

# PAN AMERICAN PETROLEUM CORPORATION

W - 48

P. O. Box 268  
Lubbock, Texas  
July 15, 1964

File: RES-3380-986,510

Subject: Application for Salt Water  
Disposal - Empire Abo Field  
Eddy County, New Mexico

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

Attention: Mr. A. L. Porter

Gentlemen:

Pan American Petroleum Corporation respectfully requests administrative approval to dispose of produced water from the Empire Abo Field into a zone non-productive of oil and gas in the Lower Yeso formation in its U.S.A. Malco "G" No. 13, located in Unit K, Section 10, T-18-S, R-27-E, Eddy County, New Mexico. In accordance with Rule 701C, we are attaching hereto, in support of our "Application to Dispose of Salt Water by Injection Into a Porous Formation Not Productive of Oil or Gas":

1964 JUL 20 PM 1:03

- (1) Plat showing location of the proposed injection well and the location of all other wells within a radius of 2 miles from said proposed injection well, with the zones coded showing the completion interval in each well.
- (2) A log of the proposed injection well.
- (3) A diagrammatic sketch of the proposed injection well.
- (4) A cross-section showing the proposed injection interval with respect to nearest producing shallow zone in the area.
- (5) A copy of a letter to the State Engineers office transmitting a copy of this application.

By NMOCC Order No. R-2661, dated March 13, 1964, permission was granted to Pan American to dispose of Empire Abo produced water into the Abo formation in the subject well through interval 6001-6093'. In attempting to establish injection into the interval 6001-6018', it was determined



July 15, 1964

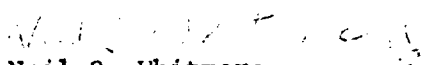
that communication existed between this interval and intervals previously perforated and squeezed in the Abo formation. After determining that such communication existed, we attempted to inject water into the entire Empire Abo interval and were able to inject only 2 barrels per minute at 3650 psi and 1/2 barrel per minute at 3100 psi. In view of these low injection rates and high acidizing pressure into the Abo formation in this well of some 5400 psi, we do not believe that the Abo in this well is satisfactory for salt water disposal.

After determining that the Abo was not satisfactory, a review of the log of this well was made and a decision to attempt injection into a lower Yeso carbonate interval from 3700-3750 psi was made. After perforating this interval and acidizing with 3,000 gallons, it was determined that this zone would take two barrels water per minute at 750 psi which is believed to be satisfactory. Prior to testing this interval, a 25-sack cement plug was set over the Empire Abo perforations with a bridge plug set at 3900' and capped with 15 feet of cement. After acidizing the interval 3700-3750' with 3,000 gallons, 43 barrels of load water and 5 barrels new salt water were recovered by swabbing in 1-1/2 hours and there was no show of oil or gas in this interval. An analysis was not made of the formation water as such was contaminated by acid residue.

As shown on the attached cross-section, the proposed injection interval is located some 400' below the Paddock zone currently producing in our J. H. Harbold No. 1, some two miles north of the proposed injection well. On test of the Paddock in the Harbold Well No. 1, the lower portion of the pay interval swabbed 177 BW in 72 hours. As the proposed injection well is considerably lower structurally than the Harbold Well No. 1, it is evident that this zone is not productive in the subject well. To our knowledge, the proposed injection interval has not been proven productive in the area.

In the event you are unable to grant our request for administrative approval, it is requested that a hearing be set to consider the proposed salt water disposal project.

Yours very truly,

  
Neil S. Whitmore  
District Superintendent

RES:jn  
Attachments

cc: USGS, Artesia, New Mexico  
Atlantic Refining Co., Roswell, New Mexico  
State Engineers, Santa Fe, New Mexico

# PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 268  
Lubbock, Texas 79401  
July 15, 1964

File: RES-3381-906.510

Subject: Application for Salt Water  
Disposal - Empire Abo Field  
Eddy County, New Mexico

State Engineers Office  
P. O. Box 1079  
Santa Fe, New Mexico

Gentlemen:

In accordance with New Mexico Oil Conservation Commission Rule 701B.5, we are attaching hereto our application to dispose of produced water from the Empire Abo Field into a non-productive interval in our U.S.A. Malco "G" Well No. 13.

Yours very truly,

*Neil S. Whitmore*  
Neil S. Whitmore  
District Superintendent

RES:jn  
Attachment

cc: New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico

LARGE FORMAT  
EXHIBIT HAS  
BEEN REMOVED  
AND IS LOCATED  
IN THE NEXT FILE

# SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SIMULTANEOUS



*Laterolog-Gamma Ray-Neutron*

COUNTY FIELD or LOCATION WELL COMPANY	EDDY	COMPANY		PAN AMERICAN PETROLEUM CORP. -	
	EMPIRE ABO	WELL		U.S.A. MALCO REFINERIES "G" 113	
	MALCO REFG "G" 113	FIELD		EMPIRE ABO	
	PAN AMER. CAN PETR. CORP.	COUNTY		EDDY	STATE
Location:		330' FN & WL NE/4-SW/4		Other Services:	
Sec. 10		Twp. 18S Rge. 27E			
Permanent Datum:		GROUND LEVEL ; Elev.:		Elev.: K.B. 3463	
Measured From		K.B. 12.75 Ft. Above		D.F.	
Long Measured From		K.B.		G.L.	
5-24-61					
No. 1					
Depth - Driller 6093					
Depth - Schlum. 6090					
Btm. Log Interval 6087					
Top Log Interval 100					
Casing - Driller 8 5/8 @ 1508 @ @					
Casing - Schlum. 1511					
Bit Size 7 7/8					
Type Fluid in Hole EMPTY & FORMATION WATER					
Dens. Visc. - - - - -					
pH. Fluid Loss - - - - - CC CC CC CC					
Source of Sample FLOW LINE					
Rmc Meas. Temp 10 @ 69 F @ F @ F					
Rmf @ Meas. Temp 10 @ 69 F @ F @ F					
Rmc @ Meas. Temp NONE F @ F @ F					
Source Rmf Rmc M					
Rmf @ B.H.T. 107 @ 100 F @ F @ F					
Time Since Circ. 4 HOURS					
Max. Rec Temp 100 F F F F					
Equip. Location 1555 ARTESIA					
Recorded By HURST					
Witnessed By SNOOK					

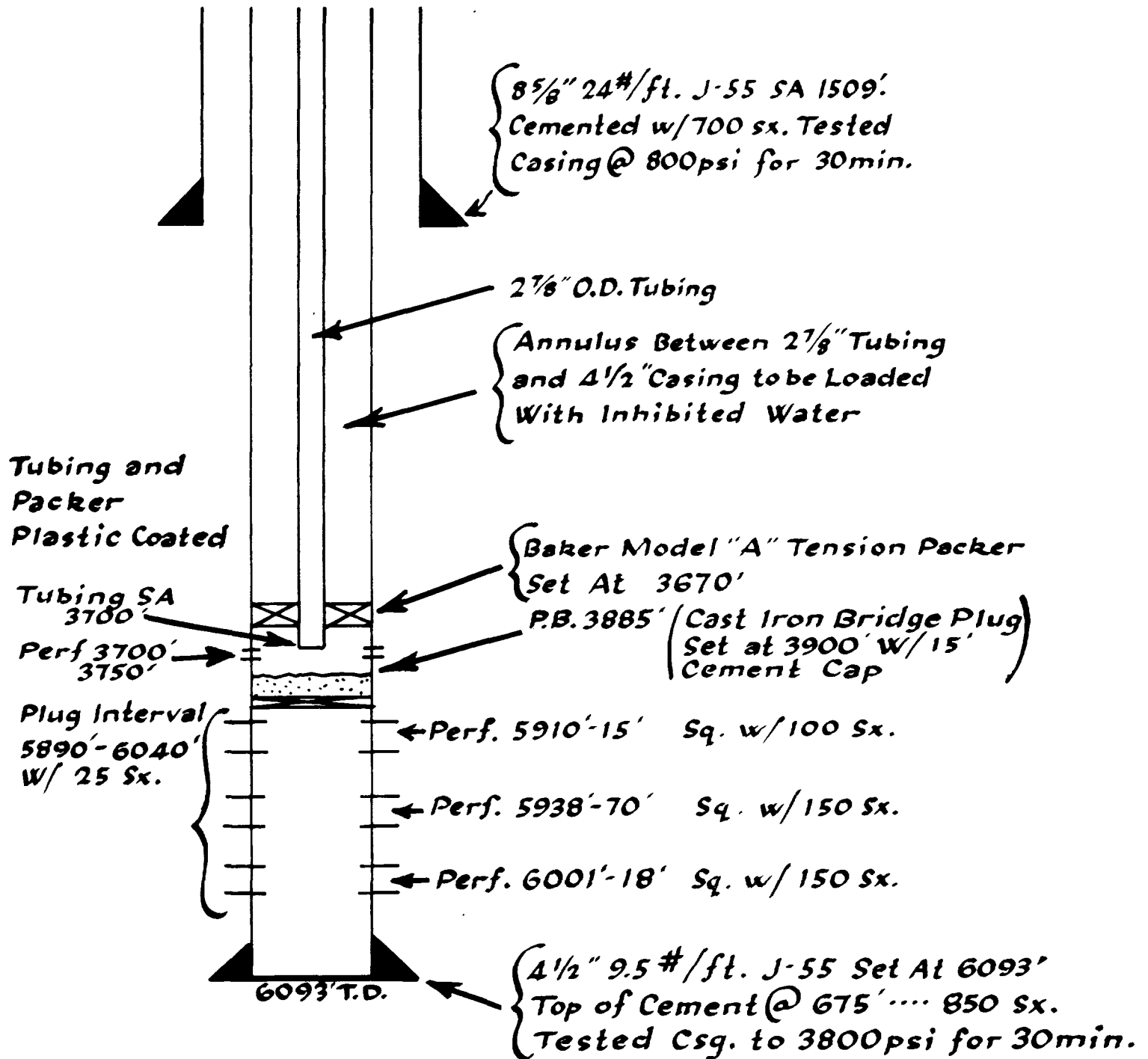


THIS HEADINGS AND LOG CONFORM TO API RECOMMENDED STANDARD PRACTICE RP - 31

FOLD HERE

# PAN AMERICAN USA-Malco Refining "G" No. 13

2302' FSL 1650' FWL of SEC. 10  
T-18-S, R-27-E Eddy Co., New Mexico  
Elev. 3463' RDB



SCHEMATIC DIAGRAM SHOWING PROPOSED  
COMPLETION and HOOKUP OF USA-MALCO  
REFINERIES "G" NO. 13 FOR PRODUCED WATER  
DISPOSAL SERVICE, EMPIRE ABO FIELD  
Eddy Co., New Mexico

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 P. O. Box 268, Lubbock, Texas

Lease U.S.A. Malco "G" Well No. 13 County Eddy

Unit K Section 10 Township 18-S Range 27-E

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

Empire Abo

Name of injection formation(s) Lower Yeso (Carbonate)

Top of injection zone 3700 Bottom of injection zone 3750

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	Feet of Cement	Top of Cement
Surface	<u>8-5/8"</u>	<u>1509</u>	<u>700</u>	<u>Circulated</u>
Intermediate	<u>None</u>			
Long String	<u>4-1/2"</u>	<u>6093</u>	<u>850</u>	<u>675'</u>

Will injection be through tubing, casing, or annulus? Tubing

Size tubing 2-7/8" OD Setting depth 3700' Packer set at 3670'

Name and Model No. of packer: Baker Model "A" Tension Type

Will injection be through perforations or open hole? perforations

Proposed interval(s) of injection 3700-3750

Well was originally drilled for what purpose? Empire Abo Field Well

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:

6001-18 - 150 sx; 5938-70 - 150 sx; 5910-15' x 100 sx; 5890-6040 x 25 sx

Give depth of bottom of next higher zone which produces oil or gas 3380 (Paddock)\*

Give depth of top of next lower zone which produces oil or gas 5910 (Abo)\*

Give depth of bottom of deepest fresh water zone in area: 1100'

Expected volume of salt water to be injected daily (barrels) 400

Will injection be by gravity or pump pressure? Pump Estimated pressure: 750 psi

Is system open or closed type? closed Is further or special treatment necessary? No



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

Atlantic Oil & Refining Co.      Box 1978,      Roswell, New Mexico

Name and address of surface owner **Federal Government c/o USGS, Drawer "U", Artesia, New Mex.**

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: [Signature]

Title: District Superintendent

STATE OF TEXAS )  
 ) ss.  
County of LUBBOCK )

BEFORE ME, The undersigned authority, on this day personally appeared Nell S. Whitmore 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 15th day of July,  
19 64

Notary Public in and for the County of Lubbock  
Texas.

6-1-65  
My Commission Expires

NOTE: Should waiters 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.

ix/



THE ATLANTIC REFINING COMPANY  
INCORPORATED - 1870  
PETROLEUM PRODUCTS

100 100 100

1964 JUL 20 PM 1 14

DOMESTIC PRODUCING DEPARTMENT  
NEW MEXICO DISTRICT

BOONE MACAULAY, DISTRICT MANAGER  
R. F. CHAMPION, DISTRICT LANDMAN  
W. T. EASTES, DISTRICT GEOPHYSICIST  
E. R. DOUGLAS, DISTRICT GEOLOGIST  
A. D. KLOXIN, DISTRICT DRG. & PROD. SUP'T.  
W. P. TOMLINSON, DISTRICT ENGINEER  
B. R. WARE, ADMINISTRATIVE SUPERVISOR

MAILING ADDRESS  
P. O. BOX 1978  
ROSWELL, NEW MEXICO

July 20, 1964

New Mexico Oil Conservation  
Commission  
Post Office Box 2088  
Santa Fe, New Mexico

Attention: Mr. A. L. Porter

Re: Pan American Petroleum Corporation's  
Letter of Application For Salt Water  
Disposal, Empire Abo Field, Eddy  
County, New Mexico.

Gentlemen:

Please be informed that The Atlantic Refining Company concurs in the Pan American Petroleum Corporation's proposal to dispose of salt water by injection into a non-productive Lower Yezo formation in the Empire Abo Field. Injection is intended into the carbonate interval from 3700' to 3750' in Malco "C" No. 13 Well located in Unit K, Section 10, Township 18 South, Range 27 East, Eddy County, New Mexico.

Yours very truly,

  
J. R. McMinn

JRM:ly

cc: USGS, Artesia, New Mexico  
State Engineers, Santa Fe, New Mexico  
Pan American Petroleum Corporation,  
Lubbock, Texas



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS  
STATE ENGINEER

July 21, 1964

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

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 which seeks authority to dispose of salt water through their U. S. A. Malco "G" Well No. 13 in Unit K, Sec. 10, T. 18 S., R. 27 E.

From examination of the application and the attached exhibits, it appears that no threat of contamination to the fresh waters which may exist in the area will occur. Therefore, this office offers no objection to the granting of the application.

Yours truly,

S. E. Reynolds  
State Engineer

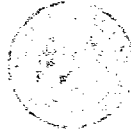
By:

*Frank E. Irby*  
Frank E. Irby  
Chief  
Water Rights Division

FEI/ma  
cc-Pan American Petro. Corp.  
F. H. Hennighausen

GOVERNOR  
JACK M. CAMPBELL  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
E. S. JOHNNY WALKER  
MEMBER

P. O. DRAWER DD  
ARTESIA, NEW MEXICO

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

July 27, 1964

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

Attention: J. E. Kapteina

Re: Application for Salt  
Water Disposal.

Dear Jim:

After reviewing the subject application for Pan Americans  
U. S. A. Malco G, #13--K, 10-18-27, I can find no reason  
why it should not be approved.

Very truly yours,

A handwritten signature in cursive script that reads "Dick".

R. L. Stamets

RLS/jw



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS  
STATE ENGINEER

January 27, 1964

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

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 which seeks authority to dispose of produced water in the Empire Abo Field into the U. S. A. Malco Refineries "G" Well No. 13. After reviewing the application and the 4 exhibits mentioned therein, I have reached the conclusion that no threat of contamination to the fresh waters which may exist in the area will occur. Therefore, this office offers no objection to the granting of the application, provided the plan submitted is followed.

Yours truly,

S. E. Reynolds  
State Engineer

FEI/ma  
cc-Pan American Petro. Corp.  
F. H. Hennighausen

By:   
Frank E. Irby  
Chief  
Water Rights Div.