

CASE 3895: Application of SUN OIL
COMPANY for pressure maintenance
project, Chaves County, N. Mex.

Case Number

3895

Application
Transcripts.

Small Exhibits

ETC.

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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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BEFORE THE
NEW MEXICO OIL-CONSERVATION COMMISSION
Santa Fe, New Mexico
October 23, 1968

EXAMINER HEARING

IN THE MATTER OF:)
)
)

Application of Sun Oil Company)
for a pressure maintenance project,)
Chaves County, New Mexico.)
)

Case 3895

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will now call Case No. 3895.

MR. HATCH: Application of Sun Oil Company for a pressure maintenance project, Chaves County, New Mexico

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for the Applicant in association with Mr. Granville Dutton, a member of the Texas Bar who will present the case.

MR. DUTTON: We have one witness, Mr. Examiner.

(Witness sworn.)

MR. DUTTON: Mr. Examiner, our exhibits are contained in brochure form. Do you want each item to be marked as an exhibit or the entire brochure marked as an exhibit.

MR. NUTTER: The brochure can be identified as Exhibit A or 1 and then you can refer to the items as items.

MR. DUTTON: All right, I would like to have it so identified.

(Whereupon, Applicant's Exhibit 1 marked for identification.)

* * * * *

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

DIRECT EXAMINATION

BY MR. DUTTON:

Q Would you state your name for the record, please?

A Robert J. Ridgeway.

Q By whom are you employed and where?

A Sun Oil Company, in Dallas, Texas.

Q In what capacity?

A As a Regional Petroleum Engineer.

Q In this capacity, does the area of the Cato - San Andres field come under your supervision?

A It does.

Q Have you had an occasion to make a recent study of this field with particular reference to the subject matter of this hearing?

A Yes.

Q Have you testified previously as an expert before the Oil Conservation Commission?

A No, sir.

Q Would you give a brief resume of your educational and professional background?

A I graduated from Texas A & M in 1948 with a B. S. in Petroleum Engineering and B. S. in Mechanical Engineering. I was employed by Sun Oil after graduation and served in a training program for approximately a year. Following that I went into the Reservoir Section and in 1950, I was moved to Dallas. About three years ago, I became a Regional Petroleum Engineer, and early this year, I took charge of the West Texas Region.

Q And New Mexico is included under this region, is it not?

A Yes, sir.

MR. DUTTON: We would like to submit the witness's qualifications, Mr. Examiner, as an expert Petroleum Engineer.

MR. NUTTER: The witness is qualified, please proceed.

Q (By Mr. Dutton) Mr. Ridgeway, have you prepared a brochure containing exhibits pertaining to this hearing?

A Yes, I have.

Q Would you briefly describe the contents of this brochure?

A Well, on page 1, we have a list of the contents. We have a description of the initial completion on the New Mexico State H Lease. The next page contains a tabulation of production from the H. Lease and the next page shows a calculation of the present reservoir voidage from the Lease. We have a Well diagram on New Mexico H State Well No. 13 as presently completed; we have a schematic of a proposed water injection well, which will be the New Mexico State H No. 13. We have included a water analysis report, the production performance graph, a plat showing the New Mexico H State Lease and we have a log on the proposed water injection well.

Q Now, Mr. Ridgeway, what is the current production on the New Mexico State H. Lease?

A On page 3 this is shown, and for August the oil production was 20,838 barrels. The gas was 10,402 mcf, water production was 3,059 barrels.

Q What's the significance of the asterisk under your gas production for the month of August?

A Well, effective the 1st of August, the gas was gathered and is being taken by Cities Service.

Q So that represents a measured volume for that month, does it not?

A Yes, sir.

Q What is the current production from the proposed injection Well H 13?

A For the month of August, H 13 produced 289 barrels of oil and 279 barrels of water.

Q What is the current reservoir voidage from the H Lease using the August rate as the last test date?

A Following the tabulation, we have a sheet showing our calculation of voidage, and using the August production, the monthly total was 43,379 barrels.

Q At what rate do you propose to commence injection into H 13?

A Initially, approximately 5,000 barrels a month.

Q What will be the initial sources of the injected water into the H 13?

A We intend to gather the water from the New Mexico H Lease, that's about 3,000 barrels, and our Woodman Federal Lease, which is about a mile and a half to the south, produces about 2,000 barrels and we intend to gather that also.

Q Please explain how Well H 13 will be converted for injection services if this application is granted.

A In our brochure, we have a schematic showing how the well will be completed. We will remove the equipment presently in the well. We'll run 2 and 3/8ths tubing, cement-lined, we'll set a packer at 3370, which is above the perfs, and we intend to fill the annulus with an inhibited water. It might be noted on the schematic that the top of the cement from temperature survey was found to be 2517 feet, and on our surface, we circulated cement, on our surface pipe, we circulated cement back to the surface.

Q And injection would be directly into the San Andres producing formation, is that correct?

A Yes, sir.

Q What is the current oil production trend on the H Lease?

A Well, as shown on our performance graph, the lease hit a peak in October of 1967, and since that time it's been showing a steady decline.

Q Has this decline in trend influenced your conclusion that water should be injected into the producing formation?

A Yes, sir, because the production is mainly due to the lack of capacity of the wells.

Q What project area do you recommend for this pressure maintenance injection program?

A Following the performance graph, we have a plat showing our New Mexico H Lease, and we recommend the project area be the southeast quarter of the section.

Q Does that plat also indicate the location of the proposed injection well?

A Yes, sir, it does. The injection well is marked with a triangle.

Q Are there any offsetting producing wells to the proposed injection well?

A No, sir, no offsets, no immediate offsets to the proposed injection well.

Q Does the plat also indicate the source of the other water from the Woodman Federal Lease?

A Yes, sir, to the southwest about, a little better than a mile, and it's shown there, Woodman Federal Lease.

MR. DUTTON: Mr. Examiner, at this time, I would like to submit the brochure as Sun Oil Company's Exhibit No. 1.

MR. NUTTER: Sun Oil Company's Exhibit No. 1 will be admitted in evidence.

(Whereupon, Sun oil Company's Exhibit No. 1 offered and admitted in evidence.)

MR. DUTTON: Thank you.

Q (By Mr. Dutton) Mr. Ridgeway, in your opinion, would injection in the San Andres through the proposed Well H 13 cause waste or violate correlative rights?

A No, sir, we are hopeful that the injection of the produced water into No. 13 will serve to partially maintain pressure and perhaps lead to more oil recovery on our lease. We intend to monitor the offsetting wells to the injection well and if this area proves floodable, we have in mind extending this injection program.

Q Do you have anything further?

A Furthermore, by taking this proposed water and injecting it for this partial pressure maintenance, we will eliminate pollution of the surface acreage.

Q Eliminate the danger of pollution?

A The danger, yes.

MR. DUTTON: Mr. Examiner, that concludes our

direct case on this matter. The witness is available for any questions that anyone might have.

MR. NUTTER: Does anyone have any questions of the witness?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Ridgeway, you stated that the annulus would be loaded with inhibited water?

A Yes, sir.

Q Can that annulus be left open or equipped with a gauge at the surface?

A Yes, it will be.

Q Which?

A With a gauge.

Q Equipped with a gauge. Do you have a recent test on this No. 13 Well, Mr. Ridgeway?

A No, sir, I don't. I have the August production, that's the last test I have.

Q Normally in our pressure maintenance orders, we prescribe that the injection well, when it is placed on disposal, would have the allowable as established by a test prior to conversion, and then that allowable can be distributed to the other wells in the project area. This well can be

tested prior to putting it on disposal and a test filed with the Commission?

A Yes, sir.

MR. NUTTER: I presume, Mr. Dutton, that the normal type of pressure maintenance rules that the Commission issues would be suitable for this project?

MR. DUTTON: Yes, sir, they would. This particular project area will be unable to utilize initially the transferred allowable. We are hopeful that it will change with time.

MR. NUTTER: The decline is there and you hope to arrest the decline?

MR. DUTTON: Yes, sir.

MR. NUTTER: Are there any other questions of the witness? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Dutton?

MR. DUTTON: I would like to point out that Pan American, the offset operator to this injection well, has been notified and sent a copy of the Application, and Mr. Guy Buehl and Mr. George Board have both informed me that Pan American has no objection to the granting of this injection permit.

MR. NUTTER: Does anyone have anything now they wish

to offer in Case 3895? We will take the case under
advisement.

I N D E X

WITNESS

ROBERT J. RIDGEWAY

Direct Examination by Mr. Dutton

Cross Examination by Mr. Nutter

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EXHIBITS

MARKED

OFFERED AND
ADMITTED

Applicant's No. 1

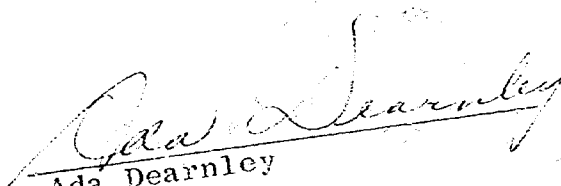
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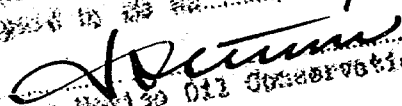
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STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

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

WITNESS my hand this 1st day of November, 1968.


 Ada Dearnley

I do hereby certify that the foregoing is a complete record of the proceedings in the hearing held at Case No. 3895, dated by me on 10/23, 1968.

 New Mexico Oil Conservation Commission

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON S. HAYS
MEMBER

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

P. O. BOX 2068
SANTA FE

November 5, 1968

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: Case No. 3895
Order No. R-3551
Applicant:
Sun 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.
A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC x

Aztec OCC

Other Mr. Granville Dutton

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. 3895
Order No. R-3551

APPLICATION OF SUN OIL COMPANY
FOR A PRESSURE MAINTENANCE PROJ-
ECT, CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 4th day of November, 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, Sun Oil Company, seeks authority to institute a pressure maintenance project in the Cato-San Andres Pool on its New Mexico State "H" Lease located in Section 16, Township 8 South, Range 30 East, NMPM, Chaves County, New Mexico, by the injection of water into the San Andres formation initially through its New Mexico State "H" Well No. 13, located in the SE/4 SE/4 of said Section 16.

(3) That the applicant further seeks the designation of the project area and the promulgation of special rules and regulations governing said project.

(4) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

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CASE No. 3895
Order No. R-3551

(5) That the application to institute a pressure maintenance project should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(6) That there appears to be no necessity for the promulgation of special rules and regulations governing said project at this time.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sun Oil Company, is hereby authorized to institute a pressure maintenance project in the Cato-San Andres Pool on its New Mexico State "H" Lease, Chaves County, New Mexico, by the injection of water into the San Andres formation through its New Mexico State "H" Well No. 13, located in the SE/4 SE/4 of Section 16, Township 8 South, Range 30 East, NMPM, Chaves County, New Mexico.

(2) That said injection shall be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3370 feet, and into the perforated interval from approximately 3421 feet to 3439 feet;

PROVIDED HOWEVER, that the tubing shall be cement lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus in order to determine leakage in the tubing, casing, or packer.

(3) That the subject pressure maintenance project is hereby designated the Sun Oil Co Cato-San Andres Pressure Maintenance Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(4) That monthly progress reports of the pressure maintenance project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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CASE No. 3895
Order No. R-3551

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/

Docket No. 31-68

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 23, 1968

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 3894: Application of Signal Oil and Gas Company for a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard oil proration unit comprising the W/2 NE/4 and the N/2 SE/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico, said unit to be dedicated to its State AP Well No. 1 located 1980 feet from the South line and 660 feet from the East line of said Section 17.

CASE 3895: Application of Sun Oil Company for a pressure maintenance project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its New Mexico State "H" Lease by the injection of water into the San Andres formation through its New Mexico State "H" Well No. 13 located in the SE/4 SE/4 of Section 16, Township 8 South, Range 30 East, Cato-San Andres Pool, Chaves County, New Mexico. Applicant further seeks the promulgation of special rules to govern operation of said pressure maintenance project.

CASE 3887: (Continued from the October 9, 1968, Examiner Hearing)

Application of Kersey & Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Premier sand of Grayburg formation through two wells to be located in Units E and K of Section 12, Township 18 South, Range 28 East, Artesia Pool, Eddy County, New Mexico. Applicant further proposes to produce oil from the Upper Grayburg through parallel strings of tubing, if said zones are productive in the subject wells.

CASE 3896: Application of Kersey & Hanson, Yates Drilling Company, and John H. Trigg for several waterflood projects, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute several cooperative waterflood projects by the injection of water into the Queen and Grayburg formations through four injection wells located in Sections 21

CASE 3896 continued

and 28, Township 18 South, Range 29 East, Turkey
Track Queen-Grayburg Pool, Eddy County, New Mexico.

CASE 3897: Application of Kersey-Wittkopp and E. A. Hanson for two waterflood projects, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute two cooperative waterflood projects by the injection of water into the Queen formation through two injection wells located in the NW/4 SE/4 and the SW/4 SE/4 of Section 6, Township 19 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 3898: Application of Tenneco Oil 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 Queen formation in the open-hole interval from approximately 3258 feet to 3341 feet in its Ginsberg-Federal Well No. 6 located in Unit E of Section 31, Township 25 South, Range 38 East, Langlie-Mattix Field, Lea County, New Mexico.

CASE 3899: Application of Cities Service Oil 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 San Andres formation in the interval from approximately 4087 feet to 4176 feet in its State AD Well No. 8 located in Unit J of Section 22, Township 10 South, Range 32 East, Mescalero-San Andres Pool, Lea County, New Mexico.

CASE 3900: Application of Continental Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Vacuum Wolfcamp Pool and the North Vacuum Abo Pool in the well-bore of its State H-35 Well No. 7 located 660 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, Lea County, New Mexico.

CASE 3901: Application of Continental Oil 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 Yates-Seven Rivers formations in the perforated interval from approximately 3330 feet to 3552 feet in its Lynn A-28 Well No. 6 located in Unit H of Section 28, Township

(CASE 3901 continued)

23 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3902: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Queen formation through its Stevens "B" Well No. 8 located in Unit A of Section 12, Township 23 South, Range 36 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 3903: Application of Continental Oil Company 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 Delaware formation in the perforated intervals from approximately 4675 feet to 4765 feet in its Payne Well No. 11 and from 4666 feet to 4740 feet in its Payne Well No. 12 located 660 feet from the South line and 1650 feet from the West line of Section 30, 1935 feet from the North line and 2090 feet from the West line of Section 31, respectively, Township 26 South, Range 33 East, El Mar-Delaware Pool, Lea County, New Mexico.

CASE 3904: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Delaware formation through its Thompson Federal 19 Well No. 2 located in Unit F of Section 19, Township 26 South, Range 32 East, North Mason-Delaware Pool, Lea County, New Mexico.

CASE 3905: Application of Texas Pacific Oil 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 Devonian formation in the open-hole interval from approximately 12,269 feet to 12,541 feet in its State "O" Well No. 1 located in Unit J of Section 15, Township 10 South, Range 36 East, South Crossroads-Devonian Pool, Lea County, New Mexico.

- CASE 3906:** Application of Skelly Oil Company 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 Queen formation through its Mattix "A" Well No. 4 located in Unit K of Section 2, Township 24 South, Range 37 East, Langlie-Mattix Oil Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 3907:** Application of Skelly Oil Company for a waterflood project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the San Andres formation through its Hobbs "W" Well No. 9 located in Unit F of Section 29, Township 7 South, Range 34 East, Chaveroo-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 3908:** Application of Pan American Petroleum Corporation 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 3932 feet to 4027 feet in its Miller Federal Well No. 4 located in Unit L of Section 35, Township 7 South, Range 31 East, Tom-Tom San Andres Pool, Chaves County, New Mexico.
- CASE 3909:** Application of Champlin Petroleum Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into San Andres formation, Chaveroo-San Andres Pool, Roosevelt County, New Mexico, through the following two wells located in Township 7 South, Range 33 East:

Champlin Lauck-Federal Well No. 12,
Unit J of Section 29; Disposal Interval -
4202 feet to 4404 feet;

Champlin State 32-7-33 Well No. 5, Unit J
of Section 32; Disposal Interval - 4303
feet to 4425 feet.

CASE 3910:

Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SW/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico. Said acreage to be dedicated to a well located in the NE/4 SW/4 of said Section 17.

CASE 3911:

Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SE/4 of Section 8, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico. Said acreage to be dedicated to a well located in the NW/4 SE/4 of said Section 8. In the alternative applicant seeks approval of a non-standard oil proration unit comprising the E/2 SE/4 of said Section 8 and the W/2 SW/4 of Section 9, said Township and Range, said unit to be dedicated to a well to be drilled in the NE/4 SE/4 of said Section 8.

CASE 3882:

(Continued from the October 9, 1968, Examiner Hearing)
Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Teague Blinbry Pool, Lea County, New Mexico.

CASE 3883:

(Continued from the October 9, 1968, Examiner Hearing)
Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Imperial Tubb-Drinkard Pool, Lea County, New Mexico.



PRODUCTION DEPARTMENT **SUN OIL COMPANY** SOUTHLAND CENTER, P.O. BOX 2880, DALLAS, TEXAS 75221

TOM F. HILL
Manager, Southwest Division
F. G. PRUTZMAN
Superintendent Operating Department

September 27, 1968

State of New Mexico
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Cash
3895

69 OCT 1 AM 10 11

Re: Cato Field, Chaves County:
Application for Water
Injection Pressure Maintenance

Gentlemen:

Sun Oil Company operates 16 oil wells on the New Mexico State "H" Lease consisting of Sec. 16, T8S, R30E, in the Cato Field of Chaves County. We propose to dispose of salt water produced on this lease and another lease in the area through New Mexico State "H" Well #13 located in the SE/4 of the SE/4 of said Sec. 16. It is our desire to inject this salt water into the San Andres reservoir of the Cato Field as a partial pressure maintenance project.

Enclosed are a plat, a log of Well "H" #13 and a diagrammatic sketch of the well equipment. Injection would be into the San Andres through perforations from 3421 to 3429 feet at a rate of approximately 200 BWP. The source of the salt water to be injected is from water produced on the above New Mexico State Lease "H" and the Sun Oil Company Woodman Federal Lease in the same township.

It is requested that a hearing be set on our application for this injection as a pressure maintenance project at which hearing we will ask that the project area and the allowable formula be fixed. Your consideration in setting this matter for the first Examiner hearing after the October Statewide Hearing would be appreciated.

Yours very truly,

SUN OIL COMPANY
A. R. Ballou

By: *Granville Dutton*
Granville Dutton

GD:jv

Encs.

cc: Mr. George Ford
Pan American Petroleum Corp.
Box 1410
Ft. Worth, Texas

DOCKET MAILED

Date 10-11-68

SUN OIL COMPANY
NEW MEXICO "H" STATE LEASE
CHAVES COUNTY, NEW MEXICO

EXHIBIT FOR WATER INJECTION
FOR
PARTIAL PRESSURE MAINTENANCE

PROPERTY NAME	WATER
CITY	NEW MEXICO
STATE	NEW MEXICO
CEC	3895

Sun Oil Company
Southwest Division.

October 16, 1968

CONTENTS

Description of Initial Completion on Lease

Tabulation of Production from Lease

Calculation of Present Reservoir Voidage from Lease

Well Diagram on New Mexico "H" State Well No. 13--As Presently Completed

Schematic of Proposed Water Injection Well

Water Analysis Report

Production Performance Graph

Plat Showing New Mexico "H" State Lease

Log on Proposed Water Injection Well

*H-13
2nd well in lease
2nd well into no. 13*

SUN OIL COMPANY
CATO, SAN ANDRÉS FIELD
SAN ANDRÉS RESERVOIR
CHAVES COUNTY, NEW MEXICO
NEW MEXICO "H" STATE LEASE

FIRST COMPLETION ON LEASE: New Mexico "H" State Well No. 1

COMPLETION DATE: February, 1967

INITIAL TEST ON NO. 1 WELL: 18 hours on 48/64" choke, f!wd 120 B.O., 12 B.L.W., TP 100#
C.P. (PKR), GOR (too small to measure).
Well was perforated @ 3297', 3310', 3315'
@ 3300', 3305', 3312', 3314', 3321', 3325'
@ 3274', 77', 80', 83', 85', 86', 91', 94'
3297', 3302'
Well was W.O. 7-30-67 to 8-11-68.
Before W.W. well in 24 hours pumped 15 B.O., 2 B.W.
Added perfs 3350', 55', 57', 72', 75', 77', 79', 82', 87'
Acidized w/100 gal. 15% HCL and 4000 gals. 28% HCL.
After wellwork, well No. 1 in 24 hours pumped 64 B.O., 11
B.L.W., GOR 415/1.

SUN OIL COMPANY
NEW MEXICO "H" STATE LEASE
CHAVES COUNTY, NEW MEXICO

Estimated Reservoir Pressure = 950 psi
Oil Gravity = 25° API
Gas Gravity = .70
Reservoir Temperature = 96° F

From "Correlation of Bottom Hole Sample Data"
Guy Borden, Jr. and Michael J. Rzasa
Journal Petroleum Technology, Dec., 1950

Solution GOR = 150/1
F.V.F. = 1.062

Reservoir Voidage Based on August, 1968 Production

Oil Produced = 20838 Bbls X 1.062 F.V.F.	= 22130 Res. Bbls.
Gas Produced = $[10402 \text{ MCF} - (20838 \times .150 \text{ MCF})] \times 2.5$	= 18190 Res. Bbls.
Water	= 3059 Res. Bbls.
Month Total =	<u>43379</u> Res. Bbls.

SUN OIL COMPANY
PRODUCTION DATA
NEW MEXICO "H" STATE LEASE

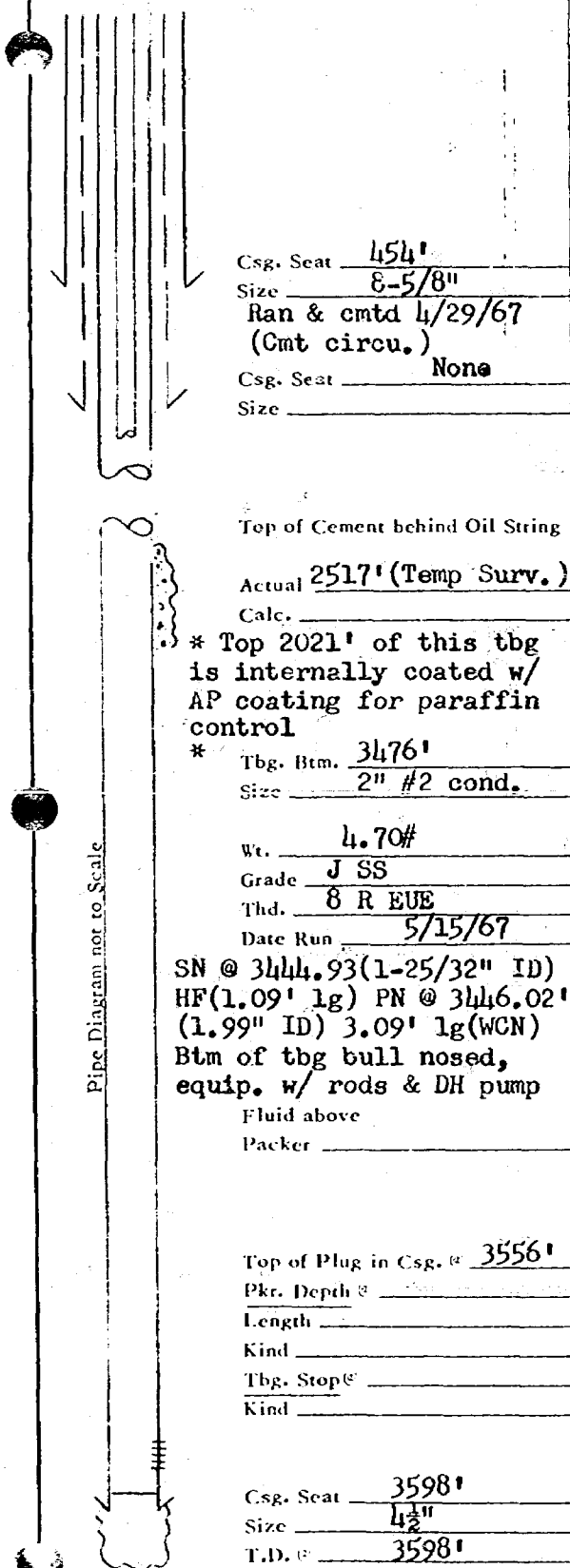
	<u>No. Wells</u>	<u>Oil, BBLS</u>	<u>Gas, MCF</u>	<u>Water, BBLS</u>
1967 Feb.	3	2,201	-	-
Mar.	8	9,730	-	-
Apr.	12	15,586	1,252	112
May	16	21,045	1,938	722
June	16	21,744	3,851	1,147
July	16	20,871	3,985	2,096
Aug.	16	17,100	5,614	3,381
Sept.	16	16,426	4,542	2,385
Oct.	16	21,993	4,356	2,547
Nov.	16	31,066	5,802	3,025
Dec.	16	30,202	8,584	3,030
Cum. Jan. 1, 1968		<u>207,964</u>	<u>8,341</u>	<u>3,313</u>
			<u>48,265</u>	<u>21,758</u>
1968 Jan.	16	25,155	6,676	2,846
Feb.	16	24,277	6,470	2,782
Mar.	16	26,033	6,954	3,317
Apr.	16	23,667	6,282	3,082
May	16	25,327	6,753	3,377
June	16	21,739	5,790	1,740
July	16	20,795	8,100	1,487
Aug.	16	20,838	10,402*	3,059
Cum. Sept. 1, 1968		<u>395,795</u>	<u>105,692</u>	<u>43,448</u>

*Gas to Cities Service effective 8-1-68.

Well Diagram Ticket No. 3A Sun Oil Company Prepared by jla 5/23/67

WELL NAME: State of New Mexico H-13

DOWN HOLE SUMMARY



Pipe Diagram not to Scale

Csg. Seat 454'
Size 8-5/8"
Ran & cmtd 4/29/67
(Cmt circu.)
Csg. Seat None
Size _____

Top of Cement behind Oil String

Actual 2517' (Temp Surv.)
Calc. _____

* Top 2021' of this tbg
is internally coated w/
AP coating for paraffin
control

* Tbg. Btm. 3476'
Size 2" #2 cond.

Wt. 4.70#
Grade J SS
Thd. 8 R EUE
Date Run 5/15/67

SN @ 3444.93 (1-25/32" ID)
HF (1.09' lg) PN @ 3446.02'
(1.99" ID) 3.09' lg (WCN)
Btm of tbg bull nosed,
equip. w/ rods & DH pump

Fluid above _____
Packer _____

Top of Plug in Csg. @ 3556' by Lane Wells GR log meas., FC @ 3578'
Pkr. Depth @ _____
Length _____
Kind _____
Tbg. Stop @ _____
Kind _____

Csg. Seat 3598'
Size 4 1/2"
T.D. @ 3598'

PERFORATIONS

Reached TD, 5/3/67
Ran & cmtd 5/5/67

(Milnesand (San Andres) top @ 3386', btm @ 3450')

Single shot pfs #1 @ 3421', 23', 25', 27', 29', 31',
33', 35', 38' & 39' w/ 1 Jet shot @ ea. interval
(By Lane Wells Densilog meas.) Lane Wells pf w/ 3 1/2"
OD Seleckone NCF 2 csg gun, 11 grams powder w/ RA
charges.

Pot Test: Date: 5/21/67, 24 hrs P 9 BO, 27 BW,
1 1/2" chk, pmpg 9 SPM x 4 1/4" LS, GOR TSTM, grav. of
oil 26.8 Deg. API

NEW MEXICO "H" S&W WELL NO. 13
 10-1-1964, LMA NEW, R.M.
 -30m, T-8S, -10, UNK 1

PROPOSED SALE WATER INT. COMPLETION

4153 DE
 4142 CL

454' 8-5/8" Csg. Test
 Cmt. Circ. To Surf.

Inhibited str. in area
can't find

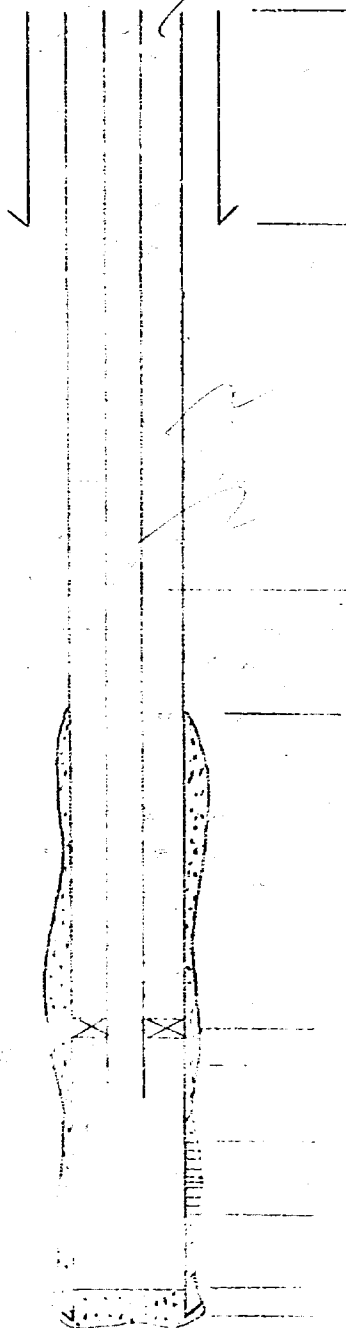
Inhibited Water Packer Fluid

2517' Top of int. (emp. urv.)

3400' Ker Model A-1 tension Pkr.
 3400' Csg. tm. 2-3" int. lined

3421, 23, 25, 27, 29, 31, 33, 35, 38-3
 10 holes
 Nitro sand Zone

3578' 4-1/2" int.
 3598' 4-1/2" int. and



Form 0-1292 (1/66)
Printed in USA

Well Diagram Ticket No. 3A Sun Oil Company Prepared by Jda 5/25/67

WELL NAME: State of New Mexico H-13

DOWN HOLE SUMMARY

Csg. Seat 454'
Size 8-5/8"
Ran & cmt'd 4/29/67
(Cmt circu.)
Csg. Seat None
Size

(Milnesand(San Andres) top @ 3386', btm @ 3450')

Single shot pfs #1 @ 3421', 23', 25', 27', 29', 31',
33', 35', 38' & 39' w/ 1 Jet shot @ ea. interval
(By Lane Wells Densilog meas.) Lane Wells pf w/ 3 1/2"
OD Seleckone NCF 2 csg gun, 11 grams powder w/ RA
charges.

Pot Test: Date: 5/21/67, 24 hrs P 9 BO, 27 BW,
1 1/2" chk, pmg 9 SPM x 44" LS, GOR TSTM, grav. of
oil 26.8 Deg. API

Top of Cement behind Oil String

Actual 2517' (Temp Surv.)

Calc.

* Top 2021' of this tog
is internally coated w/
AP coating for paraffin
control

* Tbg. Btm. 3476'
Size 2" #2 cond.

Wt. 4.70#

Grade J SS

Thd. 8 R EUE

Date Run 5/15/67

SN @ 3444.93(1-25/32" ID)

HF(1.09' lg) PN @ 3446.02'

(1.99" ID) 3.09' lg(WCN)

Btm of tbg bull nosed,
equip. w/ rods & DH pump

Fluid above

Packer

Top of Plug in Csg. @ 3556' by Lane Wells GR log meas., FC @ 3578'

Pkr. Depth

Length

Kind

Tbg. Stop

Kind

Csg. Seat 3598'

Size 4 1/2"

T.D. 3598'

PERFORATIONS

Reached TB, 5/3/67
Ran & cmt'd 5/5/67

Case 3895

DRAFT

GMH/esr
10-31-68

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. 3895

Order No. R-3551

APPLICATION OF SUN OIL COMPANY
FOR A PRESSURE MAINTENANCE PROJ-
ECT, CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this day of November, 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, Sun Oil Company, seeks authority to
institute a pressure maintenance project in the Cato-San Andres
State
Pool on its New Mexico/"H" Lease located in Section 16, Township
8 South, Range 30 East, NMPM, Chaves County, New Mexico, by the
injection of water into the San Andres formation initially through
its New Mexico State "H" Well No. 13, located in the SE/4 SE/4 of
said Section 16.

(3) That the applicant further seeks the designation of
the project area and the promulgation of special rules and
regulations governing said project.

(4) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(5) That the application to institute a pressure maintenance project should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(6) That there appears to be no necessity for the promulgation of special rules and regulations governing said project at this time.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sun Oil Company, is hereby authorized to institute a pressure maintenance project in the Cato-San Andres Pool on its New Mexico State "H" Lease, Chaves County, New Mexico, by the injection of water into the San Andres formation through its New Mexico State "H" Well No. 13, located in the SE/4 SE/4 of Section 16, Township 8 South, Range 30 East, NMPM, Chaves County, New Mexico.

(2) That said injection shall be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3370 feet, and into the perforated interval from approximately 3421 feet to 3439 feet,

PROVIDED HOWEVER, that the tubing shall be cement lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus in order to determine leakage in the tubing, casing, or packer.

(3) That the subject pressure maintenance project is hereby designated the Sun Oil Co Cato-San Andres Pressure Maintenance Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

-3-

CASE No. 3895

(4) That monthly progress reports of the pressure maintenance project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(5) 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.