

CASE 2644: Application of PAN AMER.
for approval of a dual completion
(oil production & salt water disposal)

2644

Section, Transcript,

// Exhibits, Etc.

DRAFT

JMD/esr
October 16, 1962

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. 2644

Order No. R-2341

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR A DUAL COMPLETION (OIL
PRODUCTION AND SALT WATER DISPOSAL),
SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
September 27, 1962, at Santa Fe, New Mexico, before Elvis A. Utz,
Examiner duly appointed by the Oil Conservation Commission of New
Mexico, hereinafter referred to as the "Commission," in accordance
with Rule 1214 of the Commission Rules and Regulations.

NOW, on this day of October, 1962, the Commission,
a quorum being present, having considered the application, the
evidence adduced, and the recommendations of the Examiner,
Elvis A. Utz, 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, Pan American Petroleum Corporation,
is the owner and operator of its U. S. G. Section 19 Well No. 13,
located 2050 feet from the North line and 1810 feet from the East
line of Section 19, Township 29 North, Range 16 West, ^{NMPM,} Hogback
Pennsylvanian Pool, San Juan County, New Mexico.

(3) That the applicant seeks permission to dually complete
its U. S. G. Section 19 Well No. 13 in such a manner as to permit
the production of oil through the tubing from the Pennsylvanian
formation at an approximate depth of 6620 to 6632 feet and to
dispose of ^{produced} salt water ~~from the productive zone and from the~~
~~applicant's U. S. G. Section 19 Well No. 17, located 1850 feet~~
~~from the South line and 790 feet from the East line of said~~
~~Section 19, into a non-productive zone in the applicant's~~

CASE No. 2644

~~U. S. G. Section 19 Well No. 13~~ at a depth of approximately 6514 to 6524 feet, said salt water to be injected down the annulus between the tubing and casing.

(4) That the evidence indicates that there is no vertical communication between the proposed injection zone and the proposed producing zone in applicant's U. S. G. Section 19 Well No. 13.

(5) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby authorized to dually complete its U. S. G. Section 19 Well No. 13, located 2050 feet from the North line and 1810 feet from the East line of Section 19, Township 29 North, Range 16 West, NMPM, Hogback-Pennsylvanian Pool, San Juan County, New Mexico, in such a manner as to produce oil through the tubing from the Pennsylvanian formation at an approximate depth of 6620 to 6632 feet and to dispose of ^{produced} salt water down the annulus between the tubing and casing into a non-productive formation at an approximate depth of 6514 to 6524 feet; ~~said salt water to be produced from the subject well and from applicant's U. S. G. Section 19 Well No. 17 located 1850 feet from the South line and 790 feet from the East line of said Section 19.~~

(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.

Provided However, that the applicant shall complete, operate and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations.

Provided Further, that the applicant shall take packer-leakage tests upon completion and annually thereafter. ~~During the Gas Oil Ratio Test Period for the Pennsylvanian formation.~~

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 480, Farmington, New Mexico
August 22, 1962

File: N-750-501.61

Subject: Application to Dispose of
Salt Water in Pan American
Petroleum Corporation's
United States Government
Section 19 Well No. 13
Hogback Pennsylvanian Field
San Juan County, New Mexico

*Case
3644*

S. J. for hearing

Mr. A. L. Porter, Jr. (3)
Secretary-Director
Oil Conservation Commission
State of New Mexico
P. O. Box 871
Santa Fe, New Mexico

Dear Sir:

Pan American Petroleum Corporation respectfully requests (1) an exception to requirements of New Mexico Oil Conservation Commission Rule 701 (A) and (2) Administrative approval to dispose of salt water in our U.S.G. Section 19 Well No. 13, located 2050' FNL and 1810' FEL, Section 19, T-29-N, R-16-W, Hogback Pennsylvanian Pool, San Juan County, New Mexico. Attached in triplicate are: (1) Application to Dispose of Salt Water by Injection into a Porous Formation Not Productive of Oil or Gas, (2) pertinent data sheet, (3) log of proposed injection well and (4) plat showing location of proposed injection well, location of other producing wells within a radius of two miles, producing zones of wells within two miles and lease owners within two miles.

The proposed disposal well is presently completed in an oil producing interval in the Pennsylvanian from 6620-32'. The proposed disposal zone (6514-24') is separated from the oil producing zone by a packer and other down the hole equipment. The proposed disposal zone was formerly a gas producing interval in the subject well and in U.S.G. Section 19 Well No. 17 located 1850' FSL and 790' FEL, Section 19, T-29-N, R-16-W. However, both well Nos. 13 and 17 commenced producing water to the extent that they would not deliver sufficient gas to the U. S. Bureau of Mines Helium Plant to continue operation; therefore, the gas producing intervals in both wells were abandoned in 1958.

Abandonment of the gas producing zones was accomplished by bottom hole separation equipment. Pan American proposes to dispose of salt water down the annulus between the tubing and casing through perforations from 6514-24'. The water produced from the interval 6514-24' is of no value for irrigation, stock, domestic, or other general uses as shown by the attached water

*Washed
Mailed
9/12/62
[Signature]*

Page 2
Mr. A. L. Porter, Jr. (3)

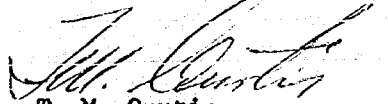
August 22, 1962
N-750-501.61

analysis. The water to be disposed of contains 60,900 PPM chlorides as shown by field titration and is unfit for domestic, stock, irrigation, and/or other general uses. The water to be disposed of is being produced from the present oil producing interval from 6620-32' in Well No. 13 and a correlative interval (6643-59') in Well No. 17. Performance of the oil producing interval indicates that the reservoir is in the latter stages of depletion. Therefore, Pan American cannot economically justify a salt water disposal system entailing a sizable expenditure. We have proposed disposal of salt water in the above manner in order to continue producing the wells to depletion.

The State Engineer's Office and the surface owner of the land upon which the subject well is located have been notified by a copy of this letter, with a copy of our application attached, of our intent to dispose of salt water in U.S.G. Section 19 Well No. 13. Pan American is the operator of the off-set acreage. The nearest well completed in the proposed disposal interval is Continental Oil Company's Table Mesa 3-18, located some nine miles to the southwest in Section 3, T-27-N, R-17-W.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION


T. M. Curtis
District Superintendent

JRK:en
Attach.

cc: State Engineer's Office
Santa Fe, New Mexico

United States Geological Survey
Roswell, New Mexico

PERTINENT DATA SHEET
PAN AMERICAN PETROLEUM CORPORATION'S
U.S.G. SECTION 19-29-16 Well NO. 13
SAN JUAN COUNTY, NEW MEXICO

Well Location	2050' FNL & 1810' FEL, Section 19, T-29-N, R-16-W, San Juan County, New Mexico
Date Spudded	May 16, 1952
Date Completed	October 13, 1952
Elevations	GL: 5033' DF: 5044'
Total Depth	7453' (Basement)
Plug Back Depth	6743' (Pennsylvanian)
Casing Program	13-3/8" CSA 1250' w/1300 sacks 9-5/8" CSA 5326' w/400 sacks 5-1/2", 14# CSA 7138' w/660 sacks
Tubing	2-3/8" OD, 1.995" ID, 4.7# set at 6580'
Other Down the Hole Equipment	5-1/2" Baker Model "D" Packer set at 6580' 2-3/8" Otis Side Door Choke Nipple set at 6579'
Formation Tops	See attached well log
Producing Formation	Pennsylvanian
Type of Formation	Limestone
Perforations	6620'-32'
Proposed Water Disposal Zone & Depth	Pennsylvanian 6514-24'
Type of Fluid to be Injected	Salt Water
Anticipated Amount of Fluid to be Injected	1000 barrels per day
Source of Injection Fluid	U.S.G. Section 19 Well No. 13 Pennsylvanian Zone 6620-32' U.S.G. Section 19 Well No. 17 Pennsylvanian Zone 6643-59'

ST. OLIND OIL AND GAS COMPANY
RESEARCH DEPARTMENT
WATER ANALYSIS

Lease U. S. O. Section 19 Well No. 13 Lab. No. T-13, 524
Field Hogback-Pennsylvanian County San Juan State New Mexico
Quarter or Survey 2020' FNL and 1810 FEL Blk. 19 T. 29N R. 16W
Exact Location Pennsylvanian Sample Series No. HG-23
Producing Stratum Pennsylvanian P.B.T.D. 6743 Total Depth 6524
Stratum Yielding Sample 6514 From 6524
Condition of Well _____
Sample Collected From Separator Method Used Direct
Collected by W. T. Holland Date Collected 4-25-58 Date Received 5-5-58
Transmittal Letter by L. O. Speer, Jr. Date 4-28-58 File B-2156-535.11

Radicle	Per Cent by Analysis	(a) P. P. M.	(b)	(a) X (b)	Per Cent Reacting Value	Calculated Compound	P. P. M.
Na	30.52	26,102	.0435	1,131.97	38.18	Na ₂ SO ₄	
Ca	6.56	5,611	.0499	279.99	9.44	NaCl	65,873
Mg	1.00	858	.0822	70.53	2.38	Na ₂ CO ₃	
Fe						NaHCO ₃	647
						CaSO ₄	1,053
						CaCl ₂	14,593
SO ₄	.83	712	.0208	14.81	.50	CaCO ₃	
Cl	60.54	51,772	.0282	1,459.97	49.24	Ca(HCO ₃) ₂	
CO ₂		0	.0333			MgSO ₄	
HCO ₃	.55	470	.0164	7.71	.26	MgCl ₂	3,360
H ₂ S						MgCO ₃	
						Mg(HCO ₃) ₂	
Total solids as a summation of radicles							85,525 P.P.M.
Total solids by evaporation and ignition of residue at low red heat							85,790 P.P.M.
Sample as received Resistivity ohms/M'F at 77°F. pH Value 6.5 Specific Gravity 60°/60°F. 1.062							

PROPERTIES OF REACTION IN PER CENT

PRIMARY SALINITY: SO₄ + Cl = _____ with equal value Na (K) _____ 76.36 %
SECONDARY SALINITY: If SO₄ + Cl is greater than Na (K) _____ %
Then SO₄ + Cl = _____ with equal value of Ca + Mg _____ 23.12 %
PRIMARY ALKALINITY: Excess Na (K) over SO₄ + Cl = _____ with equal value of CO₂ + S. _____ %
SECONDARY ALKALINITY: Excess Ca + Mg over SO₄ + Cl = _____ with equal value of CO₂ + S. _____ 52 %
CHLORIDE SALINITY: Cl + (SO₄ + Cl) = _____ X 100% _____ %
SULPHATE SALINITY: SO₄ + (SO₄ + Cl) = _____ X 100% _____ %

NOTE: Multiply Parts per Million by .6583 to obtain Grains per Gallon.

REMARKS:

Resistivity Ohms/M²M .109 at 55°F
" " .048 at 148°F

E. V. Hewitt
C. L. Kelley
L. O. Speer, Jr.
A. F. Frederickson (2)

RECEIVED	
APR 25 1958	
DS	
1	TE
2	GE
3	RE
	Clrk
2156-535.11	
DISTRICT OFFICE	

Analysed James J. Elliott Date 5-21-58

Is the water to be disposed of mineralized to such a degree as to be unfit for domestic, stock, irrigation, and/or other general use? Yes

Is any water occurring naturally within the proposed disposal formation mineralized to such a degree as to be unfit for domestic, stock, irrigation, and/or other general use? Yes

List all offset operators to the lease on which this well is located and their mailing address

None

Name and address of surface owner _____

Have copies of this application been sent by registered mail or given to all offset operators, surface owners, and to the New Mexico State Engineer? Yes

Is a complete electrical log of this well attached? Yes

Operator: Pan American Petroleum Corporation

By: T. M. Curtia

Title: District Superintendent

STATE OF New Mexico)
) ss.
County of San Juan)

BEFORE ME, The undersigned authority, on this day personally appeared T. M. Curtia known to me to be the person whose name is subscribed to the above instrument, who being by me duly sworn on oath states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein and that said report is true and correct.

SUBSCRIBED AND SWORN TO before me this the _____ day of August, 19 62.

Notary Public in and for the County of _____

My Commission Expires _____

NOTE:

Should waivers from all offset operators, the surface owner, and the State Engineer not accompany an application, the New Mexico Oil Conservation Commission will hold the application for a period of fifteen (15) days from date of receipt by the Commission's Santa Fe office. If at the end of said fifteen-day period, no protest nor request for hearing is received by the Santa Fe office, the application will then be processed.

ir/

Case
2444

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

APPLICATION
TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION
NOT PRODUCTIVE OF OIL OR GAS

Operator Pan American Petroleum Corporation Address Box 480, Farmington, New Mexico

Lease U.S.G. Section 19 Well No. 13 County San Juan

Unit G Section 19 Township 29-N Range 16-W

This is an application to dispose of salt water produced from the following pool(s):

Hogback Pennsylvanian Pool

Name of Injection Formation(s): Pennsylvanian

Top of injection zone: 6514' Bottom of injection zone: 6524'

Give operator, lease, well no., and location of any other well in this area using this same

zone for disposal purposes: None

CASING PROGRAM

	Diameter	Setting Depth	Sacks Cement	Top of Cement
Surface	13-3/8"	1250'	1300	Surface
Intermediate	9-5/8"	5326'	400	4200'
Long String	5-1/2"	7138'	660	4930'

Will injection be through tubing, casing, or annulus? Annulus between casing and tubing

Size tubing 2-3/8" Setting depth: 6580' Packer set at. 6580'

Name and Model No. of packer: Baker Model "D" Production Packer

Will injection be through perforations or open hole? Perforations

Proposed interval(s) of injection: 6514-24'

Well was originally drilled for what purpose? Producing oil and/or gas

Has well ever been perforated in any zone other than the proposed injection zone? Yes

List all such perforated intervals and sacks of cement used to seal off or squeeze each:

(See Attached Sheet)

6930-7030' squeezed w/200 sacks; 6930-80' squeezed w/630 sacks; 7050-54' squeezed w/200 sacks;

Give depth of bottom of next higher zone which produces oil or gas: 882'

Give depth of top of next lower zone which produces oil or gas: 6620'

Give depth of bottom of deepest fresh water zone in area: No fresh water in area. Morrison at 870-1977' produces brackish water.

Expected volume of salt water to be injected daily (barrels): 1000

Will injection be by gravity or pump pressure? Pump Estimated pressure: 1800 psig

Is system open or close type? Open Is filtration or chemical treatment necessary? No

ATTACHMENT

6930-55' squeezed w/150 sacks; 6166-78' and 6198-6214' squeezed w/200 sacks; 6330-42' and 6380-6400' squeezed w/100 sacks; 6330-42' squeezed w/200 sacks; 6166-78' squeezed w/150 sacks; 6330-60' squeezed w/150 sacks; 6191-97' and 6198-6214' squeezed w/150 sacks; 6380-6400' squeezed w/150 sacks; 5590-5600' squeezed w/100 sacks; 5542-52' squeezed w/250 sacks; 5388-95' squeezed w/250 sacks.

- CASE 2645: Application of Pioneer Production Corporation for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force pooling all mineral interests in the Basin Dakota Gas Pool to form a 320-acre gas proration unit comprising the S/2 of Section 2, Township 29 North, Range 13 West, San Juan County, New Mexico.
- CASE 2646: Application of Texaco Inc., for permission to dispose of salt water, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to dispose of salt water into the Devonian formation through the Shell State of New Mexico "A" Well No. 3, located 990 feet from the South line and 660 feet from the West line of Section 2, Township 11 South, Range 37 East, Echols (Devonian) Pool, Lea County, New Mexico.
- CASE 2647: Application of Carper Drilling Company for a tubingless completion, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to complete its Baetz Well No. 1, located in the SE/4 SW/4 of Section 35, Township 14 South, Range 27 East, Chaves County, New Mexico, as a tubingless gas well completion producing through perforations from 8182-8270' in 2 7/8 inch casing.
- CASE 2648: Application of El Paso Natural Gas Company for an unorthodox oil well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox oil well location for its Canyon Largo Unit Well No. 118 at a point 1090 feet from the South line and 800 feet from the East line of Section 8, Township 24 North, Range 6 West, Devils Fork Gallup Pool, Rio Arriba County, New Mexico.
- CASE 2649: Application of Tidewater Oil Company for two triple completions, (conventional), Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to add the Blinebry zone to its A. B. Coates "C" Wells Nos. 11 and 12, located in Unit F and Unit K respectively of Section 24, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico. Both of said wells are presently Tubb-Drinkard and Fusselman dual completions.
- CASE 2650: Application of Tidewater Oil Company for a triple completion, (conventional), Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to add the Blinebry zone to its A. B. Coates "C" Well No. 14, located in Unit G of Section 24, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico. Said well is presently a Tubb-Drinkard and Montoya dual completion.

DOCKET: EXAMINER HEARING - THURSDAY - SEPTEMBER 27, 1962

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 Daniel S. Nutter, as Alternate Examiner:

CASE 2622: (Continued)

Application of Cactus Drilling Company for a non-standard gas unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 120-acre non-standard gas unit comprising the E/2 NE/4 and NW/4 NE/4 of Section 11, Township 18 South, Range 36 East, Arkansas Junction-Queen Gas Pool, Lea County, New Mexico.

CASE 2642: Application of Phillips Petroleum Company for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the West Cap Queen Sand Unit Agreement embracing 1,680 acres, more or less, of State, Federal and fee lands in Township 14 South, Range 31 East, Caprock Queen Pool, Chaves County, New Mexico.

CASE 2643: Application of Phillips Petroleum Company for a waterflood project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of a waterflood project on its proposed West Cap Queen Sand Unit Area, Caprock Queen Pool, Chaves County, New Mexico, by the injection of water into the Queen formation through 17 wells located in Sections 8, 17, 20, and 21, Township 14 South, Range 31 East. Applicant proposes to operate the waterflood project under the provisions of Rule 701.

CASE 2644: Application of Pan American Petroleum Corporation for a dual completion (oil production and salt water disposal), San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its U. S. G. Section 19 Well No. 13, located 2050 feet from the North line and 1810 feet from the East line of Section 19, Township 29 North, Range 16 West, Hogback Pennsylvanian Pool, San Juan County, New Mexico, in such a manner as to dispose of salt water into a former gas producing zone (6514-6524') and to produce oil from a lower zone (6620-6632') through the casing-tubing annulus and through tubing, respectively.

CASE 2651: Application of Tidewater Oil Company for a triple completion (conventional), Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to add the Blinebry zone to its A. B. Coates "C" Well No. 16, located in Unit O, of Section 24, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico. Said well is presently a Tubb-Drinkard and McKee dual completion.

CASE 2652 Application of Tidewater Oil Company for a triple completion (conventional), Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to add the Blinebry zone to its A. B. Coates "C" Well No. 20, located in Unit A, of Section 24, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico. Said well is presently a McKee and Ellenburger dual completion.

CASE 2653: Application of Tidewater Oil Company for a triple completion (conventional), Lea County, New Mexico. Applicant, in the the above-styled cause, seeks authority to add the Blinebry zone to its A. B. Coates "C" Well No. 21, located in Unit J of Section 24, Township 25 South, Range 37 East, Justis Field, Lea County, New Mexico. Said well is presently a Montoya-McKee dual completion.

iqg/

Front Corner #10

7
513 78 - 1200 10x

1250

7
5326 400 2x - 9 5/8

SWD zone.

6514-24

"D" Baker

6580

Perfor.

6666-32

6626

6524

92 ft.

apart.

5 1/2 - 7138 w 600 2x



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

October 1, 1962

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Case No. 2644
Pan American Petroleum Corp.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Pan American Petroleum Corporation for a dual completion of its U. S. G. Section 19 Well No. 13, San Juan County, New Mexico.

I have reviewed the application and it appears that the casing program is adequate to protect the known fresh water zones. Therefore, this office offers no objection to the application.

Very truly yours,

S. E. Reynolds
State Engineer

By: *D. E. Gray*
D. E. Gray
Engineer
Water Rights Division

DEG/ma
cc-Pan American Petroleum Corp.
Box 480
Farmington, N. M.

Case 2644

Heard 9-27-62

Rec. 10-8-62

Grant Pan Am's request for an
SWD dual completion for their
A.S.S. #13 - 2050 / N 1810 / E-19
29 N - 16 W.

The well is to be produced thru
 tubing from a zone in the Penn.
 zone 6620-32. Salt water from
 this zone and from well #17
 may be injected into a zone
 from 6514-24 in the Penn.
 their #13 well.

Evidence indicates there is
 no vertical communication
 between the injection zone and
 the producing zone of #13 well,

W. H. R.

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER



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

P. O. BOX 871
SANTA FE

October 23, 1962

Mr. Charles Malone
Atwood & Malone
Attorneys at Law
P. O. Drawer 700
Roswell, New Mexico

Re: Case No. 2644
Order No. R-2341
Applicant:
Pan American Petroleum Corporation

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

lr/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC x

OTHER Mr. Phil McGrath

Mr. Eugene Gray (State Engineers Office)

Mr. Guy Buell

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. 2644
Order No. R-2341

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR A DUAL COMPLETION (OIL
PRODUCTION AND SALT WATER DISPOSAL),
SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 27, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 22nd day of October, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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, Pan American Petroleum Corporation, is the owner and operator of its U. S. G. Section 19 Well No. 13, located 2050 feet from the North line and 1810 feet from the East line of Section 19, Township 29 North, Range 16 West, NMPM, Hogback-Pennsylvanian Pool, San Juan County, New Mexico.

(3) That the applicant seeks permission to dually complete its U. S. G. Section 19 Well No. 13 in such a manner as to permit the production of oil through the tubing from the Pennsylvanian formation at an approximate depth of 6620 to 6632 feet and to dispose of produced salt water into a non-productive zone at a depth of approximately 6514 to 6524 feet, said salt water to be injected down the annulus between the tubing and casing.

(4) That the evidence indicates that there is no vertical communication between the proposed injection zone and the proposed producing zone in applicant's U. S. G. Section 19 Well No. 13.

-2-

CASE No. 2644
Order No. R-2341

(5) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pan American Petroleum Corporation, is hereby authorized to dually complete its U. S. G. Section 19 Well No. 13, located 2050 feet from the North line and 1810 feet from the East line of Section 19, Township 29 North, Range 16 West, NMPM, Hogback-Pennsylvanian Pool, San Juan County, New Mexico, in such a manner as to produce oil through the tubing from the Pennsylvanian formation at an approximate depth of 6620 to 6632 feet and to dispose of produced salt water down the annulus between the tubing and casing into a non-productive formation at an approximate depth of 6514 to 6524 feet.

PROVIDED HOWEVER, That the applicant shall complete, operate, and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations.

PROVIDED FURTHER, That the applicant shall take packer-leakage tests upon completion and annually thereafter.

(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.

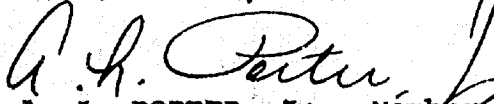
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



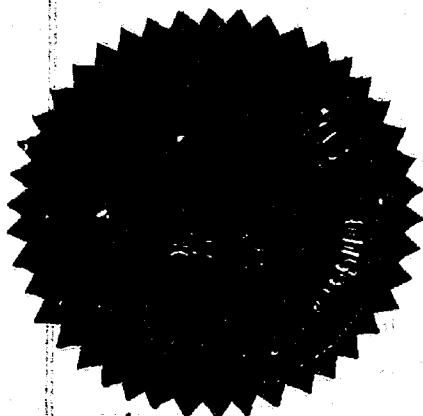
EDWIN L. MECHEM, Chairman



E. S. WALKER, Member



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



esr/

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

September 27, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for a dual completion (oil production and salt water disposal), San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its U. S. G. Section 19 Well No. 13, located 2050 feet from the North line and 1810 feet from the East line of Section 19, Township 29 North, Range 16 West, Hogback Pennsylvanian Pool, San Juan County, New Mexico, in such a manner as to dispose of salt water into a former gas producing zone (6514-6524') and to produce oil from a lower zone (6620-6632') through the casing-tubing annulus and through tubing, respectively.

CASE NO.
2644

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF PROCEEDINGS

EXAMINER UTZ: Case 2644.

MR. DURRETT: Application of Pan American Petroleum Corporation for a dual completion (oil production and salt water disposal), San Juan County, New Mexico.

MR. MALONE: May it please the Commission, Charles

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Malone of Atwood and Malone, representing the applicant. We have one witness to be sworn, Mr. George Eaton.

(Witness sworn.)

GEORGE EATON,

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

DIRECT EXAMINATION

BY MR. MALONE:

Q Would you state your name and position for the Commission, please?

A George W. Eaton, Senior, Petroleum Engineer for Pan American Petroleum Corporation in Farmington, New Mexico.

Q Mr. Eaton, did you personally prepare the application in this case, or was it prepared under your direct supervision and control?

A The application was prepared under my supervision.

Q What is the direct reason for making this application to the Commission, Mr. Eaton?

A We had a demand from the USGS to cease making disposition of this salt water that is produced from the Hogback Pennsylvanian pool on the surface.

Q What sort of application was made?

A An administrative application was made, and then it was set for hearing.

Q Now, then, is there attached to the application a plat

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showing the wells in question?

A Yes, sir, there is.

Q And the well through which it is proposed that that salt water be disposed is called what?

A The name of that well is the Pan American Petroleum U. S. G. Section 19 Well No. 13.

Q Does the plat show Well No. 13 and any other wells in the immediate area which have been drilled to the zone at which disposal is proposed?

A Yes, sir, those wells colored in green on the plat are wells which are now producing from the Pennsylvanian Paradox.

In addition, there is a dry hole in the Northwest Quarter of Section 25, Township 29 North, Range 17 West, which was drilled to the Pennsylvanian but abandoned.

Q Would you please give us, as briefly as you can, a history of the two wells here, the No. 13 and No. 17?

A Yes, sir. The U. S. G. 19 Well No. 13 was originally drilled in 1952. It was a Morrison test; casing was set in the Morrison horizon, and the initial completion of that well was in the Mississippian.

After a very short period of production, that zone went to water. Extensive workover operations were commenced, but were unsuccessful in shutting off that water and re-establishing gas production.

In approximately 1954, a recompletion was made on the



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well, at which time the well was recompleted from the Mississippi and into the Paradox. At the time of that recompletion, perforated intervals were made over approximately 600 foot intervals in various porous zones in the Paradox. These intervals were selectively tested at that time and the present producing interval in the Paradox was one which was opened then.

Although the interval that is opened now is an oil zone, there was so much gas zone also open, it wasn't known that that was an oil zone opened at the time of the original Pennsylvanian completion. At the end of a rather extensive cooperative effort between Farmington's research people and the Bureau of Mines research people, it was determined that the gas from the Pennsylvanian completion in this well was suitable for processing in the U. S. Bureau of Mines Shiprock helium plant, and accordingly, Pan American built a pipeline from that well to the U. S. Bureau of Mines Shiprock helium plant, and for about five years that plant was run from the production from the U. S. G. 19 Well No. 13.

At about that time, the well commenced producing water and water production increased to the extent that it became apparent that we could not continue to supply the plant with sufficient gas for it to operate. Rather than shut the plant down completely while workover operations were in progress on Well No. 13, Pan American elected to drill a second well to keep the plant in operation during the time we were trying to restore



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production to well No. 13.

Is this second well the other well shown in green in the plot as No. 17?

A Yes, sir, that is the well. This occurred in late 1957 and early 1958, I believe. Strangely enough, during the testing operations of the Pennsylvanian, during the completion attempt on Well No. 17, we also found that the Pennsylvanian contained water throughout at this location, even though it is slightly higher structurally than Well No. 13.

But as there was enough gas also produced along with this water, it did enable the plant to continue in operation. Shortly after that, an elaborate and extensive workover program was carried out on Well No. 13, during which program each of the various porous intervals in the Pennsylvanian was selectively tested and subsequently squeezed off, with the exception of the interval we are now applying to use for a salt water disposal zone and the present oil productive interval.

We picked this interval, 6514-24, which is the subject of our application for the salt water disposal zone, as a gas productive interval which would furnish a little bit of gas to the helium plant while producing less water in these other intervals that were once gas productive from the Pennsylvanian. At that time, we didn't expect a long-life zone, so the well was equipped then with a Baker Model D packer set between -- I will call it the watered-out gas zone and the oil-productive zone which produced



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no water.

Q You are speaking of Well No. 13, which would be this exhibit? (Indicating)

A Yes, sir, so that when the gas producer from the upper zone finally reached a point so the plant could no longer operate and the well would have to be converted to an oil well, all that would have to be done was to set a side door blank check to shut off the upper perforations and permit the upper perforations to produce.

The point is, the well is equipped for dual completion. No additional work will have to be done in order to equip it for this. The annulus will be in 2 3/8-inch tubing and 5 1/2-inch casing and has this set of perforations open to it. The tubing is set off with this blank side door check arrangement.

Q Did you state whether or not the gas producing zone is now producing?

A No, sir, the gas producing zone is not now producing. The two wells, producing wells No. 13 and No. 17, produced gas for another six or seven months to run that Bureau of Mines helium plant. The water production had increased in both the wells, and that gas production had decreased to the point the plant could no longer operate on this small total.

Q In about what year was this, that the water so increased that gas could no longer be produced?

A The year 1958. Thereupon, the helium plant was shut



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down and the pipeline which Pan American had built from the Hogback Pennsylvanian pool to the plant was picked up and used elsewhere and the plant was shut down. Then for approximately one year, at some time in early 1959, Pan American drilled a discovery well on another little Pennsylvanian structure. That has resulted in the completion of what is known as the Navajo C-1 Well, which is that green well on the plat already referred to, in the Northwest Quarter of Section 1, Township 29 North, Range 17 West.

Q Is that well producing from the same stratigraphic interval as Wells 13 and 17?

A No, sir, that is a different reservoir. I will also refer you to the well in the Northwest Quarter of Section 19 of Township 29 North, Range 17 West, which is a well known as the Pan American Navajo Tribal No. 1. That well is a dry hole in the Pennsylvania Formation, and I believe it effectively shows separation between the Hogback Pennsylvanian pool and the undesignated Pennsylvanian pool from which this Navajo C-1 is producing.

To continue about that well, it was completed early in 1959 and was found to have a gas that contained approximately five percent helium and although with a great deal of qualms on my part with regard to again building a line system from that well to the U. S. B. M. Helium plant and letting one well again run that plant, that is what was done and at the present time the Navajo C-1 is furnishing the gas to run the U. S. B. M. helium plant.



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I might add, with regard to that, that I am assuming the same production characteristics as the U. S. G. 12 and 13 and 17. In the past six or eight months, it has started producing water, and water production on the well is increasing and gas production is decreasing, and I don't know just how much longer we will be able to sustain that helium plant operation.

Q What are you doing with the salt water from that well, please?

A The well being so close to the San Juan River, it's not possible to store that water in pits at all, so water is collected in stock tanks, regular oil stock tanks on the lease, and approximately two or three times a week, it is actually hauled away in tank trucks.

Q At what cost?

A I estimated that the present cost per barrel is running about thirty cents per barrel to dispose of water by way of the lease collection and the tank truck hauling.

Q Now, do I understand that only the wells designated as No. 13 and 17 are producing oil at this time?

A That is correct.

Q What is the approximate production?

A The combined production is approximately fifty barrels per day from the two wells. In order to obtain that fifty barrels of oil per day, the two wells combined produce approximately a thousand barrels of salt water per day.



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Q Now, then, what is the desire of Pan American as expressed in this application with respect to disposing of this salt water production with the fifty barrels of oil per day?

A It is the desire of Pan American to use the watered-out former gas producing zone in the Pennsylvanian as a disposal zone.

Q And that is, the gas having ceased production in 1953?

A Yes, sir, it is.

Q Are there any other wells nearby which are producing gas from the proposed disposal zone?

A No, sir, there are not.

Q How close would the nearest well be?

A My memory is that the nearest well that produces from this same correlative interval is in the Table Mesa area approximately nine miles away.

Q Now, then, on the basis of the facts that Pan American has at hand at this time, does Pan American have any other possible solution in mind for this water disposal problem which you have in Wells 13 and 17, other than the method described in this application?

A No, sir, I don't believe so. The economics would not justify the drilling of a disposal well and a hauling cost, if we elected to take that route to haul the water as is done in the case of the Navajo C-1, thirty cents a barrel would run \$30.00 per day, which is in excess of the value of the oil.

Q The combined oil production is fifty barrels per day.



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you said, approximately?

A Yes. We have this request from the UOCS to cease disposition on the surface. This appears to be the solution.

Q What would Pan American be required to do with respect to the oil production from Wells No. 13 and 17 if this application should be denied? Could these wells continue to be produced?

A No, sir.

Q They would have to be abandoned?

A Yes, sir.

Q Would the correlative rights of any other owner be affected by the granting of an application for disposal of salt water in this former gas zone?

A No, sir, they would not. The only well in the vicinity, anywhere in the vicinity, is a Pan American well.

Q You have stated that it is in a different stratigraphic interval?

A Yes, sir.

Q With respect to the correlative rights of Pan American, would they be protected in the granting of this application?

A Yes, sir, they would, in that production could be continued from the two wells until it became no longer economical to operate the two wells.

Q Do you have any other statements to make, Mr. Eaton?

A No, sir, I don't believe so.

MR. MALONE: Would the Examiner care to have the



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application marked as an exhibit on the plat marked as an exhibit in the case? Would it be of any assistance to the Commission?

A As a historical note, those brown wells on this plat are completed under the Dakota formation in the Hockback Pennsylvanian pool, and I believe that they are the first wells completed in the state of New Mexico. The little pool was discovered in 1922 and that makes it pretty old.

EXAMINER UTZ: That 160 acres has been pretty good to Pan American?

A Yes, sir, it has. Evidently, based on the performance of the wells, this Pennsylvanian reservoir is an area that must be one of the most powerful water drives in the world. Those Pennsylvanian wells will flow a hundred percent, too, and based on the actual production from the two Pennsylvanian wells there, they are practically flowing a hundred percent now with twenty to thirty barrels of oil and five barrels of water per day each.

EXAMINER UTZ: The Examiner would request that the plat be marked as Exhibit 1 in this case.

(Whereupon Applicant's
Exhibit No. 1 marked
for identification.)

Q (by Mr. Malone) It was prepared under your supervision and control, is that correct?

A That is correct.

MR. MALONE: We move the admission.

EXAMINER UTZ: It will be accepted.



(Whereupon Applicant's Exhibit No. 1 was admitted in evidence.)

EXAMINER ITZ: Are you completed?

MR. MALONE: Yes.

CROSS EXAMINATION

BY EXAMINER ITZ:

Q Mr. Eaton, in your opinion, is there adequate separation between your abandoned gas zone and the lower oil zone?

A Yes, sir. Let me elaborate on that point just a little bit. During extensive and elaborate repair operations done on H. S. G. 19-13 Well in 1958, each of those zones that had been perforated was selectively tested and then each one was again re-tested; and although some of them were fairly close together or are fairly close together, there was never in the entire operation any evidence that there was any communication between any of them. And I feel that the same conditions prevail with regard to the proposed disposal zone and the oil zone for this reason.

At the time that that black check was run in this well back in 1958 to block off that gas zone, the well was making a lot of water; but once that check was in place, water production ceased until here just fairly recently, in modern times, you might say, and it has gradually increased. I believe that is definite evidence that the two zones are entirely separate.

Q Does the oil zone produce water?

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A Yes, sir.

Q Is it also salt water?

A Yes, sir.

Q Does it produce gas?

A Gas-oil ratio I believe is in the range of approximately 1300 to 1400 cubic feet per barrel.

Q Is this oil zone gas, does it have any helium in it comparable to the type of gas there?

A To answer the question, yes. And then I will elaborate on that. It differs from the top zone gas in that the helium content is principally hydrocarbon content, the solution gas in this oil will burn. The gas that was once used as a supply source to the helium plant would not burn. It is principally nitrogen, but the solution gas in the oil zone is principally hydrocarbon.

Q It also contains nitrogen?

A Very little, very little, mostly hydrocarbon and the small helium content.

Q How about pressures in the two zones?

A Approximately equal, to the best of our knowledge, and our history on that well. Since it's been recompleted in the oil zone, I don't believe we have any bottomhole pressure data since that time; and with the powerful water drive that the reservoir seems to be supplying, it would be my opinion it is at original pressure today or very close to it.

With regard to the gas zone, particularly, we had a



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chance to take bottomhole pressures in the gas zone when the helium plant would be down for turn-around or repair or something, and the bottomhole pressure history was very encouraging, because it did not decline; but unfortunately, it wasn't due to the tremendous gas reserves. It was due to pressure by the water drive, which we did not expect.

Q The gas zone never did produce any oil?

A It produced condensate.

Q But not all of the type at the oil zone?

A No, sir. Let me qualify that, too. At the time that it was producing as a gas well, this oil zone was also open, so chances are there were some small amounts of that oil being produced at this time. We never really got a good estimate of the condensate in the fluid. The gravity of the condensate was in the range of 5540 to 5558 degrees.

Q What is the gravity of pure oil?

A It's about 37.

EXAMINER UTZ: Are there any other questions?

MR. GRAY: Mr. Examiner, I would like to ask three questions. Mr. Gray, State Engineer's Office.

CROSS EXAMINATION

BY MR. GRAY:

Q Mr. Eaton, does the 5 1/2-inch casing extend from the surface?

A Yes, sir, it does.



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Q And the injection of the salt water will be down the 5 1/2-inch casing?

A Yes, sir.

Q Will the Morrison formation be protected by two strings of casing?

A Yes, sir. And I want to qualify that again. Part of it will be protected by three strings, that is, strings of 13 3/8-inch set at 1250 feet, which is into the Morrison.

MR. GRAY: That is all, Mr. Examiner.

EXAMINER UTZ: Are there other questions?

The witness may be excused.

(Witness excused.)

Just a minute. Mr. McGrath.

MR. McGRATH: I am P. T. McGrath of the USGS in Farmington. This well is all on Navajo land and insofar as that is concerned, we recommend the Commission approve this application.

EXAMINER UTZ: Are there other statements?

The case will be taken under advisement.

We will have a ten-minute recess.

(Whereupon these proceedings were recessed at 10:30 o'clock A.M.)



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

I, MICHAEL RICE, NOTARY PUBLIC in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of proceedings was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

Michael Rice
 NOTARY PUBLIC

My Commission Expires:

May 11, 1966

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2644, heard by me on *Sept 12, 1962*.

Ernest D. [Signature], Examiner
 New Mexico Oil Conservation Commission

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