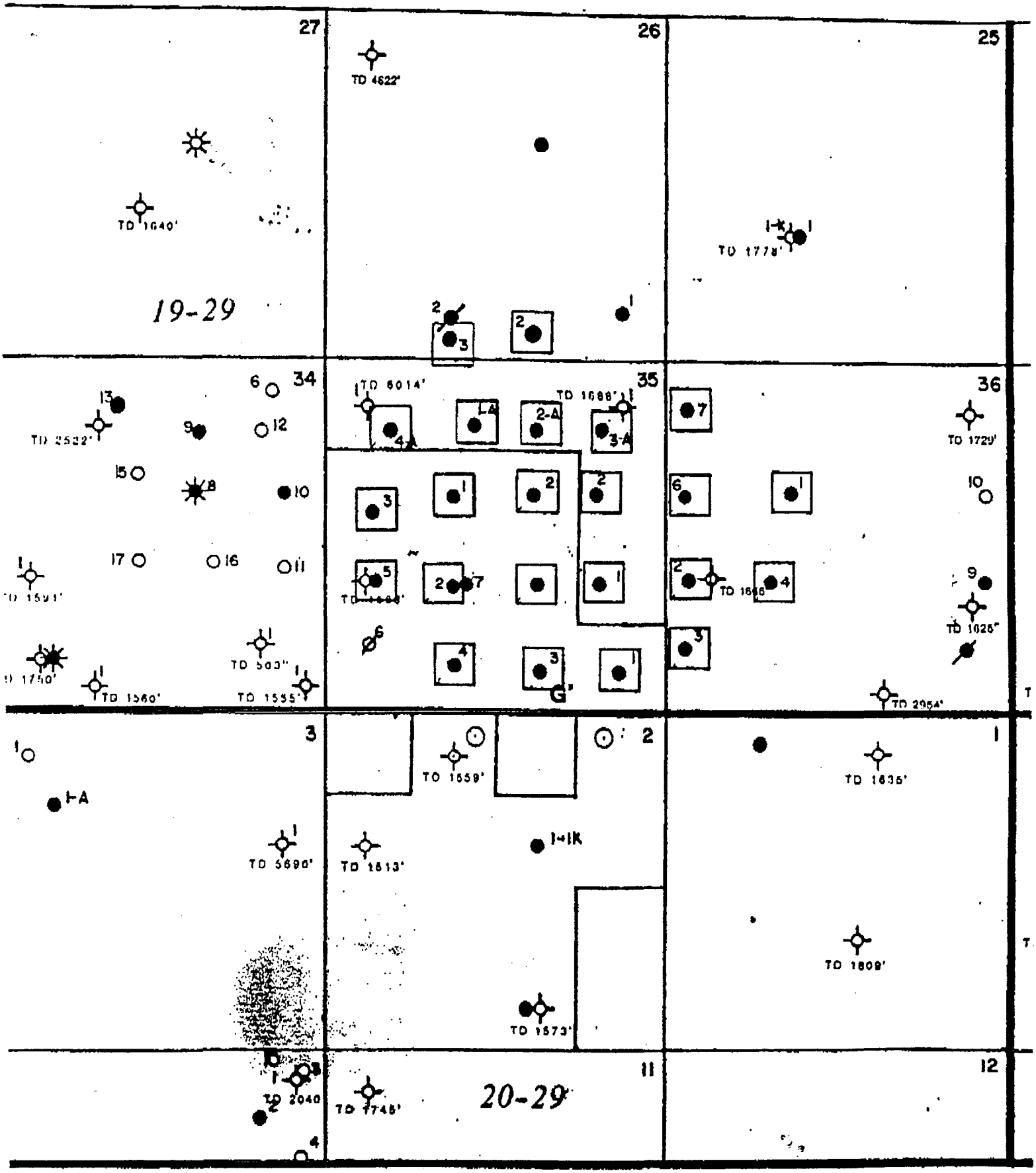
9. In the event that the data obtained from the test fails to demonstrate that the allowable for each well in the pool can be increased without waste, then and in that event, there exists in the pool sufficient remaining reserves for each well so that any well not participating in the test will have opportunity to make up the overproduction attributed to the test wells thereby preventing the violation of correlative rights.

10. Applicant requests that this Application be set for hearing on the Examiner's docket now scheduled for March 21, 1990.

WHEREFORE, Applicant requests that this Application be set for hearing and that after notice and hearing the Application be granted as requested.

Respectfully submitted

W. Thomas Kellahin



BURTON PROSPECT
PARKWAY (DELAWARE) FIELD
EDDY COUNTY, NEW MEXICO

☐ DELAWARE COMPLETION

EXHIBIT A

Cal-Mon Oil Co.
P.O. Box 2066
Midland, TX 79702

Chevron USA
Box 670
Hobbs, NM 88240

Conoco Inc.
Box 460
Hobbs, NM 88240

Dalton H. Cobb
P.O. Box 50670
Midland, TX 79710

Mobil Oil
Box 633
Midland, TX 79702

Moroilco Inc.
Drawer "I"
Artesia, NM 88211

Oryx (Sun Exploration and Production)
P.O. Box 1861
Midland, TX 79702

Ray Westall
Box 4
Loco Hills, NM 88255

R. M. Richardson
P.O. Box 2423
Roswell, NM 88202-2423

Santa Fe Energy
500 W. Illinois, Suite 500
Midland, TX 79701

Siete Oil & Gas Corporation
P.O. Box 2523
Roswell, NM 88202

Stata Exploration
648 Petroleum Building
Roswell, NM 88202

Yates Petroleum
105 S. 4th Street
Artesia, NM 88210

EXHIBIT B

KELLAHIN, KELLAHIN AND AUBREY
ATTORNEYS AT LAW
EL PATIO BUILDING
117 NORTH GUADALUPE
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Dear Mr. LeMay:

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By copy of this Application and letter, sent by certified mail return receipt we are notifying all operators within the pool and all operators within one mile of the outer boundary of said pool of this Application of their right to appear at the hearing and to participate in this hearing, including the right to present evidence either in support of or in opposition to this Application.

Very truly yours,

W. Thomas Kellahin

WTK/dm
Encl.

xc: Meridian

Certified Mail Return Receipt
All Parties listed on
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RECEIVED
FEB 27 1990
OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION OF MERIDIAN OIL, INC. FOR A TEMPORARY WELL TESTING ALLOWABLE FOR CERTAIN WELLS IN THE PARKWAY DELAWARE OIL POOL, EDDY COUNTY, NEW MEXICO

CASE NO. 9889

A P P L I C A T I O N

COMES NOW, MERIDIAN OIL INC., by and through its attorneys, Kellahin, Kellahin & Aubrey, and applies to the New Mexico Oil Conservation Division for a Temporary Well Testing Allowable for certain wells in the Parkway Delaware Oil Pool, Eddy County, New Mexico, as more specifically described as follows:

1. By Order R-8455, dated June 15, 1987, the Division created the Parkway Delaware Pool, whose vertical limits encompass the entire Delaware formation and whose current horizontal limits comprise all of Section 35 and the W/2 of Section 36, T19S, R29E, N.M.P.M., Eddy County, New Mexico.

2. Applicant is the operator of the following wells in the Pool:

(1) Apache "A" Federal #1 Well, Unit C of Section 35
(2) Apache "A" Federal #2 Well, Unit B of Section 35
(3) Apache "A" Federal #3 Well, Unit A of Section 35
(4) Apache "A" Federal #4 Well, Unit D of section 35

3. The location of the wells in the Pool is as set forth on Exhibit A attached hereto.

4. There are currently fifteen wells completed in and producing from the Pool of which eleven are currently capable of producing in excess of a top unit allowable for the Pool which is 80 barrels of oil per day.

5. Applicant seeks authority to conduct a special 90-day flow test on selected Meridian Oil, Inc. operated wells in the Pool for the purpose of gathering data to determine the most efficient producing rate for this particular reservoir.

6. The proposed testing procedure for each of the subject wells is as follows:

Flow Rate BOPD/Well	Flow Period Days
400	15
340	15
280	15
220	15
160	15
100	15

7. The names and addresses of the Operators in the Pool to whom notice has been sent by a copy of this Application are set forth on Exhibit B to this Application.

8. That the proposed Temporary Well Testing Allowable is necessary in order to obtain data from which to determine the most efficient rate of production for the proper development and depletion of the pool thereby preventing waste and protecting correlative rights.

9. In the event that the data obtained from the test fails to demonstrate that the allowable for each well in the pool can be increased without waste, then and in that event, there exists in the pool sufficient remaining reserves for each well so that any well not participating in the test will have opportunity to make up the overproduction attributed to the test wells thereby preventing the violation of correlative rights.

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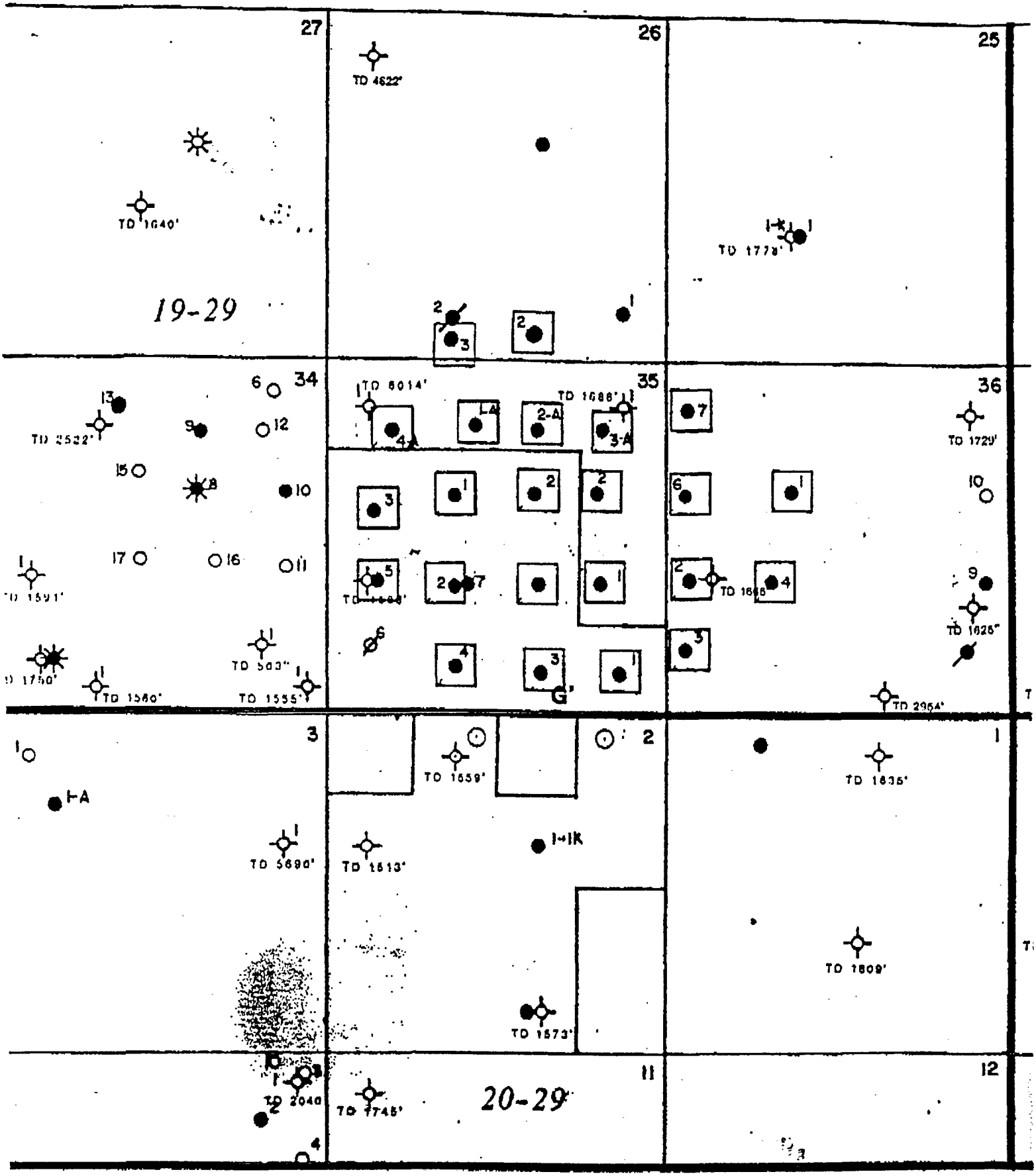
Respectfully submitted

W. Thomas Kellahin



BURTON PROSPECT
PARKWAY (DELAWARE) FIELD
EDDY COUNTY, NEW MEXICO

DELAWARE COMPLETION

EXHIBIT A

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Roswell, NM 88202-2423

Santa Fe Energy
500 W. Illinois, Suite 500
Midland, TX 79701

Siete Oil & Gas Corporation
P.O. Box 2523
Roswell, NM 88202

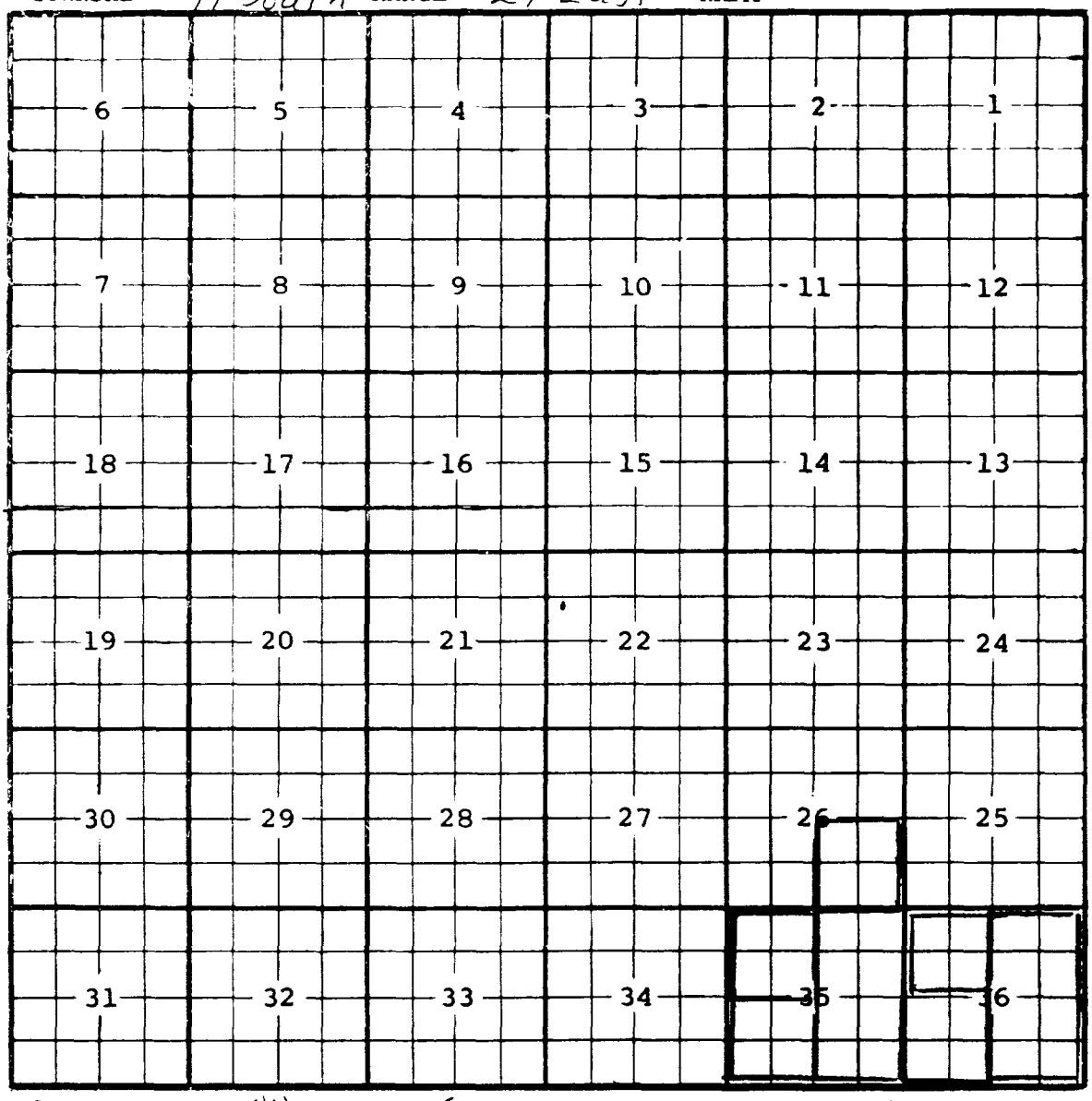
Stata Exploration
648 Petroleum Building
Roswell, NM 88202

Yates Petroleum
105 S. 4th Street
Artesia, NM 88210

EXHIBIT B

COUNTY Eddy POOL Parkway-Delaware

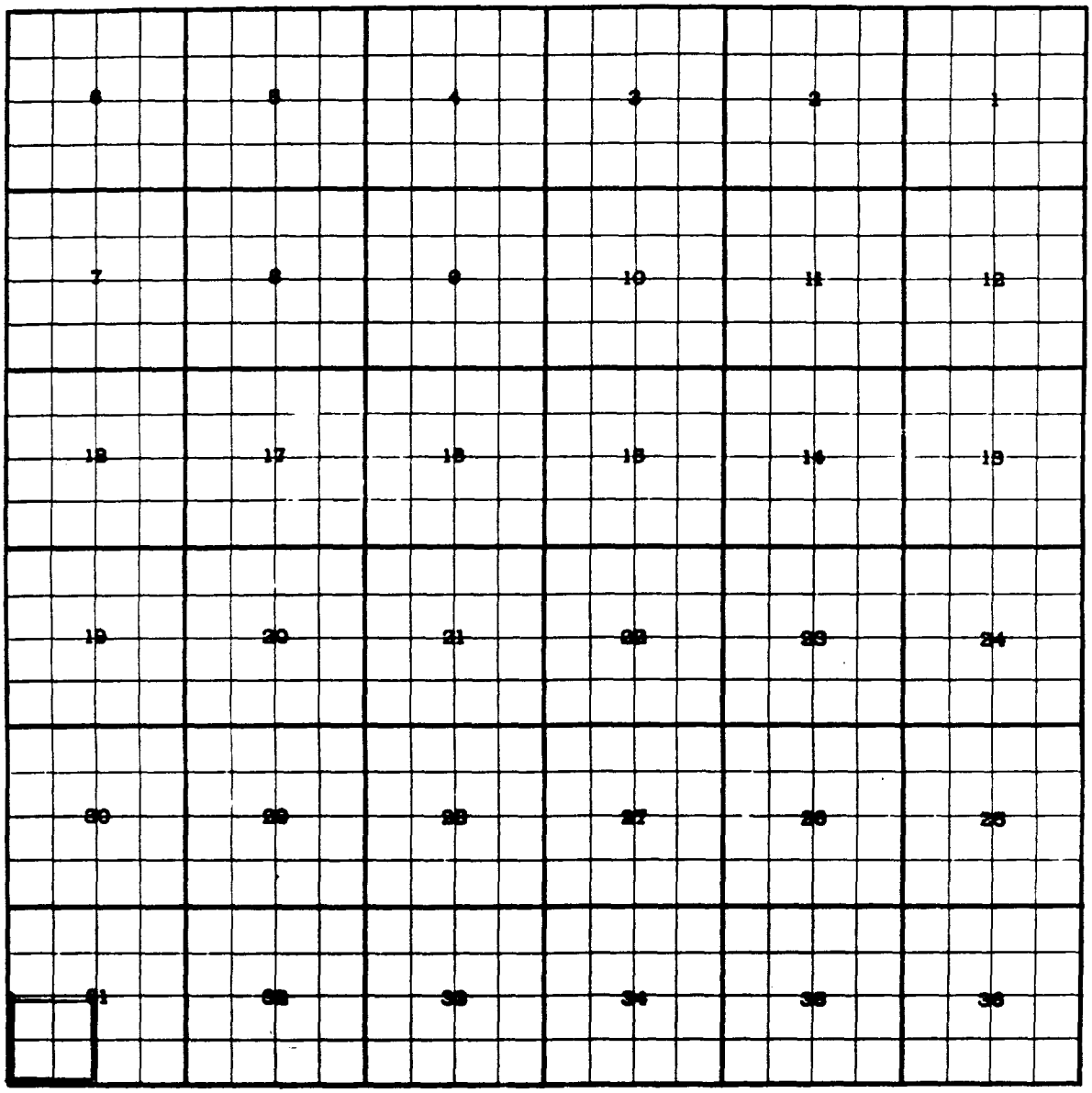
TOWNSHIP 19 South RANGE 29 East NMPM



Description: NW/4 Sec. 36 (R-8455, 6-15-87) EXT: E/2 sec 35 (R-8827, 12-22-88) EXT: SW/4 sec 35 (R-8847, 1-10-89) EXT: NW/4 sec 35 (R-8945, 5-31-89) EXT: SW/4 sec 36 (R-8969, 8-1-89) EXT: SE/4 sec 26, E/2 sec 36 (R-9096, 1-1-90)

County EDDY Pool PARKWAY-DELAWARE

TOWNSHIP 19S, RANGE 30 East, NEW MEXICO PRINCIPAL MERIDIAN



EXT: SW/4 SEC 31 (R-9096, 1-1-90)