

CASE 3411: Application of SEC OPER-
ATING for a waterflood project,
Lea County, New Mexico.

ASE No.

3411

Application,

Transcripts,

All Exhibits

ETC.

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO

July 7, 1966

C
Mr. Hal Porter
Cima Capitan Incorporated
312 Becker Building
Post Office Drawer 1343
Artesia, New Mexico

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Dear Sir:

Enclosed herewith is Commission Order No. R-3036, entered in Case No. 3411, approving the SEC-Teas Waterflood Project.

P
Initial injection shall be into the one authorized injection well which shall be tested in accordance with the following procedure:

- Y
- (1) A radioactive tracer test shall be conducted on the well approximately 90 days after injection is commenced to ensure that no injection water is coming up the well-bore outside the casing.
 - (2) A radioactive tracer test shall be conducted on the well at such time as 40,000 barrels of water have been injected or at the time the surface wellhead injection pressure is above 0 psig.
 - (3) A radioactive tracer test shall be conducted on the well at any time thereafter that any anomaly in injection rates or pressure is apparent.

The foregoing tests shall also be conducted on any old wells later converted to water injection in this project.

A newly drilled and completed well in this project shall be tested in accordance with the following procedure:

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

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Mr. Hal Porter
Artesia, New Mexico

July 7, 1966

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Y
- (1) A radioactive tracer test shall be conducted on the well approximately 90 days after injection is commenced.
 - (2) A radioactive tracer test shall be conducted on the well at any time thereafter that any anomaly in injection rates or pressure is apparent.

As to allowable, our calculations indicate that when the authorized injection well has been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 84 barrels per day.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir
Enclosures

cc: Messrs. Roy Blackburn, Jason Kellishin, Carl Engwall, Frank Irby
Oil Conservation Commission - Hobbs, New Mexico

**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. 3411
Order No. R-3086**

**APPLICATION OF SEC OPERATING
FOR A WATERFLOOD PROJECT, 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 7th day of July, 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, SEC Operating, seeks permission to
institute a waterflood project in the Teas Pool by the injection
of water into the Yates formation through its Federal "A" Well
No. 2, located in Unit C of Section 14, Township 20 South, Range
33 East, NMPM, Lea County, New Mexico.

(3) That the applicant further seeks an administrative pro-
cedure 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, NMPM, Lea County, New Mexico, under
cooperative offset operating agreements or unitization agreements;
that said administrative procedure should provide for administrative

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CASE No. 3411
Order No. R-3086

approval for conversion to water injection in exception to the well response requirements of Rule 701 E-5 of the Commission Rules and Regulations.

(4) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(5) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(6) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations; provided, however, that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection.

IT IS THEREFORE ORDERED:

(1) That the applicant, SEC Operating, is hereby authorized to institute a waterflood project in the Teas Pool by the injection of water into the Yates formation through its Federal "A" Well No. 2, located in Unit C of Section 14, Township 20 South, Range 33 East, NMPM, Lea County, New Mexico.

(2) That the subject waterflood project is hereby designated the SEC-Teas Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations;

PROVIDED HOWEVER, that the Secretary-Director of the Commission may approve expansion of the SEC-Teas Waterflood Project to include such additional lands and injection wells in Sections 11, 13, 14, and 15, Township 20 South, Range 33 East, NMPM, Lea County, New Mexico, under cooperative offset operating agreements or unitization agreements, as may be necessary to complete an efficient water injection pattern; that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection;

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CASE No. 3411
Order No. R-3086

PROVIDED FURTHER, that injection shall be, and the injection well or wells shall be tested, as prescribed by the Commission.

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

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

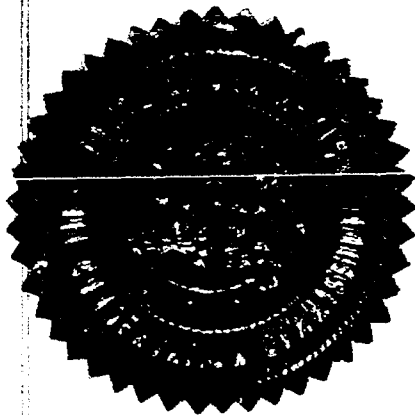
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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



esr/

3411

Memd 6866

Rec. 6-10-66.

1. Grant Stevens, Engwall & Call, ^{operating} permission to connect their Federal A #2, C-14-205-338) to a water injection well. Said well shall inject thru plastic coated tubing and underneath a packer set as near as practical to the 5 1/2 casing shoe.
2. Radio Active tracer tests shall be run on the Federal A #2 as well as any other old well which is converted to injection as follows:
 - (a) a tracer test within 20 days after initial injection.
 - (b) a tracer test after 40,000 Bbls of water has been injected or at the time the wellhead injection pressure is above 0 p.s.i.g.
 - (c) at any time thereafter that an anomaly is apparent in injection rate, ~~injection~~ pressure.
3. A newly ~~comp~~ drilled & completed injection well shall be tested as follows:
 - (a) a tracer test within 20 days after initial injection.
 - (b) at any time thereafter that an anomaly is apparent in injection rate or pressure.
4. Grant administrative procedure for injection wells ^{of this project} which have been completed in the approved manner.

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.

JUNE 8, 1966, EXAMTNER HEARING

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 10 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.

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POST OFFICE DRAWER 1343

cima **CAPITAN** incorporated

(N.S.L.)

ARTESIA, NEW MEXICO

May 23, 1966

MAIN OFFICE

PH 113
AREA CODE 505
TELEPHONE 748-1125
MAY 24 1966

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

Attention: Mr. Dan Nutter, Chief Engineer

Dear Mr. Nutter:

Pursuant to our telephone conversation of May 17, 1966, please consider this letter the application of SEC Operating for a waterflood permit in the Teas Pool, Lea County, New Mexico. Cima Capitan, Inc. (NSL) has been designated as agent for SEC Operating for the purpose of obtaining the waterflood permit.

The applicant proposes the conversion for Federal A, Well No. 2, NE/4 NW/4, Section 14, T-20S, R-33E, from a producing oil well to a water injection well and that an injection well completion program be approved that will allow for expansion of the waterflood by administrative order to include injection wells in Section 11, 13, 14 and 15, T-20S, R-33E.

Injection will be into the Yates sand at a depth of approximately 3250 feet. The water injected will be primarily produced water from the Seven Rivers formation. It is proposed to inject through corrosion-protected tubing under a packer. All tubing and injection lines will be cement-lined or plastic-coated.

Please set this matter for hearing on the June 8, 1966, hearing date, if possible. If there is further information which you may need, please call me at Artesia - 748-1125.

Very truly yours,

CIMA CAPITAN INCORPORATED

Hal C. Porter

Hal C. Porter
Chief Engineer

HCP:ed

cc: SEC Operating
USGS, Hobbs
OCC, Hobbs
Offset Operators
Potash Corporation of America
Mr. Jason Kellishin, Santa Fe
State Engineer

cima **CAPITAN** incorporated

(N.S.L.)

ARTESIA, NEW MEXICO

312 BOOKER BUILDING
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AREA CODE 505
TELEPHONE 748-1125

June 2, 1956

Potash Company of America
Carlsbad, New Mexico 88120

Attention: Mr. Blackman

Dear Mr. Blackman:

Concerning Cases 3111 and 3112, applications of SDC Operating, to be held before the Oil Conservation Commission on June 8, 1966, this letter will confirm our discussion today wherein we stated that we are willing to the abandonment procedure in accordance with Order R-111-A.

I would appreciate a letter from you concern-
ing these cases and acknowledging receipt of the applications
and exhibits. It was a pleasure visiting with you today.

Very truly yours,

OTHER CAPTAIN INFO PROVIDED

Ed Porter

Edl O. Porter

HCP/10

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EXAMINER	HEARING
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Application of SEC Operating for a
waterflood project, Lea County,
New Mexico.

Case No. 3411

Case No. 3412

TRANSCRIPT OF HEARING

MR. UTZ: We will call next Case 3411.

MR. HATCH: Application of SEC Operating for a waterflood project, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, representing the applicant. We also have Case 3412 and we would use the same exhibits and the testimony would overlap, and I would request the consolidation of the two cases for the taking of the record.

MR. UTZ: The two cases will be called at the same time, consolidated for the taking of testimony, and then separate orders written on each case.

(Witness sworn.)

MR. UTZ: Any other appearances in this case?

(Whereupon, SEC Operating's Exhibits 1 through 6 were marked for identification.)

HAROLD C. PORTER

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Harold C. Porter.

Q What business are you engaged in, Mr. Porter?

A I am an engineer for Cima-Capitan, Incorporated in

Artesia.

Q In connection with your work with Cima-Capitan, Incorporated, have you anything to do with SEC Operating?

A SEC Operating is designated by Cima-Capitan, Incorporated as their agent for the purposes of these two cases.

Q In connection with that, have you done any engineering work for SEC Operating in connection with Cases 3411 and 3412?

A Yes.

MR. UTZ: Let's make a record on what SEC is.

A SEC is an abbreviation for the people who own the properties, being James Stephenson, Carl Engwall and Max Coll, The Second, all of Roswell.

Q Is that a corporation?

A No, sir, it's just an operating company. To my knowledge, I am not real sure on that.

Q But Cima-Capitan is doing the engineering work for SEC Operating, is that correct?

A Yes. Cima-Capitan has evaluated these projects and are considering the purchase of these projects in the event we do obtain a waterflood permit.

Q Now, we have two applications here. In connection with Case 3411, are you familiar with the application in that

case?

A Yes, sir, I am.

Q What's proposed by SEC Operating in Case 3411?

A In Case 3411 we propose to convert the SEC Federal "A" Well No. 2 from a producing oil well to a water injection well. This well is located in the Northeast Quarter, Northwest Quarter, Section 14, Township 20 South, Range 33 East, Teas Pool, in Lea County. We would like an administrative order, or a method for administrative approval of expanding the flood to take in offset operators and other wells on our leases under a cooperative project or a unitization, whichever we work out in the future. Mainly, we want to get approval on the method of converting wells, the completion of new injection wells, and the completion of new producing wells.

Q Now, in Case 3412 what is proposed by the applicant?

A In Case 3412 we propose to drill a new producing well in the Northwest Quarter of the Northwest Quarter of Section 14 of the same township, range and location as I mentioned a while ago.

MR. UTZ: Are you proposing to enter this as an exhibit?

MR. KELLAHIN: This is the application that he's reading from.

A Under this case we have applied for an exception

to Order No. R-111-A, eliminating the salt protection string of casing and setting surface pipe at the 950-foot level and then drilling with air until we reach the top of the pay. We will mud up and drill through the pay and set our production string and cement it back up with enough cement to tie into the surface pipe.

Q Has that type of completion, as proposed in Case 3412, been approved by the Commission before?

A Yes. Carl Engwall applied for the same exception in Case 3264, resulted in Order R-2932, which was issued June 24, 1965, and it was approved by the Commission without objection from the Potash Company, and we are asking for exactly the same program as was approved in that case.

MR. KELLAHIN: At this time I would like to ask the Examiner to take notice of the record that was made in Case 3264 and the Commission Order 2932.

MR. UTZ: Was this on one particular well?

MR. KELLAHIN: Yes, sir, it was.

MR. UTZ: How far was this well from this well?

MR. KELLAHIN: Two locations away.

MR. UTZ: And in the potash area?

MR. KELLAHIN: In the potash area.

MR. UTZ: The Examiner will take administrative notice of Case 2932.

Q (By Mr. Kellahin) Now, Mr. Porter, referring to what has been marked as our Exhibit No. 1 in the consolidated cases, would you identify that exhibit, please?

A This is an area plat and I've outlined in red the acreage owned by SEC Operating. This is not intended, however, to be a description in the project area. The project area will be defined when we complete the negotiations for cooperative agreement. However, as Mr. Engwall testified in the previous case, the Potash Company of America is the potash lessee and we have contacted them. I do not have the potash area defined, but they are, according to Mr. Engwall, the only potash lessee within a mile of the area.

Q Now, referring to what has been marked as Exhibit No. 2, would you identify that exhibit, please?

A Exhibit No. 2 is a plat of the immediate area and it has contours on top of the third Yates sand zone, but those are not really pertinent to the case, it's merely a plat to show ownership and to show the location of the proposed conversion of the Federal "A" No. 2 and also the Northwest Quarter will be the location of the proposed new producing well.

Q Now, at the present time you are only proposing one injection well, is this correct?

A Yes, that's true. The reason for that is that we do not have the pattern worked out with the offset operators



and we wanted to get approval on our casing program and waterflood permit before we went to all the trouble of unitizing or working up a cooperative flood.

Q This would be in the nature of a pilot project at the present time, is that right?

A Yes, I guess you could call it that. Of course, when we do start injection we propose to have more injection wells and hope that we might be able to get them by administrative approval.

Q What is your source of injection water?

A We propose to begin injection with water produced from the Federal "A" No. 1, which is shown on the plat in the Northwest Quarter, Northwest Quarter of Section 14. This well will produce approximately 1200 barrels of water per day with about seven or eight, maybe ten barrels of oil. We propose to reinject this produced water in the initial phase and then if we do not have enough we will go to some outside source for water.

Q Now, referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

A Exhibit No. 3 is a print of an electric log to show the Yates formation, the four major Yates sands, which are productive in the area, and the top of the Seven Rivers, which occurs at approximately 3397, or 1400 feet in the area.

Injection will be into the Yates sand and the Seven Rivers, if it is opened in the wells to be converted, will be plugged off with a cement plug.

Q At what depth do you find the Yates sand on that typical log?

A On the Black Federal No. 3 log it occurs at approximately 3158.

Q Now, referring to what has been marked as Exhibit No. 4, would you identify and discuss that exhibit?

A Exhibit No. 4 shows a schematic of our proposed completion for three different types of wells, the first one being a converted producer, the second the completion of a new injection well, and the third the completion of a new producer.

Now, the present wells were drilled in the early 1950's and the method of completion was to set surface pipe at approximately 650 feet, and this was generally ten and three-quarter or larger pipe, then they would drill, and this would be cemented in and then they would drill down through the water, the lowest water was approximately 920 feet, and they would mud in a string there with cable tools and then they would continue drilling their hole and then they would run their long string and pull their water string, then they would cement the bottom of their production string with a hundred to one hundred fifty sacks of cement. Then they would two-stage the



cement job and cement from approximately 1500 feet back to the surface with sufficient cement to come to the surface, and this apparently was the approved method in those days in the potash area. Nearly all the wells were completed that way.

Now, to convert one of these to injection we would propose to set a packer near the bottom of the casing on two-inch tubing, which was internally plastic-coated or cement-lined to protect for corrosion, and having plugged off the Seven Rivers, then inject into the Yates sand in open hole.

In the event that we had a bad cement job on the long string or the water was not going into the proper Yates sand, then we would propose to cement a liner below or through the open hole and up into the casing and then run our packer on tubing and set it inside the liner.

Q Unless you encounter difficulty, you propose to inject through the open hole, is that correct?

A That is correct.

Q On your proposed new completion for injection wells, how would you do that?

A Well, on the proposed new completion, as we applied for in the application, we would drill to approximately 950 feet and cement our surface casing with sufficient cement to circulate to the surface. Then we would drill out from underneath the surface pipe by air and drill with air until we

reached near the top of the pay, at which time we would mud up and drill the pay. Then we would cement our long string with sufficient cement to tie into the surface pipe, and this cement would be salt-saturated cement to prevent washing out the salt section.

Now the reason for drilling with air, we have talked with the potash companies and we feel, and they apparently agree with us, that by drilling with air we would keep the fluid off the salt until such time as we got near the pay, and this would allow for better protection than drilling through the salt with mud-laden water and mud, and then cementing the salt protection string.

Now, the only difference between the proposed new producer and the proposed new injector is the fact that the injector will have four and a half casing rather than five and a half and the injector will have a packer set on tubing above the pay and injection will be down the tubing.

Q Again, will the tubing be internally coated?

A Yes, it will be.

Q On your proposed producing well, that is the type of completion that you are applying for in Case 3412, is that correct?

A Yes, that's true.

Q That's the same type of completion exactly as was

approved by Order R-2932?

A That is correct, and in our conversation with the potash representative, Mr. Blackman, he said that they were agreeable to this but he would want us to commit ourselves to an abandonment procedure under Order R-111-A. We agreed to that.

Q You are willing to have an order providing that in case of abandonment you would comply with Order R-111-A?

A Yes, that is correct.

Q But you want approval for completion of the change in the well initially?

A Yes.

Q Why do you want this change, Mr. Porter, the change from requirement of R-111-A?

A To save the expense of running this salt protection string. In the previous case that Mr. Engwall gave on the well just south of this he went into the economics of it. I don't have those figures with me, but they are available.

Q Are the savings, in your opinion substantial?

A Yes, sir, they are.

MR. UTZ: Did he drill with air?

A Yes, sir, he did. Yes, sir.

Q (By Mr. Kellahin) Now referring to what has been marked as Exhibit 5, would you identify that exhibit, please?

A This is a compilation of well completion data on the

existing wells on SEC leases in the Teas Pool, and entered merely so that it would be in the Commission record. Most of the wells are in the Yates and Seven Rivers. However, only the Well No. 1 has produced substantial oil from the Seven Rivers formation.

Q Is that the well that you are going to get your water from?

A Yes, sir.

Q Do you have a record of the production data for the Teas Pool?

A I have an exhibit, the next exhibit.

Q No. 6?

A Yes, No. 6. This shows the production from the five wells on the SEC leases. It shows that they have recovered nearly 400,000 barrels to date. We calculate that approximately 75 percent of this is coming from the Yates formation, which we propose to flood.

Q What's the present state of production from the Teas Pool?

A The production has declined, as you can see from the tabulated production, down to the point where you would consider these wells to be marginal and in an advanced state of depletion.

Q Are they--In your opinion then, would a waterflood

dearnley-meier reporting service, inc.

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project result in the recovery of oil that would not otherwise be recovered?

A Yes, sir, it would. The Yates sand is being successfully flooded in several areas in the Permian Basin.

Q Have those floods been successful?

A Yes, sir, the majority of them have been.

Q In your opinion will this result in the prevention of waste?

A Yes, sir.

Q In your opinion will the completion of the well, as proposed in your Case No. 3412, adequately protect the potash zone?

A Yes, sir, I believe it will.

Q Will it protect any fresh water zones that are encountered in this area?

A Yes, sir. The lowest water they encountered in the well that Mr. Engwall drilled was about 920 feet, and after they set pipe he reported to me that when they drilled out with air, that they encountered no more water.

Q Is it in the interest of conservation to provide an order permitting the enlargement of this project as the waterflood progresses, by an administrative procedure?

A I would say so. That's what we're asking for and trying to keep from coming back for a separate hearing, in the

event we comply with the procedures approved, that we might be able to go ahead and expand by administrative approval.

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

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer Exhibits 1 through 6 into the record.

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

(Whereupon, SEC Operating's Exhibits 1 through 6 were offered and admitted in evidence.)

MR. KELLAHIN: That's all I have, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Referring to your Exhibit No. 4, the left-hand completion plan is the manner in which you intend to complete the initial injection well?

A No, sir. I would like to clarify that exhibit, too. Mr. Irby asked me what the yellow meant. That is supposed to represent cement behind the pipe, but the one on the left is the proposed conversion of the present well to injection.

Q Well, that will be your first injection well?

A Yes, sir.

Q Well, that's what I actually said or meant to say.



In other words, this well is completed at the present time without the tubing and packer?

A Yes, sir.

Q In the manner shown here?

A No, sir, it is now producing. It has tubing in it and a pump, but this is the way it will look after we convert it.

Q So your plan is to pull the tubing and pump, run plastic-coated tubing and a packer?

A Yes, sir. We would do that after we would plug off the Seven Rivers.

Q Did you intend to make any casing tests on this well?

A Yes, sir. What we would propose on that would be to, on all of our new injectors or converted wells, would be to run a tracer within a month, say, or after the well had had sufficient time to pressure up. Run a tracer to see where our fluid is going and make certain it is going into the Yates, and in the event it didn't, to take whatever remedial steps were necessary to make sure it did go into the Yates.

Q How about a pressure test on the casing?

A We very seldom do that as a matter of course, because there is no pressure on the casing to speak of.

Q You very seldom do it when you run tubing?

A Right, yes, sir.

Q Of course, you understand this is a potash area and we have a little resistance to the type of completions. How old is the casing in this well, was it run new?

A Yes, sir, it was run on, the well data exhibit shows that the well was completed in October of 1953 and I can't testify from my own knowledge that it was new, but it would either be new or good, used, I would think.

Q Who drilled that well?

A It was drilled by W. H. Black, and the contractor was, a contractor out of Eunice drilled all these wells. Fred Whittaker.

Q On the wells, the injection wells which you are requesting administrative approval, you would complete in accordance with the center diagram?

A Yes, sir. Any new injection wells would be completed in that fashion.

Q Any new producing wells would be completed in accordance with the diagram on the right-hand side of Exhibit 4?

A Yes, sir, that is true. Of course, we would have tubing and rods and a pump in them. That would be the casing program.

Q Is there any difference between the casing program in the producing well and the injection well?

A Only the size of the casing. We propose four and a



half for the injector and five and a half for the producer.

Q Now, why don't we make it clear as to how this casing program would vary from what is required in R-111-A?

A Well, I believe that 111-A requires that a string of pipe be cemented through the salt section prior to drilling into the pay. The way this varies from that is that we would drill through the salt section to the top of the pay with air, then we would mud up and drill the pay. As soon as we drilled the pay we would cement our casing as shown.

Now, in talking to the potash company our position was that the fact that we drilled through the salt section with air and then mudded up, we would only have fluid on the salt for, say, twenty-four hours perhaps. The other way, if we drilled all that mud through the salt section, then maybe we would have the salt exposed to fluid for considerably longer and this would actually give better protection to the salt providing we used a salt-saturated cement, which we plan to do, than the other method.

Q The potash people are in agreement with this procedure?

A Yes, sir. They offered no objection to the previous case and they say this looked all right to them. I believe you have a letter from the potash company.

Q We just got it this morning a little bit before the

hearing and we haven't had a chance to read it yet, so we're going to read it into the record.

MR. UTZ: Are there any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any other statements in these cases? I believe we have some correspondence from the Potash Company of American, which I am sure that the applicants in this case haven't seen or read unless you saw it before I did.

MR. PORTER: I read those letters back there a while ago. I think they're pertinent.

MR. UTZ: I think probably under the circumstances it would be well to read the letter into the record.

MR. HATCH: There are two different letters.

MR. UTZ: There was one for each case.

MR. HATCH: "Oil Conservation Commission of New Mexico, Attention Mr. A. L. Porter, Junior, Secretary-Director, Re: Application of SEC Operating, Case 3411.

"Dear Mr. Porter:

"Comes now Potash Company of America, a Colorado corporation, authorized to do business in the State of New Mexico, hereinafter called PCA, and states:

"That it is the owner of United States of America potash leases covering substantially all of Sections 11, 13 and 14 in

T 20 S, R 33 E noted above and that a body of potash ore is known to exist underlying a large portion of said lands.

"That any waterflood project conducted on said lands should be conducted under special rules embracing all possible protection of the salt section to prevent contamination of the potash ore zone.

"PCA requests that the special rules governing this waterflood project include provisions for testing at regular intervals to insure that liquids are not migrating into any formation except as specifically permitted by the approved program.

"PCA requests that it be notified sufficiently in advance of all test procedures that it can have a representative present during such test. By R. H. Blackman, Resident Counsel."

"Potash Company of American, June 3, 1966, Oil Conservation Commission of New Mexico, P. O. Box 871, Santa Fe, New Mexico, Attention: Mr. A. L. Porter, Jr., Secretary-Director, Re: Application of SEC Operating case No. 3412.

"Dear Mr. Porter:

"I enclose herewith the entry of appearance of Potash Company of America.

"On June 2, we were handed a photocopy of a letter from Cima-Capitan to the Commission dated May 23 by Mr. Hal C. Porter who stated that the letter constitutes the application of SEC

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Operating for an exception to Order R-111-A. The letter states that the applicant proposes to drill a well in the NW/4 NW/4 of Section 14-20-33 in Lea County.

"We will not object to approval of this location and of the drilling and casing procedures except as to Item No. 4, the abandonment procedure. Mr. Carl Engwall and Mr. Porter were present in our office yesterday and agreed that the application would be amended to provide that the well would be plugged and abandoned in accordance with R-111-A, instead of in accordance with the statewide rules. It is upon that condition that we will not enter an objection to the location or to the drilling, casing, plugging and abandonment program as outlined in the letter of May 23 mentioned above.

"While we are not entering an objection under the conditions mentioned above, we do not wish such action to be construed as approval of a well at the proposed location since we feel that any further drilling in the Lea County R-111-A area will be detrimental to ultimate recovery of the potash reserves. We are not entering a formal protest because we feel that the evidence which would be presented at a hearing on such a protest would be substantially similar to the evidence presented in Cases 2182 and 2183, which were heard February 13, 1961. It would appear that those cases would be followed by the Commission, at least until further evidence becomes

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available or changed circumstances warrant further consideration.

"We respectfully request that the Commission Order provide that all phases of the program be conducted in accordance with Order R-111-A, as amended, except as modified in accordance with our understanding if approved by the Commission and we specifically request that the Order provide for abandonment procedures as set forth in Order R-111-A, rather than in accordance with the statewide rules. Very truly yours, H. N. Clark."

MR. UTZ: Are there any other statements?

MR. KELLAHIN: In connection with the letters that have been read, as the witness testified, why we do agree to an abandonment procedure in accordance with R-111-A. As to the requirement for testing at irregular intervals, that's a rather indefinite request. We don't know what kind of tests they are talking about. Certainly the applicant has no objection to making all reasonable tests that seem to be indicated.

It seems quite burdensome as to the nature of tests required. As the witness testified, we intend to run a tracer survey at the outset to determine what zone the water is going into. This, in the first instance, would assure that we are putting the water in the proper zone, which would be adequate protection for the potash companies. At the same time

we do not feel that any further tests of this nature should be required unless our pressure information or injection rates indicate that further tests are necessary.

These matters, of course, will be watched closely and if a test is indicated we will be willing to make it. If the potash company wants tests at regular intervals, we feel that we would be happy to make those tests if they're willing to pay for them, because these tests can be quite expensive, as the Examiner knows. In other words, what we're saying is we don't want to be burdened with tests which are periodic simply to assure the potash company that they're being protected when such tests, in our opinion, are not necessary for such protection. If anything indicates that such a test should be made, we will be happy to make it.

MR. UTZ: On the completion of these injection wells, is it your intention to fill the annulus behind the plastic-coated tubing with an inert fluid with a gauge at the surface so that you can detect any leakage into that area or from the outside into that area?

MR. PORTER: Of course, we had no plans to do this. If the packer is set at the bottom of the casing there will be no pressure upon the casing above the packer except whatever hydrostatic pressure might exist due to fluid being in the annulus between the tubing and the casing, and to determine

where our injected fluid is going, if we did have some leak in the casing or a failure of a cement job, it should be very apparent from pressure and rate variations.

For instance, if a well is leveling off under normal injection, say 200 barrels a day at a thousand pounds, if we should have a leak behind the packer or a cement job failure, then we should have an abrupt change in those conditions and we should be able to detect it.

MR. UTZ: Well, that change would be detected most readily in the annulus, would it not?

MR. PORTER: The annulus would tell you if you had a leak in the packer.

MR. UTZ: In the casing or packer?

MR. PORTER: But at the same time the best way to tell is, of course, to leave your annulus open to the air, if you do have a leak in the packer it will run out and you know it, which is the way most people detect a leaky packer or leaky tubing.

MR. UTZ: If it didn't run through the casing out into the formation?

MR. PORTER: Yes, sir. Of course, if you had a hole in your casing, well, you could determine that by pressuring up on your annulus at regular intervals with fresh water or any other substance.



MR. UTZ: The point I was trying to discuss here is the point that Mr. Blackman brings up here and which I think your attorney has objected to, to some extent anyway, and that is periodic tests to assure that fluid is going into the formation and remaining in that formation. Are you agreeable to running tracer tests which will initially insure that this water is going into the proper formation?

MR. PORTER: Yes, sir.

MR. UTZ: As I understand, you are objecting to running further tracer tests --

MR. PORTER: No, sir, this is not true, as the attorney pointed out, we didn't want it to be so burdensome on us that it would create an economic burden on the project. I suppose it could be required that it be run monthly, which would make the project economically unfeasible.

MR. UTZ: How expensive are tracer tests?

MR. PORTER: Well, of course, they vary, but I would say on the range of three hundred fifty or four hundred dollars is what it would cost to run a proper tracer on an injection well.

MR. PORTER: What would be the interval that you would be willing to make such tests?

MR. PORTER: Well, we don't normally run those unless they're required, unless there is a need for them, and you can

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always tell when you have, nearly always tell, have in the past, when you do have a rupture of a casing or bad cement job. Economically what it could stand, I don't know. If we did it once a year, say, then we'd be talking about three to four hundred dollars per year per well, which I would say would not be too burdensome.

If it were any more often than once a year I think it would be unreasonable. However, I would add this, that as a matter of determining what was happening, I would suggest that the potash company be furnished with our Form C-120, which is furnished to the Commission, in order that they may observe our pressure and rates, also that we run a tracer survey initially and then if conditions do not change to warrant a tracer, that we check the casing by pressuring up on it in the annulus, which would be quite a bit cheaper.

MR. UTZ: Unless something happens in the annulus or in your pressure rates, pressure or rates, then chances are that the water is going wherever it started to go initially, is that correct?

MR. PORTER: I would say, yes, sir, it is, correct.

MR. UTZ: Are there any other statements? The case will be taken under advisement. We'll take a short recess.

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I N D E X

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SEC OPERATING'S	2
1 through 6	14
	<u>OFFERED & ADMITTED</u>

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STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

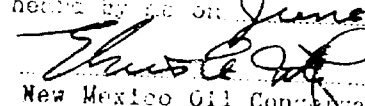
I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings,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

Witness my Hand and Seal this 11th day of June, 1966.


NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner Hearing of Case No. 3411 & 2412 heard by me on June 8, 1966.

Examiner
New Mexico Oil Conservation Commission



POTASH COMPANY OF AMERICA

MINE AND REFINERY: P. O. BOX 31 • CARLSBAD, NEW MEXICO 88220 • AREA CODE 505 • TU 7-2824

MAIL ROOM

'66 JUN 8 AM 7 27

R. H. BLACKMAN
RESIDENT COUNSEL

June 6, 1966

Oil Conservation Commission
of New Mexico
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Re: Application of SEC
Operating Case No. 3411

Dear Mr. Porter:

I enclose herewith appearance of Potash Company of America
in triplicate in the above entitled matter.

Very truly yours,


R. H. Blackman
Resident Counsel

RHB:pw
Enc.

cc: Mr. Robert S. Fulton
U.S.G.S. - Carlsbad

Mr. John Anderson
U.S.G.S. - Roswell



MEMBER: AMERICAN POTASH INSTITUTE

BEFORE THE OIL CONSERVATION COMMISSION
OF NEW MEXICO

MAILED

'66 JUN 8 AM 7 27

APPLICATION OF SEC OPERATING FOR
WATERFLOOD PROJECT IN SECTIONS 11,
13, 14, & 15 T 20 S, R 33 E, TEAS
POOL, LEA COUNTY, NEW MEXICO

CASE NO 3411

Comes now Potash Company of America, a Colorado corporation,
authorized to do business in the State of New Mexico, hereinafter called
PCA, and states:

That it is the owner of United States of America potash leases
covering substantially all of Sections 11, 13 and 14 in T 20 S, R 33 E
noted above and that a body of potash ore is known to exist underlying
a large portion of said lands.

That any waterflood project conducted on said lands should
be conducted under special rules embracing all possible protection of
the salt section to prevent contamination of the potash ore zone.

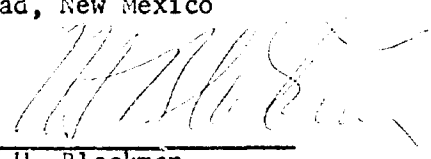
PCA requests that the special rules governing this waterflood
project include provisions for testing at regular intervals to insure
that liquids are not migrating into any formation except as specifically
permitted by the approved program.

PCA requests that it be notified sufficiently in advance of
all test procedures that it can have a representative present during
such test.

Respectfully submitted,

POTASH COMPANY OF AMERICA
P. O. Box 31
Carlsbad, New Mexico

By


R. H. Blackman
Resident Counsel



POTASH COMPANY OF AMERICA

MINE AND REFINERY: P. O. BOX 31 • CARLSBAD, NEW MEXICO • TOLSON 2111

AM 7 28
JUN 7 1966

H. N. CLARK
VICE PRESIDENT - PRODUCTION

June 3, 1966

Oil Conservation Commission
of New Mexico
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Re: Application of SEC
Operating case No. 3412

Dear Mr. Porter:

I enclose herewith the entry of appearance of Potash Company of America.

On June 2, we were handed a photocopy of a letter from Cima-Capitan to the Commission dated May 23 by Mr. Hal C. Porter who stated that the letter constitutes the application of SEC Operating for an exception to Order R-111-A. The letter states that the applicant proposes to drill a well in the NW/4 NW/4 of Section 14-20-33 in Lea County.

We will not object to approval of this location and of the drilling and casing procedures except as to Item No. 4, the abandonment procedure. Mr. Carl Engwall and Mr. Porter were present in our office yesterday and agreed that the application would be amended to provide that the well would be plugged and abandoned in accordance with R-111-A, instead of in accordance with the statewide rules. It is upon that condition that we will not enter an objection to the location or to the drilling, casing, plugging and abandonment program as outlined in the letter of May 23 mentioned above.

While we are not entering an objection under the conditions mentioned above, we do not wish such action to be construed as approval of a well at the proposed location since we feel that any further drilling in the Lea County R-111-A area will be detrimental to ultimate recovery of the potash reserves. We are not entering a formal protest because we feel that the evidence which would be presented at a hearing on such a protest



MEMBER: AMERICAN POTASH INSTITUTE

Mr. A. L. Porter, Jr.

- Page Two -

June 3, 1966

would be substantially similar to the evidence presented in Cases 2182 and 2183, which were heard February 13, 1961. It would appear that those cases would be followed by the Commission, at least until further evidence becomes available or changed circumstances warrant further consideration.

We respectfully request that the Commission Order provide that all phases of the program be conducted in accordance with Order R-111-A, as amended, except as modified in accordance with our understanding if approved by the Commission and we specifically request that the Order provide for abandonment procedures as set forth in Order R-111-A, rather than in accordance with the statewide rules.

Very truly yours,



H. N. Clark

HNC:pw

Enc:

cc: Mr. Robert S. Fulton
U.S.G.S. - Carlsbad

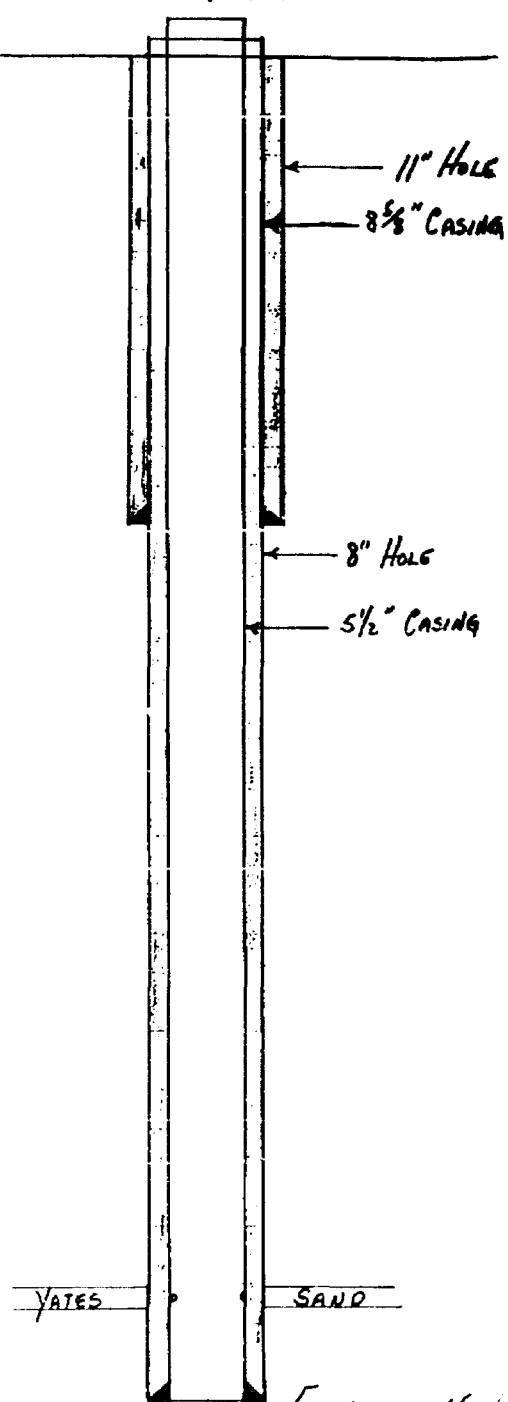
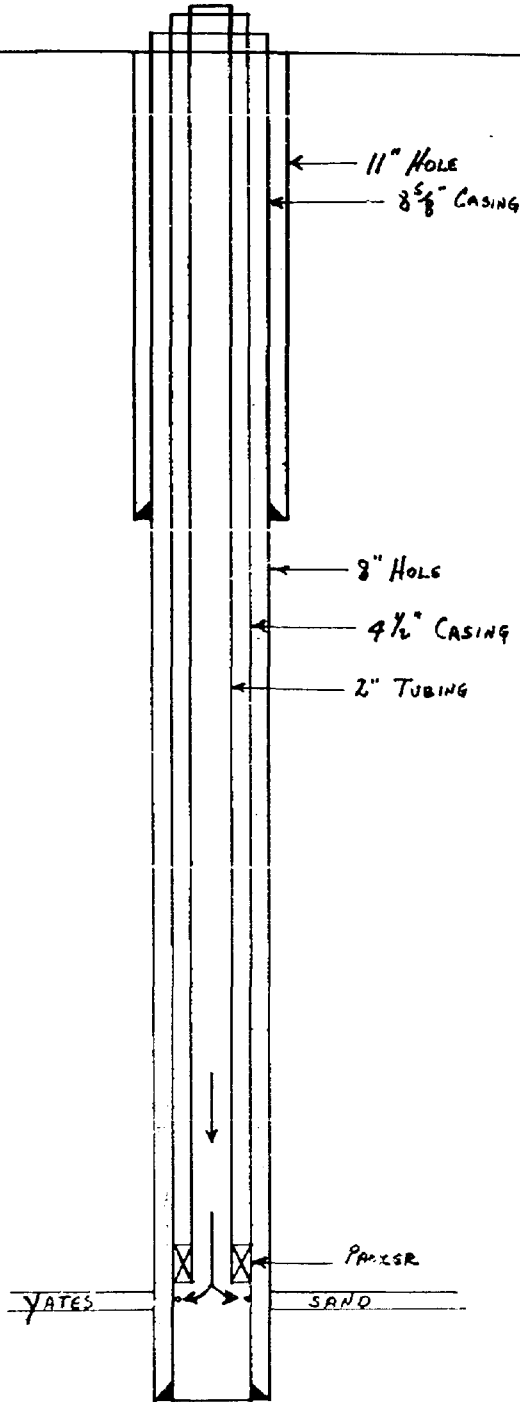
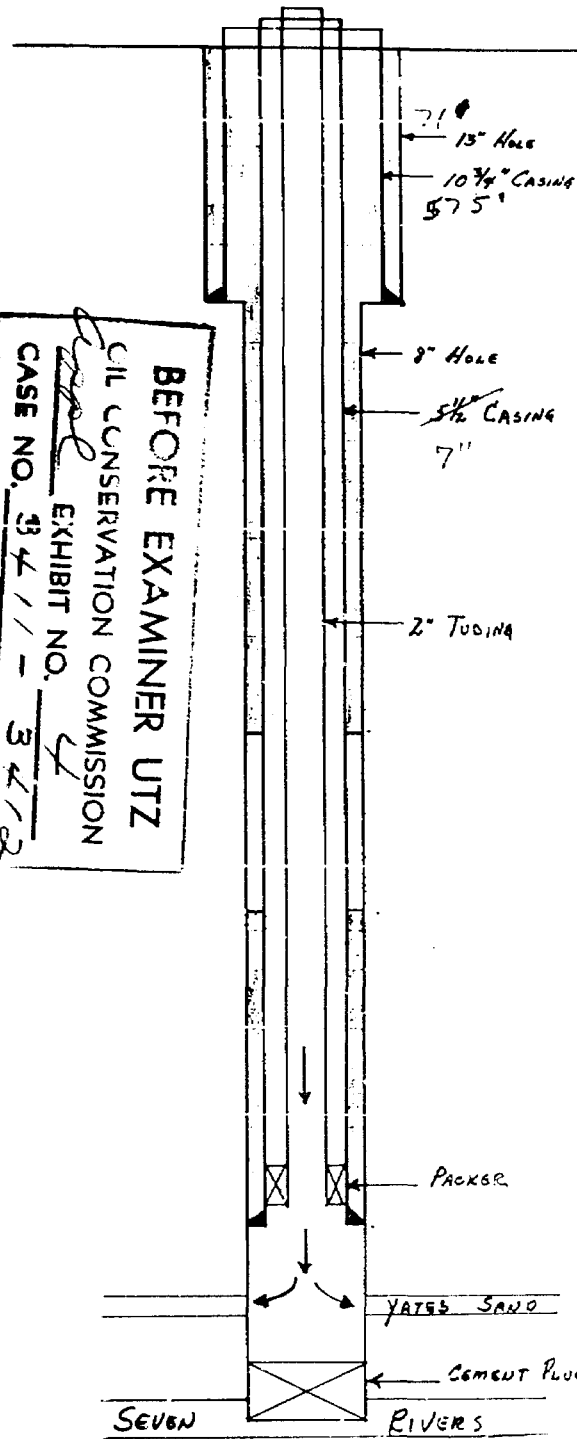
Mr. John Anderson
U.S.G.S. - Roswell

Mr. Hal C. Porter
Chief Engineer
Cima-Capitan, Inc.
312 Booker Bldg.
Artesia, New Mexico

CONVERSION OF PRESENT
WELL TO INJECTION

COMPLETION OF NEW
INJECTION WELL

COMPLETION OF NEW
PRODUCING WELL



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3411 - 3413

EXHIBIT No. 1

TEAS PROJECT

WELL COMPLETION DATA

WELL NAME LOCATION	COMPL. DATE ELEVATION	CASING SIZE-DEPTH-SACKS	ORIG. T. D.	OPEN HOLE	I. P.	TREATMENT	Cum. Prod. 1-1-66	REMARKS
FEDERAL A No. 1 (D-14-20-33)	9-28-53 3582	5 1/2-3254-50	3385	3234-3385	170	NATURAL	82768	
FEDERAL A No. 2 (C-14-20-33)	10-29-53 3587	7-3240-400 July 75 490	3278	3240-3278	75	SF 7500	72181	W.H. Blo W.H. 11 G.H. Cur.
FEDERAL A No. 3 (F-14-20-33)	12-16-53	7-3330-300 4 1/2-3392	3392	3130-3392	144	NATURAL	79549	
FEDERAL A No. 4 (E-14-20-33)	1-22-54	7-3370-300	3416	3370-3410	37	6000 ACID	48279	PB 3410
FEDERAL B No. 1 (K-14-20-33)	2-28-54 3596	7-3280-375	3325	3280-3325	257	SF 8000	106091	
FEDERAL C No. 1 (N-14-20-33)	4-16-54 3596	7-3297-400	3339	3297-3339	118	SF 10000	29445	

TEAS PROJECT
WELL COMPLETION DATA

DATE	CASING	ORIG.						
	SIZE-DEPTH-SACKS	T. D.	OPEN HOLE	I. P.	TREATMENT	Cum. Prod. 1-1-66	REMARKS	
3	5 1/2 - 3254 - 50	3385	3254-3385	170	NATURAL	32768		
53	7 - 3240 - 100	3278	3240-3278	75	SF 7500	72781	V.H. P. 3278	
17	July 7, 54 490						4th Line 3278 Co. -	
53	7 - 3330 - 300 4 1/2 - 3392	3392	3330-3392	144	NATURAL	79549		
54	7 - 3370 - 300	3416	3370-3410	37	6000 ACID	48279	PB 3410	
54	7 - 3280 - 375	3325	3280-3325	257	SF 8000	106097		
54	7 - 3297 - 450	3339	3297-3339	118	SF 10000	29445		

BEFORE EXAMINER UTZ
CONSERVATION COMMISSION
EXHIBIT NO. 3411-3412

W
from Hal Parker by phone

SEC Operating

water flood project Yates formation

Trd A # 2 NE NW 14 20S 33E

Teas Pool, Lea Co.

propose to expand to include; as many as 10

11, 15, 14 & 13

under coop effort operator