CASE 3416: Application of SIGNAL for a dual completion and salt water disposal, Lea County.

Case Number

3416

Application

Transcripts.

Small Exhibits

ETC.

GOVERNOR
JACK M. CAMPBELL
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

June 30, 1966

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Re: Case No. 3416
Order No. R-3083
Applicant:

Signal Oil & Gas 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

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
OTHER Mr. Frank Irby

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. 3416
Order No. R-3083

APPLICATION OF SIGNAL OIL & GAS
COMPANY FOR A DUAL COMPLETION AND
SALT WATER DISPOSAL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 8, 1966, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 30th day of June, 1966, 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, Signal Oil & Gas Company, seeks authority to complete its New Mexico State "AP" Well No. 1, located in Unit I of Section 17, Township 10 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to produce oil from the Simanola-Pennsylvanian Pool through the annulus between the 2 3/8-inch tubing and the 5 1/2-inch casing by means of a hydraulic downhole pump and to dispose of produced salt water down the annulus between the 8 5/8-inch intermediate casing string and the 5 1/2-inch production casing string into the San Andres and Glorieta Formations, open injection into the open hole interval below the 8 5/8-inch casing shoe at 4100 feet and the top of the cement at 2300 feet.

(3) That the produced salt water should be satisfactorily treated prior to injection to prevent casing corrosion.

(4) That approval of the dual completion and salt water disposal as set out above will prevent the drilling of unnecessary wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Signal Oil & Gas Company, is hereby authorized to complete its New Mexico State "AF" Well No. 1, located in Unit I of Section 17, Township 10 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to produce oil from the Bimancla-Pennsylvanian Pool through the annulus between the 2 3/8-inch tubing and the 5 1/2-inch casing by means of a hydraulic downhole pump and to dispose of produced salt water down the annulus between the 8 5/8-inch intermediate casing string and the 5 1/2-inch production casing string into the San Andres and Glorieta formations, with injection into the open hole interval between the 8 5/8-inch casing shoe at 4100 feet and the top of the cement at 9260 feet;

PROVIDED HOWEVER, that the produced salt water shall be continuously treated prior to injection to prevent casing corrosion;

PROVIDED FURTHER, 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 insofar as said rule is not inconsistent with this order.

(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

JACK M. CAMPBELL, Chairman

MEMBER

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

esr/

Case. 3416
Heard 6-8-66
Rec. 6-20-66.

1. Grant Signal O & G permission to dually complete their A. Mex. St. 'AP' #1. 1980/S & 660/E, 17-10S-34E. Oil from the Simanola - Penn pool shall be produced thru the 5½ x 2⅜ annulus using a Kydrabbic downhole pump and S.W. ~~shall be~~ disposed down the ~~[redacted]~~ 8½ x 8⅝ annulus into a zone from 4100' to 9200' which includes the Glorieta and San Andres formations.

The injected water shall be inhibited before injection to prevent casing corrosion.

Emery C. Arnold

CASE 3413: Application of Amerada Petroleum Corporation 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 Permo-Pennsylvanian zone through three injection wells located in Section 3, Township 15 South, Range 33 East, Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico.

CASE 3414: Application of Phillips Petroleum Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the lower San Andres formation, below the oil-water contact, in the following wells, Vacuum Field, Lea County, New Mexico:

TOWNSHIP 17 SOUTH, RANGE 34 EAST
Phillips Hale No. 11, Unit K Section 35

TOWNSHIP 17 SOUTH, RANGE 35 EAST
Phillips Santa Fe No. 97, Unit N Section 33
Phillips Santa Fe No. 86, Unit C Section 26
Phillips Santa Fe No. 58, Unit G Section 35

Applicant further seeks establishment of an administrative procedure whereby additional wells could be placed on salt water disposal below the oil-water contact in the San Andres formation of the Vacuum Field.

CASE 3415: Application of Sun Oil Company for a non-standard gas proration unit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 790-acre non-standard gas proration unit comprising all of Section 5 and 150 acres in the eastern portion of Section 6, Township 22 South, Range 23 East, Indian Basin-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico. Said unit would be dedicated to applicant's Bogle Flats Unit Well No. 8 located in Unit G of said Section 5. Although applicant has drilled a non-commercial well in the NE/4 of said Section 6, it contends that there are approximately 150 acres in said Section 6 which are underlain by the Indian Basin-Upper Pennsylvanian Gas Pool.

CASE 3416: Application of Signal Oil & Gas Company for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State "AP" Well No. 1 located in Unit I of Section 17, Township 19 South, Range 34 East, Simanola-Pennsylvanian Pool, Lea County, New Mexico, in such a manner as to produce oil from the Pennsylvanian formation through perforations from 9962 feet to 9966 feet and to dispose of produced salt water into the San Andres and Glorieta formations through the annulus between the (8 5/8) inch and the (5 1/2) inch casing in the interval from 4100 feet to 9260 feet.

CASE 2844 (Reopened):
In the matter of Case No. 2844 being reopened pursuant to the provisions of Order No. R-2627, which order established temporary 320-acre gas proration units for the Teas-Pennsylvanian Gas Pool, Lea County, New Mexico, for a period of one year from the date of first pipeline connection. The Commission will consider indefinite extension of Order R-2627 in the absence of evidence to the contrary.

Docket No. 14-66

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 8, 1966

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, Alternate Examiner:

CASE 3410: Application of Pennzoil Company for the creation of a new pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Morrow production for its Bridges-State Well No. 1 in Unit A of Section 11, Township 17 South, Range 34 East, Lea County, New Mexico, and for the promulgation of special pool rules therefor including a provision for 80-acre spacing and a limiting gas-oil ratio of 12,000 to one. In the alternative, applicant requests that the subject well be classified as a gas well and a new Morrow gas pool be created.

CASE 3411: Application of SEC Operating 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 Yates formation through one well in Unit A of Section 14, Township 20 South, Range 33 East, Teas Pool, Lea County, New Mexico. Applicant further seeks an administrative procedure whereby said project could be expanded to include additional lands and injection wells in Sections 11, 13, 14 and 15, Township 20 South, Range 33 East, under cooperative offset operating agreements.

CASE 3412: Application of SEC Operating for an exception to Commission Order No. R-111-A, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to the potash-oil area casing and cementing rules as set forth in Commission Order No. R 111 A. Applicant proposes to drill and complete a well in Unit D of Section 14, Township 20 South, Range 33 East, Teas Pool, Lea County, New Mexico, with surface casing set at approximately 950 feet, cement circulated, and production casing set at approximately 3400 feet and cemented to approximately 2500 feet above the casing point. The well would be plugged and abandoned in accordance with the provisions of Order No. R-111-A.

CASE 3261 (Reopened):

In the matter of Case No. 3261 being reopened at the request of Amerada Petroleum Corporation to consider the amendemnt of the special rules for the Jenkins-Cisco Pool, Lea County, New Mexico, to provide for 160-acre oil proration units. Applicant also seeks the extension of said pool to include certain lands in Township 9 South, Ranges 34 and 35 East. The present temporary special rules promulgated by Order No. R-2931 in Case 3261 provide for 80-acre proration units, and are subject to reconsideration in July, 1966.

J. O. SETH (1883-1963)

A. K. MONTGOMERY
WM. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS
RICHARD S. MORRIS

JOHN G. JASPER
SUMNER G. BUELL
SETH D. MONTGOMERY

SETH, MONTGOMERY, FEDERICI & ANDREWS
ATTORNEYS AND COUNSELORS AT LAW
350 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87501

POST OFFICE BOX 2307
AREA CODE 505
TELEPHONE 982-3876

May 24, 1966

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Re: Application of Signal Oil and Gas Company,
Case No. 3416, Examiner Hearing of June 8, 1966

Gentlemen:

Enclosed is application of Signal Oil and Gas Company for approval of an oil-salt water injection dual completion in the Simanola Field, Lea County, New Mexico.

We appreciate your setting this matter for hearing on the June 8, 1966 examiner docket in advance of receiving this application.

A copy of the application is being sent to Mr. Frank Irby at the State Engineer's Office.

Very truly yours,

Richard S. Morris

RSM:jm
Enclosure
cc: Mr. Frank Irby, Chief
Water Rights Division
Office of the State Enginee er
State Capitol
Santa Fe, New Mexico

Mr. D. J. Delany
Production Engineer
Signal Oil and Gas Company
1010 Wilshire Boulevard
Los Angeles, California 90017

DOCKET MAILED

Date

4. Attached to and incorporated into this application are the following exhibits:

A. Form C-108, Application to Dispose of Salt Water by Injection Into a Porous Formation.

B. Plat of the Simanola Field Showing Location of the Subject Well and All Wells Within a Two-Mile Radius.

C. List of Operators and Lessors in the Simanola Field Area.

D. Diagrammatic Sketch of Surface Installation for Salt Water Disposal.

E. Diagrammatic Sketch of Mechanical Installation of Subject Well as an Oil-Salt Water Dual Completion.

F. Tabulation of Casing Installation in Subject Well.

G. Production Information Concerning Subject Well.

H. Chemical Analysis of Water to be Injected.

I. Log of Subject Well.

5. Approval of this application will prevent waste and protect correlative rights.

WHEREFORE, applicant requests that this application be set for hearing before one of the Commission's examiners on June 8, 1966, or as soon thereafter as it may be heard and that the Commission enter its order approving the application.

SETH, MONTGOMERY, FEDERICI & ANDREWS

By _____

350 East Palace Avenue
Santa Fe, New Mexico
Attorneys for Applicant Signal Oil and Gas Company

CERTIFICATE OF MAILING

I hereby certify that on this 24th day of May, 1966, I mailed a copy of this application, complete with exhibits and

attachments thereto, to Mr. Frank Irby, Chief, Water Rights Division, Office of the State Engineer, State Capitol Building, Santa Fe, New Mexico.

Richard S. Morris

Form C-108
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

'66 MAY 25 AM 8 11

OPERATOR	ADDRESS
Signal Oil and Gas Company	509 W. Texas Ave., Midland, Texas

LEASE NAME	WELL NO.	FIELD	COUNTY
New Mexico State "AP"	1	Simanola (Penn.)	Lea

LOCATION

UNIT LETTER I ; WELL IS LOCATED 1980 FEET FROM THE South LINE AND 660 FEET FROM THE East LINE, SECTION 17 TOWNSHIP 10S RANGE 34E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8"OD	375'	375	Surface	Circulated
INTERMEDIATE	8-5/8"OD	4,100'	575	Surface	Circulated
LONG STRING	5-1/2"OD	10,015'	225	9,260	Temp.Survey
TUBING	2-3/8"OD	6,859	NAME, MODEL AND DEPTH OF TUBING PACKER: Guiberson KVL-30 set at 6846'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Glorieta and San Andres	4,047 (San Andres)	6,984 (Glorieta)

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Annulus	Open Hole	4100'-9260'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Oil Production (Currently Producing)	Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

Present Prod. Perfs. 9962-9966 (to remain open - Disposal down 8-5/8" - 5-1/2" annulus)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
No known fresh water zone	-	9960'

ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
1000	900	1200	closed	pressure	1000

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
	Yes	Yes	Yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Carl Johnson, Jr., P. O. Box 777, Lovington, New Mexico

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Sunray DX Oil Company	P. O. Box 1136	Roswell, New Mexico
Atlantic Refining Company	P. O. Box 1978	Roswell, New Mexico
Humble Oil & Refining Company	P. O. Box 1650	Hobbs, New Mexico
Penrose Production Company	411 Gulf Building	Midland, Texas

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	THE NEW MEXICO STATE ENGINEER
Yes	Yes	Yes	Yes

ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	Yes	Yes	Yes

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

D. J. Delany (Signature) — Production Engineer (Title) — 5-23-66 (Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

R-34-E

T 10 S

Z F R F Montgomery "Sunray" Z A Hanson State	L.C. Harris 6 D. B. Anderson State	Marathon Brilwell 5 Brilwell State	Marathon Marathon 4 Amerada State	Superior 3 Marathon State
Texaco Bell Petr. 12 Union State	Murphy Corp. Cont'l. 7 State	Allied Chem. Champlin O&R 8 Atlantic State	Atlantic 9 Zachary & Penrose Sun State	Marathon 10 Marathon Humble State
Union So. Roy. 13 So. Roy. Superior Murphy State	Cont'l. Champlin O&R 18 State	Atlantic Signal Atlantic 17 Atlantic Atlantic Sunray WR State	Humble Humble 16 Sunray DX Humble State	Marathon Humble 15 Humble "Four Lakes Unit" State
Louisiana L & E Expl. 24 Murphy So. Roy. Humble J.I. Sheriff Jr. State Allied Chem. Co.	Max H. Christensen J.I. O'Neill Jr. 19 Sunray State	So. Miss. Sunray Signal 20 State	Sraseco E. Rich Sun 21 Sunray DX State	Humble 22 Superior State
Tex. Pacific Allied Chem. 25 Cabot Corp. Tex. Pacific State Allied Chem. Co.	Cabot Corp. Monsanto 30 Union State	Cabot 29 Max Christensen State	Sunray D-X R.E. Williams 28 Allied Chem. State	Superior 27 State

SIGNAL OIL & GAS COMPANY — DIVISION

Lease: — County: Lea — Producing

Field: SIMMONS — State: NEW MEXICO — Zones

Contract — Acres — Scale 1" = 1000'

Rec. 3/11.

OPERATORS & LESSORS

- ADDRESSEE LIST -

SIMANOLA FIELD AREA
T-10-S - R-34-E
LEA COUNTY, NEW MEXICO

Allied Chemicals Corp.
% Union Texas Petroleum
P. O. Box 196
Midland, Texas

D. B. Anderson
410 East College
Roswell, New Mexico

Atlantic Refining Co.
P. O. Box 1978
Roswell, New Mexico

Birdwell Oil Co.
Security Nat'l Bk. Bldg.
Roswell, New Mexico

Cabot Corporation
P. O. Box 4395
Midland, Texas

Cities Service Oil Co.
Cities Service Building
Bartlesville, Oklahoma

Champlin Oil & Refining Co.
P. O. Box 1797
Midland, Texas

M. H. Christensen
1116 Petr. Life Bldg.
Midland, Texas

Continental Oil Co.
P. O. Box 460
Hobbs, New Mexico

L. C. Harris
P. O. Box 1714
Roswell, New Mexico

Humble Oil & Refining
P. O. Box 1650
Hobbs, New Mexico

Marathon Oil Co.
P. O. Box 2107
Hobbs, New Mexico

G. A. Moberly
P. O. Box 629
Midland, Texas

Monsanto Chemical Co.
Drawer 1829
Midland, Texas

Murphy Oil Corp.
Murphy Building
El Dorado, Arkansas

J. I. O'Neill
410 West Ohio
Midland, Texas

Pan American Petr. Corp.
P. O. Box 68
Hobbs, New Mexico

Shell Oil Co.
P. O. Box 1509
Midland, Texas

Signal Oil & Gas Co.
509 West Texas
Midland, Texas

Sinclair Oil & Gas Co.
P. O. Box 1920
Hobbs, New Mexico

Skelly Oil Co.
P. O. Box 730
Hobbs, New Mexico

Southern Minerals Corp.
P. O. Box 1816
Midland, Texas

Sun Oil Company
P. O. Box 2880
Dallas, Texas

Sunray DX Oil Co.
P. O. Box 1416
Roswell, New Mexico

Superior Oil Co.
P. O. Box 1900
Midland, Texas

Tenneco Oil Co.
201 W. Wall Bldg., 4th Floor
Midland, Texas

Union Oil Co. of California
Union Oil Bldg.
619 West Texas
Midland, Texas

R. E. Williams
P. O. Box 1737
Midland, Texas

Zachary and Penrose
% Penrose Prod. Co.
411 Guld Bldg.
Midland, Texas

Case 3416

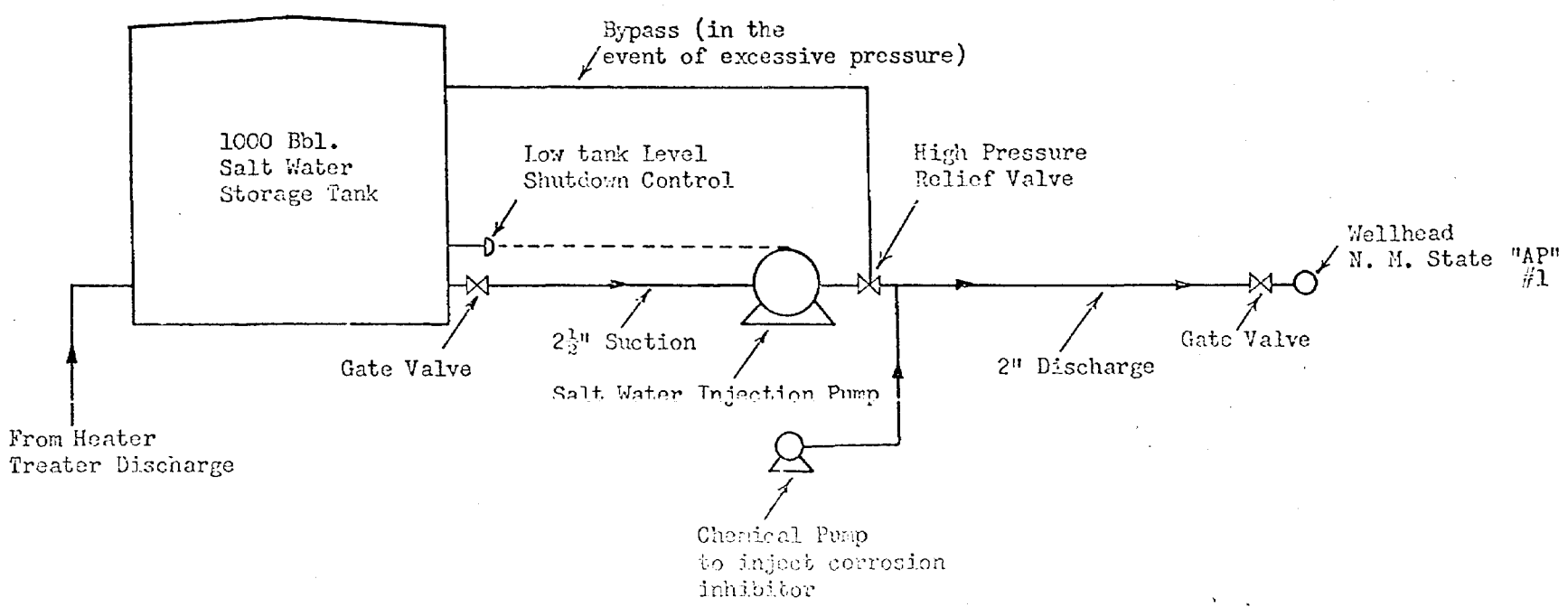
SIGNAL OIL AND GAS COMPANY

Diagrammatic Sketch of Surface Installation
for
Salt Water Disposal

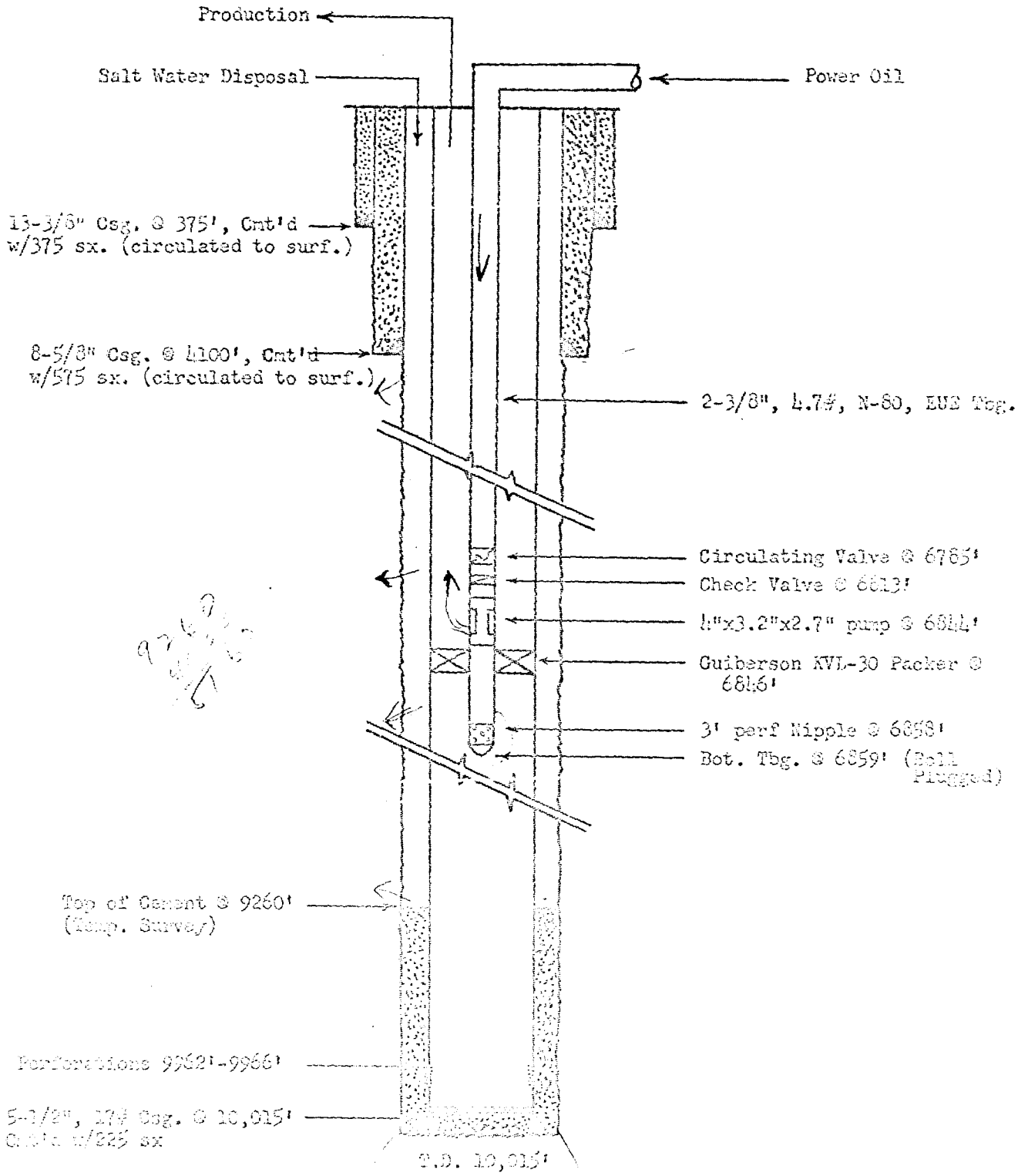
Simanola Field

New Mexico State "AP" #1

Lea County, New Mexico



SIGNAL OIL AND GAS COMPANY
NEW MEXICO STATE "AP" NO.1
1980' FSL & 660' FEL SEC. 17, T-10-S, R-34-E
LEA COUNTY, NEW MEXICO



CASING INSTALLATION
A.P. STATE NO. 1 (OG-4558)
1980' FSL & 660' FEL, SECTION 17, T-10-S, R-34-E
LEA COUNTY, NEW MEXICO

SURFACE CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling
0-375	13-3/8	48	H-40 new	ST&C

INTERMEDIATE CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling	Interval Yield Mill Hydrostatic test-psig (Spang)
0-2,378	8-5/8	24	J-55 new	ST&C	2700
2,378-3,694	8-5/8	32	H-40 new	ST&C	2600
3,694-4,108	8-5/8	32	J-55 new	ST&C	3000

PRODUCTION CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling	Design Factor 1-1/8 Collapse-psig (Spang)
0-1,066	5-1/2	17	N-18 new	LT&C	5890
1,066-2,323	5-1/2	17	J-55 new	LT&C	4500
2,323-7,527	5-1/2	17	J-55 new	ST&C	4500
7,527-10,029	5-1/2	17	N-80 new	LT&C	5890

PRODUCTION INFORMATION
NEW MEXICO STATE A. P. NO. 1
1980' FSL & 660' FEL SECTION 17, T-10-S, R-34-E
SIMANOLA PENN FIELD
LEA COUNTY, NEW MEXICO

Year	Month	Gross Monthly Oil Prod-Bbls	Monthly Water Prod.-Bbls.	Gross Cumulative Oil Prod.-Bbls.	Cumulative Water Prod.-Bbls
1965	May	550	26,900		
	June	1,581	27,998	2,131	54,898
	July	2,001	27,767	4,132	82,665
	August	1,563	30,021	5,695	112,686
	September	1,354	25,590	7,049	138,276
	October	2,031	23,644	9,080	161,920
	November	1,902	20,807	10,982	182,727
	December	3,385	27,059	14,367	209,786
1966	January	3,571	27,917	17,938	237,703
	February	3,066	23,999	21,004	261,702
	March	2,801	22,323	23,805	285,025
	April	3,129	25,031	26,934	310,056

SIGNAL OIL AND GAS COMPANY

TECHNICAL SERVICE LABORATORY

CHEMICAL ANALYSIS OF WATER TEST NO. _____

Sample Received	3-17-66			
Date of Report	3-23-66	Sample Source	Signal A. P. State Well #1	
Date of Sampling	-	Field	Simanola (Lea Cty, N.M.)	
Sampled by	D. J. Delany	Zone		
Date of Analysis	3-21, 22-66	Plant		
	As $CaCO_3$	Analyst	A. De Young	
	PPM			
Total Hardness	16,800	Chloride	Cl	55,000
Calcium	13,200	Sulphate	SO_4	658
Magnesium	3,600	Total Phosphate	PO_4	
Carbonate Alk.		Polyphosphate	PO_4	
Bicarbonate Alk.	204	Boron	B	22
Hydroxide		Iodide	I	

Radicals		PPM	EPM	Radicals		PPM	
Sodium	Na,K	28,400	1232.8	Carbonate	CO_3		
Calcium	Ca	5,280	264.	Bicarbonate	HCO_3	248	4.1
Magnesium	Mg	876	72.0	Sulphate	SO_4	658	13.7
Iron	Fe			Chloride	Cl	55,000	1550.
		34,556	1568.8	Phosphate	PO_4		
				Borate	B_4O_7	79	1.0
				Iodide	I		
						55,985	1568.8

Miscellaneous

Total Solids - Calculates 90,541

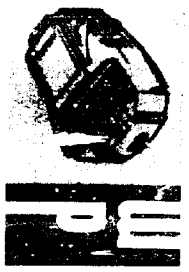
pH 6.8

H_2S _____
CO_2 _____
SiO_2 _____

By Evaoporation 104,300
By Conductivity _____

Remarks Specific gravity @ 72° F. : 1.070

App. 3414



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

June 8, 1966

Examiner HEARING

IN THE MATTER OF:

Application of Signal Oil & Gas Company for a dual completion and salt water disposal, Lea County, New Mexico.

Case No. 3416

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The hearing will come to order. The next case is No. 3416.

MR. HATCH: Application of Signal Oil & Gas Company for a dual completion and salt water disposal, Lea County, New Mexico.

MR. MORRIS: If the Examiner please, I am Richard Morris of Seth and Montgomery, Santa Fe, New Mexico, appearing on behalf of the applicant, Signal Oil & Gas Company. We will have one witness, Mr. W. T. Wheeler. I ask that he be sworn at this time, please.

(Witness sworn.)

MR. MORRIS: At the outset of this case I would like to state that the application of Signal Oil & Gas Company is almost identical with an application that was made by Sun Ray DX Oil Company in Case No. 3386 and with respect to which the Commission has entered its Order No. R-3052 approving the application, and I hand to the Examiner so he will have it in his file, a copy of this Order. The well that is the subject of that order is a direct southeast offset to the well that is the subject of this hearing.

W. T. WHEELER

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Wheeler, will you please state your name, where you live, by whom you are employed, and in what capacity?

A My name is W. T. Wheeler. I am employed by Signal Oil & Gas Company as division reservoir engineer in Midland, Texas.

Q Mr. Wheeler, would you briefly state where you received your formal education and what your experience in the oil industry has been since that time?

A I received a B.S. degree in petroleum engineering from the University of Texas in 1953 and I worked as a production and reservoir engineer in the Permean Basin since 1955.

Q Are you familiar with the application of Signal Oil & Gas Company in this case?

A Yes, sir, I am.

MR. MORRIS: Are the witnesses's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

(Whereupon, Applicant's Exhibits 1 through 6 marked for identification.)

Q (By Mr. Morris) Mr. Wheeler, with reference to

production of water show the necessity for the subject application?

A Yes, sir.

Q As I understand it, the application, Mr. Wheeler, you propose to complete the well as dual completion or change over from a producing well to a dual completion, so that saltwater that is produced from the Pennsylvanian zone in this well can be injected back through the annulus in the same well?

A Yes, sir, that is correct.

Q Now, is all this shown on the diagramatic sketch, being Exhibit 3?

A Yes, sir, we propose to dispose of water down the 8 5/8 inch, 5 1/2 inch casing annulus.

Q With reference to that Exhibit 3, would you point out the pertinent features of that exhibit, particularly with respect to the tubing and casing installation, the cementing, and how the well will actually be operated if this application is granted?

A Exhibit 3 indicates that 13 3/8 casing was set at 375 feet with cement circulated to the surface, also that 8 5/8 inch casing was set at 4100 feet with cement circulated to the surface, and that 5 1/2 inch casing was set at 10,015 feet with top of the cement behind it, 5 1/2 inch at 9260

so, therefore the zone of injection will be from 4100 feet which is the casing set of the 8 5/8 down to 9260 feet, which is the top of the cement behind the 5 1/2, and we propose to inject down the annulus into this open hole interval.

Q Now, I notice on this exhibit you show that the power oil is injected into the 2 3/8 inch tubing and that production is obtained in annular space in the 2 3/8 inch, the 5 1/2 inch casing.

A Yes, sir, that is true. This well is produced with a casing hydraulic pump and the power oil goes down the 2 3/8 inch tubing string.

Q Just how does that work, Mr. Wheeler? What is the purpose of injecting power oil down the tubing string?

A Well, the power oil serves as a source of power to operate the hydraulic casing pump. This is not an electric pump or pumping unit. This is a hydraulic downhole pump that is powered by this power oil. In this case we use oil.

Q And then production is obtained through the perforated nipple as 60/58 and your oil column arises from your perforations up above that perforated nipple, is that right?

A The production actually comes through the tubing casing and annulus through this casing pump with its large

volume of production. It requires a casing pump rather than a more conventional tubing, hydraulic pump. Let's also point out on this exhibit that with the cement circulated to the surface behind the 13 3/8 inch and 5 1/2 inch that this would protect any shallow fresh water zone.

Q Now, Mr. Wheeler, have you compared your diagramatic sketch, Exhibit No. 3, with the installation that Sun Ray DX proposed and had approved in Case No. 3386?

A Yes, sir, I think it is very similar. The only obvious difference is the depth of the tubing setting in the two wells.

Q And what is that difference?

A Well, apparently their tubing is set lower in the well than ours. The bottom of our tubing is set at 6,859 feet and theirs is set at 9,886 feet, and I would presume that they were required to set deeper in the zone due to a smaller, less fluid head where we were able to produce our well at capacity by setting our pump up the hole.

Q This is where your pump is set and your tubing is set at the present time and production is being obtained at that depth?

A Yes, sir. The disposal part of this thing is identical as far as injecting down the 8 5/8 and 5 1/2 annulus,.

Q Now, into what formations do you anticipate that injection will occur in the open hole interval?

A This will be in the San Andres-Glorieta formation.

Q And again is your application in that regard similar to the Sun Ray DX application?

A Yes, sir, very similar, almost identical as to depth. Their overall injection interval in their well is from 4100 feet to 9390 feet where ours is from 4100 feet to 9260 feet.

Q With reference to what has been marked as Exhibit No. 4 in the case would you say what that is?

A This is a record of the various casing strings which have been installed in the subject well.

Q This is just a tabulation of the down hole equipment as depicted on Exhibit No. 3?

A Yes, sir.

Q Now, with respect to what has been marked as Exhibit No. 5 in the case, would you explain the surface installation that you will have for the injection of water and how the produced water will be routed back to the injection in this well.

A This is a diagramatic sketch of our proposed surface installation for the salt water disposal indicating a five-barrel storage tank for the salt water. Then a

salt water injection pump which includes a by-pass around the pump and then also a chemical pump to be installed on the injection line to inject a corrosion inhibitor prior to the time the water is injected into the wellhead.

Q And in what quantities do you anticipate that you will inject water into this well if this application is approved?

A We anticipate injection of 900 to 1200 barrels of water per day in a closed system at approximate pressure of 1000 pounds.

Q And this will be the produced water from the Pennsylvanian zone in this well?

A Yes, sir.

Q Does Exhibit No. 6 represent a chemical analysis of the produced water from the Pennsylvanian formation of this well?

A Yes, sir, that is an analysis of the water from the State AP Well No. 1.

Q In your opinion, Mr. Wheeler, will the dual completion and proposed injection system adequately protect any oil and gas producing zones in this area as well as any fresh water zones that might exist?

A Yes, sir, I do.

Q In your opinion will approval of the subject

application prevent waste and protect relative rights?

A Yes, sir,

Q Were Exhibits 1 through 6 prepared by you or under your supervision?

A Yes, sir.

MR. MORRIS: We offer Exhibits 1 through 6 in evidence.

(Whereupon, Applicant's Exhibits 1 through 6 were offered in evidence.)

MR. UTZ: Without objection Exhibits 1 through 6 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits 1 through 6 were admitted in evidence.)

MR. IRBY: Is No. 6 the water analysis?

MR. MORRIS: Yes, sir.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Wheeler, I am not sure if you stated--I missed it--do you intend to treat this water before it is injected behind the casings?

A Yes, sir, by injecting a corrosion inhibitor.

Q And you feel that that will adequately take care of any corrosion problem you might have on the casing?

A Yes, sir, it should. If any casing leak does

develop it should be noticed in the production from the well. The only place the water could go would be into the 5 1/2 inch, which should be detected in the production from the Pennsylvanian zone.

MR. UTZ: Are there other questions of the witness?

MR. IRBY: Frank Irby, State Engineer's Office.

CROSS EXAMINATION

BY MR. IRBY:

Q Do you have an analysis of the water in the injection zone?

A No, sir, I do not. We have never taken a sample from the San Andres or Glorieta formation. I would anticipate that it is brackish water not suitable for domestic purposes.

Q What would you estimate the total dissolved solids for water that you call brackish?

A I don't have an estimate for total dissolved solids.

Q Well, do you have one for cloride then?

A I can't give you a very authoritative estimate on that. I have heard some figures on that subject. Certainly, I think this 5000 parts per million chloride would make this brackish water, something down in the five to ten thousand is in the questionable range, from my understanding. I don't have any authoritative numbers on that, though.

Q Your zone of disposal is San Andres and Glorieta?

A Yes, the approximate interval between San Andres Glorieta.

Q Would you say that the chloride concentration was something on the order of ten thousand parts per million, or better?

A In the San Andres-Glorieta, I would think that it would be higher than ten thousand. I would say something in the neighborhood of fifty to one hundred thousand.

Q Well, in the same range?

A In approximately the same range as the Pennsylvania water. Now, that is strictly a guess because, as I say, we don't have a sample.

Q Do you have a well nearby or can you get a sample from this well of the water in the San Andres?

MR. MORRIS: Let me interject something here that may have bearing on the problem. If Sun Ray DX is already injecting water into the San Andres I am sure it wouldn't be too long before the parts per million of dissolved solids in the water would begin, regardless of whether they were originally, would reflect the injection that already has commenced, as I understand it, of the Pennsylvanian water from this salt water. I don't know whether Sun Ray DX had any estimate of the dissolved solids in the San Andres-Glorieta yet at the time they brought this case to the

Commission, but if they did it would certainly be the same since there is less than a half mile difference in location here. I would suspect it would be the same.

MR. IRBY: You mentioned, Mr. Morris, the case number on the Sun Ray DX, was that 3386?

MR. MORRIS: 3386 and Order No. R-3052, dated April 1, 1956.

A I might add that we do not have a feasible method to obtain a sample from this San Andres.

Q (By Mr. Irby) Either from this well or nearby well?

A No, sir, this is our only well and this is only a two-well field. It would be considerable expense involved in obtaining a sample of the San Andres water, but I believe from a depth of greater than 4000 you couldn't anticipate fresh water in this area. As it has been pointed out the injection of Pennsylvanian water in a direct offset well has, or eventually will effect the salinity of the San Andres water in our location.

Q My objective is to get our thinking somewhere close together on the definition of brackish. This can mean a lot of different things.

A Yes, sir, that is why I hesitate to give you a number.

Q You don't anticipate any problem below your packer

with regard to that bare casing between your production and your injection, I assume?

A No, sir, there again, if we do intend to inhibit the water to prevent corrosion but in the case of a casing leak, there again it would be noted in the production from the Pennsylvanian zone. I believe at which time the casing could be repaired.

Q You would expect considerable additional salt water to start coming in with your production?

A Yes, sir.

Q That injection pressure at the surface is that 1000 PSI.

A Yes, sir.

MR. IRBY: That is all the questions I have.

MR. UTZ: Are there other questions of the witness? Witness may be excused. Statements in this case?

MR. MORRIS: I have nothing further.

MR. UTZ: Case will be taken under advisement.

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

I, KAY EMBREE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand this 23rd day of June, 1966.

Kay Embree
Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3416, heard by me on June 8, 1966.

Examiner
New Mexico Oil Conservation Commission

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. 3386
Order No. R-3052

APPLICATION OF SUNRAY DX OIL COMPANY
FOR A DUAL COMPLETION AND SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 23, 1966, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of April, 1966, 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, Sunray DX Oil Company, seeks authority to complete its New Mexico State "AO" Well No. 1, located in Unit M of Section 16, Township 10 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to produce oil from the Simanola-Pennsylvanian Pool through the 5 1/2-inch casing by means of a hydraulic casing pump and to dispose of produced salt water down the annulus between the 8 5/8-inch intermediate casing string and the 5 1/2-inch production casing string into the San Andres and Glorieta formations, with injection into the open hole interval between the 8 5/8-inch casing shoe at 4100 feet and the top of the cement at 9390 feet.

(3) That the produced salt water should be continuously treated prior to injection to prevent casing corrosion.

(4) That approval of the dual completion and salt water disposal as set out above will prevent the drilling of unnecessary wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Sunray DX Oil Company, is hereby authorized to complete its New Mexico State "AO" Well No. 1, located in Unit M of Section 16, Township 10 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (conventional) to produce oil from the Simanola-Pennsylvanian Pool through the 5 1/2-inch casing by means of a hydraulic casing pump and to dispose of produced salt water down the annulus between the 8 5/8-inch intermediate casing string and the 5 1/2-inch production casing string into the San Andres and Glorieta formations, with injection into the open hole interval between the 8 5/8-inch casing shoe at 4100 feet and the top of the cement at 9390 feet;

PROVIDED HOWEVER, that the produced salt water shall be continuously treated prior to injection to prevent casing corrosion.

PROVIDED FURTHER, 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 insofar as said rule is not inconsistent with this order.

(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

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

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

esr/

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. 2929
Order No. R-2413-A

APPLICATION OF TEXACO INC.
FOR SALT WATER DISPOSAL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 30, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, 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 10th day of December, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, 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 Order No. R-2413, dated January 30, 1963, authorized the applicant, Texaco Inc., to complete its State of New Mexico "O" NCT-1 Well No. 12, located in Unit J of Section 36, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, as a dual completion (tubingless) to produce oil from an undesignated Glorieta pool and an undesignated Blinebry pool through parallel strings of 2 7/8-inch casing cemented in a common well bore.

(3) That the Blinebry completion in the subject well has proven non-productive and the applicant now seeks authority to dispose of produced salt water into the Basal San Andres formation through the string of 2 7/8-inch casing authorized for Blinebry oil production by Order No. R-2413.

(4) That approval of the subject application will prevent waste and protect correlative rights.

(5) That Order No. R-2413 should be amended to authorize the applicant to complete its State of New Mexico "O" NCT-1 Well No. 12, located in Unit J of Section 36, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, to produce oil from an undesignated Glorieta pool and to dispose of produced salt water into the Basal San Andres formation through parallel strings of 2 7/8-inch casing cemented in a common well bore.

IT IS THEREFORE ORDERED:

(1) That Order No. R-2413 is hereby amended to authorize the applicant, Texaco Inc., to complete its State of New Mexico "O" NCT-1 Well No. 12, located in Unit J of Section 36, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, to produce oil from an undesignated Glorieta pool and to dispose of produced salt water into the Basal San Andres formation below 5300 feet through parallel strings of 2 7/8-inch casing cemented in a common well bore.

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 insofar as said rule is not inconsistent with this order.

(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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

esr/

R-34-E

T 10 S

24 R.F. Montgomery "Sunray" E.A. Hanson PAY E.A. Hanson State	L.C. Harris 6 O. G. Anderson State	Marathon Bridwell 5 Bridwell State	Marathon Marathon 4 Amerada State	Superior 3 Marathon State
Texaco Bell Petr. 12 Union State	Murphy Corp. Cont'l. 7 State	Allied Chem. Champlin O&G 8 Atlantic State	Atlantic 9 Zachary & Petrosol Sun State	10 Marathon Humble State
Union So. Roy. So. Roy. Superior 13 Murphy State	Cont'l. Champlin O&G 18 State	Atlantic Signal Atlantic 17 Atlantic Atlantic Sunray DX State	Humble Humble 16 Sunray DX Humble State	Marathon Humble 15 Humble "Four Lakes Unit" State
Louisiana L&E (Exp.) Murphy So. Roy. Murphy Humble J.J. O'Neill, Jr. State Nice Rich Co.	Max H. Christenson J.J. O'Neill, Jr. 19 Sunray State	So. Miss. Sunray Signal 20 State	Brasseo E. Rich Sun 21 Sunray ox State	22 1 Superior State
Tex. Pacific Allied Chem. Cabot Corp. 25 Tex. Pacific State Nice & Rich Co.	Cabot Corp. Monsanto 30 Union State	Cabot 29 Max Christenson State	Sunray O-X R.E. Williams 28 Allied Chem. State	Superior 27 State

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1
CASE NO. 1201

SIGNAL OIL & GAS COMPANY — DIVISION

Lease: Cuenta: U.S.A. — Producing

Field: SEMINOLA — State: NEW MEXICO — Zones

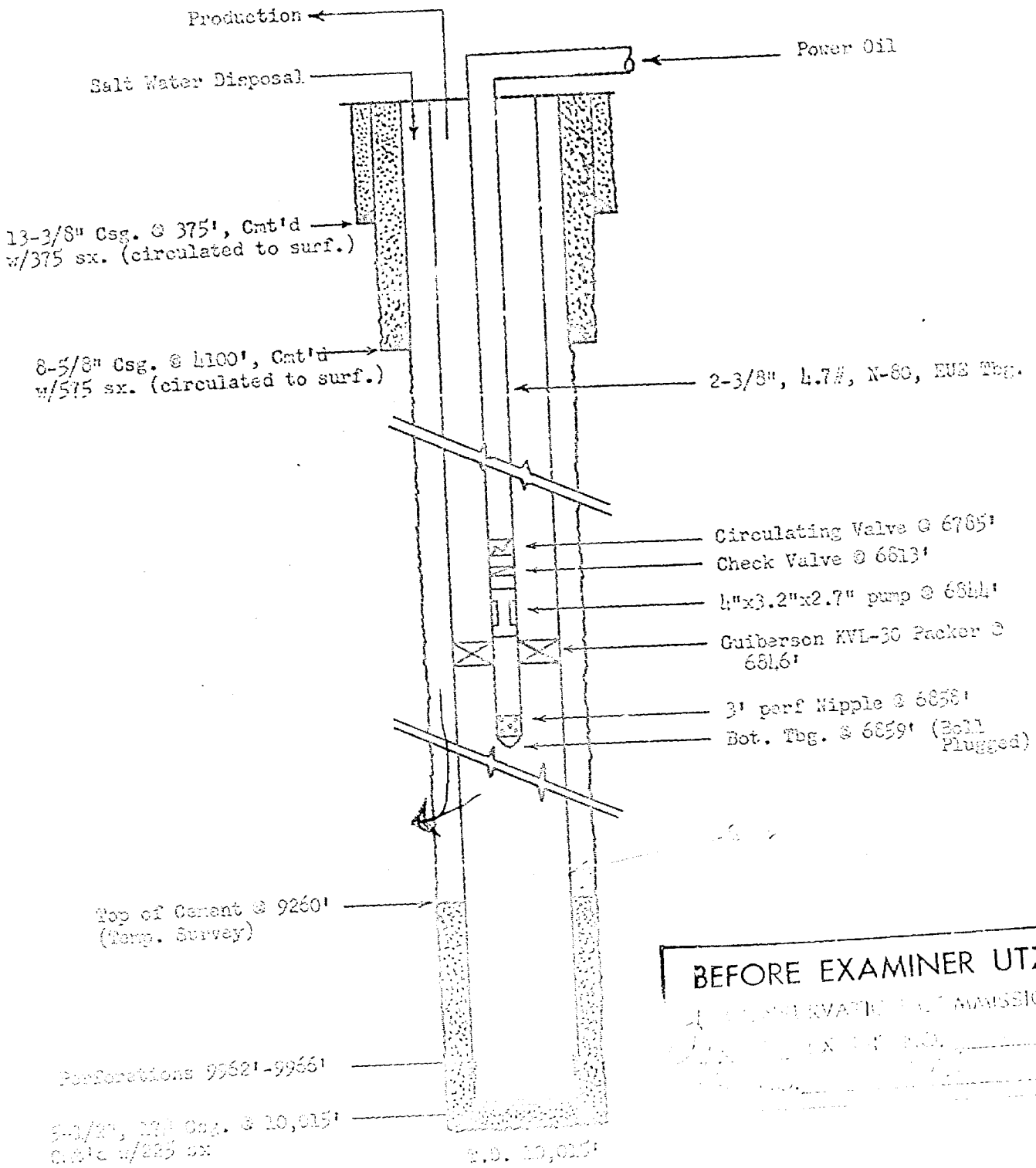
Operator: Acres: San Francisco

PRODUCTION INFORMATION
NEW MEXICO STATE A. P. NO. 1
1980' FSL & 660' FEL SECTION 17, T-10-S, R-34-E
SIMANOLA PENN FIELD
LEA COUNTY, NEW MEXICO

Year	Month	Gross Monthly Oil Prod-Bbls	Monthly Water Prod.-Bbls.	Gross Cumulative Oil Prod.-Bbls.	Cumulative Water Prod.-Bbls
1965	May	550	26,900		
	June	1,581	27,998	2,131	54,898
	July	2,001	27,767	4,132	82,665
	August	1,563	30,021	5,695	112,686
	September	1,354	25,590	7,049	138,276
	October	2,031	23,644	9,080	161,920
	November	1,902	20,807	10,982	182,727
	December	3,385	27,059	14,367	209,786
1966	January	3,571	27,917	17,938	237,703
	February	3,066	23,999	21,004	261,702
	March	2,801	22,323	23,805	285,025
	April	3,129	25,031	26,934	310,056

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
CASE NO.

SHELL OIL AND GAS COMPANY
NEW MEXICO STATE "AAP" NO.1
1980' FSL & 660' FEL SEC. 17, T-10-S, R-34-E
LEA COUNTY, NEW MEXICO



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. _____
CASE NO. _____

CASING INSTALLATION
A.P. STATE NO. 1 (OG-4558)
1980' FSL & 660' FEL, SECTION 17, T-10-S, R-34-E
LEA COUNTY, NEW MEXICO

SURFACE CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling
0-375	13-3/8	48	H-40 new	ST&C

INTERMEDIATE CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling	Interval Yield Mill Hydrostatic test-psig (Spang)
0-2,378	8-5/8	24	J-55 new	ST&C	2700
2,378-3,694	8-5/8	32	H-40 new	ST&C	2600
3,694-4,108	8-5/8	32	J-55 new	ST&C	3000

PRODUCTION CASING

Interval-ft.	Size O.D.	Weight-#/ft.	Grade-Cond.	Coupling	Design Factor 1-1/8 Collapse-psig (Spang)
0-1,066	5-1/2	17	N-18 new	LT&C	5890
1,066-2,323	5-1/2	17	J-55 new	LT&C	4500
2,323-7,527	5-1/2	17	J-55 new	ST&C	4500
7,527-10,029	5-1/2	17	N-80 new	LT&C	5890

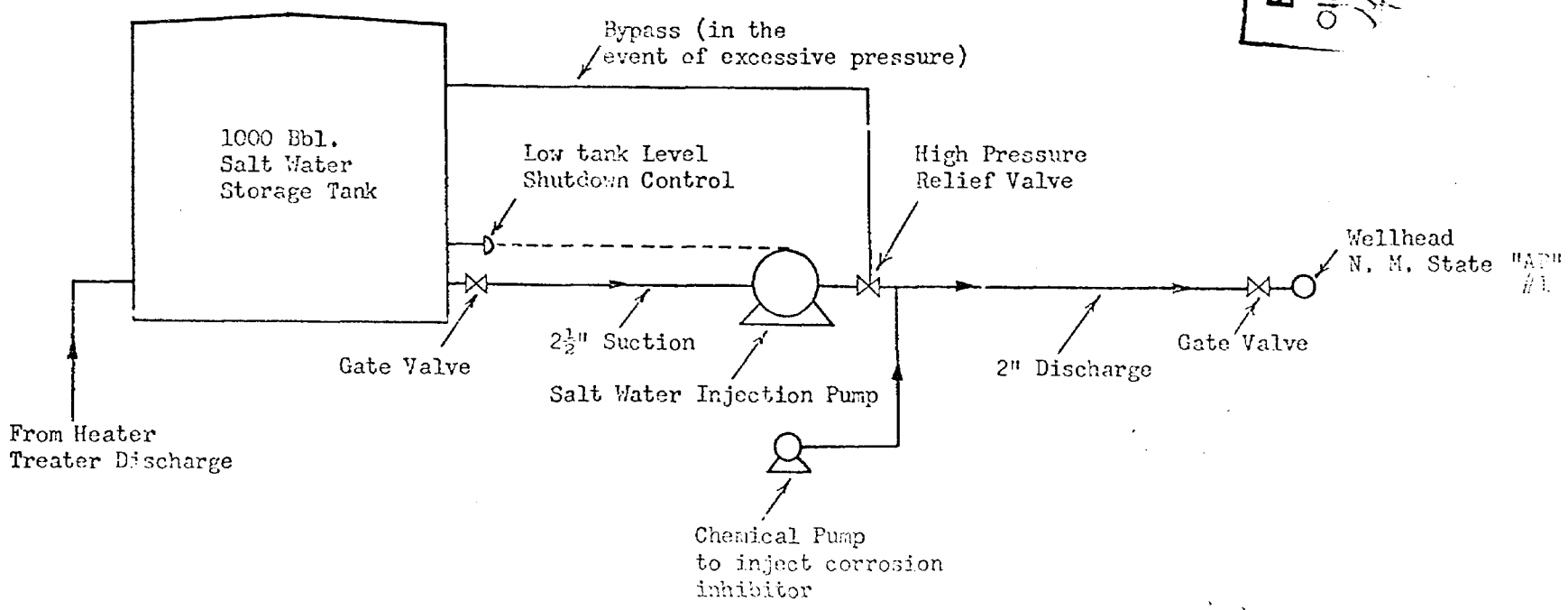
SIGNAL OIL AND GAS COMPANY

Diagrammatic Sketch of Surface Installation
for
Salt Water Disposal

Simanola Field

New Mexico State "AP" #1

Lea County, New Mexico



SIGNAL OIL AND GAS COMPANY

TECHNICAL SERVICE LABORATORY

CHEMICAL ANALYSIS OF WATER TEST NO. _____

Sample Received	3-17-66			
Date of Report	3-23-66	Sample Source	Signal A. P. State Well #1	
Date of Sampling	-	Field	Simanola (Lea Cty, N.M.)	
Sampled by	D. J. Delany	Zone		
Date of Analysis	3-21, 22-66	Plant		
	As $CaCO_3$	Analyst	A. De Young	
	PPM			
Total Hardness	16,800	Chloride Cl	55,000	
Calcium	13,200	Sulphate SO_4	658	
Magnesium	3,600	Total Phosphate PO_4		
Carbonate Alk.		Polyphosphate PO_4		
Bicarbonate Alk.	204	Boron B	22	
Hydroxide		Iodide I		

Radicals		PPM	EPM	Radicals		PPM	
Sodium	Na,K	28,400	1232.8	Carbonate	CO_3		
Calcium	Ca	5,280	264.	Bicarbonate	HCO_3	248	4.1
Magnesium	Mg	876	72.0	Sulphate	SO_4	658	13.7
Iron	Fe			Chloride	Cl	55,000	1550.
		34,556	1568.8	Phosphate	PO_4		
				Borate	B_4O_7	79	1.0
				Iodide	I		
						55,985	1568.8

Miscellaneous

Total Solids - Calculates 90,541

pH 6.8

H_2S _____

CO_2 _____

SiO_2 _____

By Evaoporation 104,300

By Conductivity _____

Remarks Specific gravity @ 72° F. : 1.070