Case Number

6034

Application

Transcripts.

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 14, 1977

EXAMINER HEARING

IN THE MATTER OF:

Application of Flag-Redfern Oil Company for salt water disposal, Lea County, New Mexico. CASE 6034

BEFORE: Richard L. Stamets, Examiner.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission:	Lynn Teschendorf, Esq. Legal Counsel for the Commission State Land Office Building Santa Fe, New Mexico
For the Applicant:	W. Thomas Kellahin, Esq. KELLAHIN & FOX Attorneys at Law 500 Don Gaspar Santa Fe, New Mexico

I N D E X

EXHIBIT INDEX

MR. STAMETS: Call next case, Case 6034.

MS. TESCHENDORF: Case 6034, application of Flag-Redfern Oil Company for salt water disposal, Lea County, New Mexico.

MR. STAMETS: Call for appearances in this case?

MR. KELLAHIN: Tom Kellahin, Kellahin & Fox, Santa Fe, appearing on behalf of the applicant and I have one witness.

(THEREUPON, the witness was sworn.)

STEVE ROSSLER

was called as a witness by the applicant, and having been first duly sworn, testified upon his oath as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name and by whom you are employed and in what capacity?

A. I am Steve Rossler and I am employed as a Petroleum Engineer for Flag-Redfern Oil Company in Midland.

Q. How do you spell your last name, Mr. Rossler?

A. R-o-s-s-l-e-r.

Q. You have not previously testified before the Commission have you?

A. No.

Q. For the benefit of the Examiner would you please tell him when and where you have obtained your degrees?

A. I obtained a Bachelor of Science in Petroleum Engineering from Texas Tech University in August of '73.

Q. Since graduation in August of '73, where have you been employed and in what capacity?

A. I have been employed for two years mainly offshore Louisiana and the other two years, up to the present time, in Midland, Texas, for the west Texas area and southeast New Mexico, as a Petroleum Engineer in both cases.

Q. You have had previous experience in Texas, I believe, with regards to the completion of a salt water disposal well?

A. That is correct.

Q. And you have made a study of and are familiar with the facts surrounding this particular salt water disposal application?

A. Yes, sir.

MR. KELLAHIN: If the Examiner please, are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q. (Mr. Kellahin continuing.) Mr. Rossler, would you refer to what I have marked as Applicant's Exhibit Number One and commence with page one of that exhibit and explain to the Examiner what Flag-Redfern is seeking to accomplish?

A. Okay. Flag-Redfern is seeking to convert our

present Bilbrey 51, No. 1, from a producing well into a disposal well.

We desire to dispose of our San Andres water into the same perforations in which the well is presently completed in.

I have shown here on page number one of my exhibit there our application to the New Mexico Oil Conservation Commission and gave them the various information that they required, surface casing, long string casing tube and how I am going to dispose of the water into the perforations.

My anticipated daily disposal is going to be two hundred and twenty-five barrels a day.

Q. Your form, page number one, indicates a minimum and maximum barrels of daily disposed water. What are those minimums and maximums?

A. Okay. The minimum is expected to be one hundred and seventy-five barrels a day and maximum of three hundred and fifty.

Q. The maximum, in fact, is not correct is it?

A. The maximum is going to vary once the system is set up on how much accumulation of disposal water we have in our tanks there and the mechanical problems and this, that, and the other there.

My daily production from the leases involved is two hundred and twenty-five barrels a day.

Q. You said you have two hundred and twenty-five barrels of water a day to dispose of. How many wells are you talking about that produce water that needs to be disposed of?

A. We are talking about seventeen wells in this field that we are going to connect to the system.

Q. Is this all San Andres water production?

A. Yes, sir.

Q. What will be the zone of injection for the disposal well?

A. The disposal zone will also be the San Andres so the water quality will be equal.

Q. Your form on page one indicates an approximate pressure of two thousand PSI at the surface. Is that, in fact, your request?

A. No, sir. My request is for eleven hundred and thirty pounds. I have based this pressure on a frack gradient for the surrounding area of this well which is also located on page eight of this exhibit.

Q. We will come back to that in a minute. If the Examiner please, if you will turn to the second page on the far left of the folder -- would you summarize, Mr. Rossler, what is contained on that addendum?

A. Okay. What I am asking for here is a surface injection gradient of point two three oh three PSI per foot

of depth and the present New Mexico rules are point two.

Q. Why do you believe the PSI per foot of depth ought to exceed zero point two?

A. This is based on the simulation of the surrounding wells in this field and based on the shut in pressures through known engineering calculations to arrive at a fracture gradient for the San Andres formation.

Q. Let's come back to that again in a moment. Would you refer to what you have marked as page two of Applicant's Exhibit Number One and identify it?

A. Yes. This is the analysis of the water that was taken from the Bilbrey 51, No. 1, which is our disposal well showing the quality of the San Andres water there. This is the same water that will be disposed into this well.

Q. All right. Refer to page three and identify it?

A. Page three is a location plat there showing the subject well there and the lease description.

Q. Page four?

A. Page four is a schematic of my proposed disposal well, once approval is given, showing a packer which is designed to be set and hold pressure from above or below.

It shows my producing interval which is the present perfs of the well and the top of the cement and the outside of my production casing.

Q. In your opinion, Mr. Rossler, will the injected

disposal water be confined in the San Andres formation?

A. The disposed water will be confined in the San Andres formation.

Q. How do you intend to monitor this well?

A. This well will be monitored with pressure gauges on both the tubing and the annulus and a drastic change in either one will, of course, result in remedial action to find out what the problem is. It will be monitored daily.

Q. Will you fill the space between the tubing and the casing?

A. The space between the tubing and the casing or annulus will be filled with corrosion inhibited fluid.

Q. I note that your tubing string is internally coated?

A. Yes, sir, as well as the packer.

Q. Would you refer to page five of your exhibit and identify it?

A. Page five is a county map there and in the center of the circle is our proposed disposal well. I have shown wells within a one mile radius and a two mile radius.

Q. The location of offsetting wells have been identified in a tabular form on a subsequent page, have they not?

A. Yes, sir.

Q. Please refer to page number six and identify it?

A. Page number six is a letter to the United States Geological Survey concerning disposal into this well since

it is on a federal lease, but they do require New Mexico approval for that.

Q. I direct your attention to page eight, now, and explain to the Examiner what is on page eight?

A. My page number eight is a tabulation of fracture gradients for the San Andres formation for the seven surrounding wells surrounding our disposal well.

This table was taken and based on our instant shut in pressures after our initial treatment of the well which is, as you can see, is subtitled "Instant Shut in Pressure", and I have taken that pressure and gone through a formula which has been widely accepted by the petroleum industry which is on page nine and I have calculated the bottom hole fracture pressure for that particular well bore.

I have gone ahead and summated these seven wells in one -- the additional well, the disposal well -- and it proved that my formation fracture gradient is point seven three-three nine PSI per foot of depth.

Now, for my injection pressure at the surface of point two three oh three this is just the difference between the hydrostatic head and the fracture gradient.

Q. Refer to page ten and identify page ten and the subsequent pages, what is this tabulation?

A. Pages ten through sixteen is a synopsis of the wells within one mile around the disposal well showing their

locations and showing their total depth, the productive interval, which is the San Andres, the surface casing and the cement behind it and our production casing and the cement behind it.

Q. In your opinion, Mr. Rossler, is there any danger of contamination to any fresh water sources in this area?

A. No, sir, there is not.

Q. Are there any fresh water sources in the area?

A. No, sir, there is not.

Q. Have you found evidence in any of the offsetting wells or defective casing or cement jobs which would cause contamination to other zones by the injection of water into the San Andres formation from this disposal well?

A. No, sir.

Q. Please refer to Exhibit One, page sixteen, and tell me what that is?

A. This exhibit is the schematic of the only plugged and abandoned well within a mile radius. It was drilled by the Flag-Redfern Oil Company there and plugged and abandoned in 1973.

It shows the San Andres interval there is protected by a bridge plug and a short cement plug and three additional cements plugs. It shows my cement on the outside of my casing which is all verifying that the San Andres water being disposed of in my Bilbrey No. 1 cannot come up in this well

bore and contaminate the other zones.

Q. Exhibit One, pages seventeen and eighteen, what are these tracings?

A. Page seventeen there is a structure map based on the prime marker in the San Andres formation showing sub-sea depth there and it included there to give you a general idea of the contour of the formation.

This prime marker, incidentally, is one hundred and fifty-five to one hundred sixty-five above our top of the standard porosity there where all of the wells are perforated in.

Page eighteen, is my line of section for my cross section to follow there. I have taken a north-south cross section cutting which follows the slope of the formation in an east-west -- or rather a west-east cross section, also.

Q. Refer to page nineteen and the cross section that you have compiled?

A. The cross sections, northeast-southeast cross sections, it is a cross section of the five wells shown on the previous page and on this cross section I have tied together all of the pi zones in the top of the San Andres porosity between the five wells.

As you can see there is no sub-structural unconformities or faults across this area where disposed water may creep to a different formation.

Q. Is the pi zone a readily identifible in all of these wells?

A. Yes, it is.

Q. Would you identify which of the logs is the disposal well?

A. The logs at the top are labeled number two is the Bilbrey No. 1. This will be my disposal well. It also has perforations marked on it.

Q. Do you have any other comments with regard to this exhibit?

A. No, sir.

Q. All right. Please turn to page twenty and identify it?

A. Page twenty is another cross section of my east-west area of the field showing the same information. All of these -- both cross sections are logged on a sub-sea depth.

Q. What is the reason for the inclusion of the two cross sections?

A. To show that there is no fault in between the wells and all of these wells are within at least one half mile of our disposal well and no structural unconformities that may lead to the disposal water escaping from the San Andres zone.

Q. Page twenty-one, Mr. Rossler, what is that?

A. Page twenty-one is a tabular production for my

proposed disposal well showing oil, gas and water production from the time the well was put on line to the present.

Q. What is the current status of the well?

A. The current status of the well is that it is pumping one barrel of oil a day, thirty-one water, and thirty-nine MCF a day.

Q. Page twenty-two?

A. Page twenty-two shows my production of my disposal well in graphical form.

Q. Page twenty-three, what is that?

A. Page twenty-three is my tabular production for the Bilbrey 51 lease which the proposed well is located in.

Q. How many other San Andres wells are in this lease?

A. There are three other San Andres wells besides the proposed disposal well.

Q. Let me direct your attention now to pages twenty-five to thirty-eight and ask you to summarize what those pages contain?

A. These pages have been included in this report to support my frack pressure gradient there. They are the actual treatment reports of the seven wells surrounding my proposal well showing the shut in pressure and the pressure that it took to break down the formation.

All of these have been included to help support my application for a higher surface injection pressure.

Q. If I understand you correctly, the information contained on pages twenty-five through thirty-eight was used to compile your tabular page eight showing the facture gradients for the different wells?

A. That is correct.

Q. Mr. Rossler, was Exhibit One of the applicant prepared by you directly or compiled under your direction and supervision?

A. Yes, it was.

Q. In your opinion will the granting of this application be in the best interest of conservation, prevention of waste, and the protection of correlative rights?

A. Yes, it will.

MR. KELLAHIN: We move the introduction of Exhibit One.

MR. STAMETS: Exhibit One will be admitted.

MR. KELLAHIN: That concludes our examination of Mr. Rossler.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Rossler, utilizing the figure of point two three oh three PSI at the surface plus the weight of the water which would point five oh three -- add those two together -- just the weight of the water would be point seven three-three.

Does that provide any margin of safety in this particular case against fracturing?

A. Yes, sir, it does, because under injection conditions there you will have friction. I propose to dispose of approximately one third of a barrel per minute. My friction pressure even though it will be a small amount it will be under a hundred pounds and that is not included in here. So, therefore, this point two three oh three does allow for approximately a hundred pound safety factor.

Q. And of course when you shut down you have got no injection pressure and that will come off?

A. That's right.

Q. Now, you calculated the top of the cement on some of these wells on pages ten, twelve and thirteen, however far that goes along -- maybe ten, eleven, twelve, thirteen, fourteen, and fifteen.

How did you calculate that?

A. I am sorry. I should have showed you. On page fifteen there at the bottom I have got two notes -- all of my production casing strings were set in seven and seven-eighths hole and all the calculations on cement tops were based on seventy-five percent fillup.

Q. Does that match pretty well match what you found in those holes that did have a temperature survey?

A. Yes, sir. The only well that had a temperature

survey, it was five and a half casing, different, than all of the other wells. They put fifty sacks of cement less and just on a comparison basis it does calculate out to be -- approximate top of the cement there is reliable.

Q. I notice that this well is one of the highest structurally on your lease. Why was this particular well picked?

A. This well was picked because of the high water production of thirty-one barrels a day.

Q. Even though it was high structurally it made a lot of water?

A. Yes, sir. In fact, the highest one on the structure was that plugged and abandoned one, Bilbery 91, and it was proved to be water which condemned that portion of the field up there.

Q. You indicated that there would be seventeen wells which would be sending water?

A. Yes, sir. There are twenty-two wells that we operate in the field. The other wells are not going to be connected to the system because they make just a small amount of water.

Q. Is this all this same lease or is it different leases involved?

A. There will be five leases that will be joined in this system. They are located on page six.

Q. Just for the record which five leases are those?

A. Okay. The five leases are the Bilbrey 23; the Bilbrey 51; the Yates 60 Federal; the Brown 93; and the Allied 93.

MR. STAMETS: Okay, thank you. Are there any other questions of this witness? He may be excused. I would like to congratulate the witness and the attorney for presenting the required evidence in such an efficient manner and they have all the data required here and we appreciate it.

MR. KELLAHIN: Thank you, sir.

MR. STAMETS: We will recess the hearing at this time until one-fifteen.

(THEREUPON, the witness was excused and the hearing was in recess.)

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6034, heard by me on 9-14, 1977.

Richard L. Stamets, Examiner
New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

DIRECTOR
JOE D. RAMEY

LAND COMMISSIONER
PHIL R. LUCERO

STATE GEOLOGIST
EMERY C. ARNOLD

Re: CASE NO. 6034
ORDER NO. R-5539

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

Applicant:

Flag-Redfern Oil Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other

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. 6034
Order No. R-5539

APPLICATION OF FLAG-REDFERN OIL
COMPANY FOR 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 September 14, 1977, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 18th day of October, 1977, 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, Flag-Redfern Oil Company, is the owner and operator of the Bilbrey "51" Well No. 1, located in Unit A of Section 23, Township 9 South, Range 37 East, NMPM, Sawyer-San Andres Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres formation, with injection into the perforated interval from approximately 4941 feet to 5022 feet.

(4) That the injection should be accomplished through 2 3/8-inch internally coated tubing installed in a packer set at approximately 4900 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1138 psi.

(6) That the operator should notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(8) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Flag-Redfern Oil Company, is hereby authorized to utilize its Bilbrey "51" Well No. 1, located in Unit A of Section 23, Township 9 South, Range 37 East, NMPM, Sawyer-San Andres Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4900 feet, with injection into the perforated interval from approximately 4941 feet to 5022 feet;

PROVIDED HOWEVER, that the tubing shall be internally coated; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1138 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(6) 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

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

S E A L

jr/

DOCKET NO. 28-77
EXAMINER HEARING
SEPTEMBER 14, 1977
CASE 6034

Application of Flag-Redfern Oil Company for salt water disposal, Lea County, New Mexico. Applicant in the above-styled cause seeks authority to dispose of produced salt water into the San Andres formation through the perforated interval from 4941 to 5022' in its Bilbrey "51" Well No. 1, located in Unit A of Section 23, Township 9 South, Range 37 East, Sawyer (San Andres) Pool, Lea County, New Mexico.

CASE 6034

Flag-Redfern Oil Company requests approval to dispose of produced salt water in the San Andres formation through the Bilbrey "51" Well No. 1. Permission is also requested to dispose at a surface injection pressure gradient of 0.2303 psi per foot of depth to the top of the disposal zone, based upon the San Andres fracture gradient of 0.7339 psi per foot. This would allow for a maximum surface injection pressure of 1138 psig.

TABLE OF CONTENTS

MEXICO OIL CONSERVATION COMMISS

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

OPERATOR	ADDRESS
Flag-Redfern Oil Company	P. O. Box 23, Midland, Texas 79702

LEASE NAME	WELL NO.	FIELD	COUNTY
Bilbrey "51"	1	Sawyer (San Andres)	Lea

LOCATION

UNIT LETTER A ; WELL IS LOCATED 660 FEET FROM THE North LINE AND 660 FEET FROM THE East LINE, SECTION 23 TOWNSHIP 9S RANGE 37E NMPM. Fed. Lse. LC-065151

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8-5/8"	415'	250	Surface	Circulated
INTERMEDIATE	None				
LONG STRING	4-1/2"	5070'	250	3827'	Calculated
TUBING	2-3/8"	4934'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Model "R" set at 4900'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
San Andres	4774'	Not drilled through

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Through tubing	Perforations	4941-5022'

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	For oil production	No

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

-

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 useable water aquifers	No higher oil or gas zones	Devonian - 11,618'

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
225 / 175	350	Closed	Pressure	2000

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)

W. P. Bilbrey, Route 1, Crossroads, New Mexico

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

No offset operators within 1/2 mile of well

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	NA	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.

(Signature)	Petroleum Engineer (Title)	8-11-77 (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.

Cardinal

ANALYTICAL SERVICE LABORATORY

CARDINAL

Date 1-12-73

Report No. _____

Company Flag Redfern

Address

Attention Mr. Graves

Recent Treatments

County Lea

Field

Formation San Andres

Date 1-11-73
Sampled Evening

Lease Bilbrey

Well No. #1

Depth

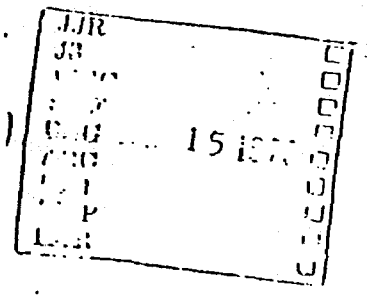
Sample Source Well-head

WATER ANALYSIS
(Reported as mg per Liter)

Specific Gravity	1.160	pH	4.5
Chloride	144,000	Calcium	28,000
Bicarbonate	1269	Magnesium	2160
Sulfate	280	Total Iron	Nil
Sulfide	Strong	Sodium (Calc.)	57,569
Total Hardness (as Ca CO_3)	79,000	Total Dissolved Solids (Calc.)	203,378

Resistivity Ohm Meters @

Remarks:



Analyst John A. Sims

Cardinal Representative _____

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Flag-Redfern Oil Company	Bilbrey 51	1

Unit Letter	Section	Township	Range	County
A	23	9-S	37-E	Lea

Actual Footage Location of Well: 660 feet from the North line and 660 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3981	San Andres	Sawyer (DESIGNATED)	160 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

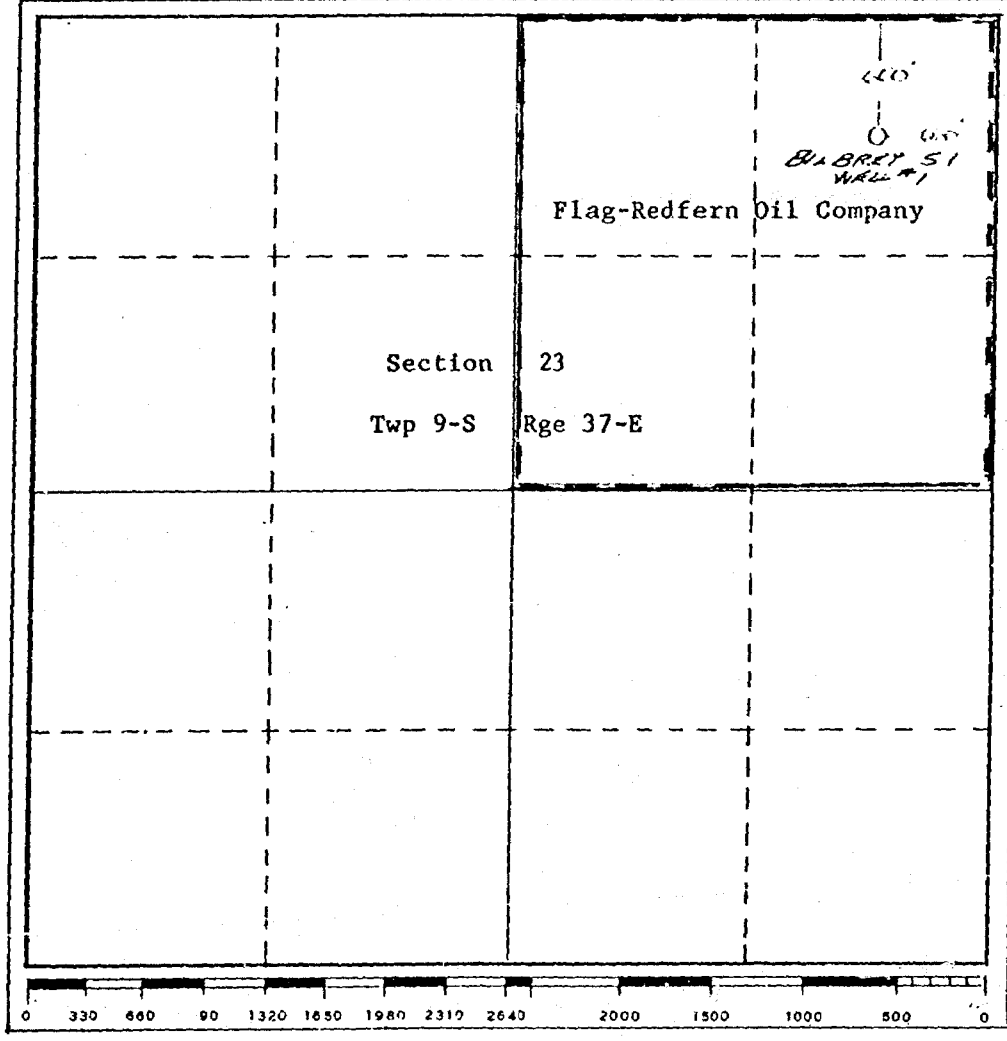
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☒ No If answer is "yes!" type of consolidation _____

If answer is "no!" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



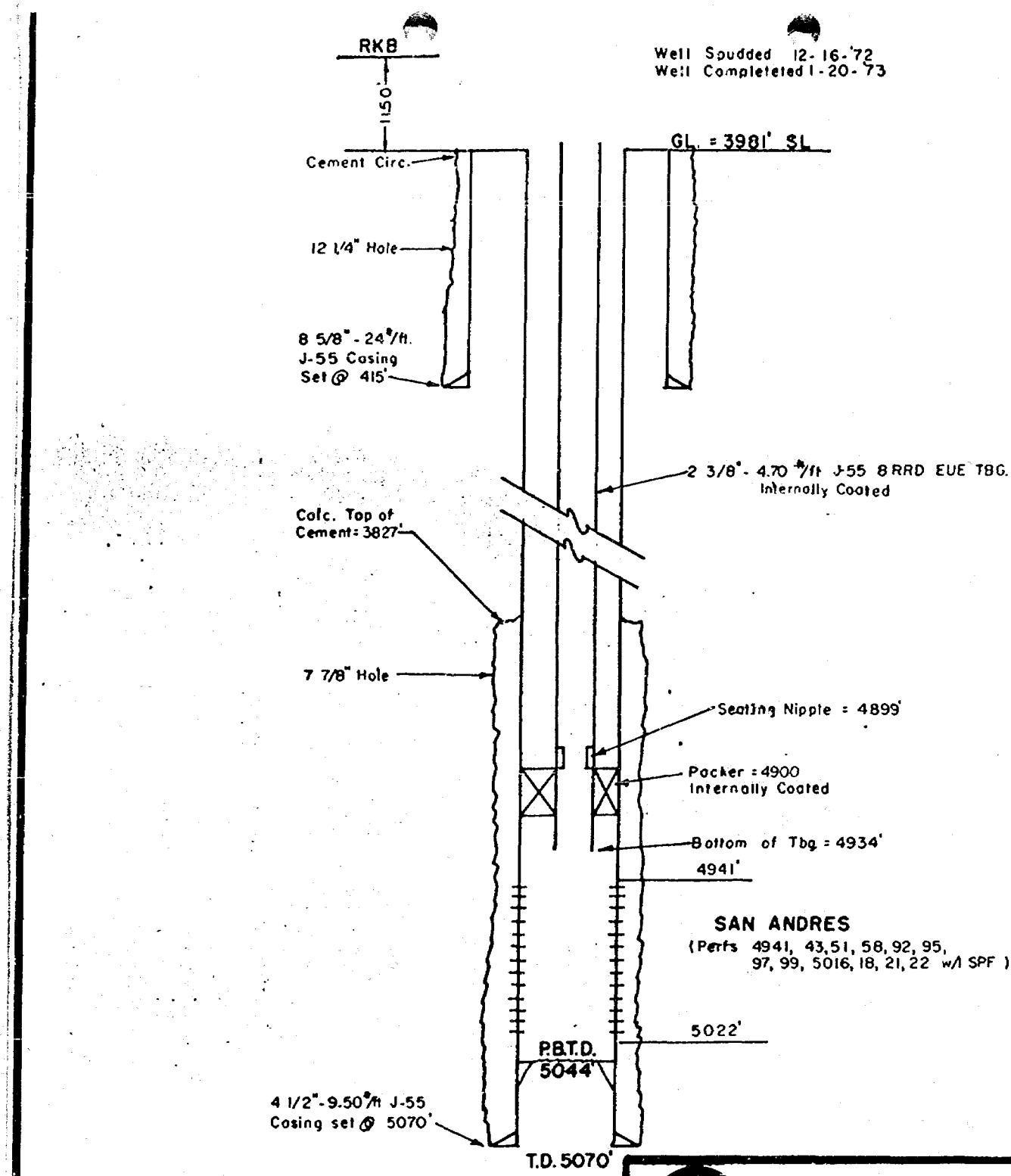
CERTIFICATION

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

Name: Bryan H. Shaw
Position: Production Manager
Company: Flag-Redfern Oil Company
Date: 11-9-72

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 11-X-72
Registered Professional Engineer and/or Land Surveyor: Ronald W. Eaton
Certificate No. 754



Flag-Redfern Oil Company

1200 WALL TOWERS WEST • MIDLAND, TEXAS 79702

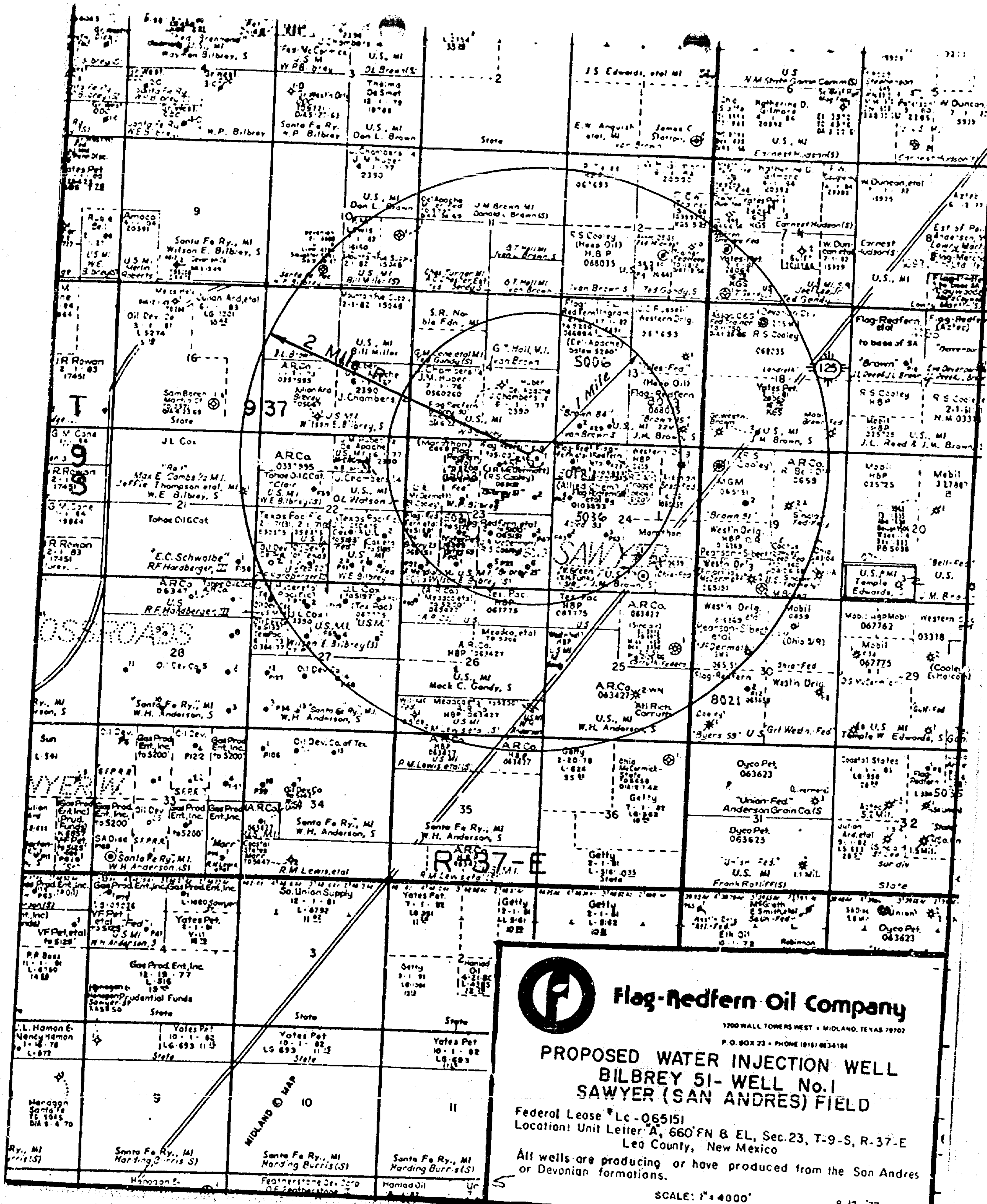
P. O. BOX 23 • PHONE (915) 683-5184

WELL PROFILE

PROPOSED WATER INJECTION WELL
BILBREY 51 - Well No. 1
SAWYER (SAN ANDRES) FIELD

Federal Lease #Lc-065151
Location: Unit Letter 'A', 660' FN & EL, Sec. 23, T-9-S, R-37-E
Leo County, New Mexico

8-12-'77



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P.O. BOX 23 • PHONE (915) 683-6184

PROPOSED WATER INJECTION WELL
BILBREY 51- WELL No.1
SAWYER (SAN ANDRES) FIELD

Federal Lease #Lc-065151

Location: Unit Letter "A", 660'FN & EL, Sec.23, T-9-S, R-37-E
Lea County, New Mexico

All wells are producing or have produced from the San Andres or Devonian formations.

SCALE: 1" = 4000'

8-12-'77

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Flag-Redfern Oil Company
1200 WALL TOWERS WEST • MIDLAND, TEXAS 79701 • PHONE (915) 683-5184

July 22, 1977

Mailing address:
P. O. Box 23
Midland, Texas 79702

File:

United States Department of the Interior
Geological Survey
P. O. Box 1157
Hobbs, New Mexico 88240

Attention: Mr. Arthur R. Brown

Re: Application for Salt Water
Disposal Permit
Bilbrey "51" Well No. 1
Lease No. LC-065151
Sawyer (San Andres) Field
Lea County, New Mexico

Dear Mr. Brown:

Flag-Redfern Oil Company hereby requests a permit for salt water disposal for the above captioned well. As per your requirements listed in Bulletin NTL-2B, the following information is provided:

1. Proposed disposal well - Bilbrey "51" No. 1
660' FNL & 660' FEL of Section 23, T-9-S, R-37-E
Lea County, New Mexico
Lease No. LC-065151

2. The daily quantity of disposed water will be 225 barrels, which will be San Andres produced water from the following leases:

Lease	Lease No.	San Andres Water Prod.
Bilbrey "23"	LC065151	82 BWPD
Bilbrey "51"	LC065151	24 BWPD
Yates "69" Fed.	NM16369	20 BWPD
Brown "93"	NM0103893-A	21 BWPD
Allied "93"	NM0103893	78 BWPD
Total Water to be Disposed -		225 BWPD

A water analysis for the Bilbrey "51" No. 1 is attached.

3. The proposed disposal interval is the San Andres formation through the perforated interval 4941-5022'.

4. The quality of the fluids in the injection interval is the exact same as the water to be disposed of.

5. There are no useable water aquifers in the area.

6. Casing strings:
   a. Surface Casing: 8-5/8", 24#/ft, J-55 casing set at 415' in 12¼" hole and cemented with 250 sacks of Class "C" w/2% CaCl. Cement was circulated to the surface.
   b. Production Casing: 4-1/2", 9.50#/ft, J-55 casing set at 5070' in 7-7/8" hole and cemented with 250 sacks of Class "C" w/2% gel, 0.75% CFR-2 and 8 lb/sk of salt. Calculated top of cement behind this casing string is 3827'.

7. The total depth of this well is 5070' and the plug back depth is 5044'.

8. The proposed method of completing the Bilbrey "51" Well No. 1 for disposal provides for running a 2-3/8" X 4-1/2" internally coated Baker Model "R" retrievable packer on 2-3/8", 4.70#/ft, J-55 internally coated tubing and setting the packer at 4900'. Anticipated disposal pressure will be 2000 psig. The corrosion inhibitor that will be placed in the tubing-casing annulus will consist of fresh water with 1% of Tretolite KW-37 corrosion inhibitor and 10 lbs of K-4-70 oxygen scavenger.

9. The disposal well will be monitored daily as to the disposal rates and pressures. On the basis of radical changes in rates and pressures, a radioactive tracer survey will be run to confirm that disposal is confined to the San Andres interval. Upon the necessity of having to shut down this disposal system, all produced water will be hauled off lease and disposed of into approved New Mexico Salt Water Disposal Company systems, as it is currently being disposed of.

Flag-Redfern Oil Company will be pleased to provide any additional information that you might deem necessary for the approval of this salt water disposal permit.

Sincerely,

Steve Rossler
Petroleum Engineer

SR:ss

Attachment

7

Cardinal

ANALYTICAL SERVICE LABORATORY

Date 1-12-73

CARDINAL

Report No.

Company Flag Redfern

Address

Attention Mr. Graves

Recent Treatments

County Lea

Field

Formation San Andres

Date Sampled 1-11-73 Evening

Lease Bilbrey

Well No. 51 #1

Depth

Sample Source Well-head

WATER ANALYSIS

(Reported as mg per Liter)

Specific Gravity	1.160	pH	4.5
Chloride	144,000	Calcium	28,000
Bicarbonate	1269	Magnesium	2160
Sulfate	230	Total Iron	Nil
Sulfide	Strong	Sodium (Calc.)	57,569
Total Hardness (as $CaCO_3$)	79,000	Total Dissolved Solids (Calc.)	203,378
Resistivity Ohm Meters @			

Remarks:

JJR
JB
15

Analyst John A. Sims

Cardinal Representative

7-A

FRACTURE GRADIENTS - SAN ANDRES FORMATION
SAWYER (SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO

Well Name	Top Perforation	(1) Date of Acid Stimulation	Surface Pressure Required to Break Formation PSIG	Instant Shut-In Press. PSIG	(2) Formation Fracture Press. PSIG	Formation Fracture Gradient-PSI Ft.	(3) San Andres Disposal Water Calc. Surface Injection Press-PSIG	Surface Injection Gradient-PSI Ft.
Bilbrey "51" Well No. 1 Proposed Disposal Well	4941'	1-5-73	2300	1400	3587	0.726	1100	0.223
Bilbrey "51" Well No. 2	5029'	12-9-74	1700	1450	3673	0.731	1141	0.227
Bilbrey "51" Well No. 3	5012'	9-10-75	1750	1500	3719	0.742	1196	0.239
Bilbrey "51" Well No. 4	4952'	1-22-76	2000	1500	3692	0.746	1199	0.242
Bilbrey "90" Well No. 1 P&A (6-22-73)	4967'	3-15-73	1600	1700	3899	0.785	1398	0.281
Allied "93" Well No. 1	4939'	12-19-72	1750	1200	3387	0.686	900	0.182
Allied "93" Well No. 4	4997'	8-2-74	1550	1575	3787	0.758	1271	0.254
Brown "84" Well No. 2	4914'	7-2-76	N.A.	1250	3425	0.697	951	0.194
Area Average					3626	0.7339	1138	0.2303
Disposal Well	4941'					0.7339		0.2303

EXPLANATION OF FRACTURE GRADIENT TABLE

1. All acid jobs were performed based on the Matrix stimulation technique and hydraulic fracturing was purposely avoided to prevent treating out of zone and stimulating the San Andres water zone, which is encountered 15 feet below the lowest oil productive San Andres zone in these wells.

2. Calculation of the San Andres formation fracture pressures were based on the following formula:

$$P_{ISI} = P_{BF} - P_H$$

Where:

P_{ISI} = Instant Shut-In Pressure - psig
P_{BF} = Bottom Hole Fracturing Pressure - psig
P_H = Hydrostatic Pressure - psig

Reference:

Howard and Fast, Hydraulic Fracturing, Monograph Volume 2. "Mechanics of Hydraulic Fracturing", pg. 100. American Petroleum Institute of Mining, Metalurgical and Petroleum Engineers; Dallas, Texas 1970.

3. San Andres Disposal Water
Specific Gravity = 1.160
Fluid Gradient = 0.503 $\frac{psi}{ft.}$

FLAG-REDFERN OIL COMPANY
OPERATED WELLS
SAWYER (SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Bilbrey "51" No. 1 (LC-065151)	660' FNL & 660' FEL Sec. 23-9S-37E	5070'	San Andres 4941-5022' (Sub-sea = -949 to -1030')	8-5/8" set at 415'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5070'. Cmt'd w/250 sx Class "C" w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3827', calculated.
Bilbrey "51" No. 2 (LC-065151)	1980' FNL & 660' FEL Sec. 23-9S-37E	5067'	San Andres 5029-5062' (Sub-sea = -1041 to -1074')	8-5/8" set at 370'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5067'. Cmt'd w/250 sx Class "H", 50-50 Pozmix w/2% gel. 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 4006', calculated.
Bilbrey "51" No. 3 (LC-065151)	2180' FNL & 1980' FEL Sec. 23-9S-37E	5052'	San Andres 5012-5034' (Sub-sea = -1034 to -1056')	8-5/8" set at 392'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5052'. Cmt'd w/250 sx Class "C" Pozmix w/2% gel, 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 3908', calculated.
Bilbrey "51" No. 4 (LC-065151)	860' FNL & 1980' FEL Sec. 23-9S-37E	5040'	San Andres 4952-5016' (Sub-sea = -969 to -1033')	8-5/8" set at 369'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5040'. Cmt'd w/250 sx Class "C" Pozmix w/2% gel, 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 3896', calculated.
Allied "93" No. 1 (N.M.-0103893)	660' FNL & 660' FWL Sec. 24-9S-37E	5071'	San Andres 4939-5031' (Sub-sea = -949 to -1041')	8-5/8" set at 360'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5071'. Cmt'd w/250 sx Class "C" w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 4010', calculated.

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Allied "93" No. 2 (N.M.-0103893)	1980' FSL & 660' FWL Sec. 24-9S-37E	5069'	San Andres 4988-5042' (Sub-sea = -1008 to -1062')	8-5/8" set at 392'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5069'. Cmt'd w/250 sx Class "H" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 4008', calculated.
Allied "93" No. 3 (N.M.-0103893)	2080' FSL & 1980' FWL Sec. 24-9S-37E	5055'	San Andres 4980-5026' (Sub-sea = -999 to -1045')	8-5/8" set at 416'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5055'. Cmt'd w/250 sx 50-50 Pozmix w/2% gel, 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 3911', calculated.
Allied "93" No. 4 (N.M.-0103893)	1980' FNL & 660' FWL Sec. 24-9S-37E	5070'	San Andres 4997-5013' (Sub-sea = -1011 to -1027')	8-5/8" set at 400'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	5½" set at 5070'. Cmt'd w/200 sx Class "H" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 4222' (-252 SS) by cement bond log.
Allied "93" No. 5 (N.M.-0103893)	1980' FNL & 1980' FWL Sec. 24-9S-37E	5050'	San Andres 5026-5044' (Sub-sea = -1045 to -1063')	8-5/8" set at 391'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5050'. Cmt'd w/250 sx Class "C" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3906', calculated.
Brown "93" No. 1 (Fed. NM-0103893-A)	660' FNL & 1980' FWL Sec. 24-9S-37E	5049'	San Andres 4920-5013' (Sub-sea = -934 to -1027')	8-5/8" set at 425'. Cmt'd w/275 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5049'. Cmt'd w/250 sx Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3905', calculated.
Brown "84" No. 1 (Fed. NM-066884-A)	660' FSL & 1980' FWL Sec. 13-9S-37E	5099'	San Andres 4895-4988' (Sub-sea = -908 to -1001')	8-5/8" set at 415'. Cmt'd w/300 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5099'. Cmt'd w/250 sx Class "C" w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3955', calculated.

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Brown "84" No. 2 (Fed. NM-066884-A)	660' FSL & 860' FWL Sec. 13-9S-37E	5025'	San Andres 4914-5003' (Sub-sea = -920 to -1009')	8-5/8" set at 354'. Cmt'd w/250 sx Class "C" w/ 2% CaCl. Cmt circ to surface.	4½" set at 5025'. 1st stage cmt'd w/250 sx Class "C" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3881', calculated. 2nd stage cmt'd w/850 sx Halli lt wt & 400 sx circ out. Multistage cmtng tool @ 2391'.

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FLAG-REDFERN OIL COMPANY
OPERATED WELLS
WEST SAWYER (SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Marathon Fed. No. 1 (Fed. NM-0659)	2180' FNL & 1980' FWL Sec. 23-9S-37E	5045'	San Andres 4955-4999' (Sub-sea = -966 to -1010')	8-5/8" set at 427'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5045'. Cmt'd w/250 sx 50-50 Poz w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3901', calculated.
Bilbrey "23" No. 1 (Fed. LC-065151)	801' FWL & 1839' FSL Sec. 23-9S-37E	5056'	San Andres 4964-4990' (Sub-sea = -983 to -1009')	8-5/8" set at 432'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5056'. Cmt'd w/250 sx 50-50 Pozmix w/2% gel, 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 3912', calculated.
Bilbrey "23" No. 2 (Fed. LC-065151)	1980' FSL & 2180' FEL Sec. 23-9S-37E	5050'	San Andres 5006-5021' (Sub-sea = -1027 to -1042')	8-5/8" set at 423'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5050'. Cmt'd w/250 sx 50-50 Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3906', calculated.
Bilbrey "23" No. 4 (Fed. LC-065151)	1980' FSL & 660' FEL Sec. 23-9S-37E	5060'	San Andres 5016-5032' (Sub-sea = -1036 to -1052')	8-5/8" set at 370'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5060'. Cmt'd w/250 sx 50-50 Class "C" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3916', calculated.
Bilbrey "23" No. 5 (Fed. LC-065151)	800' FSL & 2120' FEL Sec. 23-9S-37E	5227'	San Andres 4987-4996' (Sub-sea = -1010 to -1019')	8-5/8" set at 367'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5227'. Cmt'd w/250 sx Pozmix Class "C" w/2% gel, 3/4% CFR-2 & 8#/sk salt. Top of cmt @ 4083', calculated.

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Bilbrey "23" No. 6 (Fed. LC-065151)	800' FSL & 800' FEL Sec. 23-9S-37E	5200'	San Andres 5048-5060' (Sub-sea = -1067 to -1079')	8-5/8" set at 351'. Cmt'd w/250 sx Class "C" w/2% CaCl. Cmt circ to surface.	4½" set at 5200'. Cmt'd 1st stage w/250 sx Class "C" Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt Top of cmt @ 4055', calculated. Cmt'd 2nd stage thru stage cementing tool @ 2358' w/750 sx lt wt w/8#/sk salt & 0.4% CFR-2. Circ 225 sx to surface.

FLAG-REDFERN OIL COMPANY
OPERATED WELLS
UNDESIGNATED FIELD
LEA COUNTY, NEW MEXICO

Well Name & Lease I.D. No.	Location	Total Depth	Producing Formation and Interval	Surface Casing	Production Casing
Bilbrey "90" No. 1 (Fed. NM-2390-A)	1980' FSL & 1980' FEL Sec. 14-9S-37E	5009'	Completion attempted in San Andres formation from 4903-4997'. (Sub-sea = -912 to -1006'). Well was P & A 6-22-73. *See plugging information below.	8-5/8" set at 421'. Cmt'd w/250 sx Class "H" w/2% CaCl. Cmt circ to surface.	4½" set at 5009'. Cmt'd w/250 sx Class "C" 50-50 Pozmix w/2% gel, 0.75% CFR-2 & 8#/sk salt. Top of cmt @ 3865', calculated.

*CIBP set @ 4850' w/38' cmt on top.
Hole loaded w/mud laden fluid.
35 sk cmt plug @ 1233-1133' (100')
35 sk cmt plug @ 471- 371' (100')
10 sk cmt plug in top of csg.

1233' of 4½" csg was recovered from hole.

Production casing strings for all wells were set in 7-7/8" hole size.

All calculations on cement tops were based on 75% fillup.

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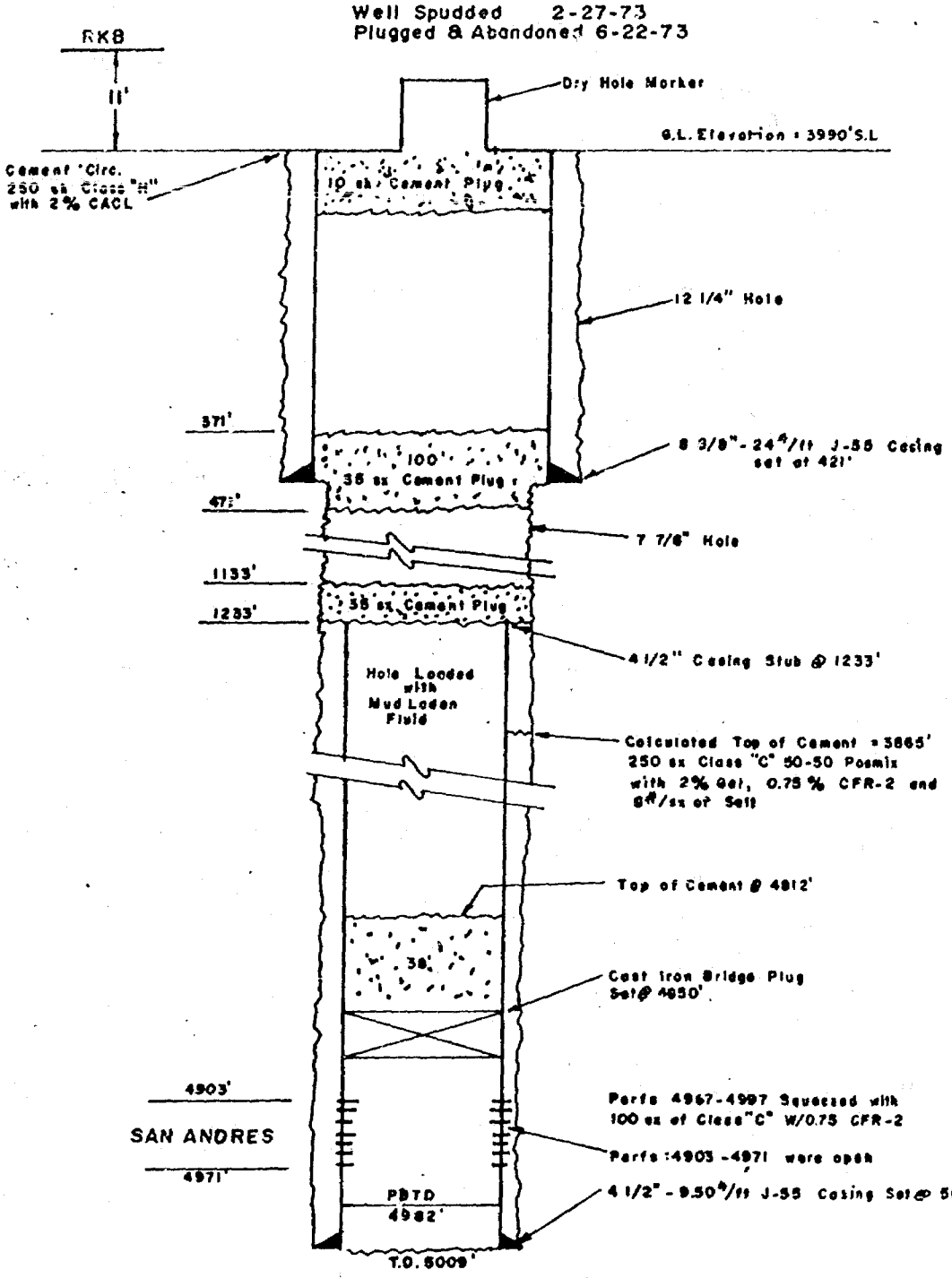
Well Spudded 2-27-73
Plugged & Abandoned 6-22-73



Flag-Redfern Oil Company

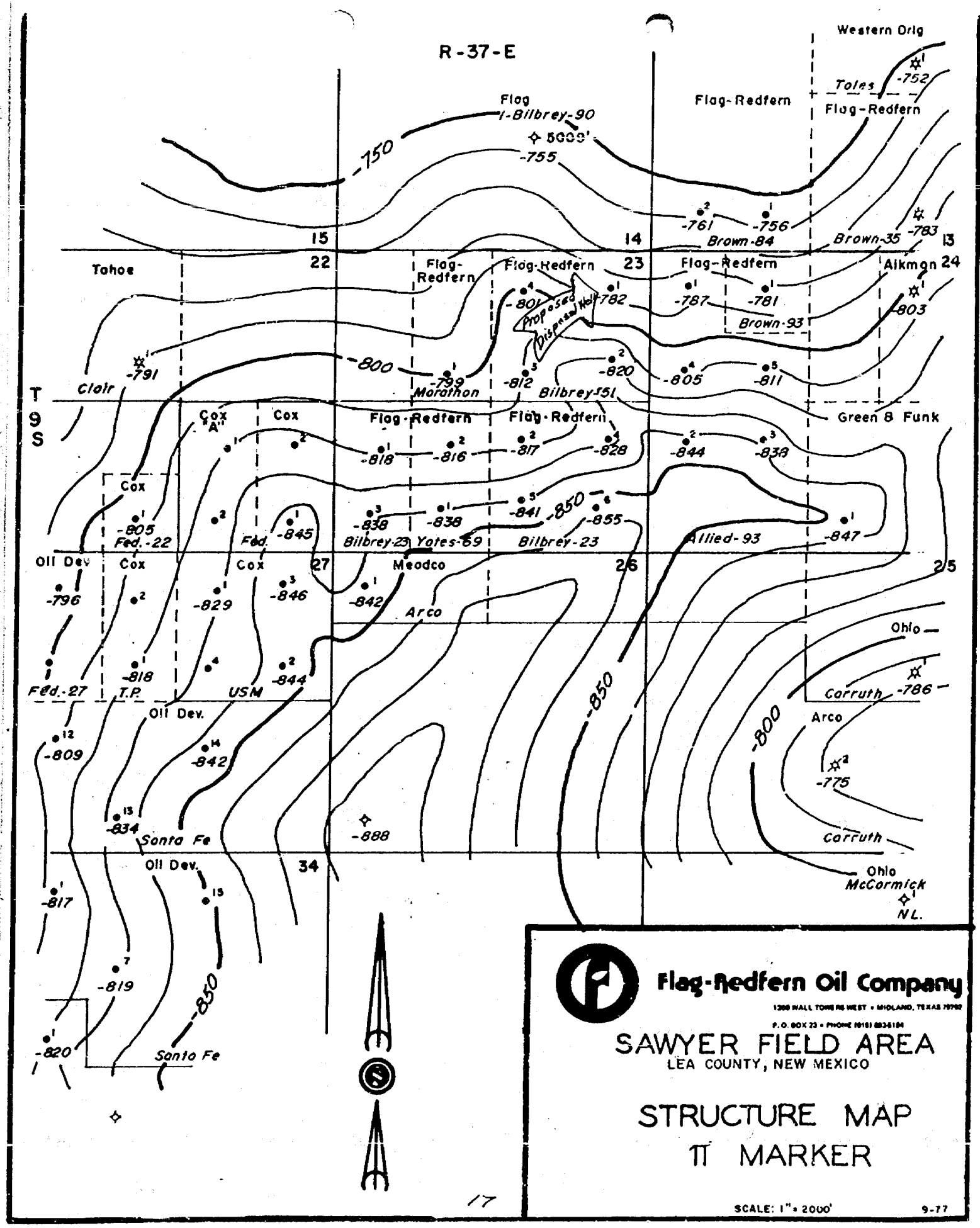
1208 WALL TOWERS WEST • MIDLAND, TEXAS 79701

P.O. BOX 73 • PHONE (915) 683-6184

WELL PROFILE

PLUGGED & ABANDONED WELL
BILBREY-90 LEASE, WELL No. 1
Location : Unit Letter-J, 1980' FS & EL
Sec. 14, T-9-S, R-37-E
Lea County, New Mexico

9-77



Flag-Redfern Oil Company

1200 MAIL TOWERS WEST • MIDLAND, TEXAS 79702

P.O. BOX 23 • PHONE (915) 683-6184

SAWYER FIELD AREA

LEA COUNTY, NEW MEXICO

STRUCTURE MAP

TT MARKER

SCALE: 1" = 2000'

9-77

R-37-E

T 9 S

Flag-Redfern Oil Company

SAWYER FIELD AREA

LEA COUNTY, NEW MEXICO

SECTION INDEX MAP

SCALE: 1" = 2000'

9-77

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BILBREY "51" WELL NO. 1
SAWYER (SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO
FEDERAL LEASE #LC-065151

PRODUCTION HISTORY

Time	Oil Prod. Bbl/Mo.	Gas Prod. MCF/Mo.	Water Prod. Bbl/Day
Jan. 1973	290	4278	76
Feb. "	328	4368	86
Mar. "	210	3813	55
Apr. "	223	3750	58
May "	118	1086	31
June "	199	2428	52
July "	134	2232	38
Aug. "	160	2197	50
Sept. "	130	2280	40
Oct. "	99	1806	31
Nov. "	146	2985	46
Dec. "	244	2998	76
Jan. 1974	195	1449	46
Feb. "	210	3514	50
Mar. "	138	3334	33
Apr. "	127	3718	30
May "	49	676	12
June "	42	2262	10
July "	12	1346	3
Aug. "	99	1778	27
Sept. "	121	1943	33
Oct. "	95	3115	26
Nov. "	7	996	2
Dec. "	52	1187	14
Jan. 1975	106	1266	30
Feb. "	84	2108	30
Mar. "	115	2624	30
Apr. "	64	3956	30
May "	75	3985	24
June "	70	4417	24
July "	79	3459	24
Aug. "	62	3765	24
Sept. "	60	4303	24
Oct. "	62	1400	22
Nov. "	60	1970	22
Dec. "	62	819	22
Jan. 1976	60	801	22
Feb. "	44	1803	22
Mar. "	31	3190	22
Apr. "	30	3950	23
May "	31	3137	23
June "	30	4007	23
July "	31	3797	23
Aug. "	31	2475	23
Sept. "	30	317	23
Oct. "	31	1092	39
Nov. "	30	1163	39
Dec. "	31	1024	39
Jan. 1977	31	970	39
Feb. "	28	1535	39
Mar. "	31	1396	39
Apr. "	30	280	31
May "	31	1143	31
June "	30	1096	31
July "	31	1210	31
Totals	4949	128.0 MMCF	54,514

BILBREY "51" LEASE
SAWYER (SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO
FEDERAL LEASE #LC-065151

PRODUCTION HISTORY

Time	Oil Prod. Bbl/Mo.	Gas Prod. MCF/Mo.	Water Prod. Bbl/Mo.	Remarks
Jan. 1973	290	4278	2356	1 well
Feb. "	328	4368	2408	
Mar. "	210	3813	1705	
Apr. "	223	3750	1769	
May "	118	1086	946	
June "	199	2428	1586	
July "	134	2232	1159	
Aug. "	160	2197	1525	
Sept. "	130	2280	1220	
Oct. "	99	1806	961	
Nov. "	146	2985	1403	
Dec. "	244	2998	2318	
Jan. 1974	195	1449	1403	
Feb. "	210	3514	1525	
Mar. "	138	3334	1007	
Apr. "	127	3710	915	
May "	49	676	366	
June "	42	2262	305	
July "	12	1346	92	
Aug. "	99	1778	824	
Sept. "	121	1943	1007	
Oct. "	95	3115	793	
Nov. "	7	996	61	
Dec. "	408	614	1922	2 wells
Jan. 1975	776	1568	2046	
Feb. "	388	2245	1848	
Mar. "	845	2953	2046	
Apr. "	469	4138	1560	
May "	553	4200	1612	
June "	514	4655	1560	
July "	561	3645	1612	
Aug. "	549	3967	1612	
Sept. "	1160	5255	2490	3 wells
Oct. "	2170	3317	2015	
Nov. "	1664	4667	1890	
Dec. "	1282	1939	2015	
Jan. 1976	1234	1897	2015	
Feb. "	901	4271	1885	
Mar. "	1114	7557	2108	4 wells
Apr. "	870	9252	1890	
May "	874	7434	1953	
June "	899	9496	1890	
July "	862	8998	1953	
Aug. "	765	5866	1951	
Sept. "	699	752	1890	
Oct. "	904	2590	2387	
Nov. "	437	2758	2310	
Dec. "	627	2429	2387	
Jan. 1977	338	2302	2387	
Feb. "	611	3644	2156	
Mar. "	565	3315	2387	
Apr. "	637	665	1650	
May "	659	2716	1705	
June "	321	2606	1650	
July "	569	2876	1705	
Totals	29,051	182.9 MMCF	90,141	

STAGE NO. 1

CARDINAL CHEMICAL, INCORPORATED

SERVICE REPORT

PAGE NO. 1

DISTRICT #1 Area 1 STATION Hobbs DATE 1-4-73

COMPANY Flag Redfern Oil Company STATE New Mexico COUNTY Lea

LEASE Bilbrey 51 WELL NO. #1 POOL Sawyer

COMPANY REPRESENTATIVES Mr. Russell CARDINAL ENGINEERS Holland

WELL DATA

CASING, TUBING & PACKER DATA

CASING O.D. 4½" WT. ____ DPT. ____ CEMENT yes

LINER O.D. ____ WT. ____ FR. ____ TO ____

TUBING SIZE 2" EUE PERF'S OR OPEN END ____

TUBING SIZE ____ PERF'S OR OPEN END ____

HYD. HOLD DOWN ANCHOR: KIND ____ DEPTH ____

UPPER PACKER TYPE: Baker Packer DEPTH ____

LOWER PACKER TYPE: Baker B.P. DEPTH ____

CASING PERFORATED W/ 4 SHOTS/~~XX~~ FROM 4941' TO 4958'

4 SHTS/~~XX~~ FR. 4992' TO 4999' FR. ____ TO ____

4 SHTS/~~XX~~ FR. 5016' TO 5000' FR. ____ TO ____

OPEN HOLE SIZE: ____ FROM ____ TO ____

COMPLETION DATA

DATE DRILLED 12-72 FORMATION San Andres

PAY SECTION FROM 4941' TO 5022'

PRESENT TOTAL DEPTH ____ P.B. FROM ____

INITIAL PROD: OIL ____ GAS ____ WATER ____

PRESENT PROD: OIL ____ GAS ____ WATER ____

ACID AND/OR FRAC. ____ DATE ____

ACID AND/OR FRAC ____ DATE ____

ACID AND/OR FRAC. ____ DATE ____

ACID AND/OR FRAC ____ DATE ____

TOTAL ACID AND/OR FRAC IN WELL ____

TYPE FLUID IN TBG. ____ IN CSG. ____

VOLUMES

TBG. ____ BBLS. CSG. ____ BBLS. OPEN HOLE ____ BBLS

ANNULAR VOL. OF PAY ZONE: CSG. ____ OPEN HOLE ____

TOTAL TO FILL ____ BBLS. TOTAL TO SPOT ____ BBLS

VOL. USED TO FLUSH ____ BBLS. TO OVERFLUSH ____ BBLS

OTHER INFORMATION: Acid test 20% , 15.5% & 3% fresh treated water flush.

OIL TANK GAUGES: START ____ FINISH ____

SERVICES USED

2250	GALS.	20% NM Stab.; 17 NM-6 TYPE
3700	GALS.	15% NM Stab.; 17 NM-225 TYPE
4700	GALS.	3% NM Stab.; 17 RD-11 TYPE
5000	LBS.	2% KCL Treated Water MATERIAL
700	LBS.	KCL; 5 Adomall MATERIAL
~~XXXXXXXXXXXXX~~		8 - 7/8" RCN Ball Sealers

PUMPS USED ON CSG. ____

DETAILS OF SERVICES PERFORMED
REMARKS

CARDINAL CONNECTIONS TESTED TO.
TBG. ____ PSI. CSG. ____ PSI.

TIME a.m. or p.m.	PRESSURES Casing	PRESSURES Tubing	BARRELS OF FLUID PUMPED In Formation	BARRELS OF FLUID PUMPED Per Reading	BARRELS OF FLUID PUMPED Per Minute	
						ARRIVED ON LOCATION. 1st stage perfs 5016-22', BP 5035, Pkr. 5010'
10:00	open					Start treated water down tubing, bleed casing.
10:30	open			55		Shut down.
11:25	open					Start 20% acid.
	open			18		Start 15% acid.
11:35	open			2		Acid on spot, shut down, annulus displaced.
11:40	open					Resume 15% to break formation.
11:41	open	2300				Formation feeding, increase rate.
11:43	open	3000	3	3	1.5	Communication to upper perfs, shut down.
	open					Pull packer to 4980' and set.
11:50	open					Resume 15% down tubing.
11:52	open	2200	9	6	3.0	Shut down, treat perfs 5016-22' and 4992-99'.
12:00	open	1100				Resume with 20% acid down tubing.
12:06	open	2200	25	18	3.0	Start 15%.
12:09	open	2200	34	9	3.0	Communication = shut down.

Continued on page 2

ADD FOR SAND DISPLACEMENT ____

INSTANTANEOUS SHUT-IN PRESSURES ____

PRESSURES ____ MINUTES AFTER STOPPING ALL PUMPS.

MAXIMUM PRESSURES AND AVG. INJECTION RATE FOR ____ MINS. PUMPING

MINIMUM PRESSURES ____

LAST TRUCK DEPARTED LOCATION WAS LEFT CLEAN — DIRTY ____

25

1

CARDINAL CHEMICAL, INCORPORATED
SERVICE REPORT

DISTRICT #1 Area 1 STATION Hobbs DATE 1-4-73

COMPANY Flag Redfern Oil Company STATE New Mexico COUNTY Lea

LEASE Bilbrey WELL NO. #1 POOL Sawyer

COMPANY REPRESENTATIVES Mr. Russell CARDINAL ENGINEERS Holland

DETAILS OF SERVICES PERFORMED, (CONT'D)

TIME a.m. or p.m.	PRESSURES Casing	PRESSURES Tubing	BARRELS OF FLUID PUMPED In Formation	BARRELS OF FLUID PUMPED Per Reading	BARRELS OF FLUID PUMPED Per Minute	REMARKS
						Pull packer to 4890' and set.
						Treat all perfs with remainder of acid in two
						equal stages with 8 balls between stages.
12:46	open	0				Start 20% acid down tubing.
12:48	open	2900	43	9	4.5	Start 15% acid.
12:55	open	3000	75	32	4.6	Start 3% acid.
1:07	open	3000	132	57	4.8	Inject 8 balls and start 20% acid.
1:09	open	3000	141	9	4.5	Resume 15% acid.
	open	2900				Data: balls on spot 2900-3000#.
1:16	open	3000	173	32	4.6	Start 3% acid.
1:28	open	3000	230	57	4.8	All acid pumped, start water flush.
1:33	open	2900	253	23	4.6	Flush and service complete.
						253 bbl. acid water
						23 bbl. fresh water
						276 bbl. tubing load
						50 bbl. annulus load

ADD FOR SAND DISPLACEMENT

INSTANTANEOUS SHUT-IN PRESSURES

open 1400 PRESSURES 13 MINUTES AFTER STOPPING ALL PUMPS.

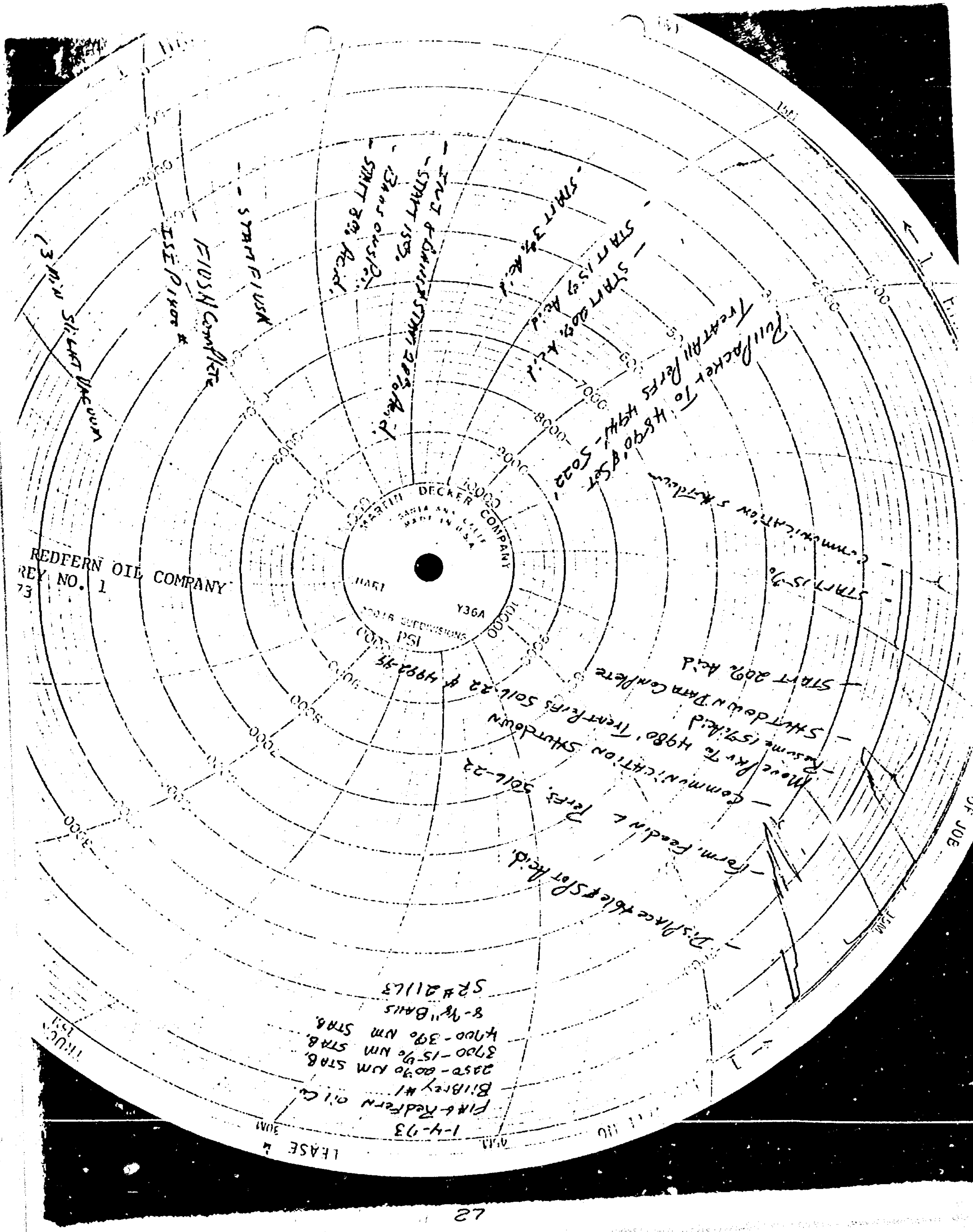
open VAC

open 3000 4.7 MAXIMUM PRESSURES AND AVG. INJECTION RATE FOR 147 MINS. PUMPING

open 2900 MINIMUM PRESSURES

2:00 LAST TRUCK DEPARTED, LOCATION WAS LEFT CLEAN – XXXX Thank you.

TR-3F REV.


REDFERN OIL COMPANY
REV. NO. 1
MARTIN DECKER COMPANY
PSI
LEASE
1-4-73
Fin & Redfern Oil Co.
Bilbrey #1
2350-20% NM STAB.
3700-15% NM STAB.
4900-30% NM STAB.
START 15%
START 20% Acid
Shutdown Data Complete
Form. Feed in & Perfs. 5016-22
Displace Hole & Spot Acid
START FLUSH
FLUSH Complete

Type Acid 20%,15%,3% N. E.

Am't Acid 8,000 gal.

Chemical

Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Spot 19.6

Tbg. Cap. 19.2

Csg. Cap. 51.87

Open Hole

TREATING LOG

Company Flag-Redfern Date 12-9-74

Lease Bilbrey 51 Well #2

Total Depth 5068 Csg. 4½ Wt. Set 5070 Open Hole None

Csg. Perf. 5029 to 5062 Shots per Ft. ~~xxxxx~~ 13 Packer Watson

Tbg. Perf. To Tbg. Depth 4970 Tbg. 2"

Pkr. Set 4940 Production Prior Treatment New Well

Type Treatment Treat vin tubing boneath packer with 1500 gallons 20% Acid, 1500 gallons 15% acid, 1000 gallons 3% Acid, divert with 100# Benzoic Acid and 100# Moth balls. 1500 gallons 20%, 1500 gal. 15%, and 1000 gallons 3%. Flush with treated water.

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
1:02	850		2½		Start 60 bbb. Treated water to displace casing.
1:25	850		2 3/4		Casing displaced - start to spot 20% Acid.
1:35	850		2 3/4		Acid on spot - shut down - pull 3 joints.
1:55					Pressure up on casing 500#.
2:00					Break formation.
2:10					Shut down - fix casing leak and adjust packer.
2:32	1700				Break formation.
2:40	1550	1700	3¾4		Rate and Pressure.
2:54	1600	1600	1½		1500 gallons 20% acid in - start 15%.
3:09	1650	1600	1½		Rate and Pressure.
3:19	1650	1600	1½		1500 gallons 15% in - start 3%.
3:33	1700	1800	1½		Start 200# Block in Gelled 3% Acid.
3:35	1650	1550	1½		200# Block - 1000 gal.3% acid in - start 20%.
3:47	1550	1600	1½		Block on formation 50# increase.
3:59	1600	1550	1½		1500 gallons 20% in - start 15%.
4:23	1600	1550	1½		1500 gallons 15% in - start 3%.
4:36	1750	1500	1½		1000 gallons 3% in - start flush.
4:51	1700	1500	1½		20 bbl. flush in. Job Complete.
					ISDP 1450 PSI
	Flush casing 60bbl.				10 Min. Shut in 1250 PSI
					AIR 1.5 BPM
					Max. PSI 1700
					Min. PSI 1500
					Total Fluid Pumped 332 bbl. Thank You

DEC 13 1974

Treatment Ordered by Treating Engineer Sonny Cook

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Type Acid 20% & 15% N.E.

A-'t Acid 6,000 gallons

Chemical 12 gal. N.E. for acid

Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Tbg. Cap. 19.48

Csg. Cap. #8# .23

Fludh

Open Hole 20.82

TREATING LOG

Company Flag Redfern Oil Co. Date 9-10-75

Lease Bilbrey 51 Well #3

Total Depth 5045 Csg. 4½ Wt. 10.50 Set 5055 Open Hole

Csg. Perf. 5012 to 5034 Shots per ft. 18 holes Packer None

Tbg. Perf. 5034 To To Treat Tbg. Depth 5034 Tbg. 2" EUE

Pkr. Set Production Prior Treatment New Well No Test

Type Treatment Treat casing perforation via tubing - in 5 stages of acid using 3 stages of 8 ball sealers and one stage of 6 ball sealers - Run balls in 20% Acid - Use 20% acid to spot treat in five 10 bbl. stages of 20% acid & five 14 bbl. of 15% Acid.

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
9:00	0	0			Start acid to formation via tubing
9:12	0	0			Acid on formation - Pull 2 stands of tubing
9:28					Start acid to break formation
9:29	1250	1000			Shut down pump
9:40	1300	1550			Start pump to pressure formation 1600 P.S.I.
9:55	1200	1550			Start pump to pressure formation 1600 P.S.I.
10:15	1200	1500			Start pump to pressure Formation 1700 P.S.I.
10:28	1500	1800			Start pump to pressure formation 1800 P.S.I.
10:34	1750	2000			Formation break at 1750 to 1450
10:36	1750	1500			Speed pump to 2.0 bbl. per minute
10:38	1750	1500			Start 15% acid
10:40	1700	1500			Start 1st stage ball sealers (8)
10:43	1700	1500			Start 15% Acid
10:53	1700	1500			Start 20% acid & ball sealers (8)
10:58	1700	1500			Start 15% Acid
11:01	1700	1500			Start 20% Acid & Ball Sealers (3)
11:03	1800				2nd Stage Sealers on - 100 P.S.I. increase
11:05	1800	1600			
11:05	2000	2000			Ball action - Shut Down - Ball Out with 24 balls on perforations - 5 minutes to let ball sealers fall to bott
11:23	1000	1000			Start pump on Acid
11:29	1500	1250		2.0	All [illegible] 20% Acid in - Start 15% Acid
11:34	1700	1500	144	2.0	All Acid in - Start Flush
11:44	1900	1500			All Flush - Shut Down

Treatment Ordered by Treating Engineer

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Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Hard Jobs In The Oil Patch

Tbg. Cap. _____

Csg. Cap. _____

Open Hole _____

TREATING LOG

Company Flag-Redfern Oil Co. Date 9-10-75

Lease Bilbrey 51 Well # 3

Total Depth _____ Csg. _____ Wt. _____ Set _____ Open Hole _____

Csg. Perf. _____ to _____ Shots per ft. _____ Packer _____

Tbg. Perf. _____ To _____ Tbg. Depth _____ Tbg. _____

Pkr. Set _____ Production Prior Treatment _____

Type Treatment _____

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
11:44	1500	1500			Instant Shut Down Pressure
11:49	1300	1300			5 minutes Shut In - Treatment Complete
11:54	1200	1200			10 minutes Shut In
					Pressure Tubing Casing
					Maximum 1900 2150
					Minimum 1500 1500
					Average 1750 1525
					Rate Maximum 2.0
					Minimum .2
					Average 2.0
					Ball Out Pressure 2200 P.S.I.
					Total Load to Recover 217.67
					Thank You

Treatment Ordered by _____ Treating Engineer Jim Kent

Type Acid 15-S-20%-NE
Am't Acid 5000 15%
5000 20%
Chemical

Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Tbg. Cap. 19.4
Csg. Cap. 54.
Open Hole

TREATING LOG

Company Flag Redfern Date 1-22-76
Lease Bilbrey Well 51-4
Total Depth 5043 Csg. 4½ Wt. 10.5 Set Open Hole
Csg. Perf. 4990 to 5016 Shots per ft. 2 Packer Watson
Tbg. Perf. To Tbg. Depth 4980 Tbg. 2"
Pkr. Set 4980 Production Prior Treatment
Type Treatment Treat above and below packer with 5000 gallons 20% NE and 5000 gallons 15% NE. Use benzoic acid flakes and moth balls as diverting agents. Flush casing and tubing with 55 bbl and 24 bbl.

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
11:08	450		2		Start 1000 gallons 15%.
11:18	350		2		15% in. Start 1000 gallons 20%.
11:28	400		2		1000 gallons 20% in. Start 20 bbl 20%.
11:37	400		2		Acid on spot. Set packer.
12:00					Resume pumping. Start xylene.
12:05	2000				2000# Break formation.
12:07	1400		1		Establish rate.
12:08	1850		1.8		Increase rate.
12:15	2100		1.8		500 gallons xylene in. Start 50# benzoic, 50# moth ball
					and 20% acid.
12:21	1850		1.8		750 gallons 20% in. Start 1250 gallons 15%.
12:25	1700		1.8		Block on formation. No increase.
12:29	1800		2.1		Increase rate.
12:35	1800		2.1		15% in. Start 100# benzoic acid and 100# moth balls.
					Start 750 gallons 20%.
12:44	1850		2.1		Block on formation. 100# increase.
12:45	1900		2.1		20% in. Start 1250 gallons 15%.
12:48	1800		2.1		Rate and pressure.
12:56	1800		2.2		15% in. Start flush.
1:06	1950		2.2		24 bbl flush in.
1:10	1900		2.0		33 bbl Total flush.
					Instant Shut In Pressure 1500# 5 minute shut in 700 10 minute shut in 300
Break Formation 2000#					Total Fluid Pumped 352 bbl 200# benzoic acid
Average PSI 1800#					200# moth balls
Average Injection Rate 2BPM					Thank you

Treatment Ordered by Treating Engineer Sonny Cook

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THE WESTERN COMPANY

Form PS-8 (Rev. 11/66)

"Engineered Well Services"

GENERAL OFFICES — FORT WORTH, TEXAS

TREATMENT REPORT

DATE: [illegible]

Western District [illegible] Field Receipt No. [illegible] Stage No. 1

Operator [illegible] Lease [illegible] Well No. [illegible]

Field [illegible] Location ______ County [illegible] State [illegible]

WELL DATA:

New Well ______ Old Well ✓ Depth TD/PB 4997 Formation [illegible]

Size Tubing 2 3/8 Tubing Perf. ______ Type Packer [illegible] Set At —

Size Casing 4 1/2 Wt. 9.5 Set From Surface To 5009

Size Liner ______ Wt. ______ Set From ______ To ______

Open Hole: Size [illegible] From — To —

Casing Perfs: Size .47 No. Per Ft. [illegible] Intervals 4962-4997

Previous Treatment ______ Prior Production ______

TREATMENT DATA.

Hole Loaded With Water

Treating Fluid [illegible]

Propping Agent [illegible]

Auxilliary Materials [illegible]

Ball Sealers: None in ______ Stages of ______

HHP Used

Procedure [illegible]

CAPACITIES & FLUID PUMPED:

Tubing Cap. 19.11

Casing Cap. [illegible]

Annular Cap. 59.00

Open Hole Cap.

Fluid to Load [illegible]

Pad Volume

Treating Fluid 165.00

Flush 21.00

Overflush [illegible]

Total to Recover [illegible]

Time AM/PM	Treating Pressure-Psi Tubing	Treating Pressure-Psi Casing	Bbl Fluid Pumped	Inj. Rate BPM	REMARKS-
9:30	0	0			Start KCl water [illegible]
9:50	1400	0	50	3.7	KCl water in [illegible]
9:55	[illegible]	0			Start [illegible] Acid [illegible]
10:04	[illegible]	0	50	4.0	Acid on [illegible]
10:19	0	[illegible]			Start [illegible]
10:20	[illegible]	[illegible]	91	[illegible]	Formation Break [illegible]
10:21	[illegible]	1500		4.5	Start [illegible]
10:24	[illegible]	1500	100	4.5	[illegible]
10:25	[illegible]	1000			[illegible] Acid
10:36	[illegible]	1500	112	4.5	[illegible]
1:02	0	50			[illegible]
1:05	[illegible]	1400	120	4.5	Start [illegible] Acid
1:10	[illegible]	1650	144	4.5	Start [illegible]
1:11	[illegible]	1600	148	4.5	[illegible]

Treating Pressure: Min. [illegible] Max. [illegible] Avg. [illegible]

Inj. Rate On Treating Fluid 4.5

Inj. Rate On Flush 4.5

Avg. Inj. Rate 4.5

I.S.D.P. [illegible] Type Fluid [illegible]

Final Shut-in Pressure [illegible] in [illegible] min.

Operator Maximum Pressure [illegible]

Customer Representative [illegible]

Western Representative [illegible]

Distribution

THE WESTERN COMPANY

"Engineered Well Services"

GENERAL OFFICES — FORT WORTH, TEXAS

TREATMENT REPORT

Page 2

Time ~~AM~~/PM	Treating Pressure-Psi Tubing	Treating Pressure-Psi Casing	Bbl Fluid Pumped	Inj. Rate BPM	REMARKS-
1:16	[illegible]	1750	164	4.5	Block on Formation 100 ESP in Casing
1:19½	[illegible]	[illegible]	169	4.5	Start 1500 gal 15% Acid
1:25	[illegible]	1900	203	4.5	Start 1000 gal 28% Acid
1:30½	2150	1900	225	4.5	Start Flush
1:36	[illegible]	1900	250	4.5	Flush in – Stop Pumping
					ISDP 1900 PSI
					~~[illegible]~~
					5 min Shut in 1500
					10 min Shut in 1450
					15 min Shut in 1400
					Avg Rate 4.5 bpm

STAGE NO. ________ PAGE NO. ________

CARDINAL CHEMICAL, INCORPORATED
SERVICE REPORT

DISTRICT #1 Area 1 STATION Hobbs DATE 12-19-72

COMPANY Flag-Redfern Oil Company STATE New Mexico COUNTY Lea

LEASE Allred 93 WELL NO. #1 POOL Sawyer - S.A.

COMPANY REPRESENTATIVES Mr. Russell CARDINAL ENGINEERS Holland

WELL DATA

CASING, TUBING & PACKER DATA

CASING O.D. 4½" WT. 9.5# DPT. ______ CEMENT yes
LINER O.D. ____ WT. ____ FR. ____ TO ____
TUBING SIZE 2" EUE PERF'S OR OPEN END 4755'
TUBING SIZE ____ PERF'S OR OPEN END ____
HYD. HOLD DOWN ANCHOR: KIND ____ DEPTH ____
UPPER PACKER TYPE: Guiberson-KUL DEPTH 4755'
LOWER PACKER TYPE: ____ DEPTH ____
CASING PERFORATED W/ 12 SHOTS/FT. FROM 4939.5' TO 5031'
____ SHTS./FT. FR. ____ TO ____ FR. ____ TO ____
____ SHTS./FT. FR. ____ TO ____ FR. ____ TO ____
OPEN HOLE SIZE: ____ FROM ____ TO ____

COMPLETION DATA

DATE DRILLED 12-72 FORMATION San Andres
PAY SECTION FROM 4939.5' TO 5031'
PRESENT TOTAL DEPTH ____ P.B. FROM ____
INITIAL PROD: OIL ____ GAS ____ WATER ____
PRESENT PROD: OIL ____ GAS ____ WATER ____
ACID AND/OR FRAC ____ DATE ____
ACID AND/OR FRAC ____ DATE ____
ACID AND/OR FRAC ____ DATE ____
ACID AND/OR FRAC ____ DATE ____
TOTAL ACID AND/OR FRAC IN WELL ____
TYPE FLUID IN TBG. ____ IN CSG. ____

VOLUMES

TBG. 18.4 BBLS. CSG. ____ BBLS. OPEN HOLE ____ BBLS
ANNULAR VOL. OF PAY ZONE: CSG. 4.4 OPEN HOLE ____
TOTAL TO FILL ____ BBLS. TOTAL TO SPOT 22.0 BBLS
VOL. USED TO FLUSH 23.0 BBLS. TO OVERFLUSH 5.0 BBLS
OTHER INFORMATION: Acid test 15% & 7½%
Flush treated w/Adomall & 2% KCL
OIL TANK GAUGES: START ____ FINISH ____

SERVICES USED

4500 GALS. 15% Unisol; 10-7/8" Balls TYPE
4500 GALS. 7½% Unisol TYPE
200 GALS. 15% DI Unisol TYPE
695 LBS. S-1; 900# KCL MATERIAL
10 ~~XX~~ RD-11; 5½ Adomall MATERIAL
PUMPS USED ON TBG. ____
PUMPS USED ON CSG. ____

DETAILS OF SERVICES PERFORMED

CARDINAL CONNECTIONS TESTED TO: TBG. 4000 PSI. CSG. ____ PSI.

TIME a.m. or p.m.	PRESSURES Casing	PRESSURES Tubing	BARRELS OF FLUID PUMPED In Formation	Per Reading	Per Minute	REMARKS
8:30						ARRIVED ON LOCATION. Operator swabbing.
12-18-72						Displace annulus and spot 200 gal. 15% DI acid.
12-19-72						
8:50	500	Open		30		Load and PSI annulus to 500#.
9:15	500	0				Start acid.
9:18	350	0		18	6.0	Encounter PSI, continue pumping.
9:19	300	2400	4	4	4.0	Acid on spot.
9:22.5	300	2400	18	14	4.0	Start 7½% acid.
9:37.5	250	2200	54	36	4.0	Start 15% acid, inject 5 ball sealers.
	200	2200				Data, balls on spot no PSI increase.
9:40.5	200	2200	90	36	4.0	Start 7½% acid.
9:49.5	200	2200	126	36	4.0	Start 15% acid, inject 5 ball sealers.
	200	2300				Data-Balls on spot, 2200-2300#.
9:58.5	250	2300	162	36	4.0	Start 7½% acid.
10:07.5	300	2300	198	36	4.0	All acid, start water flush.
10:14.5	300	2300	226	28	4.0	Flush overflush and service complete.
						216 bbl. acid water
						28 bbl. fresh water
						244 bbl. total load
						ADD FOR SAND DISPLACEMENT
	300	1200				INSTANTANEOUS SHUT-IN PRESSURES
	300	VAC				PRESSURES 12 MINUTES AFTER STOPPING ALL PUMPS.
	500	2400			4.0	MAXIMUM PRESSURES AND AVG. INJECTION RATE FOR 55.5 MINS. PUMPING.
	200	2200				MINIMUM PRESSURES
10:45						LAST TRUCK DEPARTED. LOCATION WAS LEFT CLEAN -- ~~XXXX~~ Thank you.

DEC 30 1972

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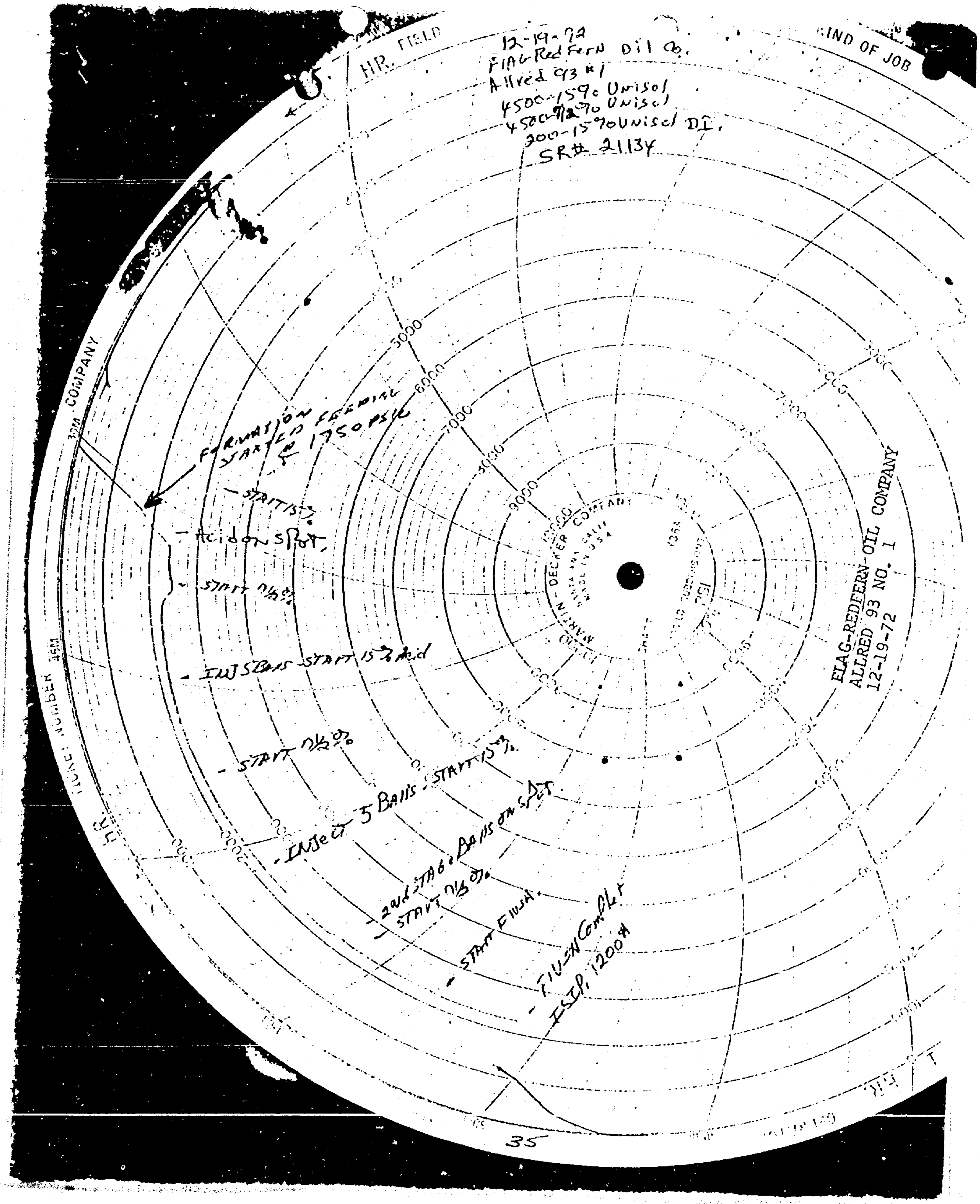


HR. FIELD
KIND OF JOB
COMPANY
TICKET NUMBER
12-19-72
FlAG Red Fern Oil Co.
Allred 93 #1
4500-15% Unisol
4500-7½% Unisol
300-15% Unisol DI.
SR# 21134
FORMATION FEEDING STARTED @ 1750 PSIG
START 15%
Acid on Spot
START 7½%
INJ 5 Balls START 15% Acid
START 7½%
INJECT 5 Balls START 15%
Balls on Spot
2nd STAGE Balls
START 7½%
START FLUSH
FLUSH Complete
ISIP 1200#
MARTIN DECKER COMPANY
SANTA ANA CALIF
MADE IN USA
PSI
FLAG-REDFERN OIL COMPANY
ALLRED 93 NO. 1
12-19-72
35

Type Acid Special N.E. 2000 20% 2000 15% 1000 3%

Am't Acid 5,000

Chemical Non-emulsion for Water

Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Tbg. Cap. 19.06

Csg. Cap. 2.0

Open Hole 21.06

TREATING LOG

Company Flag-Redfern Date 8-2-74

Lease Allied 3 Well 4

Total Depth 5040 Csg. 5½ Wt. 15.5 Set Thru Open Hole

Csg. Perf. 5½ to Drilling 5040 Shots per ft. Packer 4926 - RTTS

Casing Perf. 4997-5013 To 4926 to Treat Tbg. Depth 5016 Tbg. 2"EUE

Pkr. Set 4926 Production Prior Treatment

Type Treatment Treat Casing Perforations Via tubing below RTTS packer in one stage - Flush with treated water.

San Andres Formation.

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
10:00	0	0			Start Treated water to circulate hole.
10:30	0	1000			Hole circulated with Fresh Treated Water.
10:37	0	0			Start Acid onFormation - Pull 3 JTS.
11:10	0	0			Start to Pressure Formation.
11:11	1500	NG			Shut Down
11:13	1100	NG			Taking Fluid Slow.
11:15	1600	NG			Pressure to 1600 PSI
11:25	1550	NG			Formation taking Fluid at 1550 PSI
11:30	1500	NG		1	one bbl. in Formation - break.
11:35	1500	NG	.4		Break to 1400 PSI from 1500 PSI
11:37	1400	NG			Speed Pump to .75 BPM
11:50	1500	NG			Break from 1500 PSI to 1400 PSI at .75 BPM with 17 bbls.
		NG			Acid in Formation.
12:00		NG	.8	27	All 20% - Start 15% Acid
12:15	1600	NG			Speed Pump to 1.5 BPM
12:35	1650	NG	L.5	77	All 15% - Start 3% Acid
12:50	1750	NG	1.4	99	All Acid - Start Flush
1:05	1775	NG	1.4	120	All Flush - ShutDown
1:05	1575	NG			Instant Shut-Down Pressure.
1:10	1300				5 Minute Shut in
1:15	1200				10 Minute
1:20	1175				15 Minute - Treatment Complete

Treatment Ordered by _____ Treating Engineer Jim Kent

Type Acid _____

Am't Acid _____

Chemical _____

Universal Treating Co., Inc.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Tbg. Cap. _____

Csg. Cap. _____

Open Hole _____

TREATING LOG

Company Flag Redfern Page 2 Date _____

Lease _____ Well _____

Total Depth _____ Csg. _____ Wt. _____ Set _____ Open Hole _____

Csg. Perf. _____ to _____ Shots per ft. _____ Packer _____

Tbg. Perf. _____ To _____ Tbg. Depth _____ Tbg. _____

Pkr. Set _____ Production Prior Treatment _____

Type Treatment _____

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
					Maxium Treating Pressure 1775 PSI
					Minium Treating Pressure 1400 PSI
					Average Treating Pressure
					Maxium Rate 1.5
					Minium Rate .4
					Average Rate 1.1
					Total load to Recover 232 bbls.

Treatment Ordered by _____ Treating Engineer Jim Kent

Type Acid 20% LST & 15% LST

Am't Acid 3000 gallons & 3000 gallons

Chemical

Universal Treating Co., Inc.

and UNIVERSAL ACIDIZING CO, INC.

Box 1146 LEVELLAND, TEXAS Phone 894-6125

The Best Acid Jobs In The Oil Patch

Tbg. Cap. 18.6

Csg. Cap. 52.6

Open Hole 2.8

TREATING LOG

Company Flag Redfern Date July 2, 1976

Lease Brown 84 Well 2

Total Depth 5011 Csg. 4½ Wt. 10.6 Set Open Hole

Csg. Perf. 4914 to 5003 Shots per Ft. 43 Packer

Tbg. Perf. To Tbg. Depth 4831 (5000 to spot) 2"

Pkr. Set Production Prior Treatment New well

Type Treatment Treat via tubing with 3,000 gallons 20% LST acid and 3,000 gallons 15% LST acid. Use 7/8" Ball sealers as diverting agent. Flush with 24 bbl treated water.

Time	Tbg. PSI	Csg. PSI	Rate B.P.M.	Total Bbls. In Form.	
1:20					Start acid to spot.
1:27					20 bbl 20% on spot. Pull 3 stands.
1:47					Resume pumping.
1:50			2.5		Drop 12 ball sealers. 1,000 gallons in.
1:54	1700	1800	1.0		Rate and PSI.
1:57	1750	1750	1.6		Increase rate.
2:05	2200	2200			Balls on formation. Shut down to repair leak.
2:12	1500	1600	1.0		Resume pumping.
2:14	1400	1550	1.0		Drop 12 ball sealers. 2,000 gallons in.
2:18	1600	1450	2.0		Rate and PSI.
2:25	1600	1450	2.0		3,000 gallons 20% in. Drop 12 ball sealers.
2:36	1850	1800	1.4		Drop 12 balls. 4,000 gallons in.
2:41	1850	1800	1.6		Rate and PSI.
2:48	2300				Ball out.
3:24			3		Resume pumping.
3:26	400		3		Rate and PSI.
3:32	1450	1000	2.8		3,000 gallons 15% in. Start 24 bbl treated water.
3:42	1800	1250	2.6		24 bbl flush in.
					Instant Shut In Pressure 1250
					10 minute shut in. Vaccum is 4 minute shut in.
					Total Fluid Pumped 220 bbls.
					Average Injection Rat 1.0 BPM.
					Maximum PSI 2300#
					Average PSI 1800#
					43- 7/8" Ball Sealers dropped. Ball out with 4,900 gallo acid pumped.
					Thank you

Treatment Ordered by Treating Engineer Sonny Cook

Dockets Nos. 30-77 and 31-77 are tentatively set for hearing on September 28 and October 12, 1977. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 14, 1977

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for October, 1977, from fifteen prorated pools in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico.

(2) Consideration of the allowable production of gas for October, 1977, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6016: (Continued from August 31, 1977 Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit Land Oil Company, American Employers' Insurance Company, and all other interested parties to appear and show cause why the Garner Well No. 1 located in Unit D of Section 23, Township 14 South, Range 25 East, Chaves County, New Mexico, should not be plugged and abandoned in accordance with a Commission-approved plugging program.

CASE 5981: (Continued from July 6, 1977 Examiner Hearing)

Application of W. A. Moncrief, Jr., for pool creation and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of an oil pool for Upper-Pennsylvanian production for his State Well No. 1 located in Unit E of Section 26, Township 16 South, Range 33 East, Lea County, New Mexico, and the promulgation of special rules therefor, including a provision for 80-acre spacing.

CASE 5983: (Continued from July 20, 1977 Examiner Hearing)

Application of Yates Petroleum Corporation for the amendment of Order No. R-5445, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-5445 to provide for a 200 percent risk factor for drilling the unit well rather than 20 percent. Said order pooled the N/2 of Section 19, Township 20 South, Range 25 East, Eddy County, New Mexico.

CASE 6024: Application of Read & Stevens, Inc., for two unorthodox gas well locations, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its R & J Federal Well No. 1 located in the center of Unit A of Section 20, Township 12 South, Range 31 East, and its Jackson Well No. 1, located in the center of Unit I of Section 25, Township 12 South, Range 30 East, Southeast Chaves-Queen Gas Area, Chaves County, New Mexico, the E/2 of said Section 20 and the S/2 of said Section 25, respectively, to be dedicated to the wells.

CASE 6025: Application of Roger C. Hanks for a special gas-oil ratio limitation, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a special gas-oil ratio limitation of 4000 cubic feet of gas per barrel of oil for the North Dagger Draw-Upper Pennsylvanian Pool, Eddy County, New Mexico, retroactive to August 22, 1977.

CASE 6026: Application of William G. Rabe and Alice P. Rabe for a non-standard gas proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 160-acre non-standard gas proration unit comprising the NE/4 of Section 25, Township 27 North, Range 8 West, Blanco-Mesaverde Pool, San Juan County, New Mexico.

CASE 6027: Application of Great Lakes Chemical Corporation for a non-standard gas proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 160-acre non-standard gas proration unit comprising the SE/4 of Section 25, Township 27 North, Range 8 West, Blanco-Mesaverde Pool, San Juan County, New Mexico.

CASE 6028: Application of Union Oil Company of California for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for its Luzon Unit Area comprising 5117 acres, more or less, of Federal and fee lands in Township 24 South, Ranges 35 and 36 East, Lea County, New Mexico.

CASE 6029: Application of Phillips Petroleum Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Tubb, Drinkard, East Brunson-McKee, and East Brunson-Ellenburger production in the wellbore of its Sims Well No. 6 located in Unit M of Section 24, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 6030: Application of Burleson & Huff for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the SE/4 SE/4 of Section 4, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico, to be dedicated to its re-entered Smith Well No. 1 located in Unit P of said Section 4, or in the alternative, to a well to be drilled at a standard location thereon. Also to be considered will be the cost of re-entering and recompleting or of drilling and completing the unit well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in recompleting or drilling said well.

CASE 6032: Application of Burleson & Huff for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the SW/4 SW/4 of Section 21, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico, to be dedicated to its re-entered Lanehart Well No. 1-Y located in Unit M of said Section 21, or, in the alternative, to a well to be drilled at a standard location thereon. Also to be considered will be the cost of re-entering and recompleting or of drilling and completing the unit well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in recompleting or drilling said well.

CASE 6031: Application of Rex Alcorn for compulsory pooling and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the E/2 SW/4 of Section 35, Township 16 South, Range 37 East, West Knowles-Drinkard Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location 2310 feet from the South line and 1980 feet from the West line of said Section 35. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6033: Application of Basin Fuels, Inc., for salt water disposal, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Mesaverde formation through the perforated interval from 1948 feet to 2755 feet in its Slick Well No. 1 located in Unit O of Section 7, Township 20 North, Range 5 West, Franciscan Lake-Mesaverde Pool, McKinley County, New Mexico.

CASE 6034: Application of Flag-Redfern Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation through the perforated interval from 4941 feet to 5022 feet in its Bilbrey "51" Well No. 1 located in Unit A of Section 23, Township 9 South, Range 37 East, Sawyer-San Andres Pool, Lea County, New Mexico.

CASE 6035: Application of Southern Union Supply Co., for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the N/2 NE/4 of Section 30, Township 9 South, Range 33 East, Flying M-San Andres Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6017: (Continued from August 31, 1977 Examiner Hearing)

Application of E. L. Latham, Jr. and Roy G. Barton, Jr., for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the E/2 NE/4 of Section 30, Township 9 South, Range 33 East, Flying M-San Andres Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6036: Application of E. L. Latham, Jr., and Roy G. Barton, Jr., for compulsory pooling of a standard or a non-standard oil proration unit and an unorthodox location, or in the alternative, 40-acre spacing, Lea County, New Mexico. Applicants, in the above-styled cause, seek an order pooling all mineral interests in the Flying M-San Andres Pool underlying the E/2 NE/4 of Section 30, Township 9 South, Range 33 East, Lea County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location for said pool within 200 feet of the center of the NE/4 NE/4 of said Section 30, or an order pooling only the NE/4 NE/4 of Section 30 to form a non-standard 40-acre unit to be dedicated to the aforesaid well. In the alternative, applicants seek the amendment of the Flying M-San Andres Pool Rules to provide for 40-acre spacing, and seek an order pooling the aforesaid NE/4 NE/4 of Section 30 as a standard unit for said pool to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling

and completing the proposed well and the allocation of the cost thereof, as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicants as operator of the well and a charge for risk involved in drilling said well.

CASE 6037: In the matter of the hearing called by the Oil Conservation Commission upon its own motion for the creation and extension of certain pools in Lea, Eddy, and Chaves Counties, New Mexico.

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Delaware production and designated as the Combs-Delaware Gas Pool. The discovery well is the Penroc Oil Corporation Combs Federal Well No. 1 located in Unit P of Section 15, Township 20 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 15: SE/4

(b) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the East Lake-Morrow Gas Pool. The discovery well is the Coquina Oil Corporation Gulf Federal Well No. 1 located in Unit A of Section 5, Township 19 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM
Section 5: N/2

(c) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Cisco production and designated as the Hume-Cisco Pool. The discovery well is Vaquero Independent Producers, Inc. Jackrabbit Draw Com Well No. 1 located in Unit L of Section 15, Township 16 South, Range 33 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 33 EAST, NMPM
Section 15: SW/4

(d) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the West Malaga-Morrow Gas Pool. The discovery well is the HNG Oil Company Ogden 8 Com Well No. 1 located in Unit H of Section 8, Township 24 South, Range 28 East, NMPM. Said pool would comprise:

TOWNSHIP 24 SOUTH, RANGE 28 EAST, NMPM
Section 8: E/2

(e) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the Millman-Atoka Gas Pool. The discovery well is the Depco, Inc. DHY State B Well No. 1 located in Unit L of Section 11, Township 19 South, Range 28 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 11: W/2

(f) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Abo production and designated as the Pearsall-Abo Pool. The discovery well is the Harvey E. Yates Company, Inc. South Maljamar Deep Well No. 1 located in Unit O of Section 30, Township 17 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 17 SOUTH, RANGE 32 EAST, NMPM
Section 30: SE/4

(g) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Bone Springs production and designated as the Penlon-Bone Springs Pool. The discovery well is the Penroc oil Corporation Allied B Well No. 1 located in Unit K of Section 27, Township 20 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 27: SW/4

(h) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Delaware production and designated as the Penlon-Delaware Gas Pool. The discovery well is the Penroc Oil Corporation Allied Com Well No. 2 located in Unit B of Section 27, Township 20 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 27: NE/4

(i) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Rock Lake-Morrow Gas Pool. The discovery well is the Union Oil Company of California Northern Natural State Well No. 1 located in Unit O of Section 28, Township 22 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 22 SOUTH, RANGE 35 EAST, NMPM
Section 28: S/2

(j) EXTEND the Avalon-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 22: S/2
Section 27: All
Section 34: N/2

(k) EXTEND the North Burton-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 29 EAST, NMPM
Section 32: SW/4

(l) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 24: All
Section 25: E/2
Section 36: All

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM
Section 16: All
Section 18: All
Section 19: All
Section 20: S/2
Section 21: All
Section 29: All
Section 30: All
Section 31: All
Section 32: All
Section 33: W/2

TOWNSHIP 21 SOUTH, RANGE 27 EAST, NMPM
Section 4: Lots 3, 4, 5, 6, 11, 12, 13, & 14
Section 5: All
Section 8: S/2
Section 17: All
Section 20: All
Section 29: W/2
Section 30: All
Section 31: N/2
Section 32: W/2

(m) EXTEND the East Carlsbad-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 27 EAST, NMPM
Section 35: S/2

(n) EXTEND the South Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 26 EAST, NMPM
Section 13: N/2

(o) EXTEND the Cato-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 30 EAST, NMPM
Section 1: NE/4

TOWNSHIP 9 SOUTH, RANGE 30 EAST, NMPM
Section 8: NE/4

(p) EXTEND the Flying "M"-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 33 EAST, NMPM
Section 19: SE/4

Docket No. 28-77

(q) EXTEND the Indian Draw-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM
Section 7: SE/4 and N/2 SW/4
Section 18: W/2 SW/4

(r) EXTEND the South Leonard-Queen Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 37 EAST, NMPM
Section 11: SW/4

(s) EXTEND the East Lusk-Bone Springs Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM
Section 16: SE/4

(t) EXTEND the West Tonto-Pennsylvanian Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM
Section 7: S/2 and NE/4

(u) EXTEND the White City-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 26 EAST, NMPM
Section 9: All
Section 19: All

****

Docket No. 29-77

DOCKET: COMMISSION HEARING - TUESDAY - SEPTEMBER 20, 1977

OIL CONSERVATION COMMISSION - 9 A.M. - CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 5961: (REHEARING)

Application of D. L. Hannifin for amendment of Order No. R-4432, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-4432 to remove the present operator of the pooled proration unit comprising the S/2 of Section 24, Township 22 South, Range 26 East, South Carlsbad-Morrow Gas Pool, Eddy County, New Mexico, and to designate applicant as operator of said unit.

Case 6034

OIL CONSERVATION COMMISSION
Hobbs DISTRICT

OIL CONSERVATION COMMISSION
BOX 2088
SANTA FE, NEW MEXICO

DATE August 19, 1977

RE: Proposed MC _____
Proposed DHC _____
Proposed NSL _____
Proposed SWD X
Proposed WFX _____
Proposed PMX _____

Gentlemen:

I have examined the application dated _____

for the Flag Redfern Oil Co. (Operator) Bilbrey "51" (Lease and Well No.) #1-A (Unit, S-T-R) 23-9-37

and my recommendations are as follows:

Recommend hearing on this well.----J.W.R.

(1) Nearest wells ¼ mile east in Units D & E, 23-9-37, Sawyer San Andres, and wells ½ mile south & west, West Sawyer San Andres, all producing from same zone as proposed injection well.

(2) There is good usable Ogallala fresh water in the area.

Yours very truly,

John W. Runyan

AUG 9 [illegible]
OIL [illegible]

Case 6034

Flag-Redfern Oil Company

1200 WALL TOWERS WEST • MIDLAND, TEXAS 79701 • PHONE (915) 683-5184

August 23, 1977

Mailing address:
P. O. Box 23
Midland, Texas 79702

File:

New Mexico Oil Conservation Commission
P. O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Attention: Mr. Carl Ulvog
Geologist and Oil and Gas Inspector

Re: Confirmation of Hearing
Application for Salt Water
Disposal Permit
Bilbrey "51" Well No. 1
Federal Lease LC-065151
Sawyer (San Andres) Field
Lea County, New Mexico

Dear Mr. Ulvog:

This letter will serve to confirm Flag-Redfern Oil Company's request for a hearing for a salt water disposal permit for the above captioned well, which was requested orally today in your conversation with Mr. Byron Greaves.

It is our understanding that the hearing will be on September 14, 1977. Please advise us of the time and location where this hearing is to occur.

Thank you for your cooperation in this matter.

Sincerely,

Steve Rossler
Petroleum Engineer

SR:ss

RECEIVED
AUG 25 1977
OIL CONSERVATION COMM
Santa Fe

Through merger this Company is the successor of Flag Oil Corporation of Delaware, Redfern Development Corporation, Redfern Oil Company, Peter F. Redfern & Sons Co., Carney Properties, Inc. and Pomaikai Oil Corporation.

must know by [illegible]
well beg. Sept. 1956
9/20: they will advise what
they decide (Gordon)

San Andres production
all around – offsets 3 ways

Form C-108
Revised 1-1-65

Case 6034

NEW MEXICO OIL CONSERVATION COMMISSION

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

OPERATOR	ADDRESS
Flag-Redfern Oil Company	P. O. Box 23, Midland, Texas 79702

LEASE NAME	WELL NO.	FIELD	COUNTY
Bilbrey "51"	1	Sawyer (San Andres)	Lea

LOCATION

UNIT LETTER A ; WELL IS LOCATED 660 FEET FROM THE North LINE AND 660 FEET FROM THE East LINE, SECTION 23 TOWNSHIP 9S RANGE 37E NMPM. Fed. Lse. LC-065151

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8-5/8"	415'	250	Surface	Circulated
INTERMEDIATE	None				
LONG STRING	4-1/2"	5070'	250	3827'	Calculated
TUBING	2-3/8"	4934'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Model "R" set at 4900'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
San Andres	4774'	Not drilled through

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Through tubing	Perforations	4941-5022'

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	For oil production	No

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

-

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 useable water aquifers	No higher oil or gas zones	Devonian - 11,618'

ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
225	175	350	Closed	Pressure	2000

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)

W. P. Bilbrey, Route 1, Crossroads, New Mexico

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

No offset operators within 1/2 mile of well

RECEIVED
AUG 19 1977
OIL CONSERVATION COMM.
Santa Fe

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	NA	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.

(Signature)	(Title)	(Date)
	Petroleum Engineer	8-11-77

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.

Cardinal

ANALYTICAL SERVICE LABORATORY

Case 6034

CARDINAL

Date 1-12-73

Report No. _____

Company Flag Redfern

Address

Attention Mr. Graves

Recent Treatments

County Lea

Field

Formation San Andres

Date 1-11-73
Sampled Evening

Lease Bilbrey

Well No. #1

Depth

Sample Source Well-head

WATER ANALYSIS
(Reported as mg per Liter)

Specific Gravity	1.160	pH	4.5
Chloride	144,000	Calcium	28,000
Bicarbonate	1269	Magnesium	2160
Sulfate	280	Total Iron	Nil
Sulfide	Strong	Sodium (Calc.)	57,569
Total Hardness (as Ca CO_3)	79,000	Total Dissolved Solids (Calc.)	203,378
Resistivity Ohm Meters @			

Remarks:

JJR
JB
C.G
15[illegible]

Analyst John A. Sims

Cardinal Representative _____

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

Case 6039

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Flag-Redfern Oil Company	Bilbrey 51	1

Unit Letter	Section	Township	Range	County
A	23	9-S	37-E	Lea

Actual Footage Location of Well:
660 feet from the North line and 660 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3981	San Andres	Sawyer DESIGNATED	160 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

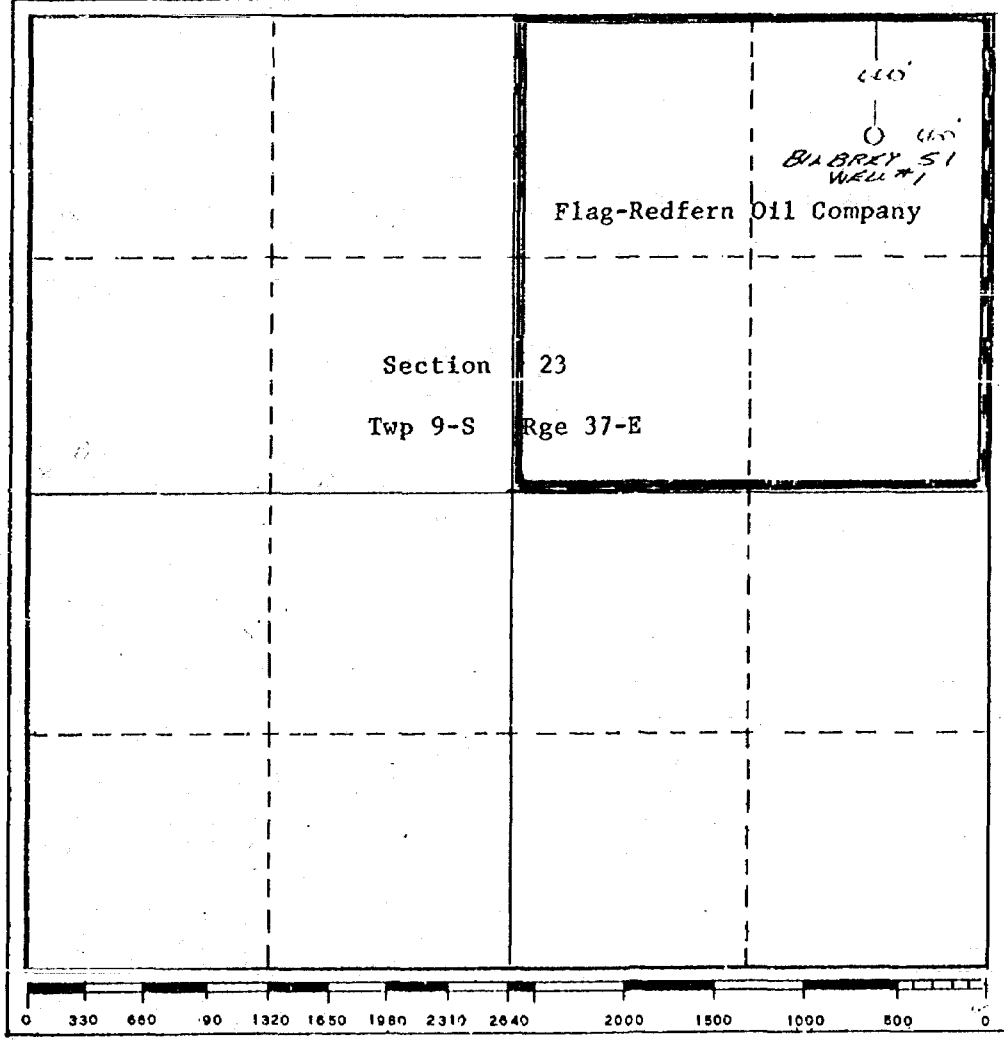
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☒ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

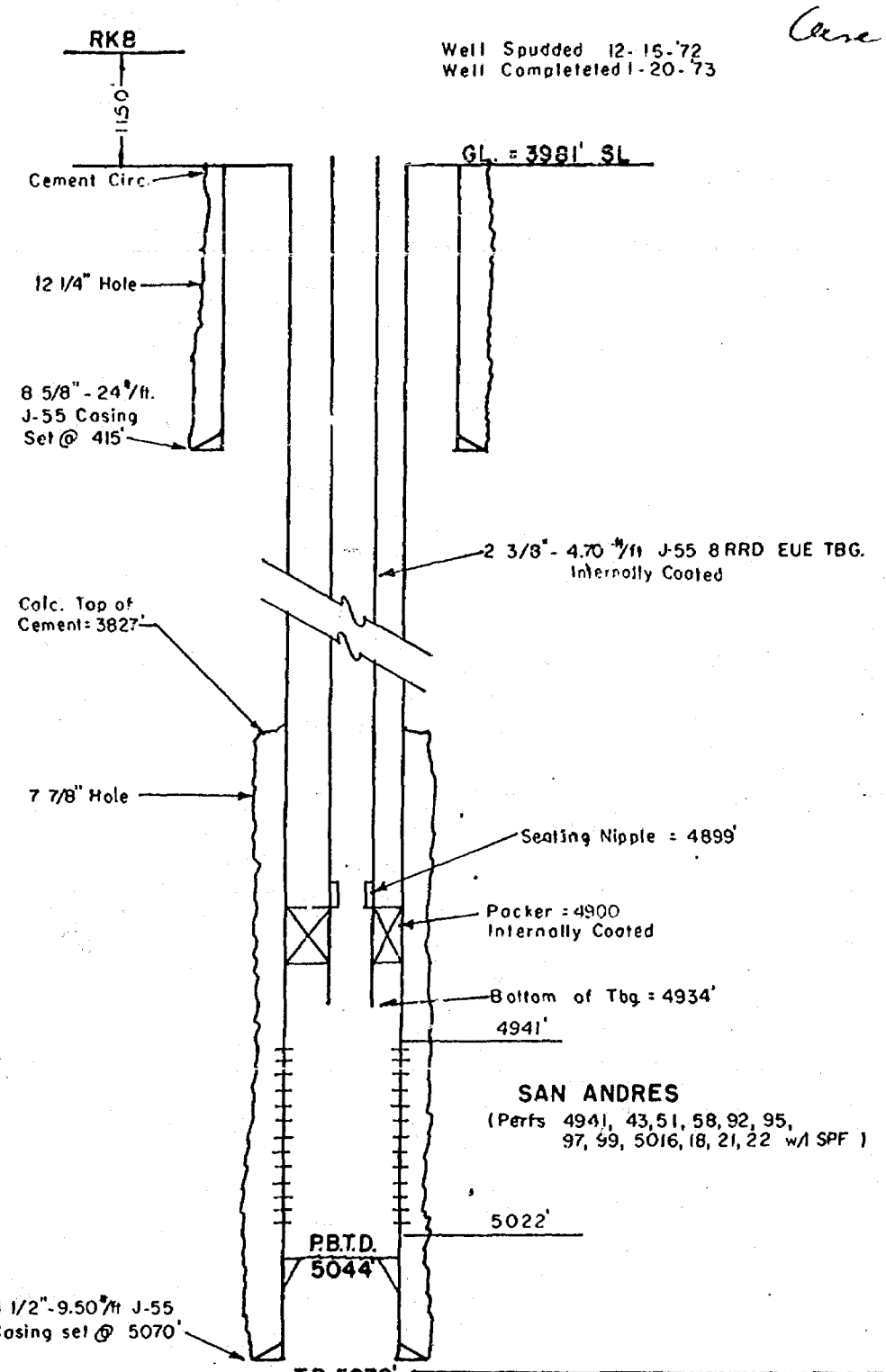
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Bryan H. Shaw
Position: Production Manager
Company: Flag-Redfern Oil Company
Date: 11-9-72

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 11-8-72
Registered Professional Engineer and/or Land Surveyor: Ronald W. Eaton
Certificate No. 754

Case 6034



Flag-Redfern Oil Company

1200 WALL TOWERS WEST • MIDLAND, TEXAS 79702

P. O. BOX 23 • PHONE (915) 682-6184

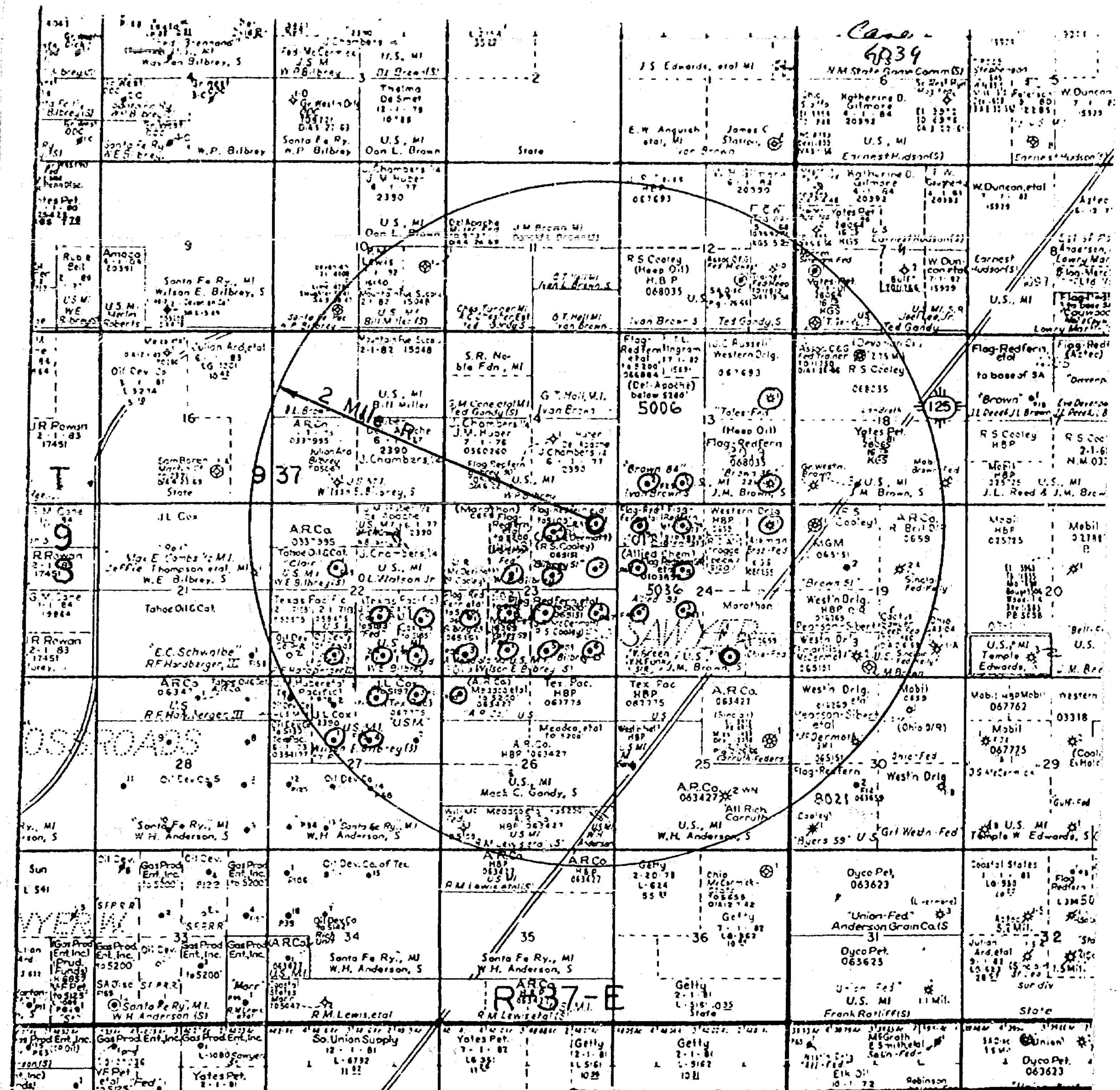
WELL PROFILE

PROPOSED WATER INJECTION WELL
BILBREY 51-Well No. 1
SAWYER (SAN ANDRES) FIELD

Federal Lease #Lc-065151
Location: Unit Letter "A", 660' FN & EL, Sec. 23, T-9-S, R-37-E
Lea County, New Mexico

8-12-77

Case 6839



Flag-Redfern Oil Company

1200 WALL TOWERS WEST • MIDLAND, TEXAS 79702
P.O. BOX 23 • PHONE (915) 6835184

PROPOSED WATER INJECTION WELL
BILBREY 51- WELL No.1
SAWYER (SAN ANDRES) FIELD

Federal Lease # Lc-065151
Location: Unit Letter "A", 660'FN & EL, Sec. 23, T-9-S, R-37-E
Lea County, New Mexico

All wells are producing or have produced from the San Andres or Devonian formations.

SCALE: 1" = 4000'

8-12-'79

DRAFT

dr/

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. 6034

Order No. R- 5539

APPLICATION OF FLAG-REDFERN OIL COMPANY FOR 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 September 14, 1977, at Santa Fe, New Mexico, before Examiner, Richard L. Stamets.

NOW, on this _____ day of September, 1977, 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, Flag-Redfern Oil Company, is the owner and operator of the Bilbrey "51" Well No. 1, located in Unit A of Section 23, Township 9 South, Range 37 East, NMPM, Sawyer-San Andres Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres formation, with injection into the perforated interval from approximately 4941 feet to 5022 feet.

(4) That the injection should be accomplished through 2 3/8 internally coated -inch ~~plastic lined~~ tubing installed in a packer set at approximately 4900 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the

annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than ~~700~~ 1138 psi.

(6) That the operator should notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(8) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Flag-Redfern Oil Company, is hereby authorized to utilize its Bilbrey "51" Well No. 1, located in Unit A of Section 23, Township 9 South, Range 37 East, NMPM, Sawyer-San Andres Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4900 feet, with injection into the perforated interval from approximately 4941 feet to 5022 feet;

PROVIDED HOWEVER, that the tubing shall be ~~plastic-lined~~ internally coated; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than ~~700~~ 1138 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(6) 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.