CASE No.
4818

Application,

Transcripts,

Small Exhibts

ETC.

NEW MEXICO OIL CONSERVATION COMMISSION
EXAMINER HEARING
WEDNESDAY, SEPTEMBER 13, 1972

CASE 4818

APPLICATION OF TIPPERARY LAND AND EXPLORATION CORPORATION FOR A WATERFLOOD PROJECT IN THE NORTH BAGLEY (PENN) FIELD, LEA COUNTY, NEW MEXICO

Tipperary Land and Exploration Corporation requests authority to institute a pilot waterflood in the North Bagley (Penn) Field. Specifically, applicant seeks permission to inject produced water from the North Bagley Field into the "F" zone of the Strawn Formation in its Bess No. 1 well through perforations at 10,177' and 10,179' with permission to also inject into other zones in this well if it appears desirable.

The North Bagley (Penn) Field has been a prolific producer with total oil production of about 30 million barrels to date. However, the oil rate for the field has been declining for the past 3 years, and it now appears that more than 70% of the ultimate primary production for the field has already been recovered. Applicant feels that it is now time to give serious consideration to possible secondary recovery methods that might be used to obtain additional oil from this field. For this reason applicant is proposing this pilot operation to obtain information that will aid in evaluating the waterflood potential of this field.

Exhibit 1 is a lease plat showing a portion of the North Bagley (Penn) Field in the area of the proposed injector. The proposed injector is located 660' FNL and 1980' FEL of Section 20, T-11-S, R-33-E. Wells having the "F" zone of the Strawn open to production are encircled on the lease plat. Applicant is operator of all wells directly offsetting the proposed injector. Each of the offset wells is equipped with an individual tank battery which will permit close monitoring of fluid rates on the wells.

Exhibit 2 is a portion of the Gamma Ray-Acoustic log run on the Bess No. 1 which shows the producing interval in the well. The well is perforated in 14 or more porosity zones ranging in depths from 9,308' to 10,179'. Also shown on this log is the applicant's designation of the various porosity zones in the Strawn Formation. The proposed zone of injection is the lowermost producing interval designated as the "F" zone on the log. Based on log calculations, it is estimated that the "F" zone contained about 12.5% of the total oil-in-place for this well.

Exhibit 3 is a graph showing the production history for the Bess No. 1. This well was completed on December 23, 1967, and to July 1, 1972, had recovered 329,816 barrels of oil. Production on the well has been declining for the past 2-1/2 years with the June, 1972, rate being only 27% of the peak rate observed in December 1969. Based on the projected decline to an economic limit of 200 barrels monthly, it appears this well will recover about 384,800 barrels of oil. This indicates that the well has already recovered more than 85% of its ultimate primary production.

Exhibit 4 is a graph showing the combined production of the Bess No. 1 and nine offsetting wells in the pilot area. These wells, which are colored on the map insert, are the ones most likely to be affected by water injection into the Bess No. 1. The combined performance of wells in the pilot area is very similar to that of the Bess No. 1. Current rate is about 30% of the peak rate observed. Cumulative production to July 1, 1972, was 3,084,405 barrels with indicated ultimate of 3,786,400 barrels. This indicates that these wells have now recovered more than 81% of their ultimate primary recovery. Production figures used in the preparation of Exhibits 3 and 4 were taken from the annual and monthly reports of the New Mexico Oil & Gas Engineering Committee.

Exhibit 5 is a diagramatic sketch of the proposed completion assembly for the Bess No. 1. Applicant proposes to set a permanent packer between the "E" and "F" zones of the Strawn and injected produced water from the field down the tubing. About 15 feet of vertical separation exists between the top of the porosity in the "F" zone and the bottom of the porosity in the "E" zone. One reason the applicant desires permission to inject into other zones in this well is the possibility of communication developing between these two zones. If this should occur, applicant would then want to set a packer above the "E" zone and inject into both zones. It is also possible applicant will want to expand the injection interval at some later date to evaluate the waterflood potential of some of the upper zones. Since the proposed pilot test is expected to be of limited duration, applicant does not plan to internally coat the tubing string unless required to do so.

Exhibit 6 is a copy of a recent analysis of water produced in the Bess No. 1 This should be typical of the water that will be used for injection purposes. No individual production or injection tests are available on the "F" zone in the Bess No. 1 on which to base estimates of injection rates. It was observed at the time of the tracer survey that the zone took water readily on a vacuum. Based on a comparison with other intervals that were drill stem tested, it is estimated that the zone will take water at about 1,400 barrels per day. At this time, there is ample produced water

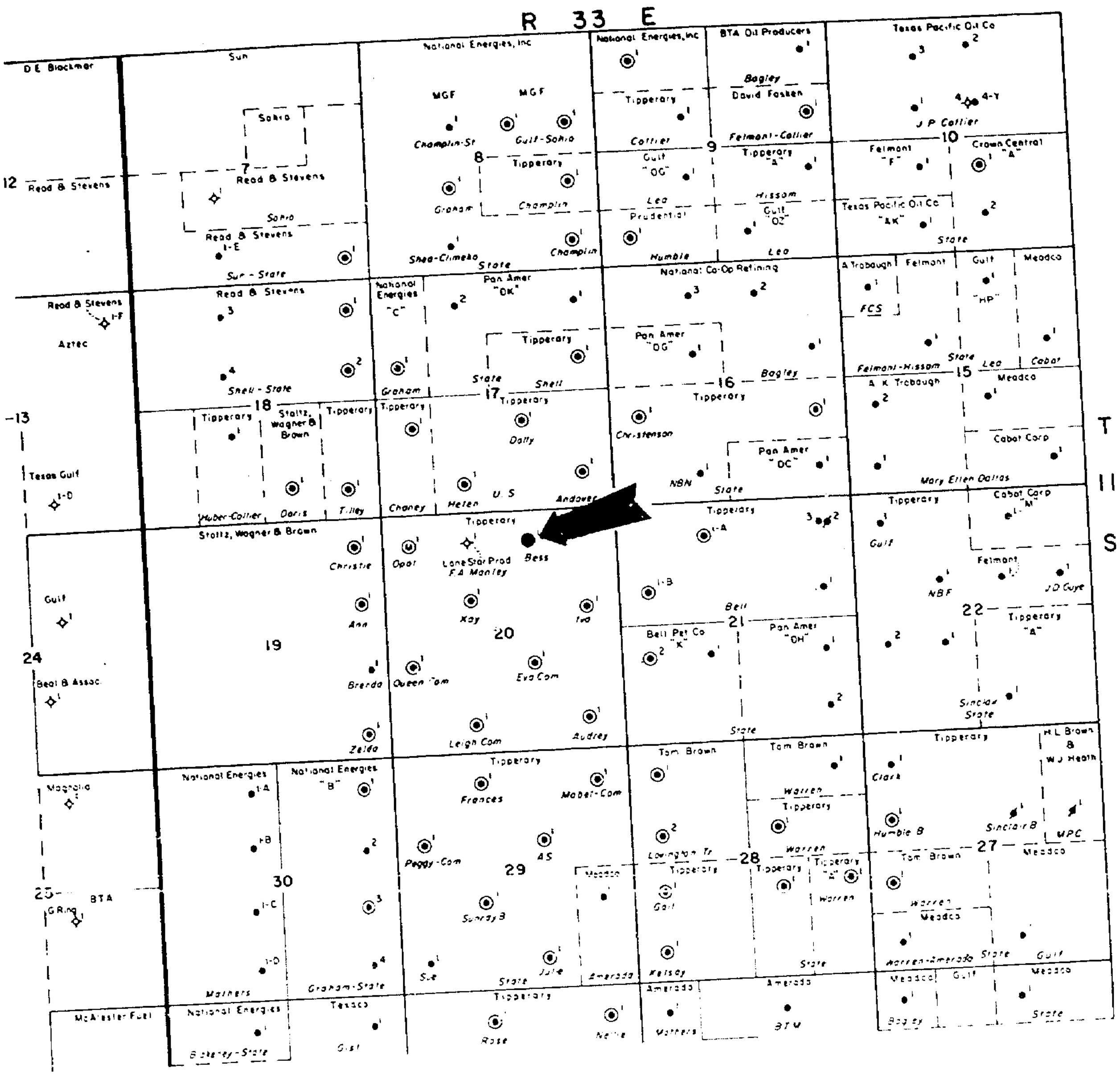
in the field to support a pilot injection program of limited extent. However, water production, like the oil rate, is declining, and water volume might not be sufficient at a later date.

At this time most wells in the North Bagley Field are equipped with hydraulic pumping equipment that is capable of handling large fluid volumes. This type of equipment would be desirable in the waterflood project. However, unless the likelihood of a flood becomes evident soon, it is likely that most operators will convert to rod pumping installations that are less expensive to operate.

In summary, it is the applicant's opinion that an evaluation of the secondary recovery potential of this field is needed as soon as possible. While any estimates of the possible recovery by secondary recovery would be speculative at this time, it is apparent from the large primary recovery that the additional recovery could be very significant. The applicant respectfully requests that this application be approved.

EXHIBITS

EXHIBIT 1	Lease Plat
EXHIBIT 2	Log of Proposed Injection Well
EXHIBIT 3	Production Graph of Proposed Injection Well
EXHIBIT 4	Production Graph of Wells in Pilot Area
EXHIBIT 5	Diagramatic Sketch of Completion Assembly for Proposed Injection Well
EXHIBIT 6	Water Analysis



LEGEND

◉ Well Known Open To Production In STRAWN "F" ZONE

A PORTION OF

NORTH BAGLEY (PENN) FIELD

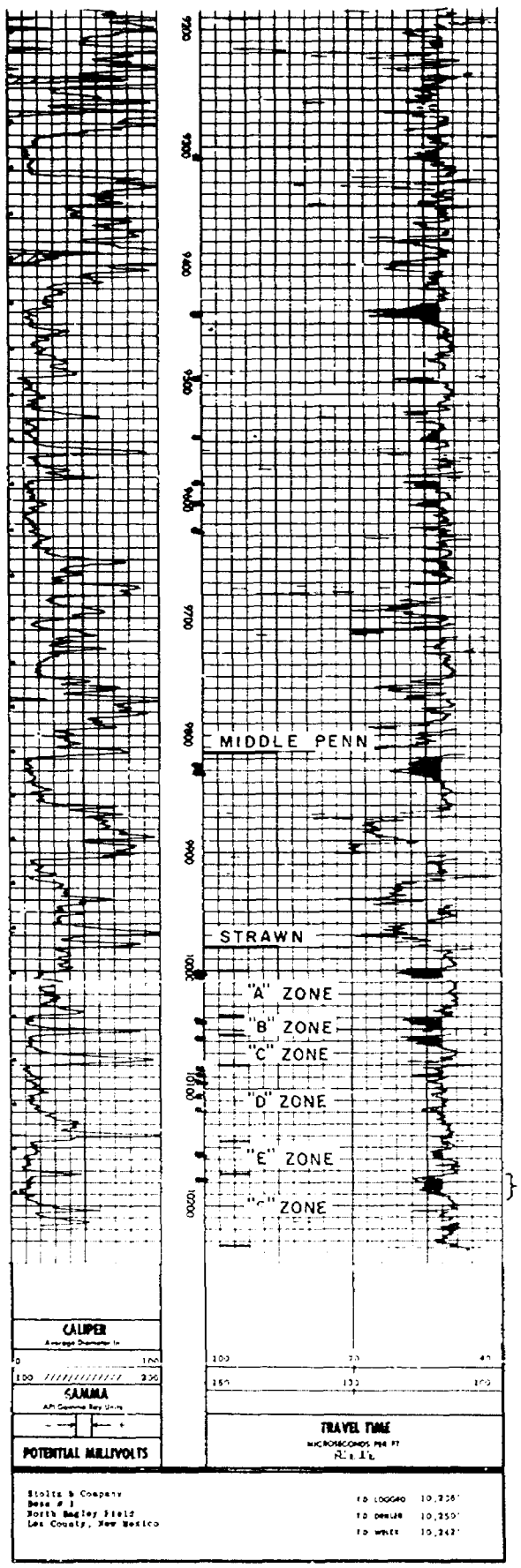
LEA COUNTY, NEW MEXICO

LEASE PLAT

RALPH H VINEY & ASSOCIATES MIDLAND, TEXAS

EXHIBIT 1

TIPPERARY LAND AND EXPLORATION CORP.
BESS NO. 1
NORTH BAGLEY (PENN) FIELD
LEA COUNTY, NEW MEXICO



PERFS. 9308' - 9311'

PERF. 9440'

PERF. 9497'

PERF. 9548'

PERF. 9585'
PERF. 9604'
PERF. 9624'

PERFS. 9825' & 9831'

PERFS. 10,002' & 10,004'

PERFS. 10,042' & 10,044'
PERFS. 10,057' & 10,059'

PERFS. 10,082', 10,088',
10,099', 10,105' & 10,118'

PERFS. 10,154' & 10,156'

PROPOSED ZONE OF INJECTION
PERFS. 10,177' & 10,179'

EXHIBIT 2

EXHIBIT 3

PRODUCTION HISTORY
TIPPERARY LAND AND EXPLORATION CORP.
BESS NO. 1
NORTH BAGLEY (PENN) FIELD
LEA COUNTY, NEW MEXICO

MONTHLY OIL PRODUCTION - BARRELS

100,000
10,000
1,000
100

CUMULATIVE 329,816 BO

ESTIMATED ULTIMATE 384,800 BO

current rate of prod 2700 bo/mo
90/day
27% of peak production

19 66 | 19 67 | 19 68 | 19 69 | 19 70 | 19 71 | 19 72 | 19 73 | 19 74 | 19 75 | 19 76 | 19 77 | 19 78 | 19 79 | 19 80 | 19 81 | 19 82 | 19 83 | 19 84 | 19 85

MAR JUNE SEPT DEC

MONTHLY OIL PRODUCTION - BARRELS

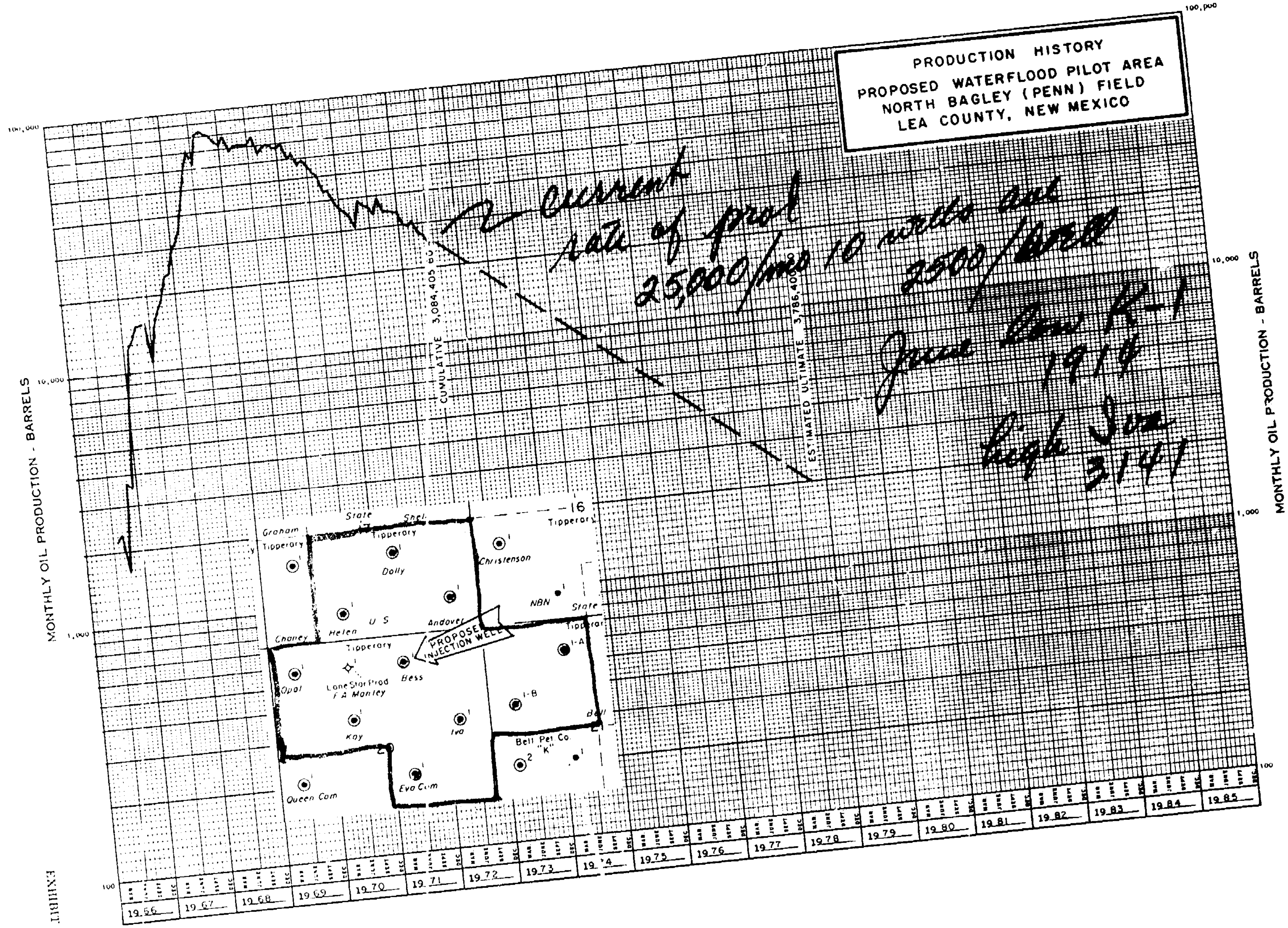

PRODUCTION HISTORY
PROPOSED WATERFLOOD PILOT AREA
NORTH BAGLEY (PENN) FIELD
LEA COUNTY, NEW MEXICO
MONTHLY OIL PRODUCTION - BARRELS
100,000
10,000
1,000
100
CUMULATIVE 3,084,405 BO
ESTIMATED ULTIMATE 3,786,400
current
rate of prod
25000/mo 10 wells ave
2500/
K-1
1914
3141
Graham
Tipperary
State
Shell
Dolly
Christenson
NBN
Helen
U S
Andover
Chaney
PROPOSED INJECTION WELL
Opal
Lone Star Prod
F.A. Manley
Bess
Kay
Iva
I-A
I-B
Bell Pet Co.
"K"
Queen Com
Eva Com
16
19 66
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EXHIBIT 1

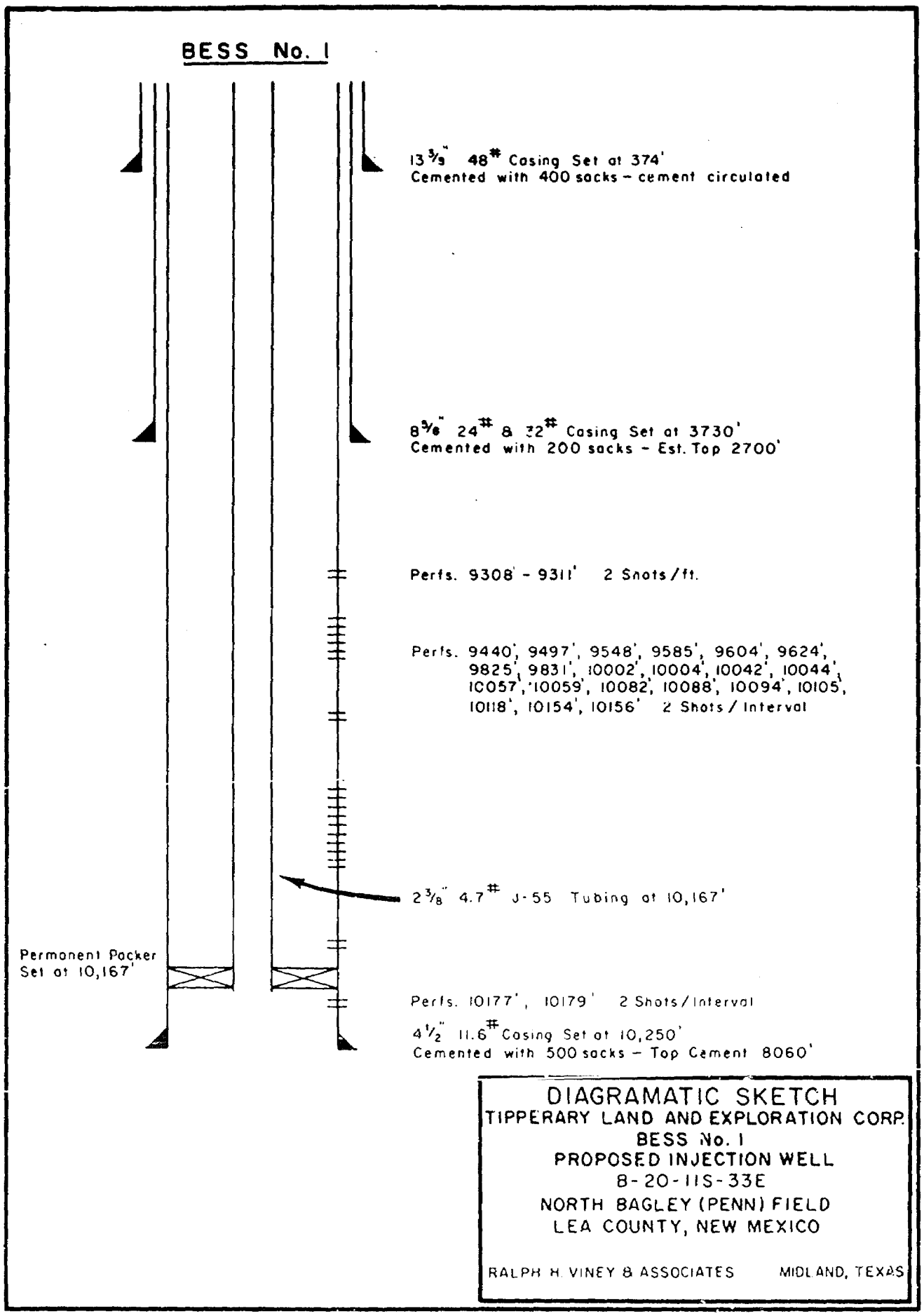

BESS No. 1
13 3/8" 48# Casing Set at 374'
Cemented with 400 sacks – cement circulated
8 5/8" 24# & 32# Casing Set at 3730'
Cemented with 200 sacks – Est. Top 2700'
Perfs. 9308' - 9311' 2 Shots/ft.
Perfs. 9440', 9497', 9548', 9585', 9604', 9624', 9825', 9831', 10002', 10004', 10042', 10044', 10057', 10059', 10082', 10088', 10094', 10105', 10118', 10154', 10156' 2 Shots / Interval
2 3/8" 4.7# J-55 Tubing at 10,167'
Permanent Packer Set at 10,167'
Perfs. 10177', 10179' 2 Shots/Interval
4 1/2" 11.6# Casing Set at 10,250'
Cemented with 500 sacks – Top Cement 8060'
DIAGRAMATIC SKETCH
TIPPERARY LAND AND EXPLORATION CORP.
BESS No. 1
PROPOSED INJECTION WELL
8-20-11S-33E
NORTH BAGLEY (PENN) FIELD
LEA COUNTY, NEW MEXICO
RALPH H. VINEY & ASSOCIATES MIDLAND, TEXAS

EXHIBIT 5

BAROID DIVISION
N L Industries, Inc.
P.O. Box 1675 Houston, Texas 77001
BAROID TREATING CHEMICALS

WATER ANALYSIS TEST REPORT

not from Bess only. from a number of wells.

			SHEET NUMBER
COMPANY: Tipperary Land Exploration			DATE: 9/6/72
FIELD: Bagley		COUNTY OR PARISH:	STATE:
LEASE OR UNIT: Bess	WELL(S) NAME OR NO.: #1	WATER SOURCE (FORMATION):	
DEPTH, FT.:	BHT, F:	SAMPLE SOURCE:	TEMP, F:
WATER, BBL/DAY:	OIL, BBL/DAY:	GAS, MMCF/DAY:	
TYPE OF OIL:	API GRAVITY: °	TYPE OF WATER: ☐ PRODUCED WATER ☐ INJECTION WATER OTHER ____	

WATER ANALYSIS PATTERN
(NUMBER BESIDE ION SYMBOL INDICATES me/l* SCALE UNIT)

	20	15	10	5	0	5	10	15	20	
Na^+										Cl^-
Ca^{++}										HCO_3^-
Mg^{++}										$SO_4^=$
Fe^{+++}										$CO_3^=$

DISSOLVED SOLIDS

CATIONS	me/l*	mg/l*
Total Hardness	244	
Sodium, Na^+ (calc.)	1027	23611
Calcium, Ca^{++}	184	3680
Magnesium, Mg^{++}	60	750
Iron (Total), Fe^{+++}	1.1	19
ANIONS		
Chloride, Cl^-	1267	45,000
Sulfate, $SO_4^=$	2.6	125
Carbonate, $CO_3^=$		
Bicarbonate, HCO_3^-	11.8	719.8
Hydroxyl, OH^-		
Sulfide, $S^=$		2
Phosphate-Meta, PO_3^-		
Phosphate-Ortho, $PO_4^≡$		

DISSOLVED GASES

Hydrogen Sulfide, H_2S		mg/l*
Carbon Dioxide, CO_2		mg/l*
Oxygen, O_2		mg/l*

PHYSICAL PROPERTIES

pH	7.9	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, JTU Units		
Total Dissolved Solids (Calc.)		mg/l*
Stability Index @ 68 F	1.88	
@ 104 F	2.28	
$CaSO_4$ Solubility @ 68 F	55.0	~~mg/l*~~ me/l
@ 104 F	56.6	~~mg/l*~~ me/l
Max. $CaSO_4$ Possible (Calc.)	2.6	mg/l*
Max. $BaSO_4$ Possible (Calc.)		mg/l*
Residual Hydrocarbons	350	ppm(Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

The stability index shows a Calcium Carbonate scaling tendency however, the Calcium Sulfate solubility shows no possibility of Calcium Sulfate scale developing.

* NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

BTC ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
H. Fischer	22	P.O.Box 311 Midland, Texas	682-4381	
TESTED BY:	DATE: 9/6/72	DISTRIBUTION: ☐ CUSTOMER ☐ BTC ENGINEER OR ☐ BTC LAB ☐ AREA OR ☐ DISTRICT OFFICE ☐ BTC SALES SUPERVISOR		

FORM #BR-2149A

EXHIBIT 6

RALPH H. VINEY & ASSOCIATES

Engineering Consultants

Central Building
MIDLAND, TEXAS 79701
915 682-5346
915 682-8181

August 16, 1972

Case 4818

New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Gentlemen:

Request for Permit to Inject Water
Bess No. 1 Well, North Bagley (Penn) Field
Lea County, New Mexico

Tipperary Land and Exploration Corporation respectfully requests a hearing before the Commission to consider its application to inject produced water from the North Bagley (Penn) Field into the captioned well.

Purpose of the planned injection is a pilot waterflood to obtain information that will aid in evaluating the secondary recovery potential of the North Bagley Field. Initial injection is planned into the "F" zone of the Strawn Formation through perforations at 10,177' and 10,179'. However, Tipperary requests permission also to inject into other zones of the Penn Formation without the necessity of another hearing if additional testing appears desirable. The "F" zone of the Strawn has been selected for injection initially because tracer surveys indicate water can be confined to this zone and also because the zone is open in all offsetting wells.

The proposed injection well, the Tipperary Land and Exploration Corporation Bess No. 1 Well, is located 660' FNL and 1980' FEL of Section 20, Township 11 South, Range 33 East, Lea County, New Mexico. Initial injection rates into the well are estimated at about 1,400 barrels of water daily.

Enclosed are a log and a diagramatic sketch of the proposed injection well along with a plat of this portion of the North Bagley Field.

Tipperary respectfully requests that a hearing be set at the earliest available date.

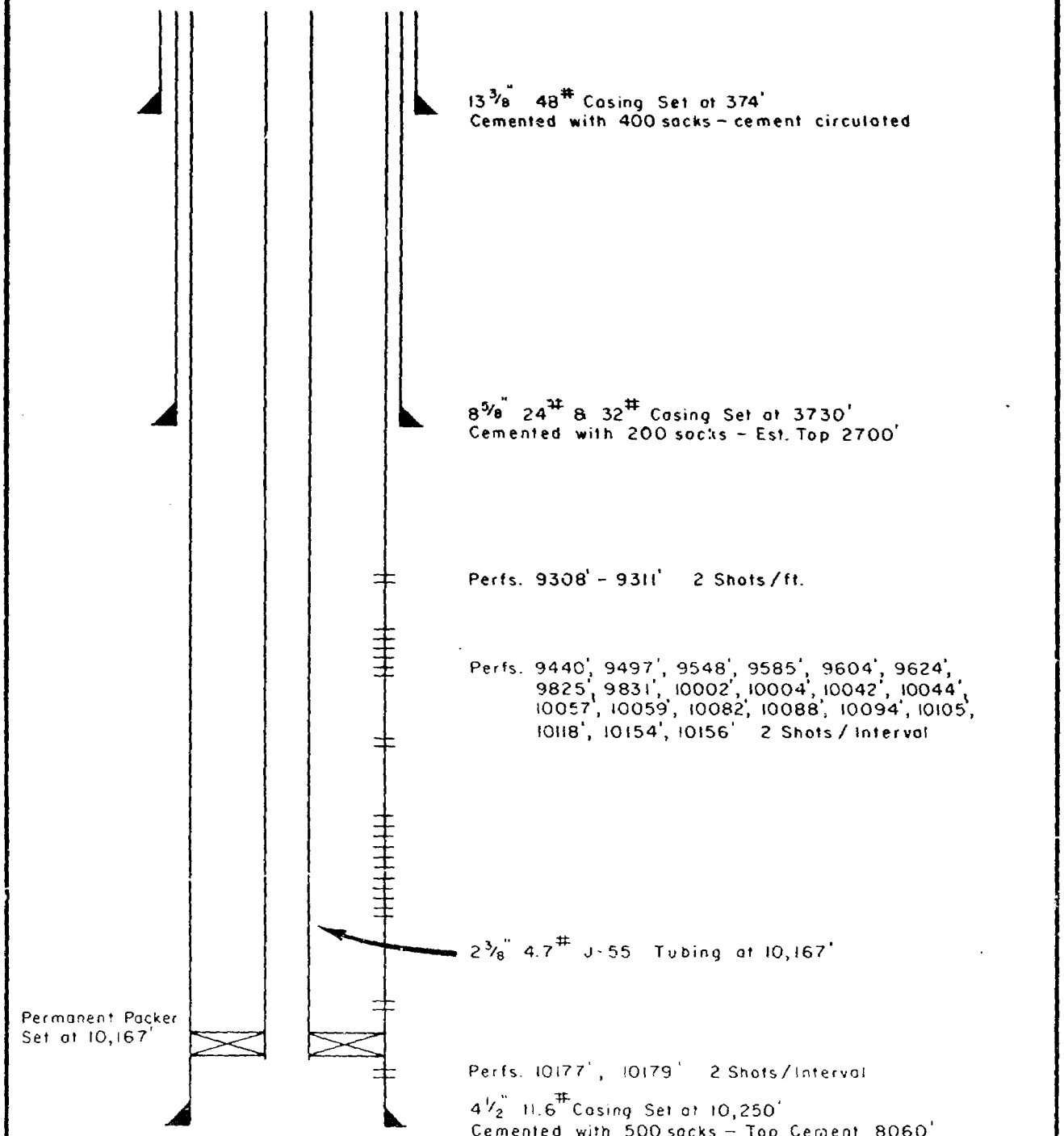
Yours very truly,

Larry McIntosh

LM:j
cc: Tipperary Land & Exploration
Mr. Jason Kellahin

8-23-72

BESS No. 1



DIAGRAMATIC SKETCH
TIPPERARY LAND AND EXPLORATION CORP.
BESS No. 1
PROPOSED INJECTION WELL
B-20-11S-33E
NORTH BAGLEY (PENN) FIELD
LEA COUNTY, NEW MEXICO

RALPH H. VINEY & ASSOCIATES MIDLAND, TEXAS

Case 4818

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
CONFERENCE HALL, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
September 13, 1972

EXAMINER HEARING

IN THE MATTER OF:

Application of Tipperary Land and Exploration Corporation for a waterflood project, Lea County, New Mexico.

CASE NO. 4818

BEFORE: Daniel S. Nutter
Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case Number 4818.

MR. HATCH: Application of Tipperary Land and Exploration Corporation for a waterflood project, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, appearing on behalf of the Applicant. I have one witness I would like to have sworn.

* * * * *

LARRY McINTOSH

was called as a witness and, after being duly sworn according to law, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Larry McIntosh.

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

A I'm a consultant petroleum engineer in Midland, Texas.

Q And with whom are you associated?

A I am associated with Ralph V. Viney.

Q Have you ever testified before the Oil Conservation Commission and made your qualifications a matter of record?

A No, sir, I haven't.

Q For the benefit of the Examiner, would you briefly

outline your education and your experience as a petroleum engineer?

A I have a degree of Bachelors of Science, degree of Petroleum Engineering, receiving them at the University of Oklahoma, June of 1958. Following graduation, I worked with Atlantic Richfield Company until January of 1967, working as a reservoir engineer and an operations engineer. In January of 1967 I entered private consulting business and continued in that business working independently and associated with Ralph V. Viney.

Q In connection with your work at Atlantic Richfield, where did you work?

A Primarily in the Midland, Texas, office, and the west Texas area.

Q Does that have to do with operations in the State of New Mexico?

A No, sir, those did not.

Q But it was in the Permian Basin?

A Yes, sir.

Q Now, with your work as a consultant, have you done any work with Tipperary Resources?

A Yes, sir, I have.

Q Did you prepare a report in connection with the Application?

A Yes, sir, I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Kellahin) Mr. McIntosh, what's proposed in the Application?

A Tipperary Land and Exploration Corporation is seeking authority here to institute a waterflood project in the North Bagley-Pennsylvanian Pool, specifically to inject water into the Strawn.

Q Now, would this be in the nature of a pilot waterflood project?

A Yes, it is.

Q It would not be, at this time, a full-scale water injection project?

A No, sir.

Q Now, referring to what has been marked as Applicant's Exhibit A, which is the multiple paged Exhibit containing individually numbered Exhibits, would you discuss that Application, please?

A Sir, the North Bagley-Pennsylvanian Field has been a prolific oil producer. It produced approximately 30 billion barrels of oil to date. However, for the past three years, the oil rate has been dropping in the field and it would now appear that about 70 percent

of the ultimate primary production for the field has already been recovered. It is the Applicant's feeling that it is now time to give some serious consideration to the possibility of secondary recovery in this field and for this reason the Applicant is proposing to institute a pilot waterflood that will obtain information that will help in evaluating the possibility of the waterflood in the field.

Q Now, in connection with the present state and depletion, would you say that this pool is in an advanced stage of depletion?

A Yes, it's an advanced stage, I would say more than 70 percent.

Q Is it a stripper stage?

A No, it's not in a stripper stage.

Q So, you are familiar with the Commission rules in connection with the waterflood project, are you not, which requires that they be at a stripper stage?

A Yes, sir, I am familiar with that.

Q In that connection, why is this Application being filed at the present time, rather than waiting until the pool is at a stripper stage?

A Well, sir, there are several reasons for this. One being that it does usually require extensive negotiation and study to unitize a field, and a unitized field is

the most efficient type of operation. There are only several completion factors involved in this. Most of the wells in this field are on hydraulic pumps, currently capable of handling large volumes of fluid. This is the type of pump that would be desirable in the end that water fluid is taken in this field. However, unless the likelihood of a flood becomes evident soon, it is likely that most operators will convert to rod pumping installations that are less expensive to operate; this would require a later change back to hydraulic pump and involve, what I consider, some unnecessary economic expenditure. Another reason is that at the present time there is an ample amount of produced water available in this field to conduct a pilot test to some extent. However, along with the decline in oil production, the water production is also dropping and it is possible at some future date that an ample supply of water will not be available.

Q So the present purpose of this Application is merely to obtain information for a future project, is that right?

A Yes.

Q And in the event it is not a stripper stage at the present time, a unitized form, it could readily be converted to a pressure maintenance project, could it not?

dearnley, meier & mc cormick
209 SIMMS BLDG • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO 87103
1216 FIRST NATIONAL BANK BLDG. EAST • ALBUQUERQUE, NEW MEXICO 87108

A Yes.

Q Now, refer to what has been marked as Exhibit A-1 and would you identify that, please?

A Exhibit A-1 is a lease plat showing a portion of the North Bagley field around the proposed injection well. The proposed injection well is the Tipperary Bess Well Number 1 which is located 660 feet from the north line and 1,980 feet from the east line of Section 20, Township 11 South, Range 33 East. This map also shows the wells having the "F" zone open to production. These wells are encircled on the lease plat. The Applicant is the operator of all of the wells directly offsetting this proposed injection well. I might add that each of the offset wells is equipped with an individual tank battery which will permit closed monitoring of fluid, and should add in evaluating the effectiveness of the pilot flood.

Q Now, have the royalty owners consented to utilizing the Bess Number 1 for injection purposes?

A Yes, sir, they have.

Q And the Applicant has the operator rights?

A Yes, sir, that is true.

Q Now, referring to what has been marked as Exhibit 2, would you identify that, again, please?

A Exhibit 2 is a portion of the gammaray acoustic log

that was run on the Bess Number 1 that shows the producing intervals of the wells. This well is perforated in 14 or more porosity zones ranging in depth from 9,308 feet to 10,179 feet. Also shown on this log is the Applicant's designation of the various porosity zones in the Strawn formation. The Applicant proposes to inject initially into the "F" zone, which is the lowermost producing zone in this well. This well is approximately 15 feet below the next porosity zone.

Q The well is currently producible, is it not?

A Yes, that is right.

Q And how much oil has it recovered?

A Exhibit Number 3 shows the production history on this well. The well was completed back in December of 1967 and through July of this year it had accumulated oil production of 329,816 barrels of oil. As the curve shows, it has been declining for the past two and one-half years and the present producing rate on the well is only about 27 percent of its top producing rate.

MR. NUTTER: And what was that?

THE WITNESS: It's approximately 2,700 barrels per month, or about 90 barrels per day. This is for June.

A From the projection that I show on the Exhibit there

down to the estimated economic limit of 200 barrels of oil per month, I would estimate this well to have an ultimate production of 384,800 barrels of oil. In other words, in my opinion, this well has already recovered more than 85 percent of its ultimate primary production.

Q Now, you already discussed Exhibit Number 4; would you turn to Exhibit Number 5, please and discuss that Exhibit?

A Mr. Kellahin, Exhibit Number 4 is a graph and I haven't covered it in detail.

Q Discuss Exhibit Number 4, then, I was looking at 5 here.

A Exhibit Number 4 is quite similar to Exhibit Number 3 in that it is also a production graph. This graph is a plot of the combined production of the Bess Number 1 and the nine offsetting wells in the pilot area. These wells, which are colored on the map insert, are the ones most likely to be affected by water injection into the Bess Number 1. The combined performance of the wells in the pilot area is very similar to that of the Bess Number 1. The ten wells combined production to July of this year was in excess of 3,000,000 barrels. I estimate ultimate production to be 3,786,400.

Q Now, is that based on the institution of this waterflood, or is that the primary production?

A That's the primary, estimate of the primary recovery under present conditions.

Q Now, referring to Exhibit Number 5, will you discuss that Exhibit, please?

A Exhibit 5 is a diagramatic sketch of the proposed completion for the proposed injection well, the Bess Number 1. The Applicant proposes to set a packer between the E and F zones of the Strawn and inject produced water from the field down the tubing. As I previously mentioned, there are only about 15 feet of vertical separation between the top of the porosity in the "F" zone and the bottom of the porosity in the E zone. For this and other reasons, the Applicant would desire permission to inject into other zones in this well, if the possibility of communication should develop between these zones. If this communication should develop, the Applicant would want to move a packer above the E zone and inject into both zones.

Q Now, are all those wells open and flowing wells?

A Yes.

Q Some of the zones are open, in other words?

A Yes, most of them are. I might add that it's the desire of the Applicant, in this case, to conduct this pilot flood zone so long as it is needed to obtain

positive results, either good or bad, about the floodability of it. We do not think that this is going to be of a long duration, the test. We propose not to internally coat the tubing at this time, unless it is required.

Q Now, you are injecting produced water, are you not?

A Yes, sir, that's true.

Q And you have a later Exhibit covering that?

A Yes, I do.

Q Now, in connection with your proposed completion, would it be possible for you to fill the casing tubing annulus with a fluid?

A No, we cannot fill it. This, we find in the wells in the field, and this well in particular will take fluid on a vacuum, and we cannot completley fill the casing.

Q Do you propose to use any pressure on injection?

A No, sir, we do not think it will be required, and until it appears that it will just be impossible, we will not use pressure.

Q Now, what volume of water do you propose to inject?

A We don't have individual tests on this F zone on which to predict the rate that would be used, but on a comparison with other intervals that were drill stem tested, we would estimate about 1,400 barrels of water daily, and it's produced from the field, from the

various zones.

Q But not from this well?

A No, sir.

Q How can you insure the Commission that there is no communication?

A It is the desire of the Applicant, of course, to insure himself that there is no communication here and they propose to periodically run radioactive tracer surveys on this well to see that communication is not occurring. I'm sure they would be agreeable to furnishing the Commission of copies of these surveys and also being at the period that the Commission might specify.

Q Now, referring to what has been marked as Exhibit 6 of Exhibit A, would you identify that Exhibit?

A Exhibit 6 is a copy of the water analysis that was recently collected from the field gathering line at a location near the Bess Number 1 and this should be representative of the water that's going to be used for injection purposes.

Q That is the source of water you are going to use, is it not?

A This was taken from the water line on the field gathering system at a location very close to the Bess Number 1 and this is where the water would come

off of and would be injected.

Q Now, the analysis would indicate that this water came from the Bess Number 1, is that correct?

A No, sir, that should be corrected. It did not actually come from the Bess Number 1, it was very close to the location, but it's actually the produced water from the field.

MR. NUTTER: From a number of wells?

THE WITNESS: Yes, sir, that's right.

Q (By Mr. Kellahin) Now, on the basis of this analysis, would you consider this water highly corrosive?

A I would classify it as being moderately corrosive. I'm informed that in pulling wells in the field that they find that there is not extensive corrosion on the tubular downhole line in these cases and in this field, and for this reason they are not proposing to internally coat the tubing at this time, unless it is required.

Q Now, for a short period of water injection, do you think that would cause any problems?

A No, sir, I don't believe it would.

Q Was Exhibit A, consisting of six separate Exhibits, prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I'd like to offer

Exhibit A in evidence.

MR. NUTTER: Exhibit A, Applicant's Exhibit will be admitted in evidence.

(Whereupon, Applicant's Exhibit A was marked and received into evidence)

MR. KELLAHIN: That completes the Direct Examination.

* * * * *

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. McIntosh, now, you mentioned you were going to conduct tracer surveys to see if there was communication. What will you be measuring, communication between F zone and this well and what?

A I'm talking about communication behind a pipe in this well just to see that we are confining it.

Q Well, you won't be producing the other zones, however, will you?

A No.

Q So how would you know?

A Well, by lowering a tool into the hole and injecting and measuring to see if it comes up behind the pipe.

Q And so, if you have any radioactivity behind the pipe and above the perforation there, you wouldn't be measuring for communication between any other wells?

A No.

Q In fact, all the wells offering this are completed in this F zone?

A Yes.

Q Now, you mentioned that this well is making 2,700 barrels a day and your Exhibit Number 4 shows the rate of production from wells that would be offsetting the Bess Number 1. Now, what's the current rate of production there, about 25,000 barrels a day for all of them?

A This is the monthly rate, yes, sir. It's been 25,000 barrels a month.

Q And how many wells does that represent?

A That includes the Bess Number 1 and nine additional wells, or ten wells.

Q So the average production is about 2,500 barrels a month?

A Yes.

Q What's the high and what's the low, as far as productivity of these offsetting wells?

A I believe in June, 1972, the low rate was from the Kay 1, 1,940 barrels. The high rate appears from the Eva Com 1, 3,141 barrels. The reducing rate is fairly uniform in the Bess.

Q The Bess well there is producing a little over 100

barrels a day?

A That's right.

Q Well, in accordance with the definition of a waterflood in the Commission Rules and Regulations, this could not be classified as a bona fide waterflood?

A Not if you consider it as being a stripper well, sir. If you considered it an advanced stage of completion, it is an advanced stage of completion, considering that the wells, most of them, are capable of 400 or 500 barrels a day, initially; where they are now 80 or 90 barrels a day, on the average.

Q The bottom-hole pressures here are down below the bubble point of the reservoir, I'm sure, aren't they?

A I do not have any recent pressures on the wells in the field. However, the gas-oil ratio field situation is increasing and there is evidence that it is now well below the bubble point.

Q This may be unimportant, I don't know. What is the acreage dedicated to the offsetting wells, do you know?

A These are all 80 acre tracts.

Q Well, do you know how the 80 runs? That might be important in defining what a project area would be, whether you have an offset or not.

A Sir, I don't have that information myself.

Q Well, both plats are on file and we can assert what the

dearnley, meier & mc cormick

209 SIMMS BLDG.•P.O. BOX 1092•PHONE 243-6691•ALBUQUERQUE, NEW MEXICO 87103
1216 FIRST NATIONAL BANK BLDG. EAST•ALBUQUERQUE, NEW MEXICO 87108

dedicated acreage to each well is. It would depend on how they run as to whether a well would be offsetting the 80 that the injection well is on.

What are you proposing to call this now, a pilot injection project or a pilot waterflood project?

A Sir, we would like to call it anything that's required to get it approved. It is, in essence, it's a pilot waterflood in that we propose to evaluate the floodability of the Pennsylvanian reservoir in the North Bagley field.

Q Although it doesn't meet the qualifications of a waterflood under the Commission's definition?

A That's right.

Q Well, whether it's a pressure maintenance or a waterflood, it might make a difference here.

A As I say, we would be glad to call it a pressure maintenance.

Q Now, if the injection project is successful, you intend to unitize the area and expand it, is this it?

A That's right.

Q Maybe at that time it could be determined what the project could rightfully be called?

A Yes, sir. I would suspect that by the time studies could be conducted that the field probably will be qualified under the stripper clause, by that time. I

feel that the pilot flood is definitely needed to give them the information that they need to see if the flood is feasible there.

MR. NUTTER: Are there any further questions of the witness?

(No response.)

MR. NUTTER: He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4818?

(No response.)

MR. NUTTER: Take the Case under advisement and recess the Hearing until 1:30 o'clock.)

(Whereupon, the Hearing was recessed until 1:30 o'clock P.M.)

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

John De La Rosa
COURT REPORTER

9/13

4818
72

I N D E X

E X H I B I T S

APPLICANT'S:	OFFERED	ADMITTED
Tipperary Land & Exploration Corp.		
Exhibit A	5	15
Exhibit A-1	8	15
Exhibit A-2	9	15
Exhibit A-3	9	15
Exhibit A-4	10	15
Exhibit A-5	10	15
Exhibit A-6	13	15

OIL CONSERVATION COMMISSION

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

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

September 27, 1972

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

Re: Case No. 4818
Order No. R-4408
Applicant:
Tipperary Land & Exploration

Dear Sir:

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

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other State Engineer Office

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. 4818
Order No. R-4408

APPLICATION OF TIPPERARY LAND
AND EXPLORATION CORPORATION FOR
A PRESSURE MAINTENANCE PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 13, 1972, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 27th day of September, 1972, 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, Tipperary Land and Exploration Corporation, seeks authority to institute a pilot pressure maintenance project in the North Bagley-Pennsylvanian Pool, by the injection of water into the "F" zone of the Strawn and possibly other zones of the Strawn formation through its Bess Well No. 1, located 660 feet from the North line and 1980 feet from the East line of Section 20, Township 11 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) That the wells in the area of the project are classified as "marginal" wells.

(4) That the subject pilot pressure maintenance project is in the interest of conservation and may result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tipperary Land and Exploration Corporation, is hereby authorized to institute a pilot pressure maintenance project in the North Bagley-Pennsylvanian Pool, by the injection of water into the "F" zone of the Strawn formation through the Bess Well No. 1, located 660 feet from the North line and 1980 feet from the East line of Section 20, Township 11 South, Range 33 East, NMPM, Lea County, New Mexico.

(2) That the subject project is hereby designated the Tipperary North Bagley Bess Pressure Maintenance Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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

(4) The Secretary-Director is hereby authorized to approve injection through the subject well into additional zones in the Strawn formation without notice and hearing. To obtain such approval, the applicant shall file proper application with the Commission, which application shall include the following:

(a) A plat showing the location of the subject well and all operators and wells completed in the Strawn formation within two miles of the subject well.

(b) A schematic drawing of the well which fully describes the casing-tubing, perforated intervals and depth showing that the injection of water will be confined to the Strawn formation.

(c) A statement that all of the above-described operators have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the application if, within 20 days after receiving the application, no objection is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from said operators.

(5) 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

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

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

S E A L

dr/

Docket No. 20-72

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 13, 1972

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

The following cases will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for October, 1972, from seventeen prorated pools in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico;

(2) Consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico, for October, 1972.

CASE 4808: Application of Skelly Oil Company for a waterflood expansion and dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to expand its Grayburg-Jackson Skelly Unit Waterflood Project, Grayburg-Jackson Pool, Eddy County, New Mexico, by the injection of water through its Unit Well No. 114 located in Unit D of Section 14, Township 17 South, Range 31 East. Said Well No. 114 to be completed as a dual completion in such a manner as to permit the production of oil from the Fren-Sevens Rivers Pool and the injection of water into the Grayburg-Jackson Pool.

CASE 4809: Application of Saturn Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Antebellum Unit Area comprising 3,840 acres, more or less, of State and Federal lands in Township 23 South, Range 34 East, Lea County, New Mexico.

CASE 4810: In the matter of the application of the Oil Conservation Commission on its own motion to consider the revision of the special rules for the Devils Fork Gallup Associated Pool and the Escrito Gallup Associated Pool, Rio Arriba and San Juan Counties, New Mexico, promulgated by Orders Nos. R-1670-B and R-1793-A, respectively, to permit taking of gas-oil ratio and bottom-hole pressure tests on an annual basis rather than quarterly and semi-annually, as is now required.

CASE 4747: (Continued from the July 26, 1972, Examiner Hearing)

Application of Union Texas Petroleum, a Division of Allied Chemical Corporation for compulsory pooling, Lea County, New Mexico, Applicant, in the above-styled cause, seeks an order pooling all mineral interests below the base of the Devonian formation underlying the N/2 of Section 33, Township 25 South, Range 37 East, Crosby Field, Lea County, New Mexico. Said acreage to be dedicated to its well to be located 1650 feet from the North line and 2310 feet from the East line of said Section 33. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4577: (Reopened)

In the matter of Case 4577 being reopened pursuant to the provisions of Order No. R-4181, which order established special rules and regulations for the Parkway-Wolfcamp Pool, Eddy County, New Mexico, including a provision for 160-acre spacing units. All interested persons may appear and show cause why said pool should not be developed on 40-acre or 80-acre spacing units.

CASE 4811: Application of Atlantic Richfield Company for a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 120-acre non-standard gas proration unit comprising the N/2 SE/4 and NE/4 SW/4 of Section 36, Township 21 South, Range 37 East, Blinebry Gas Pool, Lea County, New Mexico, to be dedicated to its State 367 Well No. 3 located in Unit K of said Section 36.

CASE 4812: Application of Midwest Oil Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks as an exception to Rule 104, authority to drill a wildcat gas well to test the Morrow formation at an unorthodox location 1320 feet from the South and East lines of Section 1, Township 18 South, Range 28 East, Eddy County, New Mexico, with the S/2 of said Section 1 to be dedicated to the well.

CASE 4813: Application of Inexco Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Sitting Bull Unit Area comprising 6,665 acres, more or less, of Federal lands in Sections 28, 29, 31, 32, and 33 of Township 23 South, Range 22 East, and Sections 4 through 9 of Township 24 South, Range 22 East, Eddy County, New Mexico.

CASE 4814: Application of Inexco Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Four Forks Unit Area comprising 3,133 acres, more or less, of Federal and Fee lands in Sections 3, 10, 11, 14 and 15 of Township 22 South, Range 25 East, Eddy County, New Mexico.

CASE 4815: Application of Inexco Oil Company for pool creation and special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn gas pool for its well located 1980 feet from the South and West lines of Section 18, Township 21 South, Range 26 East, Eddy County, New Mexico. Applicant further seeks the promulgation of special rules therefor, including a provision for 640-acre spacing units.

CASE 4816: Application of Penroc Oil Corporation for a special gas-oil ratio limitation increase, Lea County, New Mexico. Applicant, in the above-styled cause, seeks amendment of the special rules and regulations for the Hobbs-Drinkard Pool promulgated by Order No. R-3811, as amended,

(Case 4816 continued from Page 2)

to establish a limiting gas-oil ratio limitation of 6,000 cubic feet of gas per barrel of oil in said pool.

CASE 4817: Application of Phillips Petroleum Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Drag "B" Well No. 1 located in Unit K of Section 18, Township 23 South, Range 27 East, Eddy County, New Mexico, in such a manner as to produce gas from the South Carlsbad-Morrow Gas Pool through tubing and an undesignated Canyon gas pool through the casing-tubing annulus.

CASE 4818: Application of Tipperary Land and Exploration Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the North Bagley-Pennsylvanian Pool by the injection of water into the Strawn and possibly other formations by the injection of water through its Bess Well No. 1 located 660 feet from the North line and 1980 feet from the East line of Section 20, Township 11 South, Range 33 East, Lea County, New Mexico.

CASE 4819: Application of D. L. Hannifin for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in and under the S/2 of Section 24, Township 22 South, Range 26 East, South Carlsbad Field, Eddy County, New Mexico, to be dedicated to a well to be drilled 1980 feet from the South and East lines of said Section 24. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4820: Application of Anadarko Production Company for the creation of an associated pool, special rules therefor, downhole and surface commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new associated pool for the production of oil and gas from the Yates and Seven Rivers formations for its Loco Hills Federal "B" Wells Nos. 1 and 8 located, respectively, in Units P and K of Section 9, Township 17 South, Range 30 East, Eddy County, New Mexico, and the promulgation of special rules therefor including provisions for the classification of oil and gas wells, oil and gas well spacing, and an unlimited gas-oil ratio.

Applicant further seeks authority to commingle in the well-bore of said Well No. 1 the Yates-Seven Rivers production from the newly created pool and the Grayburg-Jackson Pool and to commingle on the surface the Yates-Seven Rivers production from said Well No. 8 with production from the Grayburg-Jackson Pool.

CASE 4821: Application of Getty Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks as an exception

(Case 4821 continued from Page 3)

to Rule 303 of the Commission Rules and Regulations, authority to commingle production from the North Vacuum-Abo, Vacuum-Wolfcamp, and Vacuum-Pennsylvanian Pools in the wellbore of its State "BA" Well No. 8 located in Unit B of Section 36, Township 17 South, Range 34 East, Lea County, New Mexico.

CASE 4822: Application of Getty Oil Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for its State "BA" Well No. 9 located 660 feet from the North line and 2310 feet from the East line of Section 36, Township 17 South, Range 34 East, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico. Said well being nearer than 660 feet to another well capable of producing from the same pool.

CASE 4823: Application of Getty Oil Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for its A. B. Coates "C" Well No. 28 located 1820 feet from the North and West lines of Section 24, Township 25 South, Range 37 East, Justis Blinebry Pool, Lea County, New Mexico. Said well being located nearer than 660 feet to another well capable of producing from the same pool.

CASE 4824: Application of Getty Oil Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for its H. D. McKinley Well No. 11 located 760 feet from the North line and 550 feet from the East line of Section 30, Township 18 South, Range 38 East, Hobbs Grayburg-San Andres Pool, Lea County, New Mexico. Said well being nearer than 660 feet to another well capable of producing from the same pool.

CASE 4825: Application of Hanagan Petroleum Corporation for dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Catclaw Draw Unit Well No. 3 located in Unit D of Section 36, Township 21 South, Range 25 East, Eddy County, New Mexico, in such a manner as to produce gas from an undesignated Strawn gas pool through tubing and from the Catclaw Draw-Morrow Gas Pool through the casing-tubing annulus.

CASE 4826: Application of Hanagan Petroleum Corporation for pool creation, special pool rules, and an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn gas pool for its well located 920 feet from the North and West lines of Section 36, Township 21 South, Range 25 East, Eddy County, New Mexico, and the promulgation of special rules therefor, including a provision for 640-acre spacing units. Applicant further seeks approval of an unorthodox location for the above-described well.

CASE 4827: Application of Robert N. Enfield for an unorthodox location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks

(Case 4827 continued from Page 4)

authority to drill a gas well at an off-pattern unorthodox location 990 feet from the North and East lines of Section 11, Township 15 South, Range 27 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, with the E/2 of said Section 11 to be dedicated to the well.

CASE 4828: Application of Inexco Oil Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority for the dual completion of its McMinn State Well No. 1 located 1980 feet from the South and West lines of Section 18, Township 21 South, Range 26 East, Eddy County, New Mexico, in such a manner as to produce gas from the Strawn formation and the Morrow formation adjacent to the Catclaw Draw-Morrow Gas Pool.

DRAFT

GMH/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. 4818

Order No. R-4408

APPLICATION OF TIPPERARY LAND AND
EXPLORATION CORPORATION FOR A
~~WATERFLOOD~~ Pressure maintenance PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 13, 1972, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of September, 1972, 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, Tipperary Land and Exploration Corporation, seeks authority to institute a pilot pressure maintenance ~~waterflood~~ project in the ~~North Bagley Pennsylvanian Unit Area~~, North Bagley-Pennsylvanian Pool, by the injection of water into the "F" zone of the Strawn and possibly other ~~formations by the injection of water~~ zones of the Strawn formation through its Bess Well No. 1, located 660 feet from the North line and 1980 feet from the East line of Section 20, Township 11 South, Range 33 East, NMPM, Lea County, New Mexico.