CASE 3796: Appli. of SUPERIOR OIL CO. FOR CREATION OF NEW POOL, DISCOVERY ALLOW. & POOL RULES.

Case Number

3796

Application

Transcripts.

Small Exhibits

ETC.

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WESTERN UNION TELEGRAM

W. P. MARSHALL, CHAIRMAN OF THE BOARD
R. W. McFALL, PRESIDENT

SYMBOLS
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1969 JUN 3 AM 8:21

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NEW MEXICO OIL CONSERVATION COMM, ATTN DAN NUTTER=
STATE LAND OFFICE BLDG SANTA FE NMEX=
IN REF TO HEARING, CASE #3796, SCHEDULED FOR JUNE 4,
1969. RELATING TO PERMANENT POOL RULES IN THE CERCA
UPPER PENNSYLVANIAN POOL OF LEA COUNTY NEW MEXICO.
MIDWEST OIL CORP SUPPORTS SUPERIOR OIL COMPANY IN ITS
APPLICATION FOR PERMANENT RULES, ESPECIALLY THE
PROVISION FOR 160 ACRE SPACING AND 160 ACRE ALLOWABLE=
: C F QUALIA DIST PROD SUPT MIDWEST OIL CORP=

=#3796 4 1969 CERCA 160 160=

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3796
Order No. R-3452-A

APPLICATION OF THE SUPERIOR OIL COMPANY
FOR THE CREATION OF A NEW POOL, ASSIGN-
MENT OF DISCOVERY ALLOWABLE, AND THE
PROMULGATION OF POOL RULES, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 4, 1969, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 10th day of June, 1969, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That by Order No. R-3452, dated July 12, 1968, temporary Special Rules and Regulations were promulgated for the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, establishing 160-acre spacing units for a period of one year.

(3) That pursuant to the provisions of Order No. R-3452, this case was reopened to allow the operators in the subject pool to appear and show cause why the Cerca-Upper Pennsylvanian Pool should not be developed on 40-acre or 80-acre spacing units.

(4) That the evidence establishes that one well in the Cerca-Upper Pennsylvanian Pool can efficiently and economically drain and develop 160 acres.

(5) That the Special Rules and Regulations promulgated by Order No. R-3452 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-3452 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, promulgated by Order No. R-3452, are hereby continued in full force and effect until further order of the Commission.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

esr/

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

June 10, 1969

Re: Case No. 3796
Order No. R-3452-A
Applicant:
Superior Oil Company

Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC X
Artesia OCC
Aztec OCC

Other Mr. E. F. Patman, Superior Oil Company, Austin, Texas

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

July 12, 1968

Mr. Elmer Patman
Superior Oil Company
Perry-Brooks Building
Austin, Texas

Re: Case No. 3796
Order No. R-3452
Applicant:
Superior Oil Company

Dear Sir:

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

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
Other

DOCKET MAILED
Date 5-22-69

Docket to Booker/Kelly too

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3796
Order No. R-3452
NOMENCLATURE

APPLICATION OF THE SUPERIOR OIL COMPANY
FOR THE CREATION OF A NEW POOL, ASSIGN-
MENT OF DISCOVERY ALLOWABLE, AND THE
PROMULGATION OF POOL RULES, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 26, 1968, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 12th day of July, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, The Superior Oil Company, seeks the creation of a new oil pool for Upper Pennsylvanian production in Lea County, New Mexico, and the assignment of an oil discovery allowable in the amount of approximately 52,010 barrels to the discovery well.

(3) That the applicant also seeks the promulgation of special rules for said pool, including a provision for 160-acre proration units.

(4) That the evidence presently available indicates that the Superior Oil Company State D COM Well No. 1, located in

Unit G of Section 4, Township 14 South, Range 34 East, NMPM, Lea County, New Mexico, has discovered a separate common source of supply which should be designated the Cerca-Upper Pennsylvanian Pool; that the vertical limits of said pool should be the Upper Pennsylvanian formation as found in the interval from 10,397 feet to 10,422 feet on the log of the aforesaid Superior Oil Company State D COM Well No. 1; and that the horizontal limits of said pool should be the E/2 of Section 4, Township 14 South, Range 34 East, NMPM, Lea County, New Mexico.

(5) That the discovery well for the aforesaid pool, Superior Oil Company State D COM Well No. 1, located in Unit G of Section 4, Township 14 South, Range 34 East, NMPM, Lea County, New Mexico, is entitled to and should receive a bonus discovery oil allowable in the amount of 52,010 barrels, based upon the top perforations in said well at 10,402 feet, to be assigned over a two-year period.

(6) That should subsequent development prove that the subject well has not discovered a separate common source of supply, all bonus discovery allowable remaining unproduced at such time should be cancelled.

(7) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 160-acre spacing units should be promulgated for the Cerca-Upper Pennsylvanian Pool.

(8) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(9) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(10) That this case should be reopened at an examiner hearing in June, 1969, at which time the operators in the subject pool should be prepared to appear and show cause why the Cerca-Upper Pennsylvanian Pool should not be developed on 40-acre or 80-acre spacing units.

IT IS THEREFORE ORDERED:

(1) That a new pool in Lea County, New Mexico, classified as an oil pool for Upper Pennsylvanian production, is hereby created and designated the Cerca-Upper Pennsylvanian Pool, with vertical limits comprising the Upper Pennsylvanian formation as found in the interval from 10,397 feet to 10,422 feet on the log of the discovery well, Superior Oil Company's State D COM Well No. 1, located in Unit G of Section 4, Township 14 South, Range 34 East, NMPM, Lea County, New Mexico, and horizontal limits comprising the E/2 of said Section 4.

(2) That the aforesaid discovery well is hereby authorized an oil discovery allowable of 52,010 barrels to be assigned to said well at the rate of 72 barrels per day in accordance with Rule 509 of the Commission Rules and Regulations;

PROVIDED HOWEVER, that should subsequent development prove that the subject well has not discovered a separate common source of supply, all bonus discovery oil allowable remaining unproduced at such time shall be cancelled.

(3) That temporary Special Rules and Regulations for the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
CERCA-UPPER PENNSYLVANIAN POOL

RULE 1. Each well completed or recompleted in the Cerca-Upper Pennsylvanian Pool or in the Upper Pennsylvanian formation within one mile thereof, and not nearer to or within the limits of another designated Upper Pennsylvanian oil pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located on a standard unit containing 160 acres, more or less, substantially in the form of a square, which is a quarter section being a legal subdivision of the United States Public Land Surveys.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit consisting of less than 160 acres or the unorthodox size or shape

of the tract is due to a variation in the legal subdivision of the United States Public Land Surveys. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well shall be located within 150 feet of the center of a governmental quarter-quarter section or lot.

RULE 5. The Secretary-Director may grant an exception to the requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all operators offsetting the proposed location or if no objection to the unorthodox location has been entered within 20 days after the Secretary-Director has received the application.

RULE 6. A standard proration unit (158 through 162 acres) shall be assigned a 160-acre proportional factor of 7.67 for allowable purposes, and in the event there is more than one well on a 160-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable as the acreage in such non-standard unit bears to 160 acres.

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the Cerca-Upper Pennsylvanian Pool or in the Upper Pennsylvanian formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before August 1, 1968.

(2) That each well presently drilling to or completed in the Cerca-Upper Pennsylvanian Pool or in the Upper Pennsylvanian formation within one mile thereof shall receive a 40-acre allowable until a Form C-102 dedicating 160 acres to the well has been filed with the Commission, or until a non-standard unit containing less than 160 acres has been approved.

(3) That this case shall be reopened at an examiner hearing in June, 1969, at which time the operators in the subject pool may appear and show cause why the Cerca-Upper Pennsylvanian Pool should not be developed on 40-acre or 80-acre spacing units.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

A. L. PORTER, Jr., Member & Secretary

esr/

CLASS OF SERVICE
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WESTERN UNION TELEGRAM (440)

W. P. MARSHALL
CHAIRMAN OF THE BOARD

SYMBOLS
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MAIN OFFICE OCC
1969 JUN 3 AM 8 46

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NS MDA107 DJ PD=MIDLAND TEX 2 433P CDT=
NEW MEXICO OIL CONSERVATION COMM, SECRETARY=DIRECTOR=
A L PORTER JR SANTA FE NMEX=

RE: CASE MO. 3796 JUNE 4, 1969. ATLANTIC RICHFIELD HAS REVIEWED PERFORAMANCE OF CERCA=UPPER PENNSYLAVIAN POOL AND CONCURS WITH SUPERIOR OIL COMPANY WHO WILL APPEAR AND RECOMMEND PERMANENT FIELD RULES INCLUDE 160=ACRE SPACING AND 160=ACRE ALLOWABLE BE ESTABLISHED TO PERMIT MAXIMUM RECOVERY AND ECONONIC DEVELOPMENT OF THE POOL=
R E POWERS REGION ENGINEER=

=3796 4 1969 160 160=

WU1201 (R2-65) THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
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WESTERN UNION TELEGRAM

W. P. MARSHALL, CHAIRMAN OF THE BOARD
R. W. McFALL

(520).

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MAIN OFFICE O.C.C.

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LA138 NSA562

1969 JUN 5 AM 8 46

NS MDA113 DU PD=MIDLAND TEX 2 518P CDT=
NEW MEXICO OIL CONSERVATION COMM=
STATE LAND OFFICE BLDG SANTA FE NMEX=

ATTN: MR DAN NUTTER. RE: CASE #3796 FIELD RULES = CERCA PENN. FIELD LEA COUNTY NEW MEXICO

GENTLEMEN: I AM THE OPERATOR OF A NEW WELL WHICH IS ANTICIPATED TO BE PLACED IN THE CERCA PENN FIELD, =THE SHELL STATE, 1=D, 9,14=34. WITH REGARD TO CASE #3796 SET FOR JUNE 4, 1969, THIS IS TO ADVISE THAT I CONCUR WITH THE RECOMMENDATIONS OF THE SUPERIOR OIL COMPANY THAT THE FIELD SHOULD BE DEVELOPED ON THE SPACING OF 160 ACRES

WU1201 (R2-65) THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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

WESTERN UNION TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. McFALL
PRESIDENT

SYMBOLS
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PER WELL WITH CORRESPONDING WELL ALLOWABLES AS SET FORTH
IN THE TEMPORARY FIELD RULES EFFECTIVE 7-1-68=

K K AMINI=

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TENNECO OIL COMPANY · P. O. BOX 1031 · 1800 WILCO BUILDING · MIDLAND, TEXAS 79701

June 2, 1969

Mr. A. L. Porter, Jr., Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Permanent Field Rules
Cerca (Penn) Field
Eddy County, New Mexico
Case No. 3796

Dear Sir:

Tenneco Oil Company, as a working interest owner in the referenced field, supports Superior Oil Company's application for permanent field rules for 160 acre spacing.

Yours very truly,

TENNECO OIL COMPANY

F. J. McDonald
District Production Superintendent

JJL:gs

cc: Superior Oil Company
P. O. Box 1900
Midland, Texas 79701
Attn: Production Superintendent

Docket No. 16-69

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 4, 1969

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner:

CASE 4121: (Continued from the May 7, 1969, Examiner Hearing)
Application of Roger C. Hanks for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bar U-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 160-acre spacing and proration units and the assignment of 80-acre allowables.

CASE 4143: (Continued from the May 21, 1969, Examiner Hearing)
Application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Eumont Gas Pool and the Skaggs-Grayburg Pool in the wellbore of its Fred Turner, Jr., "A" Well No. 2, the Eumont completion of which is presently classified as a gas completion, located in Unit K of Section 18, Township 20 South, Range 38 East, Lea County, New Mexico. Applicant, further seeks the establishment of a special gas-oil ratio limitation for the subject well.

CASE 3796: (Reopened)
In the matter of Case No. 3796 being reopened pursuant to the provisions of Order No. R-3452, which order established 160-acre spacing units for the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre or 80-acre spacing units.

CASE 4093: (Reopened)
Application of BTA Oil Producers for salt water disposal, Lea County, New Mexico. Order No. R-3727, dated April 15, 1969, authorized the applicant to dispose of produced salt water into the Devonian formation in the intervals from approximately 12,233 feet to 12,275 feet in its Max Pray State "E" Well No. 1 and from approximately 12,088 to 12,164 feet in its Max Pray State "E" Well No. 2 located, respectively, in Units F and C of Section 5, Township 10 South, Range 36 East, adjacent to the West Crossroads-Devonian Pool, Lea County, New Mexico. Applicant now seeks authority to extend said Devonian zones of disposal to 12,233 feet to 12,500 feet in said Well No. 1 and 12,088 feet to such depth as is necessary in said Well No. 2.

CASE 4144: Application of Sam G. Dunn Oil Operations for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from approximately 1910 feet to 1950 feet in its E. Faircloth "C" Well No. 1 located in Unit N of Section 32, Township 7 South, Range 27 East, Acme-San Andres Pool, Chaves County, New Mexico.

CASE 4143: (Continued and readvertised)
Application of Mallard Petroleum Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Seven Rivers formation in the open-hole interval from approximately 3700 feet to [illegible] in the Milnesand Federal Well No. 4, located in Unit C [illegible], Township 20 South, Range 34 East, Lynch (Wates) Pool, Lea County, New Mexico.

CASE 4145: Application of Tenneco Oil Company for an exception to Order No. R-3221, as amended, Lea and Eddy Counties, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for applicant's Lusk Field leases comprising the SW/4 NW/4 of Section 19, Township 18 South, Range 32 East, Lea County, New Mexico, and the NE/4 of Section 24, Township 19 South, Range 31 East, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by wells completed on said leases in unlined surface pits on said leases.

CASE 4146: Application of V. S. Welch for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for the applicants lease comprising the NE/4 of Section 28, Township 18 South, Range 31 East, Shugart Field, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by wells completed or to be completed on said lease in unlined surface pits on said lease.

CASE 4147: Application of Mobil Oil Corporation for pool reclassification, Lea County, New Mexico. Applicant, in the above-styled cause, seeks to have the North Vacuum-Morrow Pool, Lea County, New Mexico, reclassified from an oil pool to a gas pool.

CASE 4148: Application of Fannie Lee Mitchell, Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Wolfcamp formation in the perforated interval from approximately 10,450 feet to 10,550 feet in the former Southern Petroleum Exploration Co., Inc. Machris State 36-3 Well No. 1 located in Unit W of Section 3, Township 16 South, Range 35 East, Townsend-Wolfcamp Pool, Lea County, New Mexico.

CASE 4149: Application of Jack L. McClellan for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for applicant's Harris Well No. 1 located in Unit P, Section 5, Township 16 South, Range 30 East, West Henshaw-Grayburg Pool, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by said well in unlined surface pits in the vicinity of the well.

Hearing

THE SUPERIOR OIL COMPANY

PERRY-BROOKS BUILDING
AUSTIN, TEXAS

May 31, 1968

Case 3796
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New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Attention: Mr. Dan Nutter, Examiner

Gentlemen:

The Superior Oil Company herewith represents that on May 26, 1968, they completed a unitized well identified as State D COM No. 1, Lea County, New Mexico, flowing at the rate of 380 barrels of oil per day.

It is further represented that this well is located in Section 4, Township 14 S, R 34 E and is 1980 feet from the N Line and 1980 feet from the E Line; that the well was drilled to a total depth of 11,031 feet; that it was plugged back to 10,970 feet and perforated at the interval of 10,402-10,408 feet; that the producing formation is identified geologically as Penn-A. 4-S

Based upon the representations contained herein, this is to request that a hearing be set (June 26, 1968) for the purpose of determining whether a new field designation should be assigned to the area of this well based on the hydrocarbon discovery made thereby; whether a discovery allowable should be assigned; and at the hearing applicant will request both, together with accompanying field rules permitting development on 160-acre units with well location at a geographical point of 150 feet from the center of a governmental 1/4-1/4 section.

Your Form C-109 is being properly executed in our Midland Office and will be mailed to you with appropriate accompanying exhibits within the next few days and it will be appreciated if you will treat said Form, together with attached exhibits, as supplemental to this application.

Respectfully submitted,
THE SUPERIOR OIL COMPANY

By: Elmer Patman
Elmer Patman
Attorney

EP-lm

DOCKET MAILED
Date 5.13.68

Docket No. 20-68

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 10, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Elvis A. Utz, Examiner, or A. L. Porter, Jr., Alternate Examiner:

CASE 3800: Application of Depco, Inc. for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres and possibly other formations in its State 647 Well No. 82 located in Unit F of Section 27, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico, in the open-hole interval from 2421 feet to 2926 feet.

CASE 3801: Application of H & S Oil Company for an amendment to Order No. R-3357, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3357, which authorized a waterflood project in the West Artesia Grayburg Unit Area, Artesia Pool, Eddy County, New Mexico, to delete the water injection wells previously authorized in Units H and P of Section 7, Units D, F, H, J, and L of Section 8, and Unit D of Section 17, and to authorize for water injection certain wells in Unit I of Section 7 and Units C, E, G, K, and M, of Section 8, all in Township 18 South, Range 28 East.

CASE 3802: Application of Atlantic Richfield Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Red Lake Unit Area comprising 1,237 acres, more or less, of Federal and Fee lands in Township 18 South, Range 27 East, Red Lake Queen-Grayburg-San Andres Pool, Eddy County, New Mexico.

CASE 3803: Application of Gulf Oil Corporation for an amendment to Order No. R-3345, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3345, which authorized a waterflood project in its Stuart Langlie Mattix Unit Area, Langlie-Mattix Pool, Lea County, New Mexico, to delete the water injection wells previously authorized in Unit M of Section 2, Units A, C, & I of Section 10, and Unit C of Section 11, all in Township 25 South, Range 37 East, and to authorize for water injection four wells at the following unorthodox locations in Section 10: a well 100' from the North line and 1650' from the West line; a well 100' from the North line and 660' from the East line; a well 1315' from the North line and 100' from the West line; and a well 1420' from the South line and 100' from the East line.

CASE 3804: Application of Pan American Petroleum Corporation for a pressure maintenance project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the San Andres formation through two wells located in Units K and M of Section 29, Township 8 South, Range 35 East, Milnesand-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks the designation of a project area and the promulgation of rules governing said project, and the reclassification of the well in Unit M of Section 29 from a salt water disposal well to a pressure maintenance project injection well.

CASE 3805: Application of Benson-Montin-Greer Drilling Corporation and Lloyd B. Taylor for Pressure Interference Tests and Back Allowable, San Juan County, New Mexico. Applicants, in the above-styled cause, seek authority to extend for an additional 60-day period from July 8, 1968, the shut-in test period authorized for one well in the La Plata Gallup Oil Pool, San Juan County, New Mexico, by Commission Order No. R-3399 and to also extend the back allowable make-up period for said well. Applicants further seek authority to drill three additional La Plata oil wells in Section 6 of Township 31 North, Range 13 West, and Sections 31 and 32, Township 32 North, Range 13 West, and to shut said wells in immediately after recovery of load oil and the establishment of initial potentials, for a period of up to 180 days for the purpose of conducting pressure interference tests, and to make-up the production lost during said test period at a later date. Applicants further seek a provision for administrative extension of the shut-in test period and the make-up period.

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE , NEW MEXICO

Hearing Date JUNE 26, 1968 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
Gordon D. Ryan [?]	Pan Am. Pet. Corp	Fort Worth
David G Wight	Pan. Am. Pet. Corp.	Fort Worth
		SF
N [illegible]	RW Byram	Austin, Tex
E F Oatman [?]	The Superior Oil Co.	Midland, Texas
Terry Clacy [?]	The Superior Oil Co.	Midland, Texas
Walter Palmer [?]	Tenneco Oil Co.	Santa Fe
Richard S. Morris [?]	Montgomery firm	Roswell
Harry F. Schrom	Hanson Oil Co.	S.F
Booker Kelly	White Koch Kelly [?]	
Carl L. Whigham	Texaco	Midland
W V Kastler	Gulf Oil Corp	Roswell N.M.
J H Hoover		Santa Fe
Jason Kellahin	Kellahin & Fox	
R. L. Jones Jr	Getty Oil	Midland, Texas
J W Graham	Kewanee Oil Co.	Tulsa, Okla
R S Allison	Kewanee Oil Co	Tulsa, Okla

Docket No. 19-68

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 26, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Elvis A. Utz, Examiner, or A. L. Porter, Jr., Alternate Examiner:

CASE 3788: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Grayburg-San Andres formation through its New Mexico State "W" NCT-1 Well No. 1 located in Unit O of Section 13, Township 17 South, Range 34 East, Vacuum (Grayburg-San Andres) Oil Pool, Lea County, New Mexico.

CASE 3789: Application of Tenneco Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Mesa Queen Unit Area comprising 1,040 acres, more or less, of state lands in Township 16 South, Range 32 East, Mesa-Queen Pool, Lea County, New Mexico.

CASE 3790: Application of Tenneco Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Mesa Queen Unit Area by the injection of water into the Queen formation through 12 wells located in Sections 16, 17, and 20, Township 16 South, Range 32 East, Mesa-Queen Pool, Lea County, New Mexico.

CASE 3573 (Reopened):
In the matter of Case 3573 being reopened pursuant to the provisions of Order No. R-3240 to permit all interested parties to appear and show cause why the temporary rules for the South Corbin-Strawn Oil Pool, Lea County, New Mexico, which include a provision for 160-acre spacing units and a 4000 to one gas-oil ratio limit, should remain in effect.

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CASE 3793: Application of Gulf Oil Corporation for walt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Grayburg formation in the interval from approximately 3812 feet to 3900 feet in its Keohane "C" Federal Well No. 3 located in Unit I of Section 21, Township 18 South, Range 31 East, Shugart Yates-Seven Rivers-Queen-Grayburg Pool, Eddy County, New Mexico.

CASE 3794: Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation adjacent to the Eunice-San Andres Pool in the interval from approximately 4100 feet to 4900 feet in the Warren Petroleum Corporation Eunice Plant SWD Well No. 1, located 2255 feet from the North line and 908 feet from the East line of Section 3, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 3795: Application of Pan American Petroleum Corporation for a pool creation and discovery allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of the Bate-Yates Pool in Lea County, New Mexico, comprising the S/2 of Section 26 and the N/2 of Section 35, both in Township 19 South, Range 33 East, and for the assignment of approximately 16,750 barrels of oil discovery allowable to the discovery well, its Bate Federal Well No. 1 located in Unit N of said section 26.

CASE 3796: Application of The Superior Oil Company for the creation of a new pool, assignment of discovery allowable, and the promulgation of pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new upper Pennsylvanian oil pool for its State D COM Well No. 1 located in Unit G of Section 4, Township 14 South, Range 34 East, Lea County, New Mexico, and for the assignment of an oil discovery allowable in the amount of approximately 52,010 barrels to said well. Applicant further seeks the promulgation of special pool rules for said pool, including a provision for 160-acre proration units.

CASE 3797: Application of Ernest A. Hanson for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen formation in the overall interval from approximately 4604 to 5036 feet in his Mescalero Ridge Unit "35" Well No. 11 located in Unit N of Section 35, Township 19 South, Range 34 East, Pearl-Queen Pool, Lea County, New Mexico.

CASE 3798: Application of Ernest A. Hanson for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the interval from approximately 4177 feet to 4185 feet in his Hanson Federal Well No. 7 located in Unit J of Section 25, Township 26 South, Range 31 East, North Mason-Delaware Pool, Eddy County, New Mexico.

CASE 3799: Application of Amerada Petroleum Corporation for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to re-enter and complete as a gas well the State WR "B" Well No. 1 located at an unorthodox location 554 feet from the North line and 2086 feet from the East line of Section 35, Township 12 South, Range 34 East, Ranger Lake-Devonian Gas Pool, Lea County, New Mexico, and to dedicate to said well the E/2 of said section 35.

ir/

THE SUPERIOR OIL COMPANY

P. O. BOX 1900
MIDLAND, TEXAS 79704
July 3, 1968

Mr. E. A. Utz, Examiner
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

'68 JUL 8 AM 8 23

Re: Repotential or Special Test
Upper Pennsylvanian "A" Zone
Superior State "D" COM No. 1
1980' FNL & 1980' FEL
Section 4, T-14-S, R-34-E
Lea County, New Mexico

Dear Sir:

Attached are two copies of Form No. C-116 which includes recent potential test data from the above captioned well per your request of June 26, 1968, during Special Pool Rules and Discovery Allowable Hearing (Case No. 3796). It will be noted from this form that the State "D" COM No. 1 was repotentialed on July 1, 1968, and flowed at a rate of 557 barrels oil per day through 23/64" choke, with a flowing tubing pressure of 450 psig and gas-oil ratio of 820:1.

If we can provide additional information to you or your staff, please do not hesitate to contact us.

Yours very truly,

THE SUPERIOR OIL COMPANY

T. D. Clay
Petroleum Engineer

TDC/js

cc: Mr. Joe D. Ramey
Mr. Elmer Patman

Potential
380 BOPD

58 X 4.67 + 3(58) =
271

174 =
271
445 M.C.F.
32
517

10402 x 5 = 52,010 / 730 = 72

NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator: THE SUPERIOR OIL COMPANY
Pool: UPPER PENN "A" ZONE WILDCAT - UNDESIGNATED
County: LEA
Address: P. O. BOX 1900, MIDLAND, TEXAS 79701
TYPE OF TEST - (X): Scheduled [ ] Completion [ ] Special [X]

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST: WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS - OIL RATIO CU.FT/BBL
STATE "D" COM *	1	G	4	14S	34E	7-1-68	F	23/64	450	271	24	0	43.3	557	457	820

*REPOTENTIAL TEST AS REQUESTED JUNE 26, 1968, DURING SPECIAL POOL RULES AND DISCOVERY ALLOWABLE HEARING (CASE NO. 3796).

MAIN OFFICE
'68 JUL 8 AM 8 23

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

T. D. CLAY (Signature)
PETROLEUM ENGINEER (Title)
JULY 3, 1968 (Date)

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 1980
HOBBS

June 17, 1968

Mr. Dan Nutter, Chief Engineer
New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Dear Dan:

In reference to the attached application for a discovery bonus of Superior Oil Company, I definitely do not think this well is a discovery well. It is only an extension to the Nonombre Pool.

1. The contour map submitted by Superior can be contoured so the high shown on the Superior well is actually a nose on the Nonombre structure.

2. As shown on crossection map plat, the present existing Nonombre Pool and the pool acreage asked by Superior will be contiguous at corners of Sections 32 and 4.

3. This well is not a wildcat well as defined by the Commission; it is within 3/4 of a mile of the Nonombre Pool.

4. Pressure difference can be expected due to distance between Midwest's (Nonombre Pool) and the Superior well.

5. Apparently both the producers of the Nonombre-Upper Penn Pool and Superior believes their acreage will drain 160 acres, and both areas ~~produce f~~ same geologic zone, and dedicated acreage will be contiguous. This somewhat proves they are the same reservoirs.

Produce from the

6. The high part of the saddle between the two structures has not as yet been proven non-productive, and we have many, many Penn pools with saddles which are one reservoir; Gladiola, Bluitt, etc.

I definitely do not believe this well is a discovery well and therefore recommend a hearing.

Very truly yours,

OIL CONSERVATION COMMISSION

John W. Runyan

John W. Runyan
District Geologist

JWR:fd

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

WESTERN UNION TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. McFALL
PRESIDENT

12201.

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

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

LA126 SSK284

L RWA028 PD=ROSWELL NMEX 24 218P MDT=
1968 JUN 25 PM 2 52
OIL CONSERVATION COMMISSION=
STATE LAND OFFICE BLDG SANTA FE NMEX=

REGARDING CASE 3796 SUPERIOR OIL COMPANYS APPLICATION
FOR CREATION OF A NEW PENNSYLVANIAN OIL POOL AND
PROMULGATION OF SPECIAL POOL RULES INCLUDING A PROVISION
OF 1/6TH O-ACRE PRORATION UNITS UNION OIL COMPANY OF
CALIFORNIA SUPPORTS SUPERIOR APPLICATION=
CHARLES W CARY DISTRICT EXPLORATION SUPT.
UNION OIL CO OF CALIFORNIA==

3796 1/6TH O-ACRE=

WU1201 (R2-65) THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

Docket No. 19-68

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 26, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

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ir/

THE SUPERIOR OIL COMPANY

P. O. BOX 1900
MIDLAND, TEXAS 79704
June 12, 1968

Case 3796

Mr. Dan Nutter, Examiner
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Creation of New Pool
Upper Pennsylvanian "A" Zone
Superior State "D" COM No. 1
1980' FNL & 1980' FEL
Section 4, T-14-S, R-34-E
Lea County, New Mexico

Dear Sir:

Attached are two copies of an Application for Discovery Allowable and Creation of a New Pool (Form C-109) along with appropriate exhibits required under Rule No. 509. This information is provided as supplementary material to our Mr. Elmer Patman's letter dated May 31, 1968, requesting that a hearing be set (June 26, 1968) for the purpose of determining a new pool designation for The Superior Oil State "D" COM No. 1 Well; and at the hearing, applicant will request accompanying Field Rules permitting development on 160-acre units with wells located 150 feet from the center of a governmental quarter quarter section.

Attached are two copies of each exhibit as follows:

1. Ownership map with scale 1" = 1000' showing location of all wells, lessees of record, and producing formations within a two-mile radius of Superior State "D" COM No. 1.

2. Schlumberger Gamma Ray-Sonic log of State "D" COM No. 1 well with accompanying formation tops, drill stem test and completion data plotted on log.

3. Subsurface structure map with scale 1" = 1000' and contoured on top of the Upper Pennsylvanian "A" Zone.

4. Geological cross-section prepared from the State "D" COM No. 1 well log and nearby well logs.

5. Reservoir data from State "D" COM No. 1 and nearby fields accompanied by available bottom hole pressure data.

The Superior State "D" COM No. 1 Well was drilled to a total depth of 11,031 feet and completed May 26, 1968, in the Upper Pennsylvanian "A" Zone through perforations 10,402-08 feet. On initial potential, this well flowed (natural) 380 barrels oil per day plus 1 barrel water per day. Based on a study of the available data from this well and nearby wells located in the Nonombre and East Saunders Fields, it is believed that State "D" COM No. 1 is located on a separate structure from the nearby fields. The State "D" COM No. 1 is separated from the Nonombre Field based on a difference in the oil-water contact. That is, the oil-water contact in the Nonombre Pennsylvanian "A" Zone is believed to be 83 feet vertically higher than the completion interval in the State "D" COM No. 1. Separation of the of the State "D" COM No. 1 from the East Saunders Field is based on the large difference in bottom hole pressures. The bottom hole pressure recorded at the State "D" COM No. 1 Well indicates the reservoir pressure to be considerably higher than that in the East Saunders Field.

We respectfully submit Form C-109 and the accompanying exhibits and data to support our request for a new pool designation for the State "D" COM Well No. 1.

Yours very truly,

THE SUPERIOR OIL COMPANY

T. D. Clay
Petroleum Engineer

TDC/js

cc: Mr. Joe D. Ramey
Mr. Elmer Patman
Mr. M. U. Broussard

Case ~~3795~~ 3796
Heard 6-26-68
Rec. 7-1-68

Grant Superior a new pool and a discovery allowable for their State 'D' Com #1 8-4-13S-34E. Top of upper perfs is 10,402' - (52,010 bbls. Dis. Allowable or 72 BPD). ~~The~~ ~~pun~~ The [redacted] Vertical limits of the Cerca ~~Dub...~~ - Upper Pennsylvanian Oil pool is the Upper Penn. zone found in the above well from 10,310-10,328 (397 - ~~472~~ 460) ft. The ~~vertical~~ Horizonal limits shall be the E/2-4-13S-34E.

Allow the usual 1-year temporary 160 Ac. spacing. 150' from center of any 1/4 1/4 sections as in E. Saunders pool.

BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

June 4, 1969

EXAMINER HEARING

IN THE MATTER OF:

160-acre spacing units for the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

Case 3796

BEFORE: DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

MR. HATCH: Case 3796, reopened, in the matter of Case No. 3796 being reopened pursuant to the provisions of Order No. R-3452, which order established 160-acre spacing units for the Cerca-Upper Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

MR. KELLY: Booker Kelly, of White, Gilbert, Koch & Kelly, appearing on behalf of the Applicant. I have with me Mr. Elmer Patman, a member of the Texas Bar. I have one witness I would like to have sworn.

(Thereupon, Superior Oil Company's Exhibits 1 through 6 were marked for identification.)

TERRY CLAY

called as a witness by The Superior Oil Company, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. PATMAN:

Q Will you state your name, please, and where you live, and by whom you are employed, and in what capacity?

A My name is Terry Clay, and I work for The Superior Oil Company in Midland, Texas. I have been employed working in Southeast New Mexico for approximately

two years.

Q In what capacity are you employed?

A I am employed as a Petroleum Engineer.

Q Have you testified before the New Mexico Oil Conservation Commission, and are your qualifications a matter of record?

A Yes, they are.

MR. PATMAN: Are there any questions?

MR. NUTTER: No.

Q Are you familiar with the development in Southeast New Mexico that has been identified as the Cerca-Upper Pennsylvanian Field?

A Yes, I am.

Q What well, in your opinion, discovered the separate source of supply?

A The discovery well was the Superior Oil State D No. 1 and this well was completed on May 26, 1968, and was completed in the Upper Penn zone through perforations 10,402 to 10,408. Initial potential of this well flowed natural at a rate of 380 barrels of oil per day, 1 barrel of water, through a 26/64 choke with tubing pressure of 180, and a gas-oil ratio of 1,047. The oil is 43 degrees API gravity oil.

On a retest, after acidizing the discovery well, retest of July 1, 1968, this well flowed 557 barrels of oil per day, through 23/64 choke, gas-oil ratio 820, tube and pressure of 450 pounds, 43.3 degrees API gravity.

Q Mr. Clay, you testified here in this Case in June of last year. Do you recall that?

A Yes, sir.

Q And the burden of your testimony was that that well did discover a common source of supply?

A Yes, sir.

Q Do you agree with that after a year?

A The information that we have collected, primarily pressure data and production data to this date, indicates that the D Well did discover a separate common source of supply from the nearby existing pools.

Q How many wells have been drilled subsequent to the discovery well and completed? How many total wells have been drilled, first?

A There have been ten wells drilled.

Q That is in addition to the discovery well?

A This would include the discovery well. There have been ten wells drilled, of which two were plugged

and abandoned, and to date there are eight completions in the Upper Penn zone.

Q In other words, there have been seven completions in the Upper Penn subsequent to the discovery well?

A That's correct.

Q Now, with reference to those seven completions, were they drilled on 160-acre pattern?

A Yes, they were.

Q What did you determine with reference to the measured pressure in each of those wells in relation to whether or not the pressure was lower than the original pressure of the discovery well at thetime they came in?

A We recorded several pressures after a certain amount of withdrawal from the field, and in no case have any of the subsequent pressures subsequent to the pressure reported in the deed, in no case has this pressure been equal to or been greater than the original pressure of 3,508 PSIG that was recorded in the discovery well.

Q Would that indicate to you that the reservoir fluids are in communication across this area penetrated by these eight wells?

A Yes, it would.

Q Now, Mr. Clay, in your opinion, will a well

efficiently drain 160 acres in this reservoir?

A In my opinion, one well will efficiently drain and adequately drain 160 acres.

Q Would a drilling or spacing pattern, or unit pattern requiring the drilling of a well less than 160 acres cause the drilling of unnecessary wells, in your opinion?

A In my opinion, they would be unecessary wells. They would be unnecessary wells, particularly from an economic standpoint, and also, in my opinion, the higher density spacing would not improve the ultimate recovery in this field.

Q Are there any wells drilling in this field?

A There is one well drilling at the present time. This well is located in the northwest quarter of Section 3, 14 South, 34 East, and is operated by Mr. Sam Boren.

Q Who owns the eight wells that are completed?

A Five of the wells are operated by Superior Oil Company, with four of these wells which Tennecc Oil Company has an interest in.

Q Who owns the other three?

A There is one well operated by Atlantic, previously drilled by Sinclair. There is one well that is operated by Midwest Oil, and one well operated by K.K.

MR: NUTTER: You mentioned two dryholes. Would that be the Southern Minerals well in the northeast quarter of Section 9?

A The northeast quarter of section 9, was drilled and penetrated the Upper Penn with no porosity in the Upper Penn zone, and this well was subsequently plugged and abandoned.

The other dryhole is located in the southwest quarter of Section 3, and it was Atlantic Hondo State No. 1, and this well also penetrated the Upper Penn with no porosity in the Upper Penn, and was subsequently abandoned.

Q Mr. Clay, we have handed the Examiner the folder of Exhibits numbered from 1 through 6, and I believe you have already testified from what we numbered as Exhibit No. 1, is that right?

A A portion of No. 1, yes.

Q What else is on No. 1 that would of substantive value to establish to you as a Reservoir Engineer that a well would adequately drain 160 acres, and that the present spacing unit and proration pattern should be made permanent?

A I might mention here on Exhibit 1, as previously testified, there have been eight wells that have been

completed in the Upper Penn. One of these wells is the dual completion, and the other remaining seven wells are single completed wells. The average net pay in the Upper Penn is eight feet, is determined from electric logs, and the average porosity is eight percent, also determined from electric logs.

The average permeability in the Upper Penn zone is determined from the pressure buildup data, is 80 millidarcies.

The average water saturation as determined from electric logs is 29 percent. Cumulative oil production to May 1, 1969, from the Upper Penn zone in this field, is 342,821 barrels. Cumulative gas production to that same date is 174,908 Mcf. Cumulative water production is 6,483 barrels of water.

Q At that point, let me ask you, what are you doing with the gas?

A The gas is being sold to Warren Petroleum.

Q You are not flaring any gas?

A No, sir.

Q What are you doing with the water production?

A The water production is being hauled, and is being disposed in the Harris State Well, which is located

in the southwest quarter of Section 29 of 13 South, 34 East. This is operated by Midwest Oil.

Q There is no damage to surface or sub-surface water by reason of the production or disposal of the water?

A No, sir.

Q Let's move on to your Exhibit 2, and without reading all of the details on it, tell me how many wells are on there, and what the burden and the thrust of that exhibit is, in your opinion?

A This is a completion data on all the wells completed in this field, and these wells are listed, and the date which they were completed. The original well, thefirst one on the left, with the D-1, which is located in the northeast quarter of Section 4, 14 South, 44 East.

Q Do you have the same data on there with reference to all of the wells, as indicated?

A That's correct.

Q Now, move on to your Exhibit No. 3. What is your Exhibit No. 3?

A Exhibit No. 3 is the drilling economics of various spacings, spacing pattern that might be considered in the Cerca-Upper Penn Field. And under the basic data,

the current price of oil in this field is $3.31 a barrel; gas price is 15 cents per Mcf. The oil is being purchased by Service Pipeline, and the gas is being purchased by Warren Petroleum.

Drilling completion and production facilities cost for a single completed well in this field is $213,000. If a well were drilled on a 40-acre pattern, it is estimated that the recoverable oil would be 43,680 barrels, and recoverable gas of 30,576 Mcf, which would give a net revenue after royalty of $130,520; and after subtracting operating costs, production taxes, and ad valorem tax, would give a net of $117,407.

When balanced against the investment of drilling and completing the well at $213,000, it would result in a loss of $95,593.

If a well were drilled on 80-acre spacing, it is estimated recoverable oil would be 87,360 barrels of oil.

Q That is twice the 40?

A That's correct. Recoverable gas would be 61,152 Mcf, which would give a net revenue after royalty of $261,042; and after deducting operating costs, production taxes, and ad valorem tax, it would give a net

income of $234,816. And when balanced against the original investment of $213,000, it would give a profit of $21,816.

Q That is not a profit, counting the use of your money?

A This is not an acceptable profit.

Q How about 160 acres?

A The 160-acre pattern, the estimated recoverable oil would be 174,720 barrels, recoverable gas of 122,304 Mcf, which would give a net revenue after royalty of $522,085.

And after deducting or subtracting operating costs, the necessary taxes, it would give a net income of $469,634. When balanced against the investment costs, it would give a profit of $256,634, or a profit to investment of 1.21 to one.

Q In that connection, if the Commission did not choose to continue on a permanent basis the existing temporary rules, would you recommend to the Superior Oil Company that infill drilling be done in this field?

A No, sir, I would not.

Q Why wouldn't you do that?

A Primarily because I think it would be -- if

it were on 40-acre spacing, it would result in a loss, and if it were on 80-acre spacing, the economics would not be up to standard.

Q Would you get any more oil, in your opinion?

A No, sir, I do not think so.

Q The next Exhibit you have, what is that, No. 4?

A Exhibit No. 4 is a graph showing the reservoir pressure and the monthly oil production in the Cerca-Upper Field, and the reservoir pressure is at a common datum of minus 6,250, which is shown in the upper part of the graph. The lower part of the graph is the oil production in barrels per month, and also the sequence in which the wells were completed. On the right hand side of the graph is the pressure data, and the well in which the pressure was recorded at.

It will be noted from the reservoir pressure data, the top part of the graph, the original pressure that was recorded on May 14, 1968, was 3,508 pounds. Subsequent pressures have been taken and that we have access to, and in no case has there been a pressure that is equal to or has exceeded the original pressure of3,508 pounds per square inch, which is in my opinion indicative of a depletion type reservoir where the

pressure will decline after withdrawal of oil and gas from the reservoir.

Q In your opinion, is this reservoir rate sensitive?

A No, sir, it is not.

Q Your next Exhibit is No. 5. Briefly, what is that?

A No. 5 is a summary data sheet of reservoir pressure, and the cumulative oil production at the date the pressure was recorded, and also it gives the well in which pressure was recorded at, the shut-in period, and also the reservoir pressure corrected to a subsea elevation of minus 6,250.

MR. NUTTER: Are those corrected pressures at a common datum shown on Exhibit 4?

THE WITNESS: Yes, sir, they are all corrected to this common datum of minus 6,250.

Q Behind your Exhibit No. 5, you have some eight or ten charts that are not numbered. I will ask you if it isn't a fact that those are just the raw worksheets and the material from which Exhibit 5 was prepared?

A That's correct. This is the basic data, basic pressure data which makes up Exhibit 4.

Q And then finally you have a map, we numbered

it No. 6, and what is it?

A This Exhibit No. 6 is a structure map that is contoured on top of the Upper Penn zone, with 25 foot interval contours. It also shows the reservoir pressure that was recorded at the wells on which we have the available data. It shows the cumulative production to May 1, 1969. It shows the percent watercut that these wells have produced, if they are producing in excess of one percent watercut, and it also shows the most recent tests that we have available to us.

Q How big is this reservoir going to be, in your opinion?

A In my opinion, this reservoir could have approximately 950 acres.

Q How many more wells, in your opinion, will be drilled when it is filled up?

A Possibly one more in addition to the one that is drilling.

Q But you have eight in?

A Yes, sir.

Q Were these Exhibits prepared by you or under your supervision?

A Yes, they were.

Q In the event the Commission sees fit to continue these rules in effect on a permanent basis, in your opinion, can the allowable that would be assigned to the well be produced without adversely affecting greater ultimate recovery?

A In my opinion, the allowable currently assigned to these wells can be produced without affecting the reservoir, as far as ultimate recovery. These wells are not producing any appreciable water, and the producing gas-oil ratio is approximately 700 to one; and with the high permeability, these wells will efficiently and adequately drain 160 acres.

Q Now, at the time the Commission promulgated temporary rules, they assigned to the discovery well a bonus allowable, are you familiar with that?

A Yes, I am.

Q About how much of that have you produced?

A We produced approximately half of the bonus allowable that was assigned to the State D Well. The bonus allowable, as I recall, was effective August, 1968.

Q What are you recommending to the Commission that they do with reference to the continuation of that

bonus allowable, and giving you an opportunity to continue to produce it for one more year?

A In view of the capacity of the well shown on this exhibit, this well is capable of producing 492 barrels of oil per day, we would ask the Commission that this bonus allowable be continued.

Q What do you recommend to the Commission with reference to whether they make the rules permanent or not?

A In my opinion, from the valuation of the pressure data and the sequence in which these wells were drilled, in my opinion, the pressures substantiate that these wells are draining and affecting 160 acres.

Q And doing it efficiently, in your opinion?

A Doing it efficiently. With that in mind, I would ask that the Commission grant permanent field rules for 160-acre spacing in this field.

Q Now, Mr. Clay, in the event that the Commission does that, would each and every owner, mineral interest owner, whether royalty owner or lessee, in your opinion, be given a reasonable opportunity to recover his fair share of oil underlying his land, that or its equivalent?

A In my opinion, they would.

Q So correlative rights would not be distorted,

in your opinion?

A No, sir.

Q And waste would not occur?

A No, sir.

Q And the adoption of rules other than 160 acres, 80 acres, or 40 would, in your opinion, cause the drilling of unnecessary wells, and would not result in a greater ultimate recovery?

A In my opinion, they would result in drilling unnecessary wells.

MR. PATMAN: We offer now the Exhibits, if the Examiner please?

MR. NUTTER: Superior's Exhibits 1 through 6 will be admitted in evidence.

(Thereupon, Superior's Exhibits 1 through 6 was admitted in evidence.)

MR. PATMAN: If it be appropriate, I would ask that the data from the June 26 Hearing of last year be incorporated into this record.

MR. NUTTER: This is a part of the same case, and it will be incorporated together.

MR. PATMAN: I have no further questions.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Clay, you mentioned the well that Sam Boren is drilling in the northwest of Section 3. Your map shows another well, a location at least in the southwest of Section 33. Do you know the status of that well?

A To my knowledge, the well in the southwest quarter of 33 is only a location.

Q Now, you have taken numerous bottomhole pressures on that State D No. 1. However, I notice on your Exhibit No. 4 and 5, that only a single pressure is shown for the other wells. Have there been no bottomhole pressures taken on the other wells, other than the initial pressure?

A To my knowledge, there is only one pressure point or one piece of pressure taken at the other wells. When the original well was drilled, we observed the pressure drawdown real closely by measuring these pressures and, of course, we knew the cumulative oil at the date that we were measuring these pressures, and we were trying to get some idea of the size of the reservoir. But only the one well completed. And on subsequent pressure recordings, to my knowledge, we only had one on each of those other wells.

Q Now, I presume that all of these others, all these other pressures that are shown on Exhibit No. 5 here, are after some production from the well, with the exception of the Superior State L No. 1, which is a drill stem test pressure, and the Elkan No. 1, which is a drill stem pressure, would that be correct?

A Yes, that's correct. I am in error here. It would be noted that on October 28, 1968, we recorded a pressure of the State K Well, and we also recorded another pressure on January 22, 1969 at that same well, so there has been two pressures recorded at the State K Well.

Q Going back to Exhibit No. 4, those would be pressure point No. 7?

A Pressure point 7 and 10.

Q So there was a decline there in two pressures from the same well?

A Yes, sir, that's correct.

Q Now, going to your calculation of recoverable oil, which is on Exhibit No. 3, I presume that this is based -- you have come up with an estimated 43,680 per 40. Is this based on a volumetric calculation?

A All of these figures are based on volumetric calculation.

Q We have most of the information for volumetric formula on Exhibit 1, but we are lacking the formation volume factor. What volume factor did you use?

A Formation volume factor is about 1.57.

Q And a recovery factor?

A Recovery factor that was used for these volumetric calculations was 32 percent.

Q What did you base that on?

A This was, first, included in our exhibit at the original Hearing date, and it was based on an estimated of recovery, primarily, in the East Sanders Field.

I might add that since that -- at the time that was the only approach we had was volumetric calculations since there was only one well, and with this subsequent pressure data we have seen no reason to change our volumetric figures.

Q So this formation volume factor and the recovery factor are the same numbers entered in the original Hearing?

A Yes, sir, that's correct. I might point out one other thing, this recoverable oil of 174,000 barrels on 160-acre spacing is an average per well. In other words, it would be dividing up what we see is the ultimate

recovery from pressure cum data, it would be divided up among eight wells.

Q And you used an average net pay, an average porosity, and an average water saturation for all of the wells that are in the Pool?

A Except that that figure, again, came from the original well, and the net pay we used on the original well was 12 feet, and, as I recall, the water saturation was 28 percent, and whereas average pay is 8 feet.

Q On Exhibit No. 1, the data that is given on Exhibit No. 1 is all current, based on the average of all of the wells that have been drilled?

A That's correct. Even though the pay is slightly thinner than what we originally saw in the original well, and the pressure cum data indicates the recovery is going to be a little higher than 32 percent, which we originally estimated on the volume calculations.

Q Now, you have two pressure points that are above the extrapolated line there, which would be an average reservoir decline. They would be pressure point No. 6, which is the pressure taken on October 1, 1968, on the L No. 1, which, referring to Exhibit No. 5, would be a drill stem pressure test?

A That's correct.

Q Prior to any production from the well?

A That's correct.

Q And a pressure point No. 9 is the pressure taken on the Elkan No. 1 on January 6, 1968, which, back to Exhibit 5, is another drill stem test. So it would appear that the two pressure points that are above the line would represent virgin conditions in that vicinity prior to any production from the well?

A I would like to point out one thing. When the L well pressure was measured on October 1st, there had been, and as shown on Exhibit 5, there had been 56,000 barrels of oil withdrawn from the reservoir. And then when the pressure was recorded at the Elkan Well on January 6, again a drill stem test, again there had been 168,000 barrels taken from the wells down to the south.

Q This would account for the pressures being lower than the initial reservoir pressure, but the fact that they were drill stem test pressures prior to any production from those wells, themselves, may account for the pressures being above the line?

A Yes, sir.

Q They are lower than the initial pressure, but they are still higher than the pool pressure decline,

aren't they?

A In my opinion, the reason they are higher than the pool decline is that in the L Well, which is a fairly low permeability well, that it has not been effectively drained. However, it has been drained around it, which accounts for the lower pressure, but it hasn't been as effectively drained as in the center part of the pool.

Q You don't have your permeability for each of the wells -- yes, you do.

A The ones that I have built up data on, which is the D Well, has a permeability of 147 millidarcies that is in the center part of the pool.

Q And L-1 has nine?

A L has nine millidarcies of permeability, and that well was extremely tight when we completed it. It will be noted that we had to acidize it with some 9,000 gallons of acid to get it in its current status. Also, calculated permeability on the Elkan Well is 85 millidarcies. In both cases, the permeability seems to be, and it was corroborated by calculation, is lower up to the northeast than it is in the center part of the field.

Q Which might account for the pressure points being above the average decline?

A In my opinion

MR. NUTTER: Any further questions of Mr. Clay? You may be excused.

MR. PATMAN: I have nothing further.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3796?

MR. HATCH: The Commission has received communication from Tenneco, and from Amerada, and from Atlantic Richfield, all supporting the applicant.

MR. NUTTER: Thank you, Mr. Hatch. If there is nothing further in Case 3796, we will take the Case under advisement, and recess the Hearing until 1:30 this afternoon.

I N D E X

STATE OF NEW MEXICO)
) SS.
COUNTY OF BERNALILLO)

I, SAMUEL MORTELETTE, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Samuel K. Mortelette

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3796 heard by me on 9/4, 1969.

New Mexico Oil Conservation Commission, Examiner

THE SUPERIOR OIL COMPANY
P. O. BOX 1900
MIDLAND, TEXAS 79704
June 12, 1968

Mr. Dan Nutter, Examiner
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Creation of New Pool
Upper Pennsylvanian "A" Zone
Superior State "D" COM No. 1
1980' FNL & 1980' FEL
Section 4, T-14-S, R-34-E
Lea County, New Mexico

Dear Sir:

Attached are two copies of an Application for Discovery Allowable and Creation of a New Pool (Form C-109) along with appropriate exhibits required under Rule No. 509. This information is provided as supplementary material to our Mr. Elmer Patman's letter dated May 31, 1968, requesting that a hearing be set (June 26, 1968) for the purpose of determining a new pool designation for The Superior Oil State "D" COM No. 1 Well; and at the hearing, applicant will request accompanying Field Rules permitting development on 160-acre units with wells located 150 feet from the center of a governmental quarter quarter section.

Attached are two copies of each exhibit as follows:

1. Ownership map with scale 1" = 1000' showing location of all wells, lessees of record, and producing formations within a two-mile radius of Superior State "D" COM No. 1.

2. Schlumberger Gamma Ray-Sonic log of State "D" COM No. 1 well with accompanying formation tops, drill stem test and completion data plotted on log.

3. Subsurface structure map with scale 1" = 1000' and contoured on top of the Upper Pennsylvanian "A" Zone.

4. Geological cross-section prepared from the State "D" COM No. 1 well log and nearby well logs.

5. Reservoir data from State "D" COM No. 1 and nearby fields accompanied by available bottom hole pressure data.

The Superior State "D" COM No. 1 Well was drilled to a total depth of 11,031 feet and completed May 26, 1968, in the Upper Pennsylvanian "A" Zone through perforations 10,402-08 feet. On initial potential, this well flowed (natural) 380 barrels oil per day plus 1 barrel water per day. Based on a study of the available data from this well and nearby wells located in the Nonombre and East Saunders Fields, it is believed that State "D" COM No. 1 is located on a separate structure from the nearby fields. The State "D" COM No. 1 is separated from the Nonombre Field based on a difference in the oil-water contact. That is, the oil-water contact in the Nonombre Pennsylvanian "A" Zone is believed to be 83 feet vertically higher than the completion interval in the State "D" COM No. 1. Separation of the of the State "D" COM No. 1 from the East Saunders Field is based on the large difference in bottom hole pressures. The bottom hole pressure recorded at the State "D" COM No. 1 Well indicates the reservoir pressure to be considerably higher than that in the East Saunders Field.

We respectfully submit Form C-109 and the accompanying exhibits and data to support our request for a new pool designation for the State "D" COM Well No. 1.

Yours very truly,

THE SUPERIOR OIL COMPANY

T. D. Clay
Petroleum Engineer

TDC/js

cc: Mr. Joe D. Ramey
Mr. Elmer Patman
Mr. M. U. Broussard

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION FOR DISCOVERY ALLOWABLE AND CREATION OF A NEW POOL

Form C-109
Adopted 9-1-66

NOTE: This form is to be filed and attachments made in accordance with the provisions of Rule 509. If discovery is claimed for more than one zone, separate forms must be filed for each.

Operator	Address
The Superior Oil Company	P. O. Box 1900, Midland, Texas 79701

Lease Name	Well No.	County
State "D" COM	1	Lea

Well Location

Unit Letter G ; 1980 Feet from The North Line and 1980 Feet From the East Line of Section 4 , Township 14-S , Range 34-E , NMPM

Suggested Pool Names *(List in order of preference)*

1. Elkan 2. Etcheverry 3. Dye or Mike-Dan Field

Name of Producing Formation	Perforations	Date of Filing Form C-104
Upper Penn. "A"	10,402-08	May 29, 1968

Was "Affidavit of Discovery" Previously Filed For This Well in this Pool?	If Yes, Give Date of Filing	Date Well was Spudded	Date Compl. Ready to Prod.
No		April 8, 1968	May 26, 1968

Total Depth	Plugged Back Depth	Depth Casing Shoe	Tubing Depth	Elevation *(Gr., DF, RKB, RT, etc.)*
11,031	10,943	11,031	10,419	GR 4137; RKB 4155; DF 4154

Oil Well Potential *(Test to be taken only after all load oil has been recovered)*

380 Bbls. Oil Per Day Based On 380 Bbls In 24 Hours; 1 Bbls Water Per Day Based On 1 Bbls In 24 Hours; Gas Production During Test: 398 MCF; Gas-Oil Ratio: 1047 Method Of Producing: Flowing Chk. Size 26/64"

NEAREST PRODUCTION TO THIS DISCOVERY *(Includes past and present oil or gas producing areas and zones whether this discovery is based on horizontal or vertical separation):*

Pool Name	Name of Producing Formation	Top of Pay	Bottom of Pay	Currently Producing?
Nonombre-Upper Penn.	Upper Penn.	10,310 (-6142)	10,329 (-6174)	March 1968 8299 BOPM + 7710 MCFG

Horizontal Distance and Direction from Subject Discovery Well to the Nearest Well in this Pool	Vertical Distance from Subject Discovery Zone to Producing Interval this Pool
Northwest - 7800'	State "D" COM No. 1, 100' low to nearest Nonombre Field well (Midwest Oil St. "C" No. 1)

NEAREST COMPARABLE PRODUCTION *(Includes past and present oil or gas production from this pay or formation only):*

Pool Name	Top of Pay	Bottom of Pay	Currently Producing?
Nonombre - Upper Penn	10,310 (-6142)	10,329 (-6174)	March 1968 8299 BOPM + 7710 MCFG

Horizontal Distance and Direction from Subject Discovery Well to the Nearest Well in this Comparable Pool
Northwest - 7800'

Is "County Deep" Discovery Allowable Requested for Subject Discovery Well?	If Yes, Give Name, Location, and Depth of Next Deepest Oil Production in this County
No	

Is the Subject Well Multiple Completion?	Is Discovery Allowable Requested for other Zone(s)?	If Yes, Name all Such Formations
No	No	

LIST ALL OPERATORS OWNING LEASES WITHIN ONE MILE OF THIS WELL *(Attach additional sheet if necessary)*

NAME	ADDRESS
Union Oil Co. of California	Union Oil Building, Midland, Texas 79701 Atten: Mr. C. H. Glidden
Atlantic Richfield Company	P. O. Box 1978, Roswell, New Mexico 88201 Atten: Mr. S. L. Smith
Southern Minerals Corporation	P. O. Box 1816, Midland, Texas 79701 Atten: Mr. Jack Samples
Shell Oil Company	P. O. Box 1509, Midland, Texas 79701 Atten: Mr. R. C. Knecht
Humble Oil & Refining Company	P. O. Box 1600, Midland, Texas 79701 Atten: Mr. Bill R. Payne
Midwest Oil Corporation	1500 Wilco Building, Midland, Texas 79701 Atten: Mr. D. D. Matson
Ralph Lowe Estate	P. O. Box 832, Midland, Texas 79701 Atten: Mr. J. L. Morris
*	

Attach evidence that all of the above operators have been furnished a copy of this application. Any of said operators who intends to object to the designation of the subject well as a discovery well, eligible to receive a discovery allowable, must notify the appropriate District Office and the Santa Fe Office of the Commission of such intent in writing within ten days after receiving a copy of this application.

* Sun Oil Company, P. O. Box 1861, Midland, Texas 79701, Atten: Mr. Emil Monsour

Remarks: Attached is a copy of letter submitted to the above offset operators.

CERTIFICATION

I hereby certify that all rules and regulations of the New Mexico Oil Conservation Commission have been complied with, with respect to the subject well, and that it is my opinion that a bona fide discovery of a hitherto unknown common source of oil supply has been made in said well. I further certify that the discovery allowable for the subject well, if authorized, will be produced from the subject zone in this well only. Further, that the information given herein and attached hereto is true and complete to the best of my knowledge and belief.

J. R. Lacey
Signature

Petroleum Engineer
Position

June 11, 1968
Date

THE SUPERIOR OIL COMPANY
P. O. BOX 1900
MIDLAND, TEXAS 79704
June 12, 1968

Mailed Individually To Each Operator Within 1 Mile of State "D" Com. No. 1

Re: Creation of New Pool
Upper Pennsylvanian "A" Zone
Superior State "D" COM No. 1
1980' FNL & 1980' FEL
Section 4, T-14-S, R-34-E
Lea County, New Mexico

Gentlemen:

Attached is a copy of Form C-109, Application for Discovery Allowable and Creation of a New Pool, for your review. We have applied for a new field designation for the recently completed State "D" COM No. 1 Well. This well was completed May 26, 1968, in the Upper Pennsylvanian "A" Zone through perforations 10,402-08 feet. On initial potential, this well flowed 380 BOPD plus 1 BWPD, 26/64" choke, FTP = 180, GOR = 1047, 43° API.

We believe this well to be separated from the nearby Nonombre and East Saunders Fields. Form C-109 and required exhibits have been forwarded to the New Mexico Oil Conservation Commission to establish a new field designation.

Yours very truly,

THE SUPERIOR OIL COMPANY

T. D. Clay
Petroleum Engineer

TDC/js

(Form C-123)
(Revised 7/1/52)

REQUEST FOR THE EXTENSION OF AN EXISTING POOL

OR

THE CREATION OF A NEW POOL

TO: The Oil Conservation Commission
State of New Mexico

Date June 12, 1968

The Superior Oil Company (Name of Operator) State "D" Com (Name of Lease)

1 (Well No.) Located 1980 feet from the North line and 1980 feet

from the East line of 4 (Section) 14-S (Township) 34-E (Range)

is outside the boundaries of any pool producing from the same formation. On the basis of the information submitted herewith on form C-105, we hereby request that ~~the~~

~~[illegible]~~

~~[illegible]~~ a new pool be created to include the following described area 160 acre tract surrounding the above captioned well and described as NE/4 Section 4, T-14-S, R-34-E, Lea County, New Mexico

Suggested name: Elkan

THE SUPERIOR OIL COMPANY
Operator

Name of Producing Formation:
Upper Pennsylvanian "A"

[signature]
Representative

THE SUPERIOR OIL COMPANY
STATE "D" COM NO. 1
1980' FNL & 1980' FEL
SECTION 4, T-14-S, R-34-E
ETCHEVERRY PROSPECT AREA
LEA COUNTY, NEW MEXICO

PERTINENT COMPLETION DATA

Completion Date:	May 26, 1968
Completion Zone:	Upper Pennsylvanian "A"
Top and Bottom of Pay:	10,397 - 10,422
Subsea Top and Bottom of Pay:	-6242 to -6267
Perforations and Interval:	10,402-408 w/4 jet shots per foot
Initial Potential:	Flow (natural) 380 BOPD + 1 BWPD, 26/64" ch, TP = 180, GOR = 1047, 43° API
Total Depth:	11,031
Plug Back Depth:	10,943
Casing Size and Depth:	5-1/2" @ 11,031
Tubing Size and Depth:	2-3/8" @ 11,419
Type Packer and Depth:	Baker Model "R" @ 10,315

RESERVOIR DATA

Completion Zone:	Upper Pennsylvanian "A"
Top of Pay:	10,397
Bottom of Pay:	10,422
Net Pay:	12
Average Porosity:	8%
Permeability:	147 md
Average Water Saturation:	28%
Static Bottom Hole Pressure and Subsea Depth:	3415 psig @ -6250
Date Bottom Hole Pressure Measured:	June 2, 1968
Productivity Index:	0.236 BOPD/psi
Cumulative Production to June 1, 1968:	1627 bbls.
Average Producing Rate During May:	310 BOPD
May Allowable:	271 BOPD

NONOMBRE FIELD
SECTION 32, T-13-S, R-34-E
LEA COUNTY, NEW MEXICO

PERTINENT DATA

Subsea depth of oil-water contact in Upper Pennsylvanian "A" Zone: -6164

Support of oil-water contact in Upper Pennsylvanian "A" Zone is as follows:

Cactus Drlg. Smelting State No. 1, Section 30, T-13-S, R-34-E, Drill Stem Test interval from 10,310-60 thru the Upper Penn. "A" Zone at 10,348 to 10,375 (-6169 to -6196) recovered 187' mud + 1405' salt water.

Midwest Oil Corp. Harris State No. 1, Section 29, T-13-S, R-34-E, Drill Stem Test interval from 10,315-60 thru the Upper Penn. "A" Zone at 10,338 to 10,365 (-6165 to -6192) recovered 7900' salt water.

BTA Producers 671 LTD Lowe No. 1, Section 5, T-14-S, R-34-E, Drill Stem Test interval from 10,386-411 thru the Upper Penn. "A" Zone at 10,390 to 10,412 (-6219 to -6241) recovered 3870' salt water.

Ralph Lowe State No. 1, Section 5, T-14-S, R-34-E, Drill Stem Test interval from 10,348-93 thru the Upper Penn. "A" Zone at 10,380 to 10,400 (-6210 to -6230) recovered 345' salt water.

The above data is presented to show that the oil-water contact in the Upper Pennsylvanian "A" Zone in the nearby Nonombre Field is at a subsea depth of -6164 and higher than the subsea producing interval (-6247 to -6253) in Superior Oil Company State "D" COM No. 1. In view of the different water level in the Nonombre Field when compared with the Superior State "D" COM No. 1, it is believed that the State "D" COM No. 1 Well is located on a separate structure and constitutes a discovery.

EAST SAUNDERS FIELD
SECTION 17, T-14-S, R-34-E
LEA COUNTY, NEW MEXICO

PERTINENT DATA

The following bottom hole pressure data was obtained from Kern County Land Company which is now a part of Tenneco Oil Company. Attached are copies of this data along with a copy of the bottom hole pressure data from Superior State "D" COM No. 1 Well. The most recent bottom hole pressure data from the East Saunders Field is as follows:

Kern County Land State 17-2, Section 17, T-14-S, R-34-E, 23 hr. shut-in bottom hole pressure: 1440 psig @ -6250 on January 29, 1966.

Kern County Land State 17-1, Section 17, T-14-S, R-34-E, 24 hr. shut-in bottom hole pressure: 1368 psig @ -6250 on January 14, 1966.

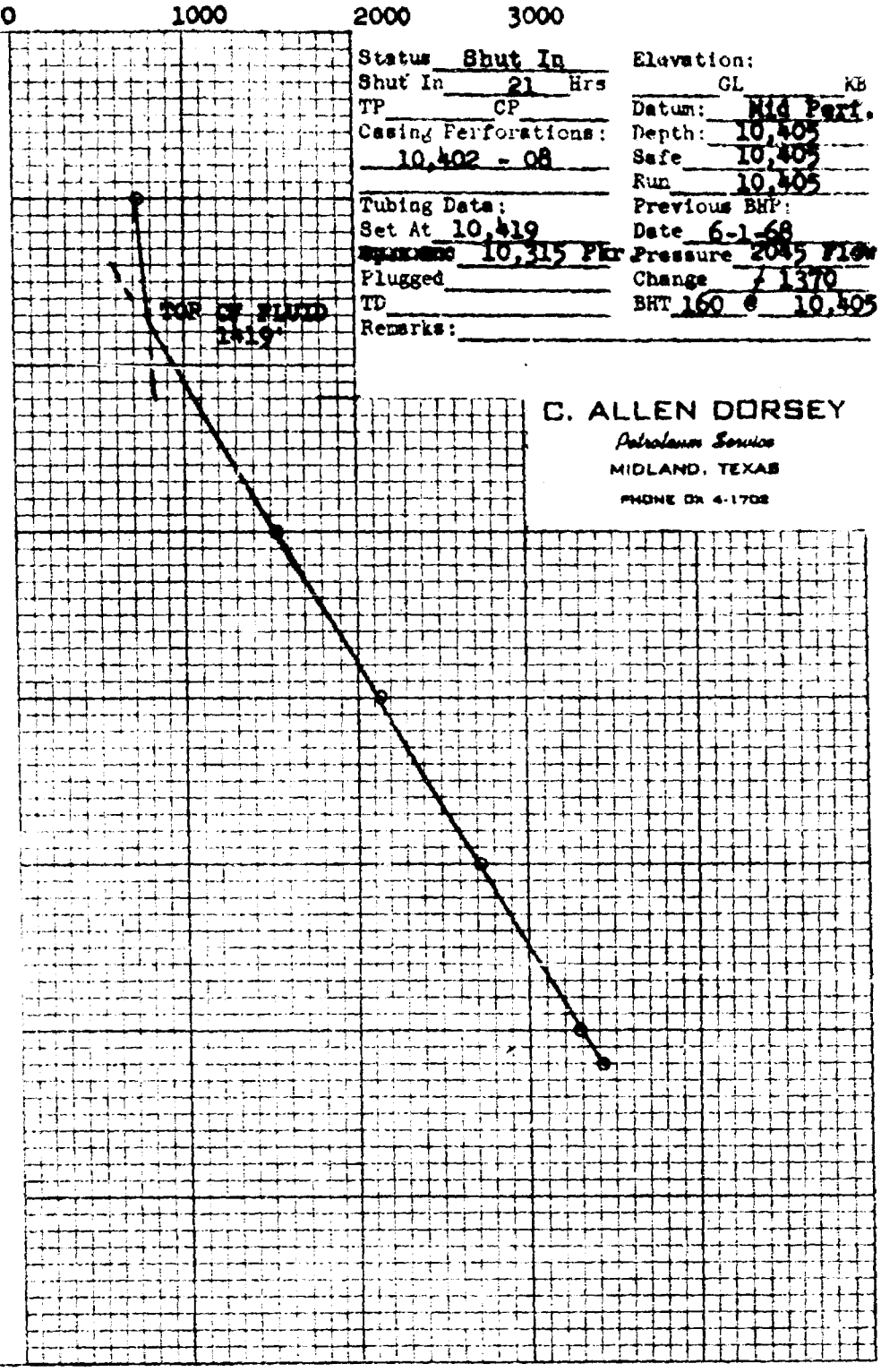
Kern County Land State 17-4, Section 17, T-14-S, R-34-E, 204 hr. shut-in bottom hole pressure: 2305 psig @ -6250 on February 15, 1966.

The above pressure data from three wells in the East Saunders Field indicates that the bottom hole pressure is considerably lower than that measured at The Superior Oil Company State "D" COM No. 1 Well. In view of the large difference in bottom hole pressure between the East Saunders Field and the State "D" COM No. 1 Well, it is believed that this well is located on a separate structure and constitutes a discovery.

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	724	
4000	1529	.201
6000	2133	.302
8000	2719	.293
10.000	3296	.288
10,405 (-6250) (Mid Perf.)	3415	.294



Status Shut In
Shut In 21 Hrs
TP CP
Casing Perforations:
10,402 - 08

Tubing Data:
Set At 10,419
10,315 Plkr
Plugged
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,405
Safe 10,405
Run 10,405

Previous BHP:
Date 6-1-68
Pressure 2045 Flow.
Change + 1370
BHT 160 @ 10,405

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE DA 4-1702

COMPANY THE SUPERIOR OIL CO., LEASE STATE "D" COM. WELL NO 1

FIELD WILDCAT COUNTY LEA STATE NEW MEXICO

ORDERED BY TERRY CLAY DATE TESTED 6-2-68

LEFTELLER, INC.

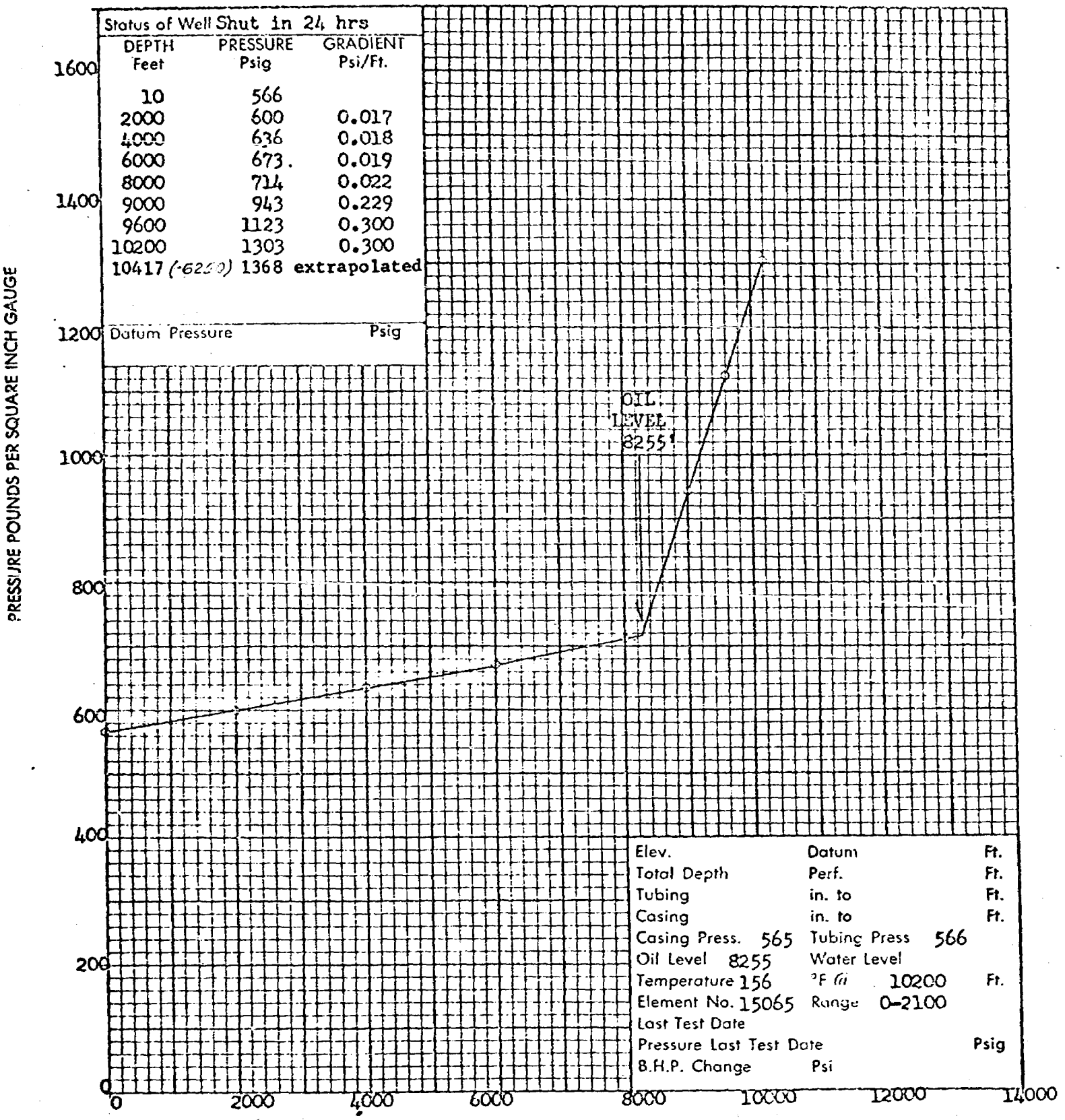
reservoir engineering data
MIDLAND, TEXAS

Company KERR COUNTY LAND COMPANY Lease STATE 17 Well No. 1
Field EAST SAUNDERS County LEA State NEW MEXICO
Formation PERMO-PENN Test Date JANUARY 14, 1966

Status of Well Shut in 24 hrs

DEPTH Feet	PRESSURE Psig	GRADIENT Psi/Ft.
10	566	
2000	600	0.017
4000	636	0.018
6000	673.	0.019
8000	714	0.022
9000	943	0.229
9600	1123	0.300
10200	1303	0.300
10417 (-6200)	1368	extrapolated

Datum Pressure Psig



Elev.	Datum	Ft.
Total Depth	Perf.	Ft.
Tubing	in. to	Ft.
Casing	in. to	Ft.
Casing Press. 565	Tubing Press 566	
Oil Level 8255	Water Level	
Temperature 156	°F @ 10200	Ft.
Element No. 15065	Range 0-2100	
Last Test Date		
Pressure Last Test Date		Psig
B.H.P. Change	Psi	

SEFTELLER, INC.
reservoir engineering data
MIDLAND, TEXAS

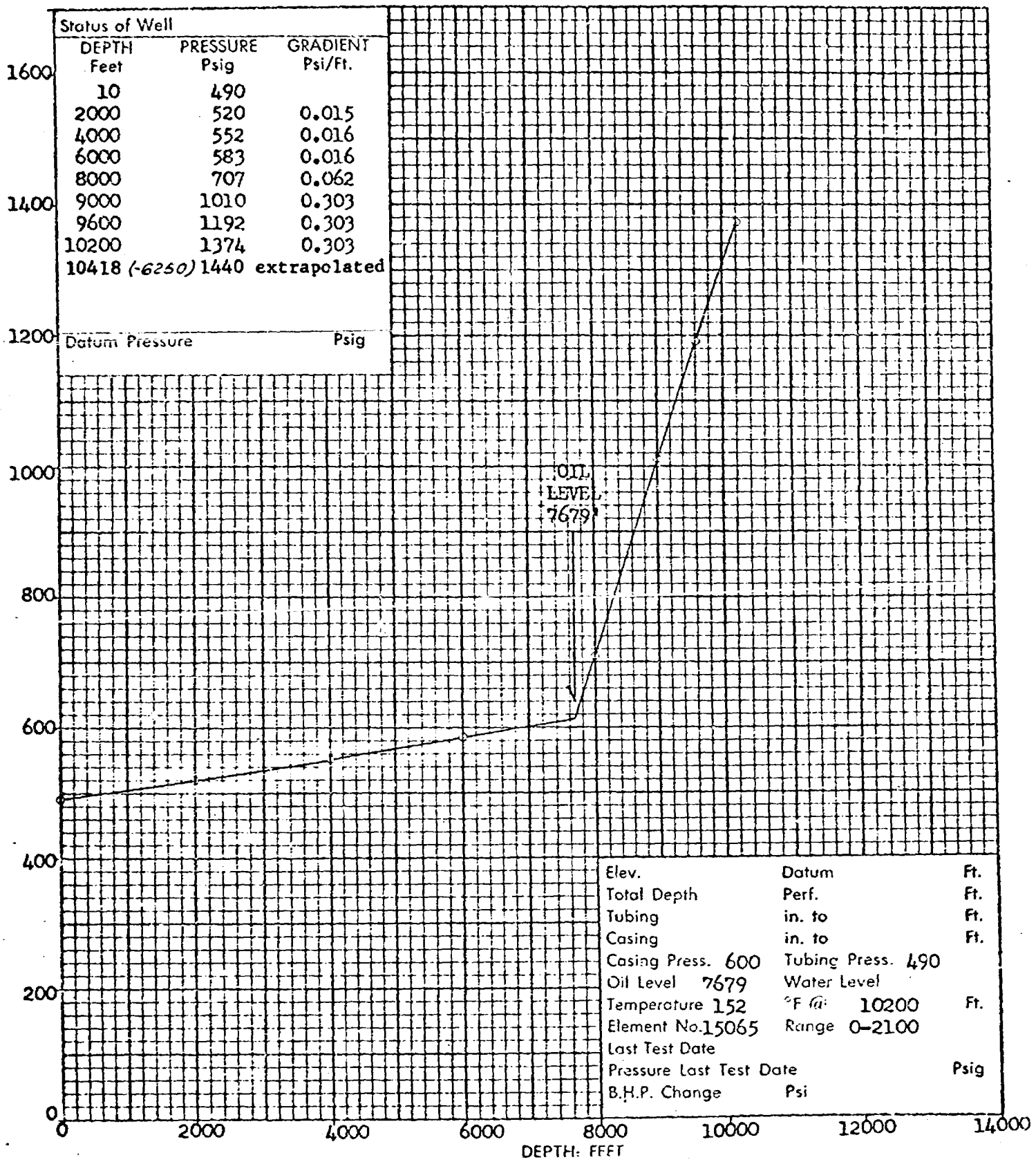
File 5-1884-CL

Company KERR COUNTY LAND COMPANY Lease STATE 17 Well No. 2
Field EAST SAUNDERS County LEA State NEW MEXICO
Formation PERMO-PENN. Test Date JANUARY 29, 1966

Status of Well

DEPTH Feet	PRESSURE Psig	GRADIENT Psi/Ft.
10	490	
2000	520	0.015
4000	552	0.016
6000	583	0.016
8000	707	0.062
9000	1010	0.303
9600	1192	0.303
10200	1374	0.303
10418 *(-6250)*	1440	extrapolated

Datum Pressure Psig



Elev.	Datum	Ft.
Total Depth	Perf.	Ft.
Tubing	in. to	Ft.
Casing	in. to	Ft.
Casing Press. 600	Tubing Press. 490	
Oil Level 7679	Water Level	
Temperature 152	°F @ 10200	Ft.
Element No. 15065	Range 0-2100	
Last Test Date		
Pressure Last Test Date		Psig
B.H.P. Change	Psi	

EFTELLER, INC.
reservoir engineering data
MIDLAND, TEXAS

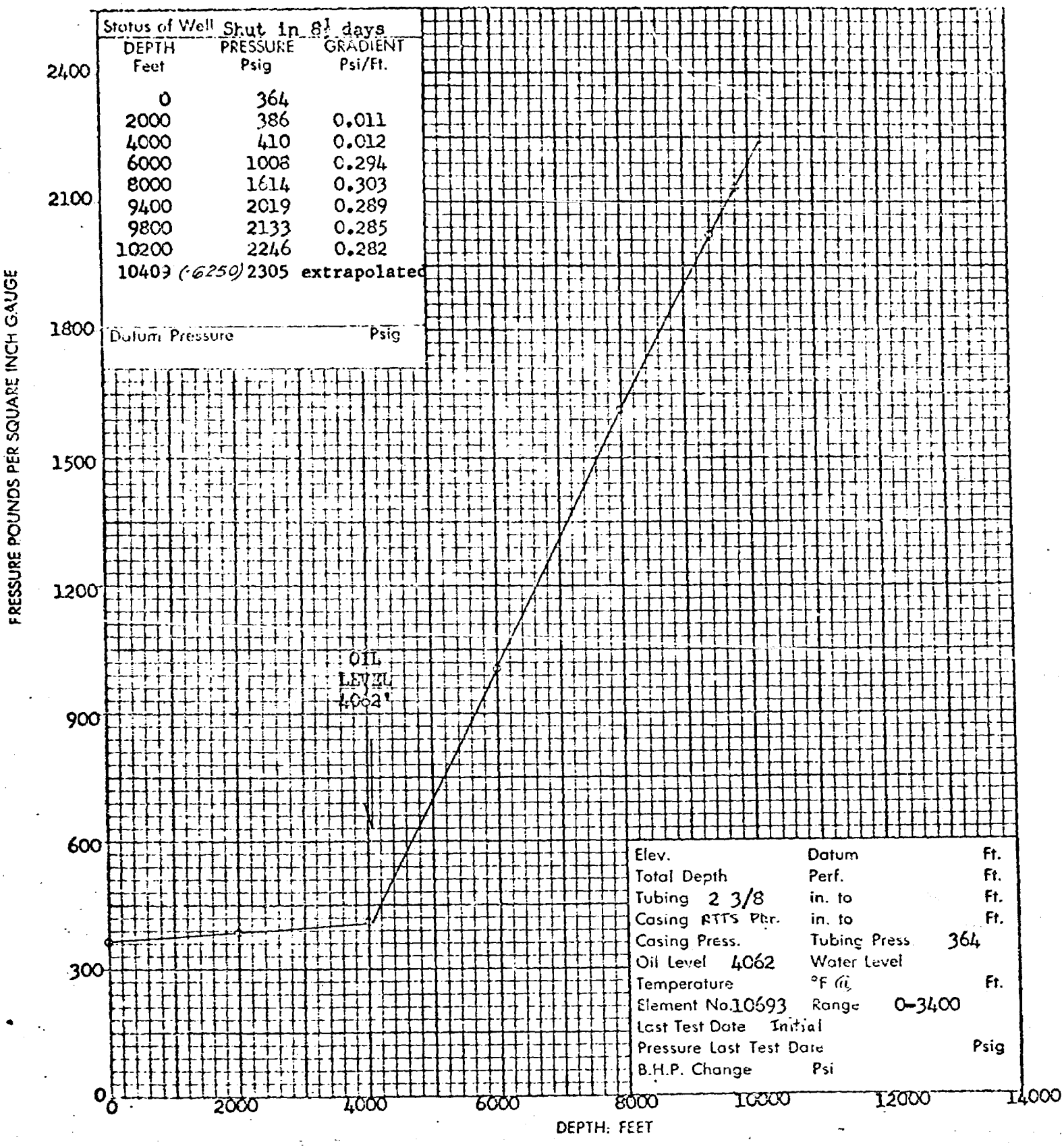
File 4-1939-P

Company KERN COUNTY LAND COMPANY Lease STATE 17 Well No. 4
Field EAST SAUNDERS County LEA State NEW MEXICO
Formation PENN PEIN. Test Date FEBRUARY 15, 1966

Status of Well Shut in 81 days

DEPTH Feet	PRESSURE Psig	GRADIENT Psi/Ft.
0	364	
2000	386	0.011
4000	410	0.012
6000	1008	0.294
8000	1614	0.303
9400	2019	0.289
9800	2133	0.285
10200	2246	0.282
10409 (-6250)	2305	extrapolated

Datum Pressure Psig



Elev.	Datum	Ft.
Total Depth	Perf.	Ft.
Tubing 2 3/8	in. to	Ft.
Casing RTTS Pkr.	in. to	Ft.
Casing Press.	Tubing Press. 364	
Oil Level 4062	Water Level	
Temperature	°F @	Ft.
Element No. 10693	Range 0-3400	
Last Test Date Initial		
Pressure Last Test Date		Psig
B.H.P. Change	Psi	

THE SUPERIOR OIL COMPANY
CERCA (UPPER PENNSYLVANIAN) FIELD
LEA COUNTY, NEW MEXICO

Hearing Date: June 4, 1969

CASE NO. 3796

CONTENTS OF THIS EXHIBIT

1. Pertinent Data Sheet of Cerca (Upper Penn) Field.

2. Completion Data of all Wells in Field.

3. Drilling Economics of Various Spacing Patterns Including Estimated Oil Reserves.

4. Graph Showing Total Monthly Oil Production and Reservoir Pressure at Cerca (Upper Penn) Field.

5. Reservoir Pressure and Cumulative Oil Production at Cerca (Upper Penn) Field. Also, a Copy of Each Pressure Survey is Included.

6. Subsurface Structure Map with Scale 1" = 1000' and Contoured on Top of the Upper Pennsylvanian Zone. Cumulative Production and Reservoir Pressure are included on Structure Map.

TDC/js
6-3-69

1-1
6-4-69

PERTINENT DATA

CERCA (UPPER PENNSYLVANIAN) FIELD
LEA COUNTY, NEW MEXICO

DISCOVERY DATA

Discovery Well: The Superior Oil Company State "D" No. 1

Discovery Date: May 26, 1968

Completion Zone and Interval: Upper Penn. Zone through perforations 10,402-10,408

Initial Potential: Flow (Natural) 380 BOPD + 1 BWPD, 26/64" choke, TP = 180, GOR = 1047, 43° API. Retest on July 1, 1968, after 100 gal acid treatment: F 557 BOPD, 23/64" choke, GOR = 820, TP = 450, 43.3° API.

Original Reservoir Pressure as Determined from Drill Stem Test Data: 3508 psig @ -6250

GENERAL INFORMATION AND RESERVOIR DATA

Number Wells Drilled:	10
Number Upper Penn Completions:	8
Number Dry Holes:	2
Number Dual Completions:	1
Average Net Pay:	8 feet
Average Porosity:	8%
Average Permeability:	80 md.
Average Water Saturation:	29%
Cumulative Oil Production to May 1, 1969:	342,821 BO
Cumulative Gas Production to May 1, 1969:	174,908 MCF
Cumulative Water Production to May 1, 1969:	6,483 BW

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant's EXHIBIT NO. 1
CASE NO. 3796

RESERVOIR PRESSURE AND TEMPERATURE

Original Reservoir Pressure:	3508 psig. at -6250
Current Reservoir Pressure:	1783 psig. at -6250
Reservoir Temperature:	160° F

CHARACTERISTICS OF RESERVOIR FLUIDS

Oil Gravity:	44°
Gas Gravity:	0.929

STRUCTURE FEATURES AND PHYSICAL PROPERTIES OF RESERVOIR ROCK

Type of Structure: Northeast - Southwest trending anticline with production controlled by porosity development.

Type of Reservoir Rock: Limestone with vuggy porosity.

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X-3
6-4-69

DRILLING ECONOMICS OF VARIOUS SPACING PATTERNS
CERCA (UPPER PENNSYLVANIAN) FIELD
LEA COUNTY, NEW MEXICO

BASIC DATA:

Oil Value:	$3.31/STB
Oil Purchaser:	Service Pipeline
Gas Price:	$0.15/MCF
Gas Purchaser:	Warren Petroleum
Net Interest in Production:	87.5%
Production Taxes:	5.19% of net revenue
Ad Valorem Tax:	1.51% of net revenue
Lifting Cost (including overhead):	$0.10/STB
Investment (includes drillig, completion, production facilities and pumping equipment):	$213,000

ECONOMICS:

		Well Spacing		
		40 Acre	80 Acre	160 Acre
1.	Recoverable Oil, STB	43,680	87,360	174,720
2.	Recoverable Gas, MCF	30,576	61,152	122,304
3.	Oil Revenue, $3.31/STB x (1)	$144,580	289,161	578,323
4.	Gas Revenue, $0.15/MCF x (2)	$ 4,586	9,173	18,346
5.	Total Revenue, (3) + (4)	$149,166	298,334	596,669
6.	Net Revenue After Royalty, 0.875 x (5)	$130,520	261,042	522,085
7.	Operating Cost, $0.10/STB x (1)	$ 4,368	8,736	17,472
8.	Production Taxes, 0.0519 x (6)	$ 6,774	13,548	27,096
9.	Ad Valorem Tax, 0.0151 x (6)	$ 1,971	3,942	7,883
10.	Net Income, (6)-(7)-(8)-(9)	$117,407	234,816	469,634
11.	Investment	$213,000	213,000	213,000
12.	Profit, (10)-(11)	$ 95,593 (Loss)	21,816	256,634
13.	Profit to Investment, (12) ÷ (11)--------		0.102:1	1.21:1

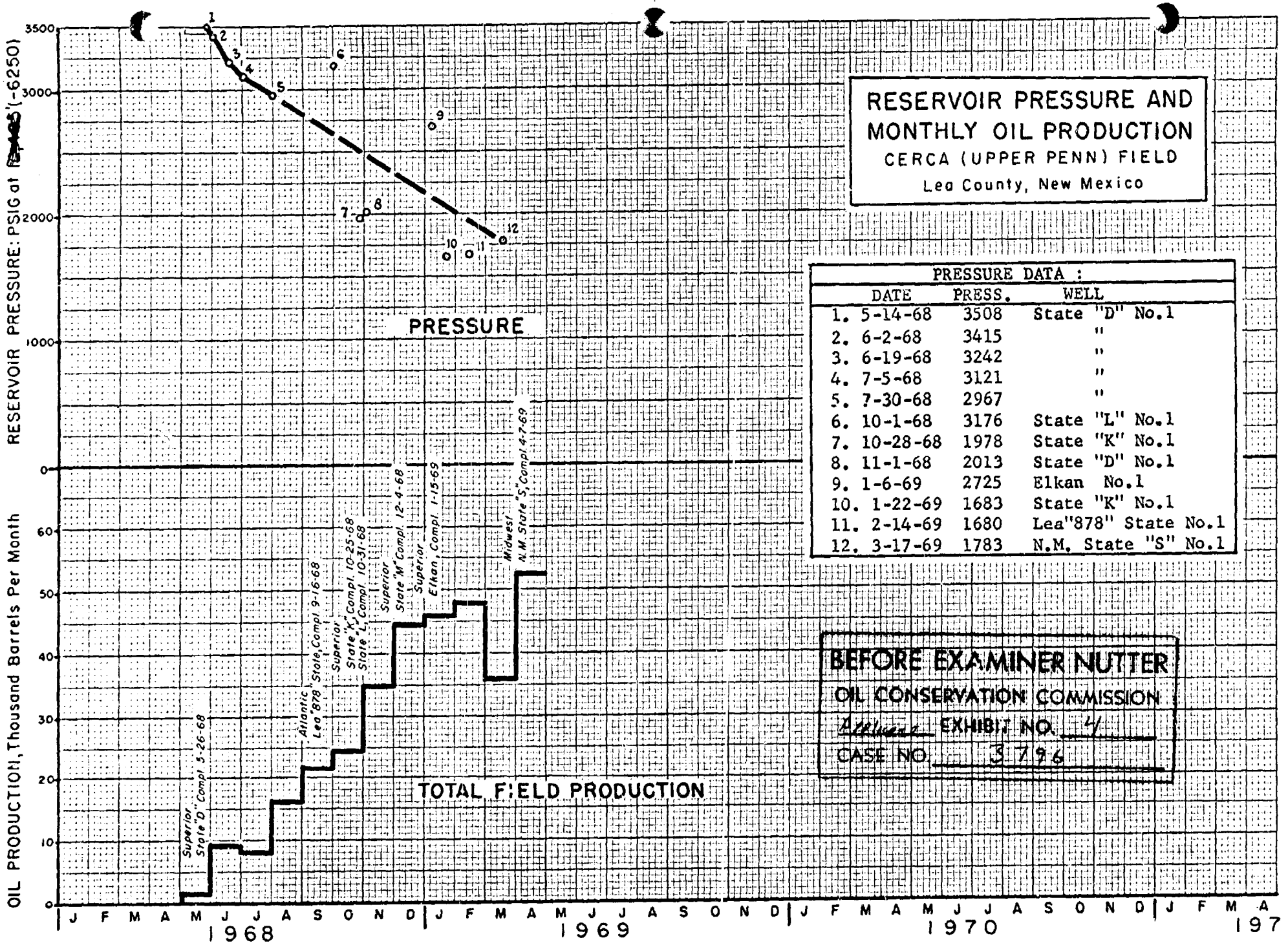
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant's EXHIBIT NO. 3
CASE NO. 3796

TDC/js
6-3-69

RESERVOIR PRESSURE AND MONTHLY OIL PRODUCTION

CERCA (UPPER PENN) FIELD

Lea County, New Mexico



PRESSURE DATA :			
	DATE	PRESS.	WELL
1.	5-14-68	3508	State "D" No.1
2.	6-2-68	3415	"
3.	6-19-68	3242	"
4.	7-5-68	3121	"
5.	7-30-68	2967	"
6.	10-1-68	3176	State "L" No.1
7.	10-28-68	1978	State "K" No.1
8.	11-1-68	2013	State "D" No.1
9.	1-6-69	2725	Elkan No.1
10.	1-22-69	1683	State "K" No.1
11.	2-14-69	1680	Lea"878" State No.1
12.	3-17-69	1783	N.M. State "S" No.1

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant EXHIBIT NO. 4
CASE NO. 3796

X-4
6-4-69

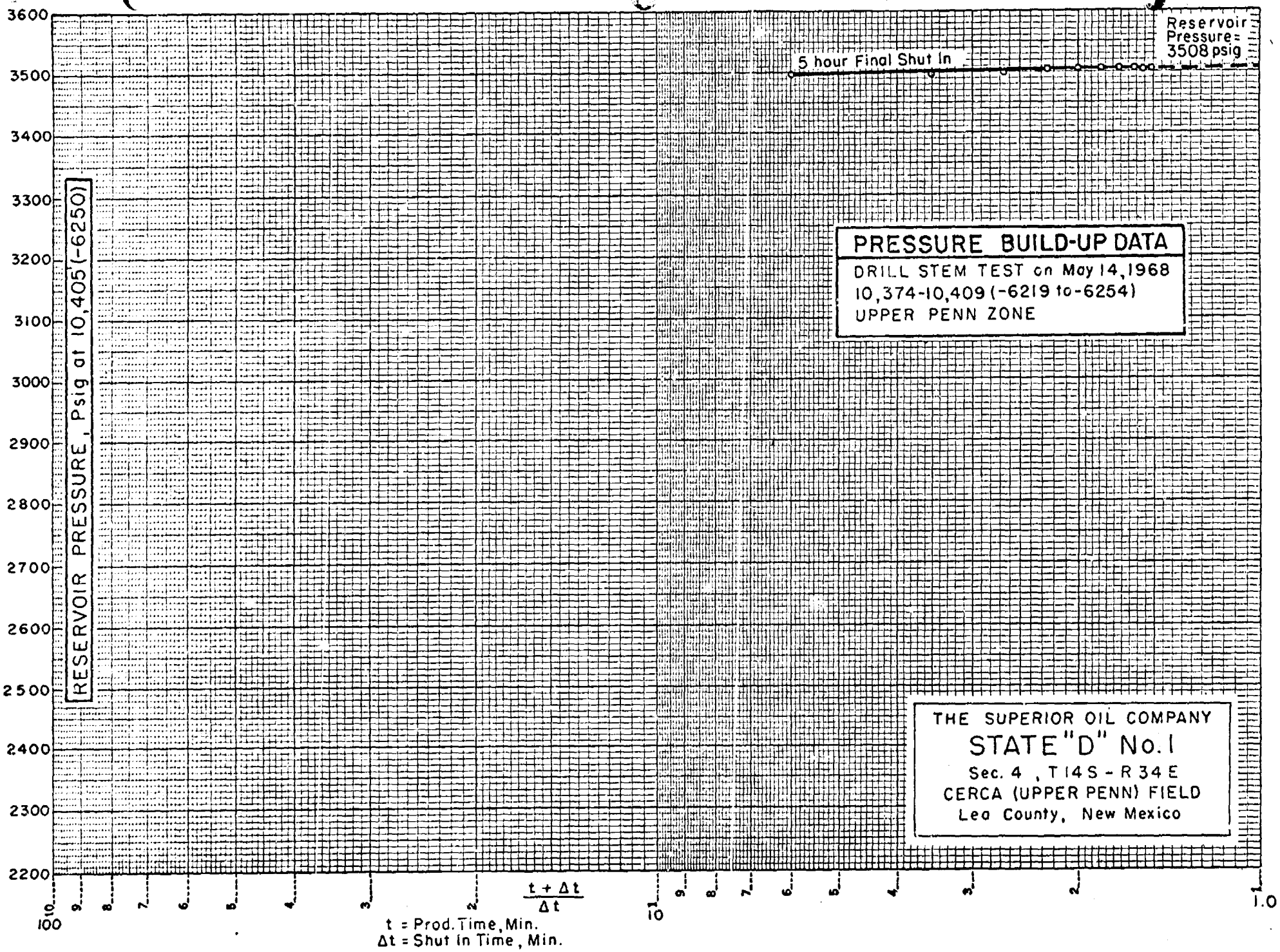
X-5
6-4-69

RESERVOIR PRESSURE AND CUMULATIVE OIL PRODUCTION
CERCA (UPPER PENN) FIELD
LEA COUNTY, NEW MEXICO

OPERATOR	LEASE AND WELL NAME	DATE PRESS. MEASURED	SHUT IN RESERVOIR PRESS, PSIG	SHUT IN PERIOD HOURS	DEPTH OF PRESS. RECORDER, FEET	RESERVOIR PRESS. CORRECTED TO (-6250)	CUMULATIVE OIL PROD. AT DATE PRESS. MEASURED BARRELS	*REMARKS
Superior	State "D" No. 1	May 14, 1968	3503	5	10,405	3508	0	DST 10,374-10,409 (-6219 to -6254)
Superior	State "D" No. 1	June 2, 1968	3415	21	10,405	3415	1,627	Build-up
Superior	State "D" No. 1	June 19, 1968	3242	7.5	10,405	3252	6,965	Build-up
Superior	State "D" No. 1	July 5, 1968	3121	48	10,405	3121	11,828	Static press.
Superior	State "D" No. 1	July 30, 1968	2967	49.5	10,405	2967	18,855	Static press.
Superior	State "L" No. 1	Oct. 1, 1968	3096	2.5	10,482	3176	56,663	DST 10,435-10,486 (-6284 to -6335)
Superior	State "K" No. 1	Oct. 28, 1968	1985	28	10,400	1978	79,032	Static press.
Superior	State "D" No. 1	Nov. 1, 1968	2013	48	10,405	2013	81,429	Static press.
Superior	Elkan No. 1	Jan. 6, 1969	2707	3	10,451	2725	168,119	DST 10,402-55 (-6301 to -6354)
Superior	State "K" No. 1	Jan. 22, 1969	1689	50.5	10,426	1683	191,863	Static press.
Atlantic	Lea 878 State No. 1	Feb. 14, 1969	1670	70	10,375	1680	229,403	Build-up
Midwest	N.M. State "S" No. 1	March 17, 1969	1787	98	10,393	1783	273,524	Static press.

*Static Pressure: A single measured pressure point after a described shut in period
Build-up: Continuous measurement of pressure points throughout the shut in period

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant EXHIBIT NO. 5
CASE NO. 3796
DCJ 18
6-2-69


Reservoir Pressure = 3508 psig
5 hour Final Shut In
PRESSURE BUILD-UP DATA
DRILL STEM TEST on May 14, 1968
10,374-10,409 (-6219 to-6254)
UPPER PENN ZONE
RESERVOIR PRESSURE, Psig at 10,405'(-6250)
3600
3500
3400
3300
3200
3100
3000
2900
2800
2700
2600
2500
2400
2300
2200
THE SUPERIOR OIL COMPANY
STATE "D" No. 1
Sec. 4 , T 14 S - R 34 E
CERCA (UPPER PENN) FIELD
Lea County, New Mexico
10
9
8
7
6
5
4
3
2
100
t + Δt / Δt
10
1.0
t = Prod. Time, Min.
Δt = Shut in Time, Min.

	1st Min.	2nd Min.				
Flow Time	20	150	Date	5-14-68	Ticket Number	474204 - S
Closed In Press. Time	1st Min. 60	2nd Min. 300	Kind of Job	OPEN HOLE	Halliburton District	LOVINGTON
Pressure Readings	Field	Office Corrected	Tester	MR. SMITH	Witness	MR. BOWEN
Depth Top Gauge	10,375 Ft.	NO Blanked Off	Drilling Contractor	RALPH LOWE DRILLING COMPANY		IC
BT. P.R.D. No.	1398	24 Hour Clock	Elevation	4288' ESTIMATED	Top Packer	10,367'
Initial Hydro Mud Pressure	4924	4844	Total Depth	10,409'	Bottom Packer	10,374'
Initial Closed in Pres.	3473	3485	Interval Tested	NET PAY 10' 10,374'-10,409'	Formation Tested	WOLFCAMP
Initial Flow Pres.	- 1	*	Casing or Hole Size	7 7/8"	Casing Perfs. Top	
	1326 2	1352			Bot.	-
Final Flow Pres.	- 1	*	Surface Choke	1" ADJUSTABLE	Bottom Choke	5/8"
	3380 2	3397			I.D. - LENGTH	
Final Closed in Pres.	3473	3485	Size & Kind Drill Pipe	4" F.H.	Drill Collars Above Tester	2 1/2" x 347.62'
Final Hydro Mud Pressure	4855	4844	Mud Weight	8.9	Mud Viscosity	41
Depth Cen. Gauge	Ft.	Blanked Off	Temperature	- °F Est. / 160 °F Actual	Anchor Size & Length	ID 2 1/2" OD 4 3/4" X 35'
BT. P.R.D. No.		Hour Clock	Depths Mea. From	GROUND LEVEL	Depth of Tester Valve	10,344' Ft.
Initial Hydro Mud Pres.			Cushion TYPE - AMOUNT -	Ft.	Depth Back Pres. Valve	- Ft.
Initial Closed in Pres.			Recovered	SEE Feet of		
Initial Flow Pres.	1 / 2		Recovered	REMARKS Feet of		
Final Flow Pres.	1 / 2		Recovered	Feet of		
Final Closed in Pres.			Recovered	Feet of		
Final Hydro Mud Pres.			Oil A.P.I. Gravity -		Water Spec. Gravity -	
Depth Bot. Gauge	10,405 Ft.	YES Blanked Off	Gas Gravity -		Surface Pressure	560# MAXIMUM psi
BT. P.R.D. No.	1397	24 Hour Clock	Tool Opened	5:45 PM A.M. P.M.	Tool Closed	10:05 PM A.M. P.M.
Initial Hydro Mud Pres.	4880	4880	Remarks	Opened tool for 20 minute 1st flow with a good blow. Closed tool at 6:05 for 60 minute initial closed with 125# on bubble hose with gas to surface in 26 minutes. Reopened tool for 150 minute 2nd flow at 7:35 on 1/4" choke with 120# and fluid to surface in 48 minutes and oil in 50 minutes. Well flowed approximately 12 barrels of oil per hour. Closed tool at 10:05 on 1/2" choke for 300 minute final closed in pressure with 540#. Pulled at 3:05 and reversed out estimate 21 barrels of oil and no water.		
Initial Closed in Pres.	3455	3506				
Initial Flow Pres.	2075 1 / 2581 2	2179 / 2103				
Final Flow Pres.	2167 1 / 3386 2	2382 / 3425				
Final Closed in Pres.	3455	3503				
Final Hydro Mud Pres.	4880	4880				

THE SUPERIOR OIL COMPANY — Lease Owner/Company Name
STATE "D" — Lease Name
1 — Well No.
2 — Test No.
MIDLAND — Owner's District
Legal Location Sec. - Twp. - Rng. SEC. 16 - 9S - 34E
Field Area WILDCAT
County LEA
State NEW MEXICO
Mea. From Tester Valve

THE SUPERIOR OIL CO.
MAY 21 1968
ENGINEERING DEPT.
MIDLAND, DISTRICT
COPY TO: H. U. FRANQUES
DATE: M. U. BROUSSARD
DON MATHERS (2)

FORMATION TEST DATA

16

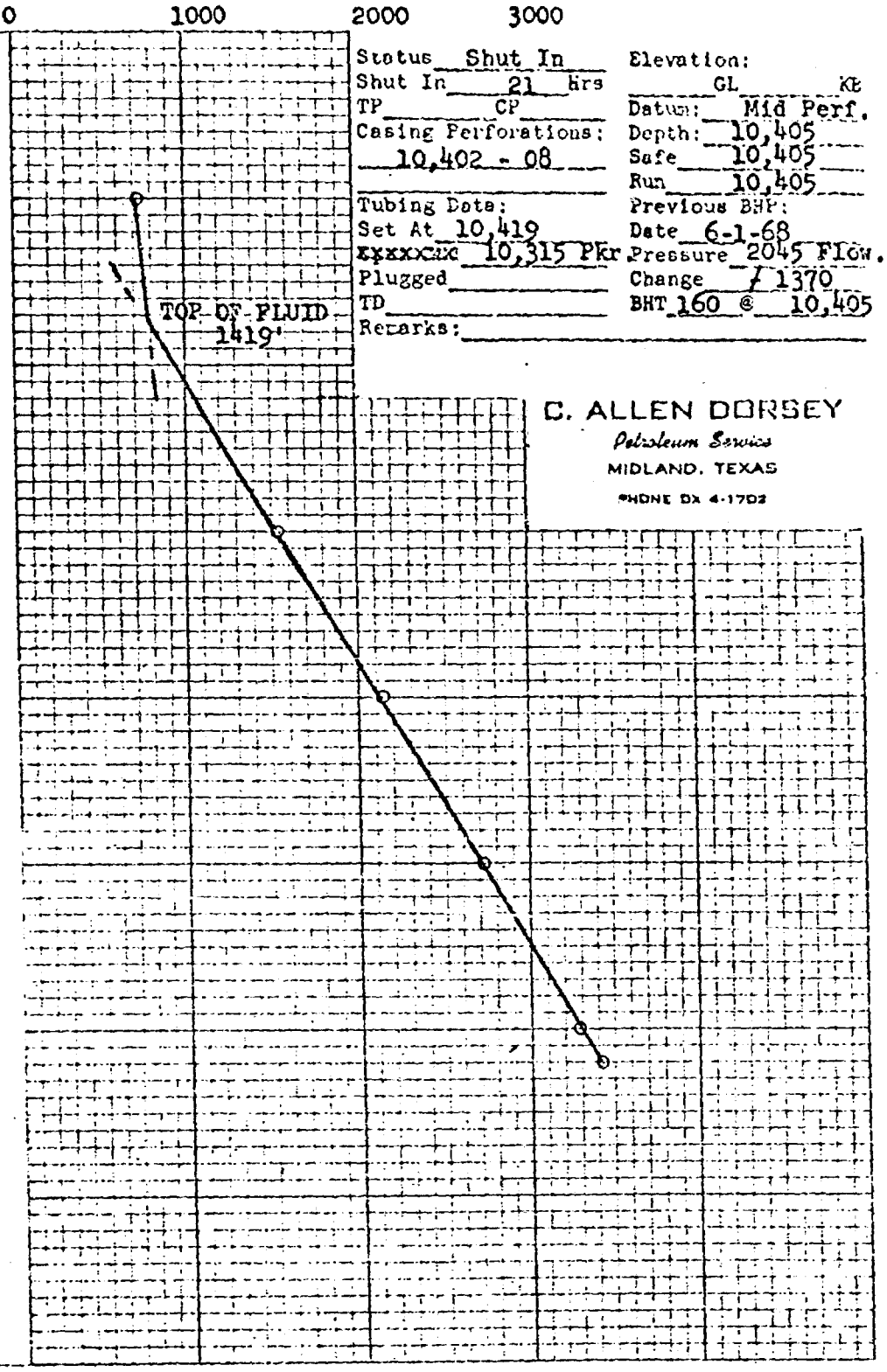
Gauge No.	1398		Depth	10,375'		Clock	24 hour		Ticket No.	474204		
	First Flow Period		Initial Closed In Pressure			Second Flow Period			Final Closed In Pressure			
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.		Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	
P_0	*UNABLE TO		.000		1218	.000	1352		.000		3397	
P_1	READ		.0151		3471	.0514	2480		.0516		3476	
P_2			.0302		3476	.1028	3193		.1032		3478	
P_3			.0453		3480	.1542	3350		.1548		3480	
P_4			.0604		3483	.2056	3362		.2064		3483	
P_5			.0755		3485	.2570	3397		.2580		3485	
P_6			.0906		3485				.3096		3485	
P_7			.1057		3485				.3612		3485	
P_8			.1208		3485				.4128		3485	
P_9			.1359		3485				.4644		3485	
P_{10}			.1510		3485				.5160		3485	
Gauge No.	1397		Depth	10,405'		Clock	24 hour					
P_0	.000	2179	Δt, Min. 0 .000		2382	.000	2103		Δt, Min. 0 .000		3425	
P_1	.030	2382	6 .0149	4.33	3494	.0508	2793		30 .0503	6.0	3494	
P_2			12 .0298	2.665	3499	.1016	3287		60 .1006	3.5	3497	
P_3	PLUGGING		18 .0447	2.11	3501	.1524	3391		90 .1509	2.67	3499	
P_4			24 .0596	1.417	3503	.2032	3400		120 .2012	2.75	3501	
P_5			30 .0745	1.668	3503	.2540	3425		150 .2515	2.0	3503	
P_6			36 .0894	1.558	3506				130 .3018	1.832	3503	
P_7			42 .1043	1.475	3506				210 .3521	1.715	3503	
P_8			48 .1192	1.418	3506				240 .4024	1.625	3503	
P_9			54 .1341	1.372	3506				270 .4527	1.558	3503	
P_{10}			60 .1490	1.332	3506				300 .5030	1.50	3503	
Reading Interval			6			30			30		Minutes	
REMARKS:												

SPECIAL PRESSURE DATA

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	724	
4000	1529	.201
6000	2133	.302
8000	2719	.293
10.000	3296	.288
10,405 (-6250) (Mid Perf.)	3415	.294



Status Shut In
Shut In 21 Hrs
TP CP
Casing Perforations:
10,402 - 08

Tubing Data:
Set At 10,419
~~xxxxxx~~ 10,315 Pkr
Plugged
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,405
Safe 10,405
Run 10,405
Previous BHP:
Date 6-1-68
Pressure 2045 Flow.
Change / 1370
BHT 160 @ 10,405

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE DX 4-1702

COMPANY THE SUPERIOR OIL CO., LEASE STATE "D" COM. WELL NO 1

FIELD WILDCAT COUNTY LEA STATE NEW MEXICO

ORDERED BY TERRY CLAY DATE TESTED 6-2-68

P. O. BOX 4904

PHONE OX 4-1702

C. ALLEN DORSEY

Petroleum Service

MIDLAND, TEXAS

- BOTTOM HOLE PRESSURES
- TEMPERATURE SURVEYS
- BACK PRESSURE TESTS
- PACKER LEAKAGE TESTS
- GAS-OIL RATIO TESTS
- ACOUSTICAL WELL SOUNDER (FLUID LEVEL RECORDER)

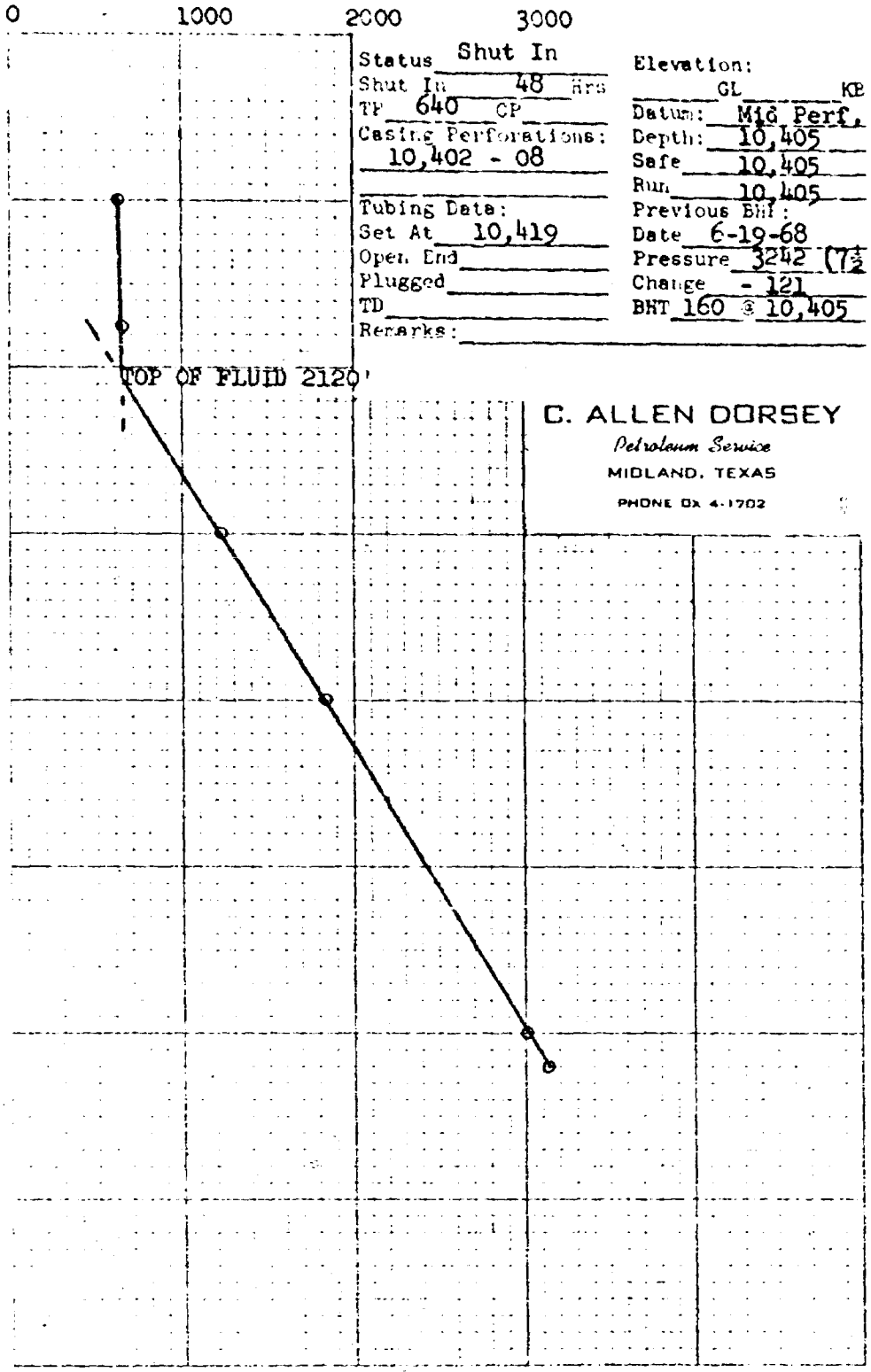
THE SUPERIOR OIL COMPANY
STATE "D" COM. # 1
WILDCAT, LEA COUNTY, NEW MEXICO
BUILD UP AND DRAW DOWN TEST
6-19 to 6-23-68

Date & Time	Min. & Hours	BHP @ 10,405' (-6250) (Mid Perf.)	Tubing Pressure	Remarks
WEDNESDAY, 6-19-68				Flowing on 18/64" choke
2:00 P.M.		3176.2	504	Instrument on bottom
2:15 P.M.	0	3176.2	504	Closed In
2:25 P.M.	10	3220.4	550	
2:35 P.M.	20	3225.1		
2:45 P.M.	30	3226.3	600	
2:55 P.M.	40	3227.5		
3:05 P.M.	50	3229.1		
3:15 P.M.	60	3230.3	625	
3:25 P.M.	70	3231.3		
3:35 P.M.	80	3233.2		
3:45 P.M.	90	3234.1		
3:55 P.M.	100	3234.1		
4:05 P.M.	110"	3234.1		
4:15 P.M.	2 hrs.	3234.6	650	
4:45 P.M.	2½ "	3236.5	650	
5:15 P.M.	3 "	3236.9	650	
6:15 P.M.	4 "	3238.1	650	
7:15 P.M.	5 "	3239.3	650	
8:15 P.M.	6 "	3240.5	650	
9:15 P.M.	7 "	3241.6	650	
9:45 P.M.	7½ "	3241.6	650	Start Flow Test
OPENED WELL AT 9:45 PM ON 6/19/68 →			Δt, hrs.	Open on 13/64" choke
9:55 P.M.	10 MIN.	3206.9	300	0.166
10:05 P.M.	20 "	3203.9	400	0.33
10:15 P.M.	30 "	3199.2	440	0.50
10:25 P.M.	40 "	3192.1	460	0.66
10:35 P.M.	50 "	3188.5	480	0.833
10:45 P.M.	60 "	3186.2	500	1.0
10:55 P.M.	70 "	3186.2	500	1.166
11:05 P.M.	80 "	3186.2	500	1.33
11:15 P.M.	90 "	3186.2	500	1.50
THURSDAY, 6-20-68				
12:15 A.M.	2½ hrs	3184.5	500	
1:15 A.M.	3½ "	3182.6	500	
2:15 A.M.	4½ "	3181.2	500	
3:15 A.M.	5½ "	3180.3	500	
4:15 A.M.	6½ "	3179.3	500	
6:15 A.M.	8½ "	3177.4	500	
8:15 A.M.	10½ "	3174.1	500	
10:15 A.M.	12½ "	3173.2	500	
12:15 P.M.	14½ "	3171.7	500	

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	622	
1500	643	.014
4000	1225	.233
6000	1836	.305
10 000	3003	.292
10,405(-6250) (Mid Perf.)	3121	.292



Status Shut In
Shut In 48 Hrs
TP 640 CP
Casing Perforations:
10,402 - 08

Tubing Data:
Set At 10,419
Open End
Plugged
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,405
Safe 10,405
Run 10,405
Previous BHP:
Date 6-19-68
Pressure 3242 (7½ hr
Change - 121
BHT 160 @ 10,405

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE Dx 4-1702

COMPANY THE SUPERIOR OIL CO., LEASE STATE "D" COM. WELL NO 1

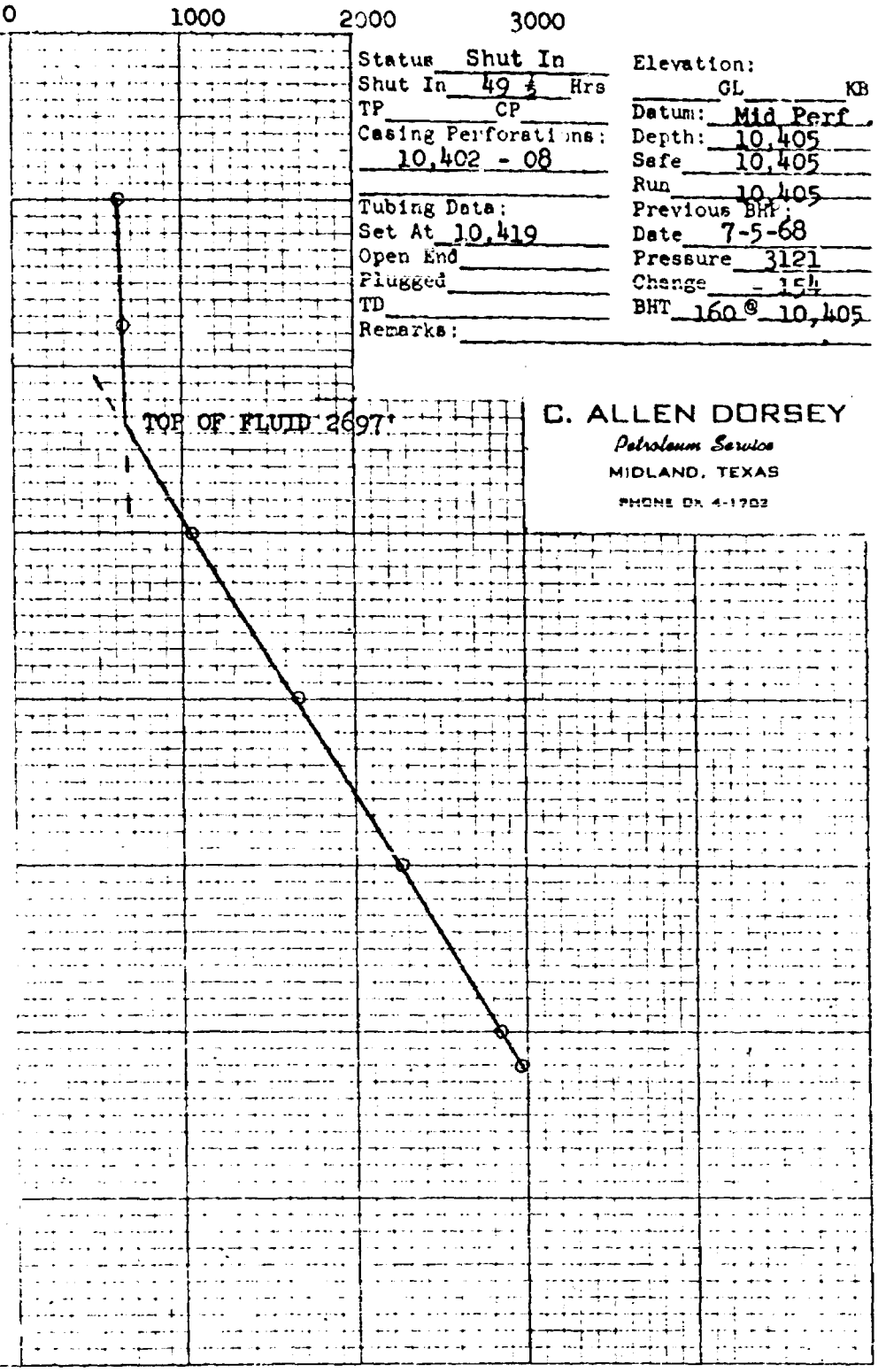
FIELD WILDCAT COUNTY LEA STATE NEW MEXICO

ORDERED BY TERRY CLAY DATE TESTED 7-5-68

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	618	
1500	643	.017
4000	1062	.168
6000	1674	.306
8000	2269	.298
10,000	2850	.290
10,405(-6250) (Mid Perf.)	2967	.288



Status Shut In
Shut In 49 ½ Hrs
TP CP
Casing Perforations:
10,402 - 08

Tubing Data:
Set At 10,419
Open End
Plugged
TD
Remarks:

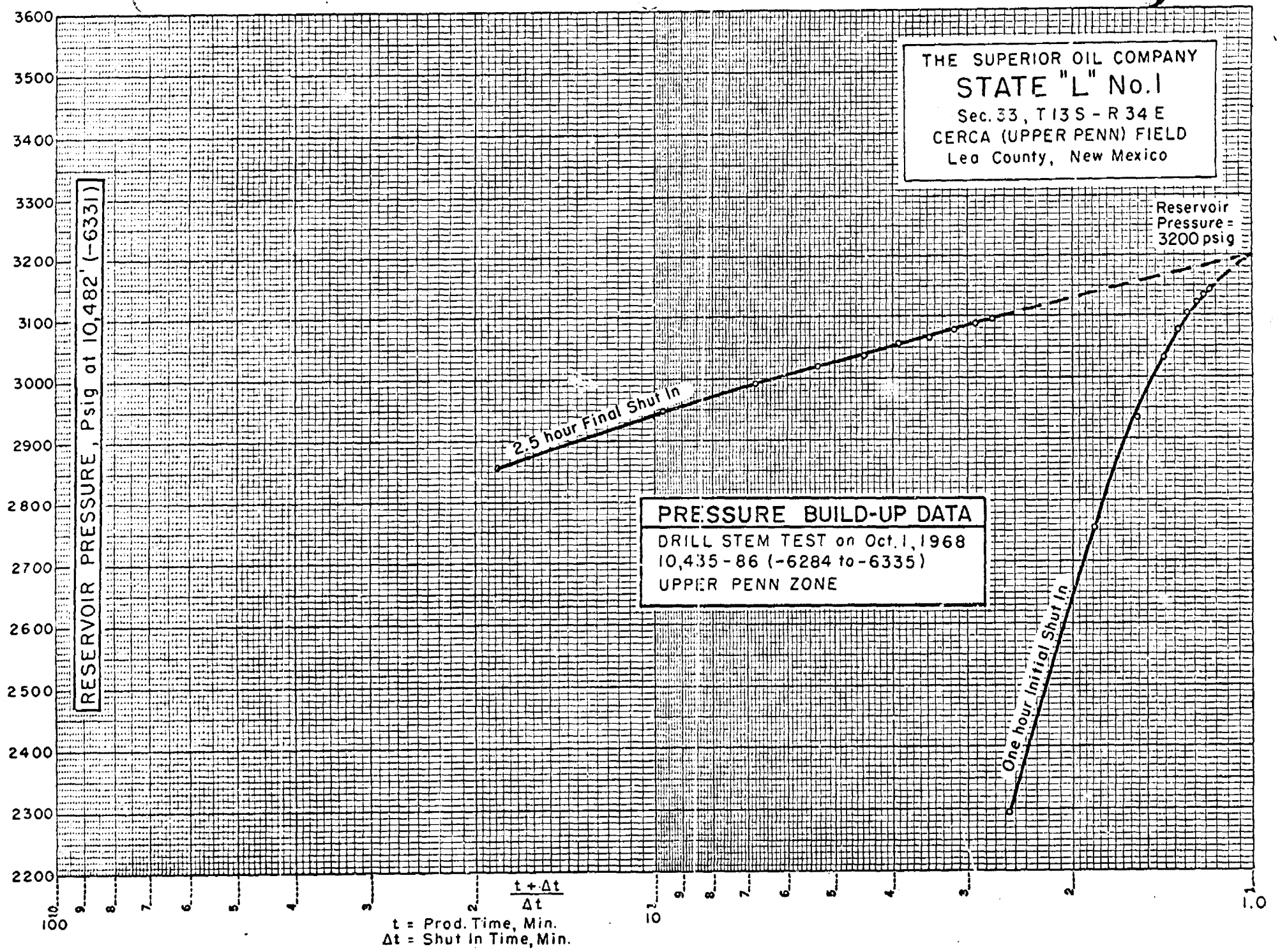
Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,405
Safe 10,405
Run 10,405
Previous BHP:
Date 7-5-68
Pressure 3121
Change - 154
BHT 160 @ 10,405

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE DA 4-1202

COMPANY THE SUPERIOR OIL CO., LEASE STAT E "D" COM WELL NO 1

FIELD CERCA COUNTY LEA STATE NEW MEXICO

ORDERED BY TERRY CLAY DATE TESTED 7-30-68


THE SUPERIOR OIL COMPANY
STATE "L" No.1
Sec. 33, T 13 S - R 34 E
CERCA (UPPER PENN) FIELD
Lea County, New Mexico
PRESSURE BUILD-UP DATA
DRILL STEM TEST on Oct. 1, 1968
10,435 - 86 (-6284 to -6335)
UPPER PENN ZONE
RESERVOIR PRESSURE, Psig at 10,482' (-6331)
Reservoir Pressure = 3200 psig
2.5 hour Final Shut In
One hour Initial Shut In
3600
3500
3400
3300
3200
3100
3000
2900
2800
2700
2600
2500
2400
2300
2200
100
10
1.0
t + Δt / Δt
t = Prod. Time, Min.
Δt = Shut In Time, Min.

	1st Min.	2nd Min.
Flow Time	10	260
Closed In Press. Time	60	150
Pressure Readings	Field	Office Corrected
Depth Top Gauge	10,415 Ft.	NO Blanked Off
BT. P.R.D. No.	1516	48 Hour Clock
Initial Hydro Mud Pressure	5017	5024
Initial Closed in Pres.	3094	3092
Initial Flow Pres.	- 1	373
	460 2	475
Final Flow Pres.	- 1	382
	2101 2	2088
Final Closed in Pres.	3049	3045
Final Hydro Mud Pressure	4973	5013
Depth Cen. Gauge	Ft.	Blanked Off
BT. P.R.D. No.		Hour Clock
Initial Hydro Mud Pres.		
Initial Closed in Pres.		
Initial Flow Pres.	1	
	2	
Final Flow Pres.	1	
	2	
Final Closed in Pres.		
Final Hydro Mud Pres.		
Depth Bot. Gauge	10,482 Ft.	YES Blanked Off
BT. P.R.D. No.	1496	48 Hour Clock
Initial Hydro Mud Pres.	5147	5077
Initial Closed in Pres.	3143	3143
Initial Flow Pres.	- 1	746
	600 2	575
Final Flow Pres.	- 1	591
	2106 2	2140
Final Closed in Pres.	3098	3096
Final Hydro Mud Pres.	5103	5068

Date	10-1-68	Ticket Number	519575 - S
Kind of Job	OPEN HOLE	Halliburton District	LOVINGTON
Tester	MR. CASTELLOW	Witness	MR. BOWEN
Drilling Contractor	A. W. THOMPSON DRILLING COMPANY IC		
Elevation	4151' K.B.	Top Packer	-
Total Depth	10,486'	Bottom Packer	10,435'
Interval Tested	NET PAY 15' 10,435'-10,486'	Formation Tested	UPPER PENNSYL-VANIA
Casing or Hole Size	8 3/4"	Casing Perfs. Top / Bot.	-
Surface Choke	1" ADJUSTABLE	Bottom Choke	5/8"
Size & Kind Drill Pipe	4 1/2" F.H.	Drill Collars Above Tester I.D. - LENGTH	2.00" x 270'
Mud Weight	9.0	Mud Viscosity	45
Temperature	- °F Est. / 154 °F Actual	Anchor Size & Length	ID 2.00" / OD 4 3/4" x 51'
Depths Mea. From	ROTARY TABLE	Depth of Tester Valve	10,405' Ft.
Cushion TYPE / AMOUNT	- Ft.	Depth Back Pres. Valve	- Ft.
Recovered	FLOWED 16 BARRELS Feet of	OIL	
Recovered	REVERSED 65 BARRELS Feet of	OIL	
Recovered	Feet of		
Recovered	Feet of		
Oil A.P.I. Gravity	-	Water Spec. Gravity	-
Gas Gravity	-	Surface Pressure	270# psi
Tool Opened	9-30-68 6:00 PM A.M. P.M.	Tool Closed	10-1-68 2:00 AM A.M. P.M.

Remarks Opened tool for 10 minute 1st flow. Closed tool for 60 minute initial closed in pressure. Reopened tool for 260 minute 2nd flow with a fair blow increasing to strong; gas to surface in 25 minutes and fluid to surface in 130 minutes. Closed tool for 150 minute final closed in pressure.

Legal Location Sec. - Twp. - Rng. SEC. 31 - 13S - 34E | Field Area N. LOVINGTON | County LEA | State NEW MEXICO

Lease Name STATE "A" | Well No. 1 | Test No. 2 | Lease Owner/Company Name THE SUPERIOR OIL COMPANY | Mea. From Tester Valve | Owner's District MIDLAND

OCT 1 1 1968

ENGINEERING DEPT.
MIDLAND DISTRICT

FORMATION TEST DATA

COPY TO: H. L. FRANQUES
DATE: M. U. BROUSSARD

Gauge No.	1516		Depth	10,415'		Clock	48 hour		Ticket No.	519375		
	First Flow Period		Initial Closed In Pressure			Second Flow Period			Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.		Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
P_0	.000	373	.000		382	.000	475		.000		2088
P_1	.016	382	.0104		2637	.0878	938		.0258		2819
P_2			.0208		2822	.1756	1367		.0516		2901
P_3			.0312		3029	.2634	1726		.0774		2941
P_4			.0416		3031	.3512	2002		.1032		2966
P_5			.0520		3072	.4390	2088		.1290		2989
P_6			.0624		3078				.1548		3004
P_7			.0728		3081				.1806		3016
P_8			.0832		3083				.2064		3027
P_9			.0936		3087				.2322		3036
P_{10}			.1040		3092				.2580		3045
Gauge No.	1496		Depth	10,482'		Clock	48	hour			
P_0	.000	746	Δt,Min.=0 .000		591	.000	575		Δt,Min.=0 .000		2140
P_1	.0032	681	6 .0103	2.52	2293	.0862	1014		15 .0255	18.45	2858
P_2	.0064	617	12 .0206	1.848	2754	.1724	1434		30 .0510	9.68	2950
P_3	.0096	591	18 .0309	1.552	2937	.2586	1777		45 .0765	6.78	2993
P_4	.0128	589	24 .0412	1.418	3031	.3448	2056		60 .1020	5.33	3020
P_5	.0160	591	30 .0515	1.332	3076	.4310	2140		75 .1275	4.47	3038
P_6			36 .0618	1.278	3102				90 .1530	3.90	3056
P_7			42 .0721	1.238	3121				105 .1785	3.48	3067
P_8			48 .0824	1.21	3132				120 .2040	3.17	3078
P_9			54 .0927	1.185	3139				135 .2295	2.925	3087
P_{10}			60 .1030	1.165	3143				150 .2550	2.731	3096
Reading Interval	2		6			52			15		Minutes

REMARKS:

SPECIAL PRESSURE DATA

DON MATHEWS <2>/0

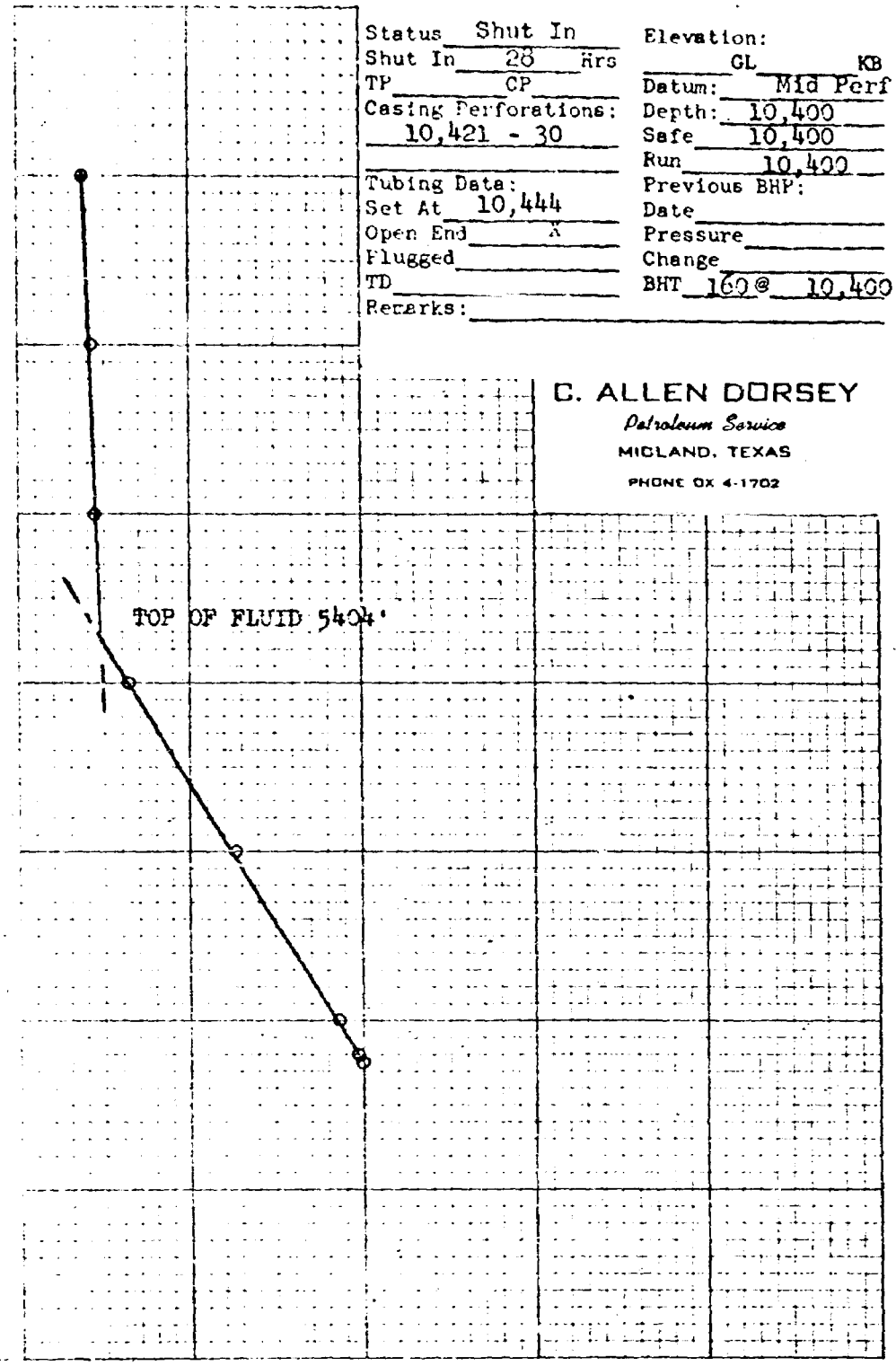
BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	387	
2000	413	.013
4000	437	.012
6000	640	.101
8000	640	.311
10,000	1860	.299
10,400(-6246)	1977	.292
10,426(-6272) (Mid Perf.)	1985*	

Pressure at 10,359 (-6250) - 1978 psig

* Extrapolated Pressure



Status Shut In
Shut In 28 Hrs
TP CP
Casing Perforations:
10,421 - 30

Tubing Data:
Set At 10,444
Open End X
Plugged
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,400
Safe 10,400
Run 10,400
Previous BHP:
Date
Pressure
Change
BHT 169 @ 10,400

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE OX 4-1702

COMPANY THE SUPERIOR OIL CO., LEASE STATE "K" COM. WELL NO 1

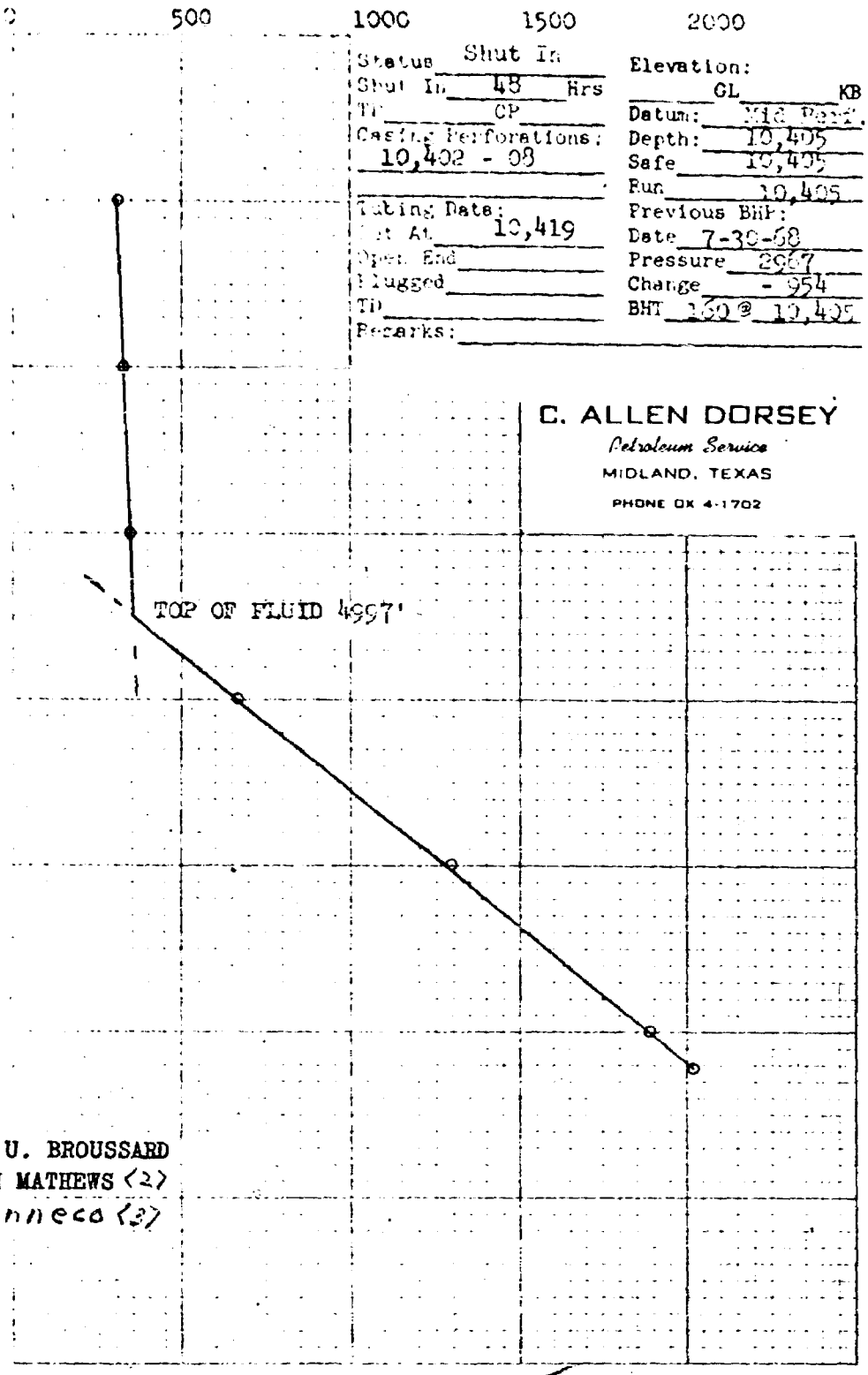
FIELD CERCA UPPER PENN. COUNTY LEA STATE NEW MEXICO

ORDERED BY O. V. SIVAGE DATE TESTED 10-28-68

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	307	
2000	325	.009
4000	345	.010
6000	668	.161
8000	1293	.312
10,000	1893	.300
10,405(-6250) (Mid Perf.)	2013	.297



Status Shut In
Shut In 48 Hrs
TP CP
Casing Perforations: 10,402 - 08
Tubing Data:
Set At 10,419
Open End
Plugged
ID
Remarks:

Elevation:
GL KB
Datum: KB Derr.
Depth: 10,405
Safe 10,405
Run 10,405
Previous BHP:
Date 7-30-68
Pressure 2967
Change - 954
BHT 160 @ 10,405

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE OX 4-1702

THE SUPERIOR OIL CO.

NOV 4 1968

ENGINEERING DEPT.
MIDLAND, TEXAS

COPY TO: M. U. BROUSSARD
DON MATHEWS (2)
Tenneco (2)

COMPANY THE SUPERIOR OIL CO., LEASE STATE "D" COM. WELL NO 1

FIELD CHICA COUNTY LEA STATE NEW MEXICO

ORDERED BY J. V. SIVAGE DATE TESTED 11-1-68

THE SUPERIOR OIL COMPANY

ELKAN No. 1

Sec. 34, T 13 S - R 34 E

CERCA (UPPER PENN) FIELD

Lea County, New Mexico

PRESSURE BUILD-UP DATA

DRILL STEM TEST on Jan. 6, 1969

10,402-55 (-6252 to -6305)

UPPER PENN ZONE

RESERVOIR PRESSURE, Psig at 10,451' (-6301)

3600
3500
3400
3300
3200
3100
3000
2900
2800
2700
2600
2500
2400
2300
2200

Reservoir Pressure = 2737 psig

3 hour Final Shut In

One hour Initial Shut In

$\frac{t + \Delta t}{\Delta t}$

100 9 8 7 6 5 4 3 2 10 9 8 7 6 5 4 3 2 1.0

t = Prod. Time, Min.

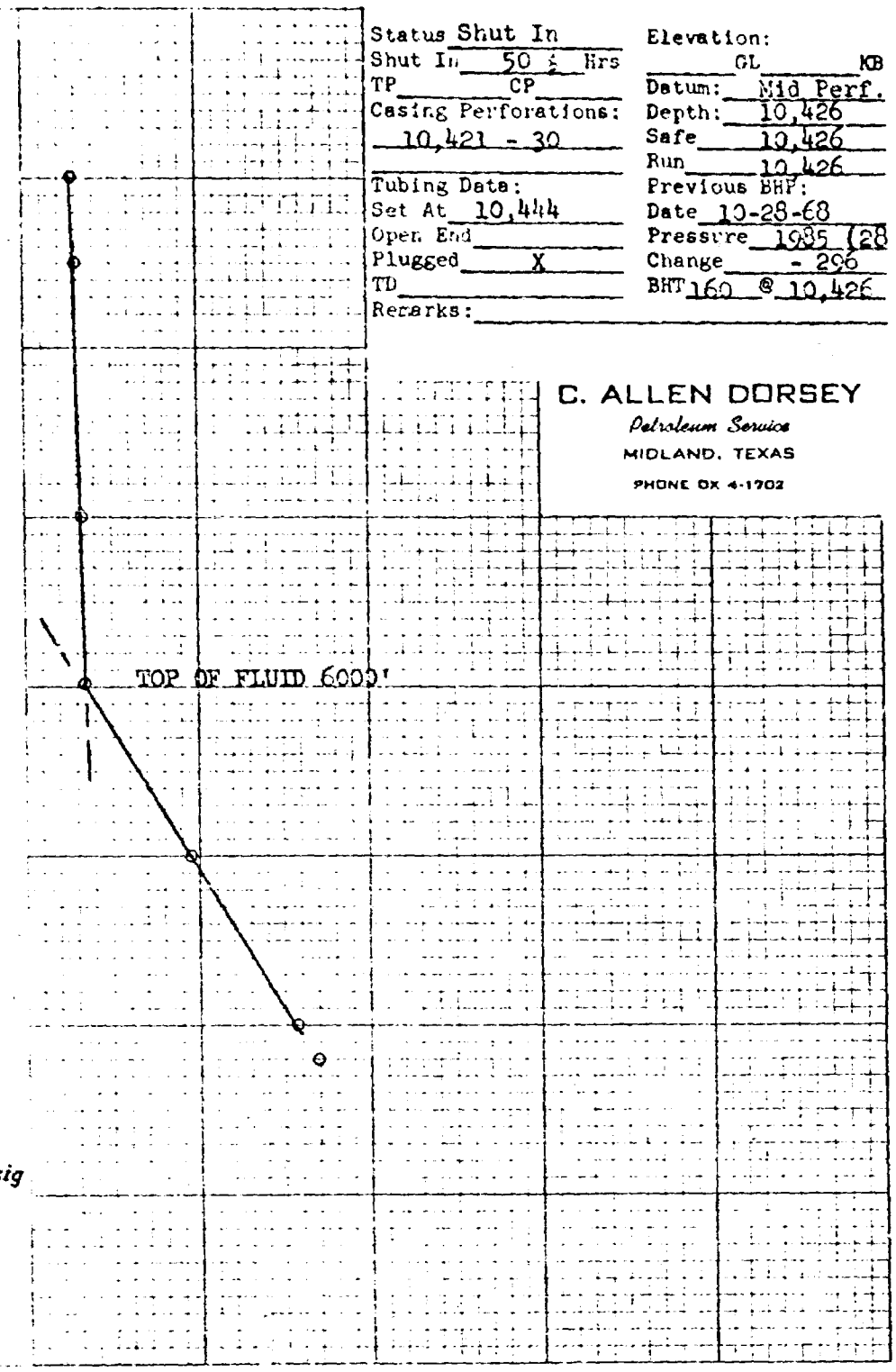
Δt = Shut In Time, Min.

BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	289	
1000	299	.010
4000	327	.009
6000	346	.009
8000	955	.305
10,000	1565	.305
10,426(-6272) (Mid Perf.)	1689	.292

Pressure at 10,359(-6250) -1683 psig



Status Shut In
Shut In 50 ± Hrs
TP CP
Casing Perforations:
10,421 - 30

Tubing Data:
Set At 10,444
Open End
Plugged X
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,426
Safe 10,426
Run 10,426
Previous BHP:
Date 10-28-68
Pressure 1985 (28 hrs.)
Change - 296
BHT 160 @ 10,426

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE OX 4-1702

COMPANY THE SUPERIOR OIL CO., LEASE STATE "K" COM WELL NO 1

FIELD CARCA UPPER PENN. COUNTY LEA STATE NEW MEXICO

ORDERED BY TERRY CLAY DATE TESTED 1-22-69

	1st Min.	2nd Min.
Flow Time	20	300
Closed In Press. Time	60	180
Pressure Readings	Field	Office Corrected
Depth Top Gauge	10,380 Ft.	NO Blanked Off
BT. P.R.D. No.	103	24 Hour Clock
Initial Hydro Mud Pressure	5014	5042
Initial Closed in Pres.	2683	2707
Initial Flow Pres.	- 1	288
	512 2	549
Final Flow Pres.	- 1	521
	1834 2	1877
Final Closed in Pres.	2641	2682
Final Hydro Mud Pressure	4972	5021
Depth Con. Gauge	Ft.	Blanked Off
BT. P.R.D. No.		Hour Clock
Initial Hydro Mud Pres.		
Initial Closed in Pres.		
Initial Flow Pres.	1	
	2	
Final Flow Pres.	1	
	2	
Final Closed in Pres.		
Final Hydro Mud Pres.		
Depth Bot. Gauge	10,451 Ft.	YES Blanked Off
BT. P.R.D. No.	102	24 Hour Clock
Initial Hydro Mud Pres.	5038	5062
Initial Closed in Pres.	2700	2729
Initial Flow Pres.	- 1	522
	526 2	575
Final Flow Pres.	- 1	577
	1876 2	1900
Final Closed in Pres.	2657	2707
Final Hydro Mud Pres.	4995	5043

Date	1-6-69	Ticket Number	60207 - S
Kind of Job	OPEN HOLE	Halliburton District	LOVINGTON
Tester	MR. HARTLEY MR. CASTELLOW	Witness	MR. FARRELL
Drilling Contractor	A. W. THOMPSON DRILLING COMPANY INC		
Elevation	4164' K.B.	Top Packer	10,396'
Total Depth	10,455'	Bottom Packer	10,402'
Interval Tested	10,402'-10,455'	Formation Tested	WOLFCAMP
Casing or Hole Size	8 3/4"	Casing Perfs. Top / Bot.	-
Surface Choke	1" ADJUSTABLE	Bottom Choke	5/8"
Size & Kind Drill Pipe	4 1/2" X.H.	Drill Collars Above Tester (I.D. - LENGTH)	2.25" x 270'
Mud Weight	9.0	Mud Viscosity	49
Temperature	- °F Est. 158 °F Actual	Anchor Size & Length	ID 2.25" OD 4 3/4" X 53'
Depths Mea. From	ROTARY TABLE	Depth of Tester Valve	10,368' Ft.
Cushion	TYPE - AMOUNT - Ft.	Depth Back Pres. Valve	- Ft.
Recovered	REVERSED BARRELS 54 Feet of OIL		
Recovered	THE SUPERIOR OIL CO. COPY TO:		
Recovered	DATE: JAN Feet of 1969 H. L. FRANQUES		
Recovered	ENGINEERING DEPT. Feet of M. U. BROUSSARD DON MATHEWS		
Oil A.P.I. Gravity	- 43.5	Water Spec. Gravity	-
Gas Gravity	-	Surface Pressure	90# psi
Tool Opened	8:35 AM A.M. P.M.	Tool Closed	5:55 PM A.M. P.M.

Remarks Opened tool for 20 minute 1st flow. Closed tool for 60 minute initial closed in pressure. Reopened tool for 300 minute 2nd flow with a fair blow increasing to strong; gas to surface in 23 minutes and fluid at surface in 120 minutes. Flowed 42 barrels of oil in 180 minutes on 1/2" choke. Closed tool for 180 minute final closed in pressure.

Legal Location Sec. - Twp. - Rng. SEC. 34 - 13S - 34E
Lease Name BEKAN
Well No. 1
Test No. 2
Field Area RANGER
County LEA
State NEW MEXICO
Lease Owner/Company Name THE SUPERIOR OIL COMPANY
Owner's District MIDLAND

FORMATION TEST DATA

5

Gauge No. 103	Depth 10,380'	Clock 24 hour	Ticket No. 60207

	First Flow Period		Initial Closed In Pressure			Second Flow Period		Final Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\Theta}{\Theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\Theta}{\Theta}$	PSIG Temp. Corr.
P_0	.000	288	.000		521	.000	549	.000		1877
P_1	.0124	333	.0192		2450	.162	1136	.0584		2626
P_2	.0248	370	.0384		2594	.324	1589	.1168		2652
P_3	.0372	417	.0576		2643	.486	1836	.1752		2662
P_4	.0496	468	.0768		2669	.648	1868	.2336		2667
P_5	.0620	521	.0960		2684	.810	1874	.2920		2671
P_6			.1152		2692	.972	1877	.3504		2675
P_7			.1344		2698			.4088		2677
P_8			.1536		2703			.4672		2679
P_9			.1728		2705			.5256		2682
P_{10}			.1920		2707			.5840		2682

Gauge No. 102	Depth 10,451'	Clock 24 hour

			Δt, Min. = 0					Δt, Min. = 0		
P_0	.000	522	.000		577	.000	575	.000		1900
P_1	.0142	737	6 .0198	4.34	2471	.1663	1158	18 .060	17.68	2655
P_2	.0284	513	12 .0396	2.662	2616	.3326	1618	36 .120	9.34	2677
P_3	.0426	511	18 .0594	2.11	2664	.4989	1859	54 .180	6.56	2685
P_4	.0568	544	24 .0792	1.832	2692	.6652	1894	72 .240	5.17	2692
P_5	.0710	577	30 .0990	1.668	2707	.8315	1898	90 .300	4.33	2696
P_6			36 .1188	1.558	2716	.9980	1900	108 .360	3.78	2698
P_7			42 .1386	1.475	2722			126 .420	3.38	2701
P_8			48 .1584	1.418	2725			144 .480	3.08	2703
P_9			54 .1782	1.372	2727			162 .540	2.85	2705
P_{10}			60 .1980	1.332	2729			180 .600	2.665	2707
Reading Interval	4		6			50		18		Minutes

REMARKS:

SPECIAL PRESSURE DATA

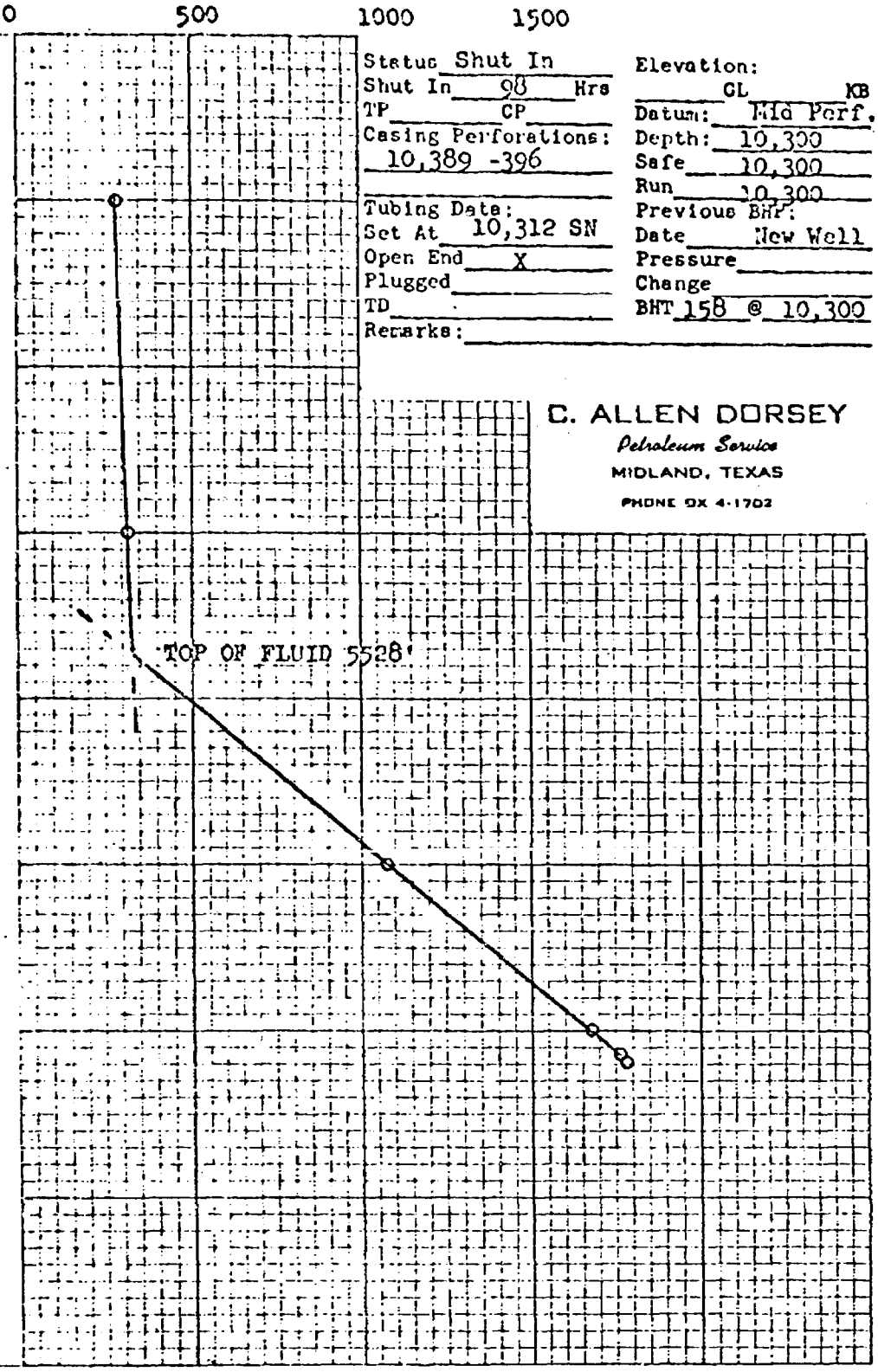
BOTTOM HOLE PRESSURE RECORD

PRESSURE POUNDS PER SQUARE INCH GUAGE

Depth	Pressure	Gradient psi/ft.
0	283	
4000	319	.009
8000	1072	.188
10,000	1670	.299
10,300(-6136)	1759	.297
10,393(-6229)	1787*	
(Mid Perf.)		

Pressure at 10,414(-6250) - 1783 psig

* Extrapolated Pressure



Status Shut In
Shut In 98 Hrs
TP CP
Casing Perforations:
10,389 -396

Tubing Data:
Set At 10,312 SN
Open End X
Plugged
TD
Remarks:

Elevation:
GL KB
Datum: Mid Perf.
Depth: 10,300
Safe 10,300
Run 10,300
Previous BHP:
Date New Well
Pressure
Change
BHT 158 @ 10,300

C. ALLEN DORSEY
Petroleum Service
MIDLAND, TEXAS
PHONE ØX 4-1702

COMPANY MIDWEST OIL CORP., LEASE NEW MEXICO STATE "S" WELL NO 1

FIELD CERCA PERM. "A" COUNTY LEA STATE NEW MEXICO

ORDERED BY FRED BROWN DATE TESTED 3-14-69

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 26, 1968

EXAMINER HEARING

IN THE MATTER OF:	)	
	)	
Application of The Superior Oil Company for the creation of a new pool, assignment of discovery allowable, and the promulgation of pool rules, Lea County, New Mexico.	)	Case No. 3796

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The hearing will come to order, please. Case 3796.

MR. HATCH: Case 3796. Application of The Superior Oil Company for the creation of a new pool, assignment of discovery allowable, and the promulgation of pool rules, Lea County, New Mexico.

MR. PATMAN: My name is Elmer Patman, and I live in Austin, Texas. I have a witness, Mr. T. D. Clay, if you would swear him, please.

MR. UTZ: Any other appearances?

MR. KELLY: Booker Kelly of White, Gilbert, Koch and Kelly on behalf of Tenneco in support of the application.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 10 were marked for identification.)

T. D. CLAY

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. PATMAN:

Q Your name is T. D. Clay?

A Yes, that is correct.

Q Where do you live?

A I live in Midland, Texas.

Q By whom are you employed and what capacity?

A Employed by Superior Oil Company as a petroleum engineer.

Q Mr. Clay, you have never testified before the New Mexico Commission, as I understand it?

A No, sir, I have not.

Q In pursuit of your education, did you obtain any degree or degrees? If so, name them and what year and what school.

A Yes, sir, I graduated in 1957 with a B. S. degree in Geology from Oklahoma State University. I was employed five years as a geologist; graduated in 1965 with a Master's degree in Petroleum Engineering from the University of Oklahoma, and I have been employed three and a half years as a petroleum engineer and am currently employed in that capacity.

Q With the Superior in Midland?

A With Superior in Midland for the past one year, working in the West Texas-New Mexico area.

Q In the pursuit of your duties, do you have under your supervision anything to do with the Superior development in Lea County, New Mexico?

A Yes, I do.

Q Are you familiar with it?

A Yes.

MR. PATMAN: In the letter that I filed as a request for this hearing I believe, if the Examiner please, I misstated the plug back depth of the well. If I may, may I give you the correct plug back depth and ask that the letter be corrected to conform? I believe that plug back depth, I gave it as 10,970 and it should be 10,943.

MR. UTZ: Mr. Patman, do you have resident counsel or are you registered in the State of New Mexico?

MR. PATMAN: I have appeared here many times. I don't have anybody today, no, sir. I was going to ask you about that.

MR. UTZ: According to the Attorney General's ruling, you must be represented by resident counsel.

MR. PATMAN: May I associate Mr. Kelly?

MR. KELLY: Under the circumstances, I would be honored to be associated.

MR. PATMAN: Would that be agreeable with you?

MR. UTZ: Yes, I am sure it would be.

MR. PATMAN: Thank you very much. I apologize for it. This is something new that came up. I did it on an emergency basis.

MR. UTZ: We thought you might have a letter in here, and that's what I was looking for.

Q (By Mr. Patman) Mr. Clay, we have prepared and handed to the Examiner and counsel a brochure of exhibits containing ten documents or exhibits of statistical data. Do you have one of these in front of you?

A Yes, I do.

Q Will you pull the first map that has been identified as Exhibit 1 and explain, if you please, for the record and for the benefit of the Examiner, what that exhibit is and what it contains?

A This map is contained within the special pool rules application packet. It is an ownership map showing the location of the Superior State D, COM Well No. 1, located in Unit G, Section 4, Township 14 South, Range 34 East, Lea County, New Mexico. Along with this well, this map shows lessees of record within a two-mile radius from the Superior State D well, also shows wells, producing wells in the completion interval within these producing wells.

Q What is the purpose of this application?

A The purpose of this application is to ask that we be allowed to develop established from one hundred sixty-acre proration unit around the State D, COM Number 1 well and also

that the permitted well be allowed or be located within a hundred fifty feet of the center of any governmental quarter-quarter of the hundred sixty-acre proration unit.

Q Now, the well in question that you are talking about--I'll ask you who owns the working interest.

A Superior is the operator with 66 2/3 percent working interest; Tenneco has a 33 1/3 percent working interest.

Q I noticed on your map you have what appears to be six hundred forty acres or four quarter sections hatched in red.

A Yes, this is right.

Q Does the Superior Tenneco arrangement extend through that six hundred forty acres?

A This is a drilling unit only between Superior and Tenneco.

Q And their interest and arrangements between themselves extend not only to the well and the land under which the well in question was drilled but to the entire six hundred forty-acre tract?

A That is correct.

Q What is the yellow on that tract?

A The yellow outside the drilling block and adjacent sections is Superior acreage. The solid yellow is 100 percent owned by Superior; the acreage that's colored around the fringes

that the permitted well be allowed or be located within a hundred fifty feet of the center of any governmental quarter-quarter of the hundred sixty-acre proration unit.

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Q And their interest and arrangements between themselves extend not only to the well and the land under which the well in question was drilled but to the entire six hundred forty-acre tract?

A That is correct.

Q What is the yellow on that tract?

A The yellow outside the drilling block and adjacent sections is Superior acreage. The solid yellow is 100 percent owned by Superior; the acreage that's colored around the fringes

with white in the center is partially owned by Superior Oil Company.

Q In your brochure you have another map; we'll pass to it, if you please. I'll ask you to tell the Examiner, if you will, what this map is, its office and utility.

A This is a structure map, subsurface structure map contoured on the top of the Upper Pennsylvanian zone with contour interval of twenty-five feet; the map encompasses the same area as the ownership map designated as Exhibit 1. The structure map shows the location of the State D, COM Number 1 well. The structure is based on subsurface and seismic data surrounding this well; also shows the structure surrounding and encompassing the Nonombre field to the northwest.

Q Tell me about these wells over to the northwest. What are those and where are they completed with reference to the subject well geologically?

A There's one well in the Nonombre field that's completed in the same zone of the Superior State D, COM Number 1 well; this is the Midwest State C Number 1 well located in the Northeast of the Southwest of Section 32, Township 13 South, Range 34 East; and there are other wells that have penetrated the Upper Penn "A" zone and have been found to be carrying salt water; and these wells are located at a higher subsea

depth in the producing interval, the comparable zone in the Superior State D, COM Number 1 well.

Q How about the water table, if any?

A The water contact in the Nonombre field is established from dry holes drilled around the Nonombre structure, is at a subsea depth of 6164; this compares with the current perforated interval State D, COM Number 1 well of 6247 to 6253 subsea depth, or the completion interval in the Superior well is approximately eighty feet low to the known oil-water contact in the Nonombre field.

MR. UTZ: What was the last figure?

THE WITNESS: 6247 to 6253 subsea depth.

Q (By Mr. Patman) I'll ask you to tell me where, in your opinion, the hydrocarbons recoverable and produced from the Midwest well over in the Nonombre field and the hydrocarbons produced, discovered and produced from the Superior-Tenneco well, subject of this hearing, are in a different source of supply.

A In my opinion the reservoir in the Nonombre field is separated from the Superior State D, COM Number 1 well.

Q Is it your opinion that they are not in communication?

A This is correct.

Q Do you have any other comments that you want to make

geologically on that?

A No.

Q How about the one down to the southwest?

A In relation to the one that's to the southwest, which is the East Saunders field, it will be noted from the structure map that the most recent bottom hole pressures in the Kern County land 17-2, Kern County land 17-4, and Kern County land 17-1, that this bottom hole pressure as recorded the first part of '66 is considerably lower than the bottom hole pressure measured in the State D, COM Number 1 well.

Q How much is considerable?

A Considerably lower is in excess of one thousand pounds.

Q Pressure differential?

A This is correct.

MR. UTZ: What was your pressure in Number 1-D-1?

THE WITNESS: June 2, '68 shut-in bottom hole pressure was 3415, and at the same subsea depth as these pressures recorded here.

MR. UTZ: The pressures on the one, two and four are shown?

THE WITNESS: Yes, sir, on the structure map.

MR. UTZ: 1368, 1440, and 2305.

THE WITNESS: 2305, that is correct as measured in

the first part of '66.

MR. UTZ: You may continue.

Q (By Mr. Patman) What is your opinion of what you have with reference to whether the field at the Southwest and the hydrocarbons produced from the wells therein are in communication reservoir-wise with the subject well of this hearing?

A In my opinion, and in view of the large difference in bottom hole pressure between the East Saunders field and the State D, COM Number 1 well, that the State D, COM Number 1 well is separated from the East Saunders field.

Q And no communication?

A This is correct.

Q Going back to the Nonombre for a minute, if you will, I notice there have been a couple of dry holes drilled to the south and to the east. Did they penetrate the Pennsylvanian formation from which the subject well is producing?

A Yes, they did.

Q No porosity?

A In some cases there is porosity, in Section 30, Township 13 South, 34 East, the Cactus Drilling Number 1 Smelters well penetrated the Upper Pennsylvanian "A" zone,

and by drill stem test recovered 1405 feet of salt water, and 187 feet of mud from the Upper Pennsylvanian zone at a subsea depth of 6169 to 6196.

Q Was the subject well drilled as a result? Is it a geophysical or geological prospect or combination?

A The subject well was drilled as a subsurface geological prospect.

Q Did the drilling of the well reasonably confirm such efforts as geological work done on it?

A Yes, it did.

Q You found the Pennsylvanian at about where you expected to find it?

A Yes.

MR. PATMAN: Before I pass on those two maps, if the Examiner please, do you have any questions?

MR. UTZ: Not right at the moment I don't. I will have some later, I'm sure.

Q (By Mr. Patman) Now, the next exhibit in the brochure is just a content identification letter. We'll just pass from that. I will ask you to state whether or not it is true that the nine contents identified follow this letter?

A Yes, this is correct.

Q Now, going to what has been identified as Exhibit 4,

I will ask you to tell, if you please, the Examiner what is contained and its utility --

A Exhibit 4 --

Q -- and what does it refer to?

A Referring to the completion data, reservoir data, and stimulation data of the State D, COM Number 1 well; and this well was completed May the 26th, 1968, in the Upper Pennsylvanian "A" zone through perforations at 10,402 to 10,408 per four jet shots per foot. On initial potential, this well flowed 380 barrels of oil per day, one barrel of water per day through a 26/64-inch choke, tubing pressure 180 P.S.I., gas-oil ratio of 1047, 43 degree A.P.I. gravity oil. Total depth of this well was 11,031 feet, plugged back depth, 10,943 feet, casing 5 1/2-inch was set at 11,031 feet; the well was completed through 2 3/8ths tubing located at 11,419 feet.

Q What kind of packer do you have set and where do you have it set?

A The tubing, along with the tubing there is a Baker Model "R" packer set at 10,315 feet. The Upper Pennsylvanian "A" zone is topped at 10,397, to the bottom at 10,422, has net pay of 12 feet, average porosity 8 percent, permeability 147 millidarcies, average water saturation 28 percent, static

bottom hole pressure and subsea deptn is 3415 P.S.I., at a minus 6250. Later, after completion, this well was stimulated on June 13th, 1968; it was given a treatment of 1100 -- correction, one hundred gallons of 7 1/2 percent M.C.A. afterward and on June the 21st, 1968, additional testing indicated this well to flow 357 barrels of oil per day through 18/64 choke, tubing pressure 525 P.S.I., gas-oil ratio 87,743.3 A.P.I. gravity oil.

Q I observe there that in your natural flow test of the well that you tested it through 26/64-inch choke and after you acidized it you tested it through a smaller choke, is that correct?

A This is correct.

Q In your opinion, will the well produce more than the 357 on the larger choke?

A Yes, sir. In my opinion this well on three-quarter-inch choke will produce from 450 to 500 barrels a day and two hundred pounds tubing pressure.

MR. UTZ: But you have not made that test?

THE WITNESS: We have not made the test.

Q (By Mr. Patman) Do you plan, after the Commission acts on this application favorably as you request, do you intend to make a new potential and file it?

A Yes, sir.

Q Let's go to Exhibit 5, which is the drilling completions of the various spacing patterns. As I understand it, the well is being produced on a statewide 480 pattern.

A This is correct. This includes various completions of various drilling patterns for the Pennsylvanian "A" zone and the State D, COM Number 1 well. To drill an additional well in this area, it is estimated that it will cost one hundred ninety-two thousand dollars. This includes the drilling, completion, installation of production facilities, and pumping equipment, and if a well were drilled on a forty-acre proration unit, it is estimated it would recover 43,680 barrels of oil and would result in a loss of $79,941.00.

If a well were drilled on an eighty-acre proration unit, it has an estimated recovery of 87,360 barrels of oil. This investment would result in a profit of $32,118.00, or a ratio of profit to investment of .167 to 1. If a well were drilled on 160-acre proration unit and recovered 174,720 barrels of oil, this would provide a profit of $256,238.00 or a profit to investment of 1.334 to 1.

Q In connection with that, in your opinion, will a well drilled to the Upper Pennsylvanian, as is the subject well, and completed, equipped and completed as you have completed

this well reasonably and effectively drain 160 acres?

A In my opinion, one well will effectively drain 160 acres.

Q I will ask you if the well is re-potentialed and makes as much oil as you testify, in your judgment that it will make and the Commission sees fit to assign an allowable according to 160-acre pattern, can the well produce that amount of oil non-wastefully?

A Yes, sir.

Q Would the production of the well under those conditions adversely affect greater ultimate recovery?

A No, sir.

Q Let's go to Exhibit 6. Tell the Examiner what that exhibit is and its office and utility.

A It is the estimated oil reserves utilizing the volumetric method.

Q What do you mean by that?

A Volumetric is commonly referred to as pore volume or that amount of pore volume that is available, the pore space that is available within the twelve net feet of pay that has oil saturation in that portion of that oil that is recoverable.

Q Anything else on that?

A From volumetric calculations, it indicates that the

ultimate recoverable oil from the Upper Penn "A" zone will be 91 stock tank barrels per acre foot or with 12 feet of net pay this will amount to a 1,092 stock tank barrels per acre. The recoveries on forty and eighty and 160-acre spacing are respectively 43,680 stock tank barrels, 87,360 stock tank barrels, and 174,720 stock tank barrels.

Q Let's go to Exhibit 7. Go ahead and tell what Number 7 is and what your symbols represent.

A Exhibit 7 is the calculated permeability in the Upper Pennsylvanian "A" zone as determined from pressure build-up data, measured June 2nd, 1968. This data indicates that the permeability in this reservoir is 147 millidarcies.

Q Now, Number 8. Anything else on that exhibit?

A No, not unless there are further questions.

Q Now, Number 8. What is Number 8 and how did you arrive at it and where did you get the information that you depict on that exhibit?

A Exhibit Number 8 is the bottom hole pressure build-up data as measured on June the 2nd, 1968; and it's simply the data corresponding to the time as measured on the bottom hole pressure chart and at a depth of 10,405, which is at a subsea depth of 6250; it provides the elapsed time that the well was shut-in versus the pressure as recorded during this shut-in

build-up test.

Q What does the pressure build-up test mean to you as an engineer, Mr. Clay, in relation to establishing a drainage pattern or drainage area of a well?

A The build-up test gives a good indication of the permeability or capacity that a well has; in other words, the more rapidly a well, the pressure will build up in a particular well is indicative of higher capacity or permeability, capacity being the permeability times the thickness.

Q It will give you a P.I. on it?

A It will also give you a P.I. if you get a flowing bottom hole pressure prior to shutting the well in. In this case, we did get a short interval flowing bottom hole pressure which indicated that the productivity index --

Q Now, that's P.I.?

A -- prior to stimulation was .236 barrels per P.S.I. pressure drop. However, I would like to point out that from this bottom hole pressure plot it was also indicated that there was considerable damage done to the formation while drilling, cementing, et cetera, and that since that time we have stimulated the well; and in my opinion, the P.I. is considerably higher now or the flowing bottom hole pressure will be considerably higher.

Q When you talk about damage, you are talking about drilling mud getting into the formations?

A Blocking off the ability of the oil to move into the well bore.

Q As you have stimulated the well and as you produce it, in the vernacular of the oil field, will it clean up and the P.I. will increase as you continue to produce it, is that what you are saying?

A That is correct.

Q I notice on here that you give 1800 barrels cumulative production as of June 18, and this is the 26th. Have you produced it since the 18th and at about what rate?

A Yes, sir, we have. The approximate cumulative production to date from this well is ten thousand barrels of oil.

Q Let's go to Exhibit 9, which is a bottom hole pressure build-up curve. Tell the Examiner how you got the information that you plot on that chart, graph.

A Exhibit 9 is a plot of the bottom hole pressure data as seen from Exhibit 8, versus delta T over T plus delta T. Delta T is simply the period of time this well was shut-in, and T is the producing period prior to shut-in. It is a ratio. By knowing the pressure at a certain time, and the time that

has elapsed since shut-in, then one can plot the pressure versus this delta T over T plus delta T and arrive at the static reservoir pressure. However, in this case, during the 21-hour shut-in period, this well reached the static reservoir pressure after six-hour shut-in period.

Q What does that mean to you as an engineer with reference to the ability of the well to produce and to deliver oil into the stock tanks?

A By the way the zone reacted when it was shut-in, and it built up to the static reservoir pressure in a very short period of time, it indicates that the capacity and permeability in this zone is extremely high. Otherwise, at the end of this 21-hour shut-in period, the pressure would have still been building. In this case, it was not. We noted from the graph between the six-hour period and the 21-hour period that the pressure was the same or 3415 P.S.I.

Q In other words, for the last fifteen hours that the well was shut-in, your pressure lay on a straight line curve?

A That is correct.

Q Now, the last exhibit that you have in your folder is a sonic log or Schlumberger, is that right?

A Yes, sir.

Q Or how do you identify it?

A It's a Schlumberger bore hole compensated sonic gamma ray log of the Superior State D, COM Number 1 well, located in Section 4, Township 14 South, Range 34 East. On this log is plotted the formations penetrated.

Q What, and give the depth as you go down.

A The Yates at 2890, Queen at 3687, San Andres, 4318, Drinkard at 7212, Abo at 7900, Wolfcamp at 9622, Upper Penn "A", 10,397, Middle Penn, let me include the base of the Penn "A", 10,422; the Middle Penn at 10,560, the Lower Penn at 10,793. This is the deepest zone or geologic interval that was penetrated in the well.

Q How many wells have been drilled in this area, just the one?

A In the immediate area, there has just been the one well.

Q In the area that you say this well made a new discovery and is entitled to a new field designation or a new pool designation, is this the only well?

A Yes, sir.

Q Is it singly or dually completed?

A This well is singly completed in the Upper Pennsylvanian "A" zone.

Q Is there another well being drilled, and if not, why?

A There is not, to my knowledge, another well currently being drilled and the development within this area will depend to a large degree on the proration unit assigned to the State D, COM Number 1 well.

Q I notice on that log the Schlumberger people had it Commission Number 1; that was in error?

A Yes.

Q We marked it out, it says communitized well, State D, COM. Is this a large or small structure and by large or small, give me the number of wells, in your opinion, based upon what you know about it at the moment, that it would take to adequately develop this reservoir under the proration unit and spacing pattern that you have requested here today.

A In my opinion, utilizing the subsurface and seismic data available, this will be a relatively small field. It will be in the neighborhood of approximately 500 surface acres and in comparison with nearby fields of similar size, three wells will adequately drain or develop the wells.

Q Three wells?

A Three in addition to the drilled well.

Q The discovery well?

A That is correct.

Q I'll ask you, together or subsequent to the request

A There is not, to my knowledge, another well currently being drilled and the development within this area will depend to a large degree on the proration unit assigned to the State D, COM Number 1 well.

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Q Three wells?

A Three in addition to the drilled well.

Q The discovery well?

A That is correct.

Q I'll ask you, together or subsequent to the request

for a hearing, you filed the required Commission forms and exhibits. Are they essentially what you have put on here today?

A Would you restate the question?

Q These exhibits that you filed with the Commission subsequent to the setting of the hearing and the execution of their forms, are they essentially what you have put on here today, or do you have other information on these exhibits that you put on here today that you didn't have at the time that you prepared this stuff in the early part of June?

A The application form C-109 and attached exhibits include essentially the same information that is presented in the special pool rules hearing exhibit. In our request for the creation of a new pool designation for the Upper Pennsylvanian "A" zone in the State D, COM Number 1 well, it is pointed out that the State D, COM Number 1 well is lower subsea depth than the known oil-water contact in the Nonombre field and also in view of the large difference in bottom hole pressure between State D well and East Saunders field, it is my opinion that the State D well is separated and constitutes a discovery.

Q With reference to all of the exhibits and information contained and attached to the execution of the form C-109, together with the ones that you put on here today, were they either prepared by you or for you under your direction and

supervision?

A Yes, sir, they were all prepared by me.

Q I notice in the application that Superior requested on behalf of them and their partner that the well location on the ground or the surface location be permitted at a variance of 150 feet from the center of a governmental quarter quarter section. Do you have any reason for making that request?

A Yes, sir, we do.

Q Would you please state it?

A Reference to Exhibit 2 or the structure map, in view of the small structure involved here, I feel that it is necessary to drill additional wells in here along the apex of this structure to prevent unnecessary dry holes from being drilled.

Q What do you mean by unnecessary dry holes? Is any dry hole necessary?

A Is this for the record?

Q Yes, what you mean by unnecessary dry holes.

A In my opinion, they're -- all dry holes are unnecessary.

Q In other words, what you are saying is, as I understand it, that permission to flexibly locate your well at

a variance of 150 feet off center of a governmental quarter quarter section will eliminate the possibility and mitigate against the possibility of drilling a dry hole?

A That is correct.

Q And would permit more flexibility to locate the well to assure greater ultimate recovery of hydrocarbons than would otherwise be had?

A That is correct.

MR. PATMAN: If the Examiner please, I offer the exhibits and ask that they be incorporated in the record, if I might.

MR. UTZ: Without objection, Exhibits 1 through 10 will be entered into the record of this case.

(Whereupon, Exhibits 1 through 10 were offered and admitted in evidence.)

MR. PATMAN: Thank you. I pass the witness. I believe I have no further questions at the moment.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Clay, referring to your Exhibit 4, in regard to your net pay, I notice your perforations span 25 feet and you pick a net pay of 12 feet. On what basis did you do that?

A The perforations are the top and the bottom of the

pay.

Q The uppermost portion of the net pay and the bottom-most portion of the net pay is all you perforate. In other words, how did you pick your 12 feet out of 25?

A The 12 feet out of the 25-foot interval here in the zone in question was picked from the sonic gamma ray log, based on porosity in excess of 5 percent.

Q In connection with the potential shown on this exhibit, you did say you were going to re-potential this test using a smaller size choke. When do you intend to do this?

A We will re-potential the well using a larger choke size pending the outcome of the 160-acre --

Q When did you say you would do it?

A Depending the establishment of the 160-acre proration unit.

Q You don't intend to do it right away?

A Well, our current allowable is 271 barrels a day in this potential as shown on Exhibit 4; 357 barrels a day is approximately 25 percent in excess of this 271 allowable which we used to report on the C-116 form or GOR test form.

Q Is the 271 the 160-acre allowable?

A 271 is the 40-acre allowable for this depth.

Q What would be the 160 allowable?

A 445 barrels per day.

Q You don't think it would be good information to show that the well could produce 445 barrels per day?

A Yes. However, in my opinion the well will produce it but we certainly would be happy to retest it.

MR. PATMAN: Do you have any objection to retesting it and filing it?

THE WITNESS: No, sir, we do not.

MR. PATMAN: Will you do it?

THE WITNESS: Yes, sir, we certainly will be glad to.

MR. UTZ: If you do, will you report that to the Commission as soon as it's available?

THE WITNESS: Sure will. Be glad to.

MR. PATMAN: Would it be helpful if he did that right away?

MR. UTZ: I think it would.

MR. PATMAN: I thought it would, too.

Q (By Mr. Utz) Your Exhibit Number 5 in regard to your economics, you have a gas price of 15 cents. Does that include the liquids or the kick back of the liquids since it is going to Warren Petroleum gasoline plant or Atlantic Plant?

A In this case it does not include the liquids, and the contract has not been drawn up for the casinghead gas

sales, and I do not know the particulars of the contract at the present time.

Q Then what you are saying is that you would probably get a little more than 15 cents for your gas?

A Possibly. It would be after processing; however, our best estimate at the present time is that we'll receive close to 15 cents per M.C.F.

Q The volumetric formula you used is a standard formula which was used all the time in volumetric calculations?

A That is correct. It includes the number of barrels per acre foot, the porosity, the water saturation as calculated from the electric log, and the original formation volume factor or the number of reservoir barrels per stock tank barrel that will be recovered.

Q How is the reservoir factor arrived at?

A Since we do not have a bottom hole sample, the reservoir volume factor was obtained from reservoir fluid analysis from the nearby Nonombre field and East Saunders field.

Q Is this oil about the same type of crude that is in the Nonombre field?

A From what we can tell, the gravity is the same, the gas-oil ratio is similar, and I feel like that it is

reasonable to use a formation volume factor.

Q How about pressure? How about Nonombre pressures as compared with these?

A The Nonombre pressure at the present time in the Upper Penn "A" zone is somewhere around 3900 pounds; however, there is an injection well on the north flank of the Nonombre field in which produced salt water is being disposed into the Midwest Harris State Number 1 well, so in my opinion the reservoir pressure that's measured has been measured at the Midwest C No. 1 well is not indicative of the completed reservoir pressure in this Upper Penn "A" zone.

Q How much salt water has been disposed of in that well, do you have any idea?

A I'm sorry, I do not know.

Q Do you know how long it's been a disposal well?

A The application was granted, the hearing was held May 27th, 1966; and it's Case Number 3407 whereby Midwest Oil Corporation sought authority to institute a pressure maintenance project by injection into the Upper Penn formation in the Harris State Number 1 well located in Section 29, 13 South, Range 34 East; and I do not know the exact date in which initial disposal or injection commenced. However, an approximate date is quoted by Midwest engineer that testified

would be the first part of '67.

Q So it's probably 16 months there?

A Yes, sir. Also in the application they estimated that 901 barrels a day would be injected through 2 3/8ths tubing with packer set at 10,340.

MR. PATMAN: Forty thousand.

MR. UTZ: Forty thousand?

A Well, it would be roughly 40,000 if they maintained that rate. That's 900 barrels a day would be 27,000 barrels a month.

MR. PATMAN: Oh, a month.

THE WITNESS: Right, 27 a month times 16 would be --

MR. PATMAN: It would be more than that. I'm sorry.

THE WITNESS: It would be approximately 380,000 barrels of oil.

MR. PATMAN: Assuming 900 barrels a day?

THE WITNESS: Assuming 900 barrels a day disposal.

Q (By Mr. Utz) In your opinion, is that enough to sustain pressure in that pool?

A Yes, it is.

Q This water contact that you show at 6164, is that an indication of water drive in the Nonombre, or in your opinion is that a water table?

A It is a water table.

Q Do you know what the initial pressure was in the Nonombre discovery well?

A Original pressure in the Midwest State Number 1-C well was 3868 P.S.I. at a subsea depth of 6183, it would be a minus 6183.

Q So their initial pressure was in the neighborhood of 400 pounds higher than your initial pressure?

A Yes, sir, that is correct.

Q I presume you don't believe that this lower pressure in your discovery was due to drainage from Nonombre?

A No, sir, I do not believe that the two fields are connected.

Q Getting back to your Exhibit Number 7, in your permeability calculation, I just have a question there, is that 162.6 a constant?

A That's a constant. It sure is, and that permeability is equal to the constant which does nothing more than convert the units to common oil field units. That's times Q, which is the producing rate, prior to the buildup, stock tank barrels per day times the viscosity which is expressed in centipoises, and that times the oil formation volume factor which is expressed in reservoir barrels per stock tank barrel; that is

divided by the slope of the straight line portion of the build-up curve; and it is shown on Exhibit 9, the straight line portion after it bends and straightens out; and this slope is measured over one cycle of this semi log paper; and it will be noted from the buildup curve that there is a very small or nominal slope after it straightens out here. Looking back at the permeability calculation, the smaller the slope it is generally true that the higher the permeability because it is, all of this is in the enumerator is divided by the slope and the net pay influencing the pressure, which in this case is ten feet.

Q On Exhibit 8, with the equals period prior to shut-in which, in this case, is equal to 136 hours, what was the status of the well prior to shutting it in? Was it producing and, if so, how long?

A Yes, sir, it was producing and it was producing at an approximate average rate of this 318 barrels of oil per day. In other words, it completed the well and then we produced it for 136 hours; while it was flowing we ran a bottom hole pressure bomb into the well, and we recorded approximately an hour of flowing bottom hole pressure and then shut the well in and allowed the pressure to move from some distance out away from well bore into this well bore, causing this buildup in pressure

which was recorded over this 21-hour period throughout this 21-hour period.

Q So that the well was shut-in before you started the 136-hour ~~production~~?

A No, the well was producing prior to the shut-in 136 hours, and then it was shut-in.

Q I thought that's what I said.

A Oh, I'm sorry.

Q It produced very little after completion before you began this test?

A That is true.

Q So that your beginning shut-in pressure should have been virutally stabilized?

A Should have been virtually stabilized and fairly representative of the original reservoir pressure since there have been withdrawals taken from the reservoir.

A Do you know the horizontal boundaries of Nonombre Pool? Would they include the Southeast Quarter of Section 32?

A I don't know the -- I'm sorry, I don't know the answer. I've asked myself the same question.

Q Well, would you agree that if I said it included the Southeast Quarter of Section 32?

A Yes, sir, I would.

Q According to ~~your~~ records, it does?

MR. PATMAN: Yes, sir.

Q That puts your well just, oh, three-quarters of a mile or so from the boundaries of the Nonombre, is that about right?

A Yes, sir.

Q Do you intend to do any drilling in the Northwest Quarter of Section 4?

A The Northwest Quarter of Section 4?

Q Yes.

A At the present time I can't answer that with a definite statement; however, this has been considered as a possible location. However, our, we're leaning a little towards the Southeast Quarter of 33 as the next well to be drilled.

Q But you do testify that this well will drain 160 acres?

A Yes, sir. In my opinion the well in view of the high permeability as recorded from the buildup pressure data, and in comparing it with permeability in Nonombre and also East Saunders, which is approximately 50 millidarcies as compared to this 147. In both Nonombre and East Saunders interference testing was conducted. The Nonombre, the Midwest State C Number 1 in the D Number 1 were the two wells used in the

interference test and then in East Saunders, the Kern County Land 1 and 2 wells were used for interference testing, and in both cases interference test indicated that one well per 160 acres would adequately drain that 160 acres.

Q Now, what control did you use for closing your 6300-foot contour as well as your 6275-foot contour, on your contour which surrounds your D Number 1 well?

A The control that was used for closing this, as well as the saddle, and between here and Nonombre, was primarily seismic data which indicated west dip, and then a trough, and then coming back up on to this Nonombre feature. The same is true looking at the 6300-foot contour and going to the south.

Q Now, in drilling your Number 1 well, how did the tops that you encountered compare with the seismic data that you had?

A Unfortunately, the seismic data was data which I think -- and I do not qualify as an expert in terms of geophysics -- however, it's what they referred to as a phantom map whereby they didn't have wells to tie into and show this dip relative to certain position in the earth's crust. They shot the lines across there and they took the geophysical data and correlated the velocity as best they could and said, "We think this is the correlative zone." So their map wasn't

on this Upper Penn "A" zone, and it would be difficult if not impossible to tie it back into these drilled wells that have been drilled since they obtained their seismic data.

Q Do you know what their reflection was, on what formation?

A No, I'm sorry, I do not know.

Q You don't know whether it was shallow or deep?

A I have seen maps. One was a shallow, one was a median depth, and one of them was -- they feel like, and I quote Tenneco's geophysics -- feel like it is near the lower part of the Pennsylvanian which would be their deeper horizon.

Q So you can't correlate your seismic data with the tops in your well, and yet you used it to contour your structure?

A Yes, sir, that's correct.

Q Because the seismic map showed a structure?

A Right. It showed reflections of a structure which indicated that you had an apex here and you had an east dip away from the apex or going east, the D well, and it had dipped to the west, and going west from the D well it had north dip in this direction and south dip here, coming back and all, it was a phantom map on whatever zone it was that they correlated.

Q Well, this situation of two highs in these Pennsylvanian pools is not too uncommon in Southeast New Mexico, to have two highs within the same pool with maybe a shallow saddle? This happens quite often, does it not?

A I'm sorry, I can't answer that question because my experience with Penn pools is not that extensive.

Q I see. Now, is this oil-water contact in the Nonombre Pool, is that your interpretation or is that Midwest's interpretation or whose interpretation is that?

A No, this is my interpretation as established from the drillstem test data and the dry holes surrounding the field and correlating the zone with the known producing zone in the D well. It will be noted from the map that four wells there drillstem tested the Upper Penn "A" zone and tested a substantial amount of salt water from a higher subsea depth in the completion interval in the State D well.

Q In all those dry holes the D.S.T. showed a substantial amount of salt water?

A All with the exception of the Ralph Lowe well in the Northwest, the Northwest of Section 5 of 14 South, 34 East, and it recovered 345 feet of salt water. This well was a little tighter than the other three. The well to the west of that recovered 3870 feet of salt water, a substantial amount. The

well on the north side of the Nonombre, 1405 feet of salt water. In the Midwest Harris State, 7900 feet of salt water which, in my opinion, is a substantial amount of salt water.

Q Now, is the Midwest one completed in the same zone as your well, I believe you stated?

A The Midwest C-1, yes, sir.

Q What kind of a D.S.T. do they have on that well in regard to water?

A With your permission, I'll take just a second here to get a log.

Q Sure.

A The Upper Penn "A" zone was originally tested in the Midwest C Number 1 well, as well as also shown on the cross section provided with the C-109 form and other exhibits; and the interval that was tested was from 10,265 to 323, which the bottom portion is in the "A" zone and the, according to the D.S.T. information there was no water recovered, no salt water recovered.

MR. PORTER: I believe while you are testifying on that well, how much oil did it make originally, the Midwest C Number 1?

THE WITNESS: Originally?

MR. PORTER: Yes.

THE WITNESS: Before it was recompleted?

MR. PORTER: No, when it was completed in the same zone that this one is.

MR. PATMAN: Barrels a day, Mr. Porter?

MR. PORTER: Yes, sir.

THE WITNESS: The C-1 well has produced?

MR. PATMAN: No, he means barrels per day.

MR. PORTER: How many barrels per day? What was the initial potential on it, in other words?

THE WITNESS: The initial potential was 399 barrels of oil per day and two barrels of water through a one-inch choke, tubing pressure 100 pounds, G.O.R. 1430, 43 degree A.P.I. gravity.

Q (By Mr. Utz) That D.S.T. you mentioned there was from what depth?

A 10,265 to 10,323.

Q That was through the producing zone then?

A That was pretty close to the bottom part, yes, sir. It sure was.

Q The perforation you show here was 22 on the cross section?

A Right. The D.S.T. interval.

Q You only got two barrels of water out of that D.S.T.

out of that zone?

A Right.

Q Do you have any dope on the Number 3 well?

A D.S.T. in the Number 3 well, this would be State D Number 3, this is located in the Southwest of the Northwest 32, 13 South, 34 East, the D.S.T. interval covered from 10,225 to 10,308, which was into the top part of the Upper Penn "A" zone and there was no salt water reported. It flowed 62 barrels of oil in 54 minutes, reversed out 102 barrels of oil.

Q The bottom of that D.S.T. was 10,225. What's the lowest perforation, do you have that there?

A The D-3 well is completed in the Middle Penn at 10,459 to 489, which is a little over 150 feet or so below this D.S.T. interval.

A And your interpretation is, then, that between the Middle Penn and the Upper Penn you have a water table?

A Yes, my interpretation is that between the Upper Penn "A", which I am calling this the lower zone as outlined on the cross section, that there's a different water level from the other Penn zones.

Q As far as your contours are concerned, in separating these pools, the Nonombre and your discovery, this was done on the basis of seis data only?

A Seis, and this subsurface control from the D-1 well, which is 100 feet low to the Midwest C-1 well. This is correct.

Q Of course, this situation could exist, your D Number 1 well could be low and still close your contours?

A Yes, sir.

Q So by closing the contours, it was done entirely on seis data?

A Yes, sir. However, the separation is supported by the difference in the oil-water contact, in my opinion.

MR. UTZ: Any other questions?

MR. PATMAN: I have two, if I may.

REDIRECT EXAMINATION

BY MR. PATMAN:

Q Mr. Clay, I forgot to ask you anything -- since you got your B. S. degree in 1957 and up until the present time, have you pursued your profession and made a living either as a geologist or petroleum engineer save and except the time that you went to graduate school?

A Yes, sir. I was employed as a geologist for five years after receiving my B. S. degree from Oklahoma State in 1957; and since receiving my Master's degree in engineering from Oklahoma University in 1965, I have worked three and a half years as a petroleum engineer.

MR. PATMAN: I should have asked if there were any questions about your qualifications. If I didn't, I'm sorry.

MR. UTZ: No, he's qualified to testify in this case. I thought you had been qualified previously. Is this your first time?

THE WITNESS: This is the first time.

Q (By Mr. Patman) Let me ask you a couple of questions on the cross section. That is attached to the form C-109?

A That is correct, and I overlooked that in my stating that the C-109 form with the attached letters and et cetera was similar to the special pool rules exhibit. It does include a few things that are a little different, one being this cross section which shows the Cactus Smelter State Number 1 well on the northwest side of Nonombre, the Midwest State C Number 1 well in the Nonombre field, the Ralph Lowe State MWO Number 1 well on the south side of Nonombre, the Superior State D Number 1 well, and then the well on the east end of the cross section is the Kern County State 17 Number 2 sell, located in the East Saunders field.

Q Five wells on that cross section?

A That is correct.

Q Mr. Clay, I'll ask you if, in your opinion, if there

is any doubt in your mind, based upon the subsurface work that you have done and the reservoir information that you have acquired with reference to these three areas, is there any doubt but that they are effectively separated as not being in communication one with another?

A There is no doubt in my mind that State D, COM Number 1 well, there's no doubt but what it is separated from East Saunders or Nonombre and Nonombre. The difference in the oil-water contact supports the seismic data or vice-versa; and the large difference in the bottom hole pressure, the State D as compared with the East Saunders Field indicates definite separation between the two near fields.

Q Going to Nonombre, you do that on the basis of the questions that the Examiner asked you in your previous testimony, and taking all that into account, you still feel that these two areas are effectively separated, as being not in communication one with the other?

A I do.

Q Do you recommend a 160-acre spacing to this Commission, prcration units for this reservoir?

A Yes, sir, I do. In view of the unfavorable economics of development on 60 and 40-acre proration units, it is most desirable to drill additional wells on 160-acre

proration units and particularly desirable from an economic standpoint.

Q In your opinion would a 40-acre spacing pattern be a deterent to the proper development of this field?

A Yes, it would.

Q And hydrocarbons would be drilled for, discovered and produced on the 160-acre pattern, in your opinion, that would not be discovered and produced on the 40-acre pattern?

A Hydrocarbons will be economically produced on 160-acre pattern that would not be, certainly not on 40-acre pattern.

Q I believe you testified that at the moment you place a maximum of 480-acre locations on this reservoir.

A Yes, three in addition.

Q That would be a total of four?

A Right.

Q Maximum of 640 acres or somewhat less than that total productive acres?

A That is correct.

MR. PATMAN: Any other questions? If not, I believe I'll rest.

MR. UTZ: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. KELLY: I would just like to state that on behalf of Tenneco, who has a working interest in the discovery well and in the area, we are in full support of the application. For the record, perhaps to clear up any question, it would be good if I entered an official appearance on behalf of Superior.

MR. PATMAN: I was going to ask you to do that.

MR. KELLY: Which I will now do.

MR. PATMAN: Thank you. I apologize to the Examiner.

MR. HATCH: I have a telegram from Union addressed to the Oil Conservation Commission dated June 25th, I'll read into the record, and you might want to take administrative notice that there might be an error in it. "Regarding Case 3796, Superior Oil Company application for creation of a new Pennsylvanian oil pool and promulgation of special pool rules, including the provision of one-sixth of zero acre proration unit, Union Oil Company of California supports Superior's application."

MR. PATMAN: I hope that was 160.

MR. UTZ: What did that say, one six zero acres?

MR. KELLY: That's pretty tight. I believe it will drain that, do you think?

MR. UTZ: Are there any other statements? The case will be taken under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 9th day of July, 1968.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1971.