

Case No.

4202

Application, Transcripts,
Small Exhibits, Etc.

dearnley-meier

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 7, 1970

EXAMINER HEARING

IN THE MATTER OF:)
)
)

Case 4204 being reopened at the
request of the applicant, Mobil
Oil Corporation.)
)
)

) Case No. 4202

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 4202.

MR. HATCH: Case 4202. In the matter of Case 4202 being reopened at the request of the applicant, Mobil Oil Corporation.

MR. SPERLING: If the Examiner please, James E. Sperling of Modrall, Seymour, Sperling, Roehl and Harris, Albuquerque, appearing for Mobil Oil Corporation.

I have one witness, Mr. Kelly.

MR. NUTTER: Are there other appearances in this case?

MR. HINKLE: If the Examiner please, Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell. I would like to enter an appearance on behalf of Atlantic Richfield Company.

(Witnesses sworn).

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

MR. SPERLING: If the Examiner please, as the call of the case and the docket has indicated, this matter has been reopened at the request of Mobil Oil Corporation who was the original applicant in Case No. 4202.

The hearing in 4202 was held on August 27, 1969, and thereafter on September 4, 1969; the Commission issued Order No. R-3823. In essence, this order authorized the institution of a waterflood project in the Langlie-Mattix Queen Unit Area in the Langlie Mattix Pool.

The request, as contained in the application at that time, was granted in all particulars with the exception that the request for permission to drill an injection well designated as Unit Well No. 14 on the easterly side of the unit area was denied.

Thereafter, Mobil has filed this application and as a basis for the application, has set forth and will present evidence to prove that the necessity for the drilling of a well in the vicinity of Unit Well No. 14 is paramount insofar as the success of the flood and the recovery of substantial quantities of oil in the magnitude of approximately two hundred thousand barrels of oil; which, we are prepared to show can be recovered through the maintenance of the integrity of the pattern proposed and authorized by the order establishing the Langlie-Mattix Queen Unit Area.

As we stated at the time of the prior hearing,

negotiations were underway at that time with Atlantic Richfield with a view toward either the inclusion of the Atlantic Richfield acreage within the unit area that consists of a 40-acre tract within Section 14 in Township 25 South, Range 37 East, and designated as the Stewart A 2 Well: is that correct?

THE WITNESS: One.

MR. SPERLING: Stewart A 1 Well or the acquisition of that well from Atlantic Richfield with a view towards its conversion to an injection well.

The negotiations which were in progress at that time have continued without success to this time and we will present in documentary and testimony form the nature and extent of these negotiations to date.

The present application, of course, reasserts the request of Mobil to be permitted to establish an injection well in the vicinity of Well No. 14 as designated on exhibits previously submitted to the Commission in connection with the hearing on August 27, 1969.

The evidence and testimony will develop, as it progresses, the nature of the reserve calculations which have been made by Mobil in connection with the study leading up to the formation of the Langlie-Mattix

Queen Unit and will, of course, give an additional insight into the necessity for the completion of the flood pattern in the manner proposed. With that statement, we will proceed with the testimony, Mr. Examiner.

PAT KELLY

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Mr. Kelly, would you state your name, please, your place of residence and your employer and the nature of your employment?

A I am Pat Kelly. I live in Midland, Texas. I work for Mobil Oil Corporation as petroleum engineer.

Q Mr. Kelly, were you present and did you testify at the prior hearing held on August 27, 1969?

A Yes, sir.

Q So that your qualifications and background are a matter of record before the Commission?

A Yes, sir.

MR. SPERLING: Mr. Kelly's qualifications acceptable --

MR. NUTTER: Yes, they are.

MR. SPERLING: --- for the purpose of this hearing?

Q (By Mr. Sperling) Mr. Kelly, will you please refer to what has been marked for identification as Mobil's Exhibit No. 1 and identify it and explain what it consists of?

A Mobil's Exhibit 1 is a package of three plats identified further as figures 1, 2 and 3. They are all constructed from the same base map and portray slightly different information.

Figure 1 shows, colored in green, two water-flood patterns that will be served by proposed injection Well No. 14, which is the subject of this hearing. The acre colored in green is what I interpret as floodable acreage and amounts to 52 acres for the pattern that will be served by producing Well No. 9 when it is drilled and 61.23 acres that will be served by producing Well No. 8, which is currently producing.

Figure No. 2 portrays, colored in green, what I interpret as the floodable acres in those same two patterns if we assume that there is no injection well at the location of proposed Well No. 14. In that case, there are 30.1 floodable acres to be served by proposed

producing Well No. 9 and 30.97 acres that will contribute to production from Well No. 18.

I might point out that if this developed to be the final flood pattern in this area of the unit, that I don't think we would drill proposed Well No. 9 at that location indicated on this plat. We would probably move it over inside the pattern so as to have a squeeze on it rather than produce it from outside the pattern as indicated here.

Figure No. 3 of Exhibit 1 shows, colored in green, the floodable acreage within the patterns served by injection Well No. 14 and shows, colored in red, the acreage that would be added to those patterns by use of the Atlantic Stewart A Well No. 1, as an injector and such well is shown on this map as a Sinclair Stewart A No. 1.

Sinclair had been acquired by Atlantic after this map was prepared. That incremental acreage, colored in red, is 23. All of the numbers that I have referred to with respect to this exhibit are shown in the upper right-hand corner of each plat.

Q Now, Mr. Kelly, have you been the reservoir engineer in charge of that particular project from its

inception?

A I have been the reservoir engineer charged with working on this project from the start. I evaluated it before we purchased it from George Buckels and we did buy it from him on May 1st --

Q Of 1969?

A -- of 1969. We set about immediately to try to unitize it, which we were successful in doing and put this waterflood in.

We did start -- we have completed our well conversion construction of our distribution and injection station. We have obtained a water supply from the San Andres and we began injecting at a rate approximating thirteen thousand five hundred barrels per day toward the first of December, 1969; the second, third or fourth or something like that.

We were testing wells from the first of the month and got it under full scale injection by around the third or fourth. We are currently injecting through all of the wells shown on the plats, marked Exhibit 1, as injectors with the exception of Well No. 30 and, of course, proposed injector No. 14.

The injection wells that serve the remainder

of the patterns of producers No. 9 and 18 are taking water at rates generally between seven hundred and a thousand barrels a day right now.

Q Now, Mr. Kelly, in preparing these area estimates and so forth, as shown on Exhibit 1, figures 1 through 3, what was the basis for your calculations of those aerial representations there?

A The areas that I have indicated as floodable acreage are simply the areas enclosed within straight lines connecting the injection wells where they confine a pattern and injection in producing wells where a pattern is not confined.

I haven't measured this acreage on the ground. I have calculated it from scale measurements from a one-inch to one thousandth map.

Q Now, still referring to the various figures in Exhibit No. 1 and with particular reference to figure No. 2, explain the reason for and, in your opinion, the necessity for and the essential nature of the location of a well at the approximate location of proposed unit Well No. 14. What would be the effect of not having a well in that area?

A The eastern limit of the Langlie-Mattix Queen

Unit represents in general the eastern limit of oil production from the Queen Formation in this area. In general up-dip to the east from the east boundary of the unit, the Queen wells have produced either gas or predominately gas.

There is a sizeable gas cap up-dip to the east. There is quite a lot of Queen sand up there. That gas cap I think has been substantially depleted now to a very low pressure. There are still commercial gas wells completed in it, but it is at a very low pressure, I imagine approximately equal to the very low pressure that we have in the oil rim.

If there is not an injection well near the up-dip limit of the oil column to confine the oil to the patterns down-dip, that oil will be forced up into the gas cap and in my opinion will be irretrievably lost. I don't believe there's a chance that there are any wells up-dip that will produce any commercial oil that will be pushed up into the gas cap out of these patterns.

Q Now, figure 3 of Exhibit A shows an area in red there which you identified. Do you have anything further to add with reference to that indicated red area and how you arrived at those calculations?

A Well, once again I just measured the dimensions of that area on a map and calculated the acreage. I'm sure it is representative of the approximate incremental amount of floodable acreage.

There is about -- slightly less than six of those acres that's colored in red underlie the Stewart A Lease and the remainder of the twenty-three acres underlie the -- for the most part, the Langlie-Mattix Queen Unit.

I calculated 5.8 acres, in red, underlie the Stewart A Lease.

Q Now, do you have anything further to add with reference to Exhibit 1 at this time?

A I believe not at this point.

Q Please refer to what's been marked as Exhibit No. 2 and explain what it portrays and its purpose.

A Exhibit No. 2 shows several 40-acre tracts, colored; and, also shows a number typed on each of those tracts. These colored tracts are the ones which will contribute oil reserves under waterflooding to the pattern served by Wells No. 9 and 18.

The numbers typed on each of those 40-acre tracts are simply the January 1, 1969 oil recovery from

that tract divided by 40 acres to reduce it down to barrels per acre primary recovery or January 1, 1969 cumulative for that tract.

Q Now, the numbers that you are referring to; are those in large type? For example, 3209, 2819 and so forth?

A Yes, sir. For Unit Well No. 8, which is the current producer in the pattern that No. 9 will be producing out of, that 40 acres recovered 3209 barrels per acre to the first of 1969; Unit Well 13 had recovered 2819 barrels per acre; Unit Well 18 had recovered 3102 barrels per acre; Unit Well 17, 2665 barrels per acre and Unit Well 21, 2597 barrels per acre.

MR. NUTTER: What was the date on that production?

THE WITNESS: January 1, 1969.

Q (By Mr. Sperling) What is the significance of the selection of the date of January 1, 1969 as a basis for these calculations?

A There is nothing really special about that date as the date for selecting cumulative production except it is fairly current.

There's been very little oil produced by these wells since January 1, 1969. They have been from a half to two or three barrels a day producers for some years and January 1, '69 cumulative was a substantial factor in the participation formula for the unit.

It was a readily available figure and I have taken it as approximating primary oil. I believe there's a little primary oil left on the unit, but it is approximately equal to January 1, 1969 cumulative.

I made this calculation for purpose of arriving at some reasonable basis for empirically determining the waterflood reserve that should be recovered out of these patterns using the best data that I have which is primary performance.

Q Now, please refer to Exhibit 3, which appears to be in tabular form a companion of Exhibit 2. Explain what it is.

A Exhibit 3 is a calculation of the waterflood reserves for the patterns that will be served by producing Wells No. 9 and 18.

If we are to drill and use proposed Well No. 14 as an injector, based upon the average primary recovery within the pattern served by Well No. 9 in barrels per

acre making the assumption that secondary oil will equal primary oil, I have determined that 3100 barrels per acre will be recovered within that pattern if it is confined and that that recovery will amount to 161,000 barrels of oil.

Similarly, I have calculated the average barrels per acre recovery in the pattern served by producing Well No. 18, which is 2899 barrels per acre and assuming that that pattern is enclosed, I believe we will approximate a primary oil -- I believe that secondary oil will approximate primary oil from it and we will get about 178,000 barrels of oil by flooding.

If we assume that Unit Well No. 14 is not drilled and we proceed with injection as it is currently underway, we would move proposed unit producer No. 9 inside the pattern and we would achieve a conventional waterflood recovery because we have a squeeze on it and we would still get 3100 barrels per acre out of that pattern or 93,000 barrels of oil with the subsequent loss or resulting loss of 68,000 barrels of oil to the gas cap up-dip out of that pattern.

In the case of the pattern served by Well No. 19, that pattern is not enclosed sufficiently for us to

get anything like a conventional recovery out of it if there is no injection up-dip.

I have estimated that the recovery out of the swept acreage will be no more than half the conventional recovery or half of 2899 barrels per acre, giving us 45,000 barrels of waterflood oil out of that pattern, I think at the best, with the result being that 133,000 barrels of oil would be pushed up-dip into the gas cap.

Adding those two figures together, the 133,000 and the 68,000 barrels, that I think would be lost from those two patterns to the gas cap if we don't inject up-dip, I come up with 200,505 barrels that I think represents the waterflood oil that we will lose without up-dip injection to even enclose those patterns.

Q You may have touched upon this before, but is there any possibility in your opinion of any portion of the 200,000 barrels, which you have referred to as being lost to the gas cap, being recovered from any of the wells located to the east of the unit area?

A It is my opinion that there will be no commercial oil produced up-dip from these patterns whether we inject at the location of No. 14 or not inject at the

location of No. 14.

I believe that is the case because it is a low pressure gas cap up-dip from us which will readily suck up anything that is pushed out there. I don't think that an oil bank will be held in the vicinity of a well up there long enough or under a high enough pressure for the well to produce any commercial oil.

I expect that any wells that are up there under temporarily abandoned condition right now will probably require an investment of somewhere between ten and fifteen thousand dollars to put them in shape to produce and I just don't believe that the wells ever produce enough oil to pay for that investment under either set of circumstances.

I have some information that I have run across that I can generate a little later in the testimony that I think would document my conclusion there.

Q Now, mention was made earlier as it is made in the application, as well as the prior hearing, of negotiation efforts as between Atlantic Richfield and Mobil leading to some sort of an agreement with reference to the disposition of the Stewart A 1 Lease, which you have already identified.

Would you please refer to Exhibit 4 now and tell us whether this reflects in documentary form the nature and extent of the negotiations to date as between Mobil and Atlantic?

A Exhibit No. 4 is a sheet of correspondence which represents the written negotiations that have taken place between Atlantic and Mobil up to this point concerning the Stewart A tract.

I might point out that there have been a number of telephone conversations had between representatives of Mobil and Atlantic about this subject over a period of some months beginning as early as May of 1969 and that they have continued up through the recent past.

The first thing that -- the first contact that we had with any representatives of Atlantic on this subject was in the form of a telephone conversation between myself and the Sinclair reservoir engineer that was, at that time, looking after this area for Sinclair. That was in May.

We had several conversations about how we ought to go about flooding the unit and Stewart A Lease; whether we ought to try to do it on a cooperative basis; whether we ought to try to buy it out or just what we

ought to do.

Pursuant to those conversations, I wrote a letter, which is in this package and is dated June 16, 1969; addressed it to Atlantic in Midland, as Atlantic had, by that time, taken over Sinclair and it is my understanding that this letter was forwarded onto the Roswell office of Atlantic; it was never handled in Midland and this letter proposes that Mobil would like to inject wells near the western corners of the Stewart A 40-acre tract and -- and would ask Atlantic to participate in those to the extent of 25 percent in each well at a well cost of \$38,000.00, bring the total to \$19,000.00 because I really didn't believe Atlantic had much chance of getting any oil out of that Stewart A No. 1, if we inject cooperatively in that way.

We made an alternative offer to buy the lease and well, queen rights, for \$12,000.00 That is set forth in this letter. The second letter in Exhibit 4 is a letter from Atlantic to Mobil dated July 22, and it, in summary, rejects the proposal made by Mobil in the June 26 letter and suggests that Atlantic would like to hear from us concerning basis for flooding the Stewart A Lease.

I might point out that in the interim between

the time the June 26 letter was written and the July 22 reply was written, there had been at least one telephone conversation between a representative of Mobil and a representative of Atlantic, which pointed out that we had changed our waterflood plan along the east side of the unit and at that time intended to drill only one injection well along that east side rather than the two that we had proposed to the June 26 letter and so that changed the proposal a little bit.

The next letter in the sheet of correspondence is a November 14, '69 letter from Mobil to Atlantic setting out Mobil's plan to try to enlarge the Langlie-Mattix Queen Unit to include three tracts which would even encompass the Stewart A Lease, 80 acres out of the Mobil Federal X Lease and 40 acres owned by Mr. Eppernauer immediately offsetting tract No. 14 to the west.

Now, we proposed in that November 14 letter that the Stewart A Lease should come in for a phase two participation equaled to .3504 percent, which was the relationship of 12,500 barrels waterflood reserves for bringing the lease into cumulative recovery from the total unit up through 1-1-69.

I point out that in the interim between the July 22 reply of Atlantic and the November 14 further proposal of Mobil, there had been the OCC Hearing at which our application to drill and use No. 14 was denied and there had been some telephone conversations with representatives of Atlantic suggesting enlargement of the unit along the lines portrayed in this November 14 letter.

And, our joint interest people had arrived at the conclusion that Atlantic wasn't really interested in this proposed enlargement over the telephone but we felt like we needed to document the offer and so wrote the letter and did so on November 14; four days later, on November 18, there is a letter in the files which is the next one from Atlantic.

Q Now, before you proceed to that, let me inquire as to where the 12,500 barrel figure and the participation factor of .3504 percent came from. What is the basis for that?

A At the August 27 waterflood hearing, Atlantic's witness at that hearing testified to the fact that he thought that injecting into the Stewart A 1 rather than the unit Well No. 14 would result in the added recovery

of some 12,500 barrels of waterflood oil by the unit.

That's where the 12,500 barrel figure came from. The participation of .3504 percent grew out of a close approximation of as close as I could come readily, to approximating the value of the lease to the unit in the same proportion that the other tracts that are participating in the unit do, so, in general, the various tracts that are within the unit now have phase two participation, which represents the approximate relationship of waterflood reserves contributed by each tract to the unit.

The waterflood reserves claimed by Atlantic for injecting into Stewart A No. 1 were 12,500 barrels and I just attempted to calculate a percent that was in the same proportion that the rest of the tracts are participating in this waterflood and under those circumstances the enlargements that we are proposing that was .3504 percent.

Q So that 12,500 represented Atlantic's approximation of their calculation of incremental oil to be contributed rather than yours; is that correct?

A Yes, sir. That was Atlantic's calculation or estimate.

Q All right. Proceed.

A The next letter in the file, as I pointed out, is a November 18 letter from Atlantic declining to participate in the enlarged unit; pointing out further that they didn't want to accept our renewed cash offer of \$12,000.00 for the well and stating further that unless we could raise our offer to \$20,000.00, Atlantic wouldn't be in a position to recommend a sale of the property to its management.

My recollection on receiving the November 18 letter was basically that negotiations had broken down and I didn't see any hope at that point of Mobil and Atlantic ever coming to any agreement on the value of that tract to the unit; so, I immediately asked our people to pursue an application to -- a renewed application before the OCC to drill and use our No. 14 as an injector to close up that pattern on the up-dip side.

I think we did write a letter to the Commission and asked that a hearing be scheduled sometime around the end of November. My understanding is that there was some

question about whether we could get this application heard and as result, we got together and decided to write a formal application which our attorney, Mr. Sperling, prepared and later filed and while discussing the desirability of setting out everything as clearly as we could in the application, it came to our attention that we may not have communicated clearly with Atlantic in our prior offers.

I have reviewed the correspondence and some of it doesn't seem to be very clear, and so I decided to try to set it all down again in a letter, which I wrote on December 11, setting it out as clearly as I knew how, what our proposals were and asked Atlantic to reconsider.

In that letter, which is part of the correspondence file, I pointed out that during the interim between the November 14 letter and this letter that the Eppernauer tract had been withdrawn from consideration by Mr. Eppernauer for enlargement and this changed a little bit the basis for computing phase two participation.

It raised the protective phase two participation to .3614 percent. I pointed out in the letter that I thought it would cost about \$18,000.00 to put Atlantic's well in shape to use as an injector and that, added to the

\$20,000.00 price they wanted for the well, would bring the cost of the tract to really, in effect, to \$38,000.00 investment at the outset which would have equaled the cost of a new well.

That's almost what we spend on digging a new well, within two or three thousand dollars of it; sometimes we are a little over, sometimes we are a little under.

My own attitude about that is that there's got to be significant difference between the outlay in one case and the other because I think that thirty-two year old well is going to have casing leaks in the future.

I would be greatly surprised if it didn't and if we were to use it, I feel sure we would have some repair and some pollution problems with it as time goes. If we drill a new well and have it cased through the pipe, I think we will have much more effective control over where the water goes than we will in the old hole, which was shot with 140 quarts of nitro even if we are successful in getting the well cleaned out and setting the liner in it and perforating.

The difference as I see it between that

Atlantic wants for the well and what we have been in position to offer from the standpoint of mechanics price is \$8,000.00. We have offered \$12,000.00. They want \$20,000.00 and that's about where that stands.

I can't recommend to my management that we go any higher on a cash offer than we have already gone. I half suspect that we have gone too high already. I tried to analyze these risks in the letter and clarify our position as best I could.

On January second there was another letter written from Atlantic to Mobil, once again declining the offers or proposals that had been made in the December 11 letter and 3 -- I think three separate proposals were set out in Atlantic's January two letter and I'll try to describe those for the record.

I start out by saying that in the last part of paragraph two, on page one of the letter, I think Atlantic sets out what it is interested in getting out of this deal. Where I'll quote, it says "we believe that Atlantic Richfield should be compensated not only for the value of the incremental oil to be recovered but also for the value of our well as replacement for the Langlie-Mattix Queen Unit No. 14."

I believe that all of these three options that Atlantic has proposed which follow in this letter are directed toward this end. In the next paragraph, paragraph three is what I interpret as the first of these proposals and I'll quote "participation of our well in the unit on the basis of reserves only should be based on the relationship of the primary recovery of our well to the cumulative primary recovery for the total unit. Please note that our Stewart A No. 1 has recovered 62,080 barrels of oil on primary as of January 1, 1969, which would give us a 1.7949 percent participation phase two."

I interpreted that has a proposal that the tract be brought in for 1.79 percent that we attempted to negotiate in. I would like to comment on that to this extent. I believe because of the location of the wells, the production history that's been enjoyed by the tracts that are currently within the Langlie-Mattix Unit, I believe that the relationship of cumulative recovery to the total cumulative recovery for the unit is a reasonable approximation of the waterflood reserve that will be contributed by those tracts to the unit.

I do not believe this is the case with respect

to the Stewart A Lease and the reason why I don't is because the well on the Stewart A Lease, the Queen Well, was drilled as far down dip as I think legitimately possible. It's 330 feet about from the west line of the lease and the adjoining well to the west is 330 feet approximately from the west line of its 40-acre unit and I believe that a -- the line share of the oil that was produced on primary by the Stewart A No. 1 came from the east part of that adjoining 40 acres.

One of the exhibits submitted in the earlier hearing and it is an attachment to one of the exhibits which will be submitted in a moment, is a tabulation of production for the Stewart A No. 1. It shows that the well began producing as the Carl B King Drilling Company Stewart A No. 1 in 1938 and during the first two years of its life produced something over half of its ultimate recovery, that is 32,000 barrels of oil.

It quit producing oil in 1953 when it made 792 barrels for the year and I suppose was shut in for some years until 1958 when it was reported to have produced 917 barrels of oil. The following year, in 1959, there were 116 barrels of oil production reported from the well and beginning in 1959, gas production was

reported and that is the only production attributed to the well from 1959 to 1963 when the well ceased production.

My -- it's my opinion, from having examined such records as I have been able to lay my hands on with regard to that Stewart A No. 1, that it in all probability had a thin oil column present in it in the beginning and that that oil column has been drained.

I have some serious reservations about our ability to waterflood that thin oil column very effectively if we should inject into it, although I should expect there should be some waterflood recovery from it.

With what I would suppose, from having examined some recent logs of wells that we have deepened down dip, there is probably somewhere in the neighborhood of 60 to 90 feet of gross sand in the vicinity of the Stewart A Lease.

I think most of that is gas sand and at the present time I judge that all of it is gas sand. As we would start to inject into that well in an effort to fill up the gas sand to prevent it being filled up with oil, as it would pressure up the oil column down dip, I think we would run a terrific risk of overriding the thin oil

column which I think is in the bottom of the sand and by passing a good bit of it because I think the water will move more readily through a gas sand.

Proposal number 2 -- I need to comment one point further on this first proposal. Going back to the idea that Atlantic should be compensated both for the reserves and the well, I would like to point out that once again that I believe various tracts in the unit are participating under the formal in the approximate relationship of their reserves, have the total reserves for the unit.

All those tracts furnished wells to the unit when they came in and I can't see any logical basis for the Stewart A tract or any other with a well on it not furnishing it on a basis, which is comparable to the basis that the other tracts participate it in.

I think we owe it to our partners and to our royalty owners to insure that something approximating that takes place if it is going to take place at all.

Proposal number 2 is found in the third from the end paragraph on the second page of the letter and I'll quote "combining the value of the well bore and the incremental oil, we consider the Stewart A No. 1 to

be worth \$15,500.00, plus a phase two participation of .3614 percent.

The preceding paragraph described the method by which Atlantic was able to calculate the value of the well bore at \$15,500.00. I think I just commented on that, the propriety of taking that action previously.

The final proposal is in the final paragraph of the letter. I interpret that Atlantic has renewed its proposal to accept \$20,000.00 for the well. Once again, I might say that I think that -- well, because of the talks that I had had and others of us had had with the people in Sinclair that were working on this area at the time we were trying to put the unit together, I came -- I talked our management into making the best offer that I thought we could to start with and didn't leave any room for negotiations.

The \$12,000.00 figure, I believe, is as high as we can go without deluding our partners interest.

Q Now, Mr. Kelly, you have previously made references to the Stewart A 1 Well in historical fashion. Please, now, refer to Exhibit 5 and state whether or not some of the calculations and statements which you have

previously made are based at least, to some extent, upon the contents of the information contained within Exhibit 5 and you may comment or make reference to particularly significant portions of the exhibit that you feel substantiate conclusions that you have already stated.

A Exhibit 5 is a package of information bearing on the Stewart A No. 1. It comprises the -- I believe the total of the information that I have had available to me. Page 1 is a copy of the scout report that I think is probably available to everyone.

It comes from a scouting service. It shows that the well was spotted in February, 1938; that it was shot with 140 quarts of nitro in March of 1938 and that it was completed flowing 70 barrels of oil per day on May 15 of 1938.

The next two sheets are copies of handwritten notes picked up by one of our people in Hobbs from the OCC well records in Hobbs, and I'm not sure what extent this represents the total of the records that the Commission has there, but it does provide a well record, that is a formation record with noted comments opposite various dates, showing what happened when.

The scout ticket, together with the data shown on the next two sheets, indicated to me that the well had made about five and a quarter million cubic feet of gas along with 70 barrels of oil from an interval between the casing shoe at 3271 feet and the total depth, which I believe at that time was 3395.

It shows further that there was a packer set in the open hole after the well was shot at 3300 feet and that the well after that time made just enough gas with the oil to flow, indicating that the -- most of the gas had been shut off by that packer.

The records that I have been able to turn up on this part of the Langlie-Mattix Pool, in searching our files and getting the information from other operators, indicates that there has been a general acceptance by operators in this area of a gas-oil contact in the Queen somewhere around minus 50 feet.

I interpret the performance on completion of the Stewart A No. 1 as tending to support a conclusion that the gas-oil contact is below the casing shoe which is 3271 feet and above the point at which the packer was set, which was at 3300 feet or minus 171 feet. That's a 29-foot interval in there.

I think that probably pretty well buttons up the gas-oil contact in the area of this well, at least under the circumstances as they were then in evidence. This well was -- the casing was perforated according to the OCC records in 1953 from 3171 to 91 and 3131 to 46.

The production record, which is another attachment to this file, doesn't show any production from the well immediately after 1953, although the Commission's record carries an AOF test of seven million cubic feet per day. I'm not sure whether those perforations that are currently -- I judge they are currently in the casing -- are opposite the Queen or the Seven Rivers. It may be either one.

The next sheet is the production tabulation that I referred to earlier and the final sheet in this package is diagrammatic sketch of the well bore as we understand it to be at the present. I don't know. The records don't show whether there's any junk left in the well. I don't know whether Atlantic's records show that.

Q Do you have any other comment concerning --

A I don't think of any other right now.

Q Now, you stated earlier, Mr. Kelly, that you

felt that substantial quantities of oil would be lost to the gas cap area and I assume that some of the information that you have taken from Exhibit 5 substantiates your conclusion that there is a definite gas cap area to the east.

Assuming that to be the case, have you made any study of any areas of Queen production which have been subjected to waterflood which show the result of the failure to provide a barrier or a back up insofar as a gas cap area is concerned in a waterflood situation?

A I think in general there are two ways to waterflood the Queen successfully and both of them really resolve to the same thing and it may really be the case anywhere.

I think you have to confine the oil within boundaries. You have to enclose it with injection patterns or you have to have some rock conditions which contribute to closing off the oil from escaping.

In the instant case, I think that we have a tremendous gas cap sand up dip from us that will quite readily accept anything that's pushed its way and that it wouldn't offer very much resistance to any fluids entering it.

I think they will move right on up there in response to a pressure differential down dip. Now, if there were an injection well up there or if there were a permeability barrier up there, I think it's entirely possible, in fact probable, that quite a nice volume of oil ought to be produced.

If you can seal off the thief zone, which, in this case is the gas cap, from the high pressure oil and you have a producing well around in the oil zone, well you can produce quite a lot of it. I have seen this happen in some cases; both things have happened.

I have seen this; get oil hemmed up against a permeability pinch-out and produce a fantastic quantity. I have seen people try to produce oil without any back up and I have seen them fail, where there was no injection outside or no permeability barrier.

The case that I am most familiar with, because I had occasion to look into it sometime in the past, is in our EK Queen Unit Waterflood. M. O. Davis, in 1968, reentered a well, offsetting our Queen flood there in Section 19, and completed for production.

The production records show that the well

has produced to a cumulative recovery of 705 barrels of oil since it was completed in 1968, and that it hadn't produced at all since June of 1969; and I think the reason why the well hadn't recovered much oil is because it's not backed up.

There isn't any injection outside of it and there is no permeability barrier to fence the oil up for it and the depleted condition of the sand outward and away from the waterflood has encouraged the oil and water that's injected in the waterflood to move on out there before that well had much of a chance to produce any of it.

This is the only case where this has happened that I have any data with me on to talk about today. I have a map of the EK Queen Unit with the location of M. O. Davis, KG No. 1, indicated on it and that is --

Q Exhibit 6?

A That's Exhibit 6; yes, sir.

Q Do I understand, then, that you would anticipate the recovery or the characteristics to be similar in the M. O. Davis well to that which would be encountered in the Stewart A 1 Well?

A I think basically the same condition would

prevail. I wouldn't venture to put a number on the barrels of oil that might be produced by the Stewart A No. 1 if a pumping unit were put on it, but I will say that I am convinced it will never be enough oil to pay the cost of putting equipment on it, the tubing, the pumping unit, the rods and the pump, the well work to put it on production.

I don't think that condition will change whether we inject at the location of No. 14 or inject under the pattern that has thus far been approved by the Commission.

I think you have to have it backed up to produce any of that oil and in either case, I would expect any oil that would push into the gas cap and get it over to that well, that quite a nice share of it would be lost to residual saturation of the gas sand before it got to the well to start with.

MR. SPERLING: Do you have anything further?

THE WITNESS: I don't think I have anything else.

MR. SPERLING: At this time, Mr. Examiner, we would like to offer Exhibits 1 through 6.

MR. NUTTER: Mobil's Exhibits 1 through 6 will be admitted in evidence.

That's all the direct examination of this witness?

MR. SPERLING: Yes, sir.

MR. NUTTER: The witness will be available for cross examination after the recess. We will now recess this hearing until one-thirty for lunch.

(Whereupon, a recess was held until one-thirty p.m.)

MR. NUTTER: The hearing will come to order, please.

MR. SPERLING: Mr. Examiner, with your permission I would like to reopen and ask one question.

MR. NUTTER: Fine.

Q (By Mr. Sperling) Mr. Kelly, in the event that the permission of the Commission is granted to the drilling of the No. 14 Unit Well, what would be Mobil's position with reference to the participation or non-participation of Atlantic on the basis proposed and for what period of time?

A I am authorized to represent that either of the proposals that Mobil has made to Atlantic will continue to be honored following Commission's approval of our application

until we have reached a point of absolute commitment on drilling of the well, which, in my judgement, would take at least ten days.

Now, we will say that either of those proposals we would hold open for ten days, and in the event that nothing should be worked out within that period, we would go ahead and drill our well just as soon as the contractors move in on it.

We haven't talked with the contractor about this location, but experiences with other wells that we have drilled in there, I think within ten to fifteen days we can have a rig in location digging and I am very anxious to get the hole down and water started in.

MR. SPERLING: Thank you. That's all.

MR. NUTTER: Any other questions of Mr. Kelly?

MR. HINKLE: Yes. I have a few here.

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Kelly, on your testimony this morning you testified, I believe, in effect that the Stewart A No. 1 Well was in a gas cap area.

A Predominantly so, yes, sir. It is now. At one time, it produced oil, but there is no moveable oil

that will move into that well bore there now, I don't believe, because it produced only gas for the last several years.

Q What do you base that on?

A From the production records of the well.

Q Now, isn't it possible that this Stewart A No. 1 is perforated into higher zone than some of the other wells in the unit?

A I haven't seen a log of the well, so I don't really know what sand it has in it or what sand might be below its total depth.

Q And there are some gas sands above in this whole area, are there not?

A I didn't understand.

Q There are some gas sands above the Langlie-Mattix Pool in this whole area; isn't that right?

A The Queen sand, which takes in what I call the upper Queen and Penrose members, that all of it is gas bearing to the east of the unit and there are a number of gas wells that produce from the Penrose or Basil member of the Queen.

There are also, I'm sure -- although I can't identify one specifically -- gas wells completed in the

Seven Rivers Sands, which overlie the Queen.

Q The Jalmat Gas Pool is above this whole area, is it not?

A I believe that's what we call the Yates, the Jalmat Yates Gas. It is shallower still than the Seven Rivers.

Q Well, it's still true that this well has produced over sixty-two thousand barrels of oil; is it not?

A I accept that.

Q And you are saying, then, that this is essentially gas well although it's produced six-two thousand barrels of oil. How can you say that?

A I think for the last several years of its producing life it abundantly displayed that it is only a gas well.

Q It was recompleted, was it not, as a gas well or reclassified as a gas well --

A Let me refer to the records on that.

Q -- from its original classification as an oil well?

A I'm not certain of the formal classification of the well, but I am certain that the production data shows what kind of well it was, however it was classified, and

for the last several years of its productive life it was a gas well according to the production records.

Q Are you satisfied with that? I am if you are.

A If I have answered your question.

Q It was reclassified, I think.

A I'm not sure. I suppose it was. I see here that the notes that I have indicate under date of 12-31-'53, that the well as shown on Form C104, was interpreted as an extension of the Langlie and not the Justice; so, I suppose that was recognition of the nature of the well.

Q Now, refer to your figure 2 of Exhibit No. 1. Now, if I understood your testimony correctly, you have shown in green that which you indicate would be the sweep from the injection well, is that right?

A I have shown in green the acreage which I interpret as being floodable acreage within the patterns of producing wells No. 9 and 18, assuming there is no injection up-dip from the wells that are currently on injection.

Q Then, are you saying to the Commission that if water is injected in Well No. 21 and 10 and 2, that that's the only direction the water would go in; that's the only direction of sweep?

A I don't see Well No. 10 there. The injectors which serve those patterns --

Q It's 13.

A --- are wells 2, 13, 17, 21, in addition to the line injector of Gulf on the offsetting SLM Unit Well No. 128.

No, sir. I don't represent that those are the only directions that the water will go. I do represent that these are representative, that this drawing represents the floodable acreage, the acreage from which oil will be swept to those wells.

Q But, it does not represent the acreage which would be swept or flooded by reason of these injection wells, does it?

A I have offered this for the purpose of showing only the acreage which would be swept to these producing wells. I think I have probably said two or three times that the injectors would push oil up-dip into the gas cap which would not be recovered by either of these wells and, in my judgement --

Q As far as your unit is concerned?

A -- would not be recovered by any wells up-dip.

Q Wouldn't Atlantic Richfield recover from its

Stewart No. 1?

A It is my opinion that the Stewart A No. 1, under either configuration that I have represented here in Exhibit 1, will not recover any commercial oil.

Q Now, you have testified in effect that this area shown in green is the area which would be swept for your producing wells --

A Yes, sir.

Q -- in the area? All right. If that is the case, if you convert the Stewart No. 1 into an injection well, would it not sweep a larger area and be one of the better injection wells in the whole unit?

A I can agree that a larger area would be swept. I don't agree that it would be the best or one of the better injection wells in the area. It may or may not be.

Q Well, it could be.

A I doubt seriously if it would ever be one of the best.

Q It may or may not?

A It may or may not. I think it's open to question, but in my opinion it probably will not be one of the best. I think that because it has a shot hole there; it has undoubtedly quite a lot of gas sand opposite and I feel we

will probably -- if we were to inject into it, which I will be willing to do -- we would probably have trouble confining the water to the sands that we wanted to go into.

Q Referring now to the negotiations, which you testified to, has Mobil ever offered to Atlantic Richfield to take the tract upon which the Stewart A No. 1 is located into the unit on the same basis that other tracts have been taken in?

A In the final analysis, I think this is the proposal that Mobil has made.

Q Are you still willing to take them in on the same basis as other tracts have been taken in?

A In the final analysis, that is exactly what we have proposed. That is the offer that is open now.

Q Just answer my question. Have you ever offered to take Atlantic Richfield into the unit on the same basis that you offered to other tracts?

A I'll need you to tell me what you think is the same basis.

Q Have you ever explained to Atlantic Richfield what your participating formula is?

A Let me say that I haven't explained to Atlantic

Richfield the details of the participating formula.

I have it on good authority that Atlantic Richfield is a royalty owner in this unit and has been furnished a unit agreement with all the details of the participating formula set forth in it.

I assume they are acquainted with it; but, I don't know for certain that they are.

Q You did not furnish them with a copy of the unit showing your participating formula when you made your offer for them to participate on the basis which you offered to participate; did you?

A I'm not sure I follow that. I think I have already said that I haven't explained to Atlantic Richfield at any point about the details of the participating formula. If that answers your question, well it does.

Q Now, refer to your Exhibit No. 1, again, and refer to tract No. 6 which is over on the northwest corner. It has one well; does it not?

A Yes, sir.

Q Isn't that a comparable situation to the 40 acres upon which the Stewart A No. 1 is located?

A No, sir. I don't think so. The tract No. 6 is on the low side of the structure and it would be my

opinion that all of the porous and permeable Queen sand underlying that tract is saturated with oil.

Q Has Mobil taken in tract No. 6 on the same basis they have taken all other tracts into the unit?

A All of the tracts within the unit area have entered on the same basis.

Q There is no other exceptions, no exceptions at all?

A They have all entered on the same participating formula.

Q Yet, you are offering Atlantic Richfield an exception, are you not, to the participation of all other tracts in the unit?

A I am proposing a different method of calculating the participation for the Stewart A tract in an effort to arrive at a participation which will be compatible and in line with the relative participation of all the tracts in the unit together in the total.

Q Now, what is your participating formula under the terms of the unit?

A The participating formula is a two phase formula with phase one being based totally on the perimeter current revenue as defined in the --

Q From your primary production?

A As defined in the agreement. I don't remember precisely what the definition is; it's six months or twelve months current production. Something like that.

That phase one continues until the unit area has produced twenty-three thousand barrels of oil from and after July 1, 1969. Thereafter, phase two takes effect and phase two is based seven percent on surface acreage and ninety-three percent on January 1, 1969 cumulative oil.

Q Based upon the formula, which you have testified to, if Atlantic Richfield should be taken into the unit -- assuming on the same basis as other tracts -- what would the probable allocation of production be to the tract upon which the Stewart A No. 1 is located?

A I'm not sure I understood the question. I'll take a stab at answering it. If you mean by your question if the Stewart A tract should be taken in under the same participation formula --

Q That's right.

A -- and not the same basis, but the same participation formula that is in effect for the unit, what would its allocation be? I haven't calculated that.

I assume that it's fairly close to the number

set out in Atlantic's letter of a few days ago, but I haven't checked it.

Q I believe you testified that you figure secondary recovery would be comparable to your primary recovery; did you not?

A Yes, sir.

Q Well, isn't it reasonable to expect that in this case the secondary recovery, as far as the Stewart A No. 1 tract, would be around sixty-two thousand barrels which is the primary recovery?

A No, sir. I don't think there is a chance that that lease will approach contributing sixty-two thousand barrels to this.

Q That's the way you figured all the other tracts?

A The other tracts are in general down-dip. They have a much thicker oil section underlying them. They have produced to primary depletion in general as oil wells and I think that relative to each other, the participation formula pretty well approximates their relative value within the unit.

I don't think it begins to approximate the relative value of the Stewart A tract within the unit and that the

greatest participation that I see that the tract should have would be relationship to its incremental reserves, if there are some.

Atlantic's representative testified at the prior hearing there were twelve thousand five hundred barrels. I don't know to what extent I accept that myself, but relying on his estimate as being reasonable, I have calculated participation on that basis and I think that is as close as I can come to estimating a participation for that tract, which will be on the same final basis as the other tracts in the unit.

MR. HINKLE: That's all the cross examination. We have one witness I would like to put on.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Kelly, in reply to a recent question there, of Mr. Hinkle's, did I understand you to say that you didn't think the tract had contributed the sixty-two thousand barrels?

A I'm sorry. I don't understand.

Q We are talking about the Stewart A tract, that 40-acre tract. Did I understand you to say that you didn't think the tract had contributed sixty-two thousand barrels?

A The extent of my statement was to the effect that I don't believe the tract will contribute sixty-two thousand barrels of oil to the unit; no, sir.

Q You are talking about secondary oil?

A Yes, sir.

Q Are you saying that the tract did not contribute sixty-two thousand barrels primary oil?

A I think that the line share of the primary oil that was made by the Stewart A No. 1 came from the 40 acres adjoining to the west and to the north and the south.

Q Well, now, some place, if this is in a gas cap here and that Stewart A No. 1 well is in the gas cap and it's depleted oil sand, then the gas-oil contact lies somewhere to the west?

A If you define the gas-oil contact as being that point above which only gas is produced, I think the gas-oil contact probably extends quite a ways down-dip in localities.

Q Did you penalize tract ten in any way in its participation in the unit because the gas cap may extend over into tract 10?

A The unit well 13 on tract 10 was a producing oil well when we converted it to injection.

Q But, the gas-oil contact lies somewhere to the east of well No. 13; right?

A I hadn't finished answering.

Q Between No. 13 and Stewart A No. 1.

A Let me complete my answer to your original question. If I define the gas-oil contact as the point above, which only gas is produced, I would have to say that it has been moved downward over the productive life of the field; but, that doesn't go to say that there is not an oil saturation which will be moved into an oil bank by the encroachment of a water bank at that location and with respect to the Stewart A tract itself, I think the oil sand is probably very thin in relationship to the gas sand that would be present at that location and I think there is a great chance that it will be overridden.

Now, looking to the tract to the west, well No. 13 was a producing oil well just like most of the other wells on the unit when it was converted and I should expect the oil saturation be much higher at the location of that well than it is farther up-dip around the Stewart A. No. 1.

Q Well, if 13 is oil saturated and Stewart A No.

1 is gas saturated, then some place in between there is a gas-oil contact in which there isn't any saturation of oil in one and saturation of gas in the other portion?

A I think there's probably oil and gas saturation through the oil column as it ever existed. I think the gas saturation grades to a higher percentage the farther up-dip you go; but, I think there's oil saturation there.

Q There would be oil saturation, then, in the Stewart A No. 1?

A Yes, sir, within that portion of the sand that was initially filled with oil. I am sure there is an oil saturation there.

Q Now, the tract No. 6 that Mr. Hinkle mentioned before. Is there a completed well out there on that tract?

A Yes, sir.

Q There is?

A Yes, sir.

Q That No. 3 was formerly a producer?

A No. 3 was a new hole. We drilled a new injection well there. There was a producing well a short distance east of the location No. 3, which had been sold -- re-complete to the Yates and sold to somebody else and we couldn't use that well.

Q And it is not shown on this exhibit?

A No, sir. It is not on this exhibit.

MR. NUTTER: I believe that's all. Does anyone else have any questions of Mr. Kelly?

MR. HINKLE: Yes. Mr. Nutter's question to you, as I understood it, was whether or not on account of the gas-oil contact moving to the west, had you penalized any of the tracts you took in like No. 3 or No. 10 on that account, because there was a gas contact there.

I don't think you ever answered his question really.

THE WITNESS: I can't say that we penalized any tract, to express it just that way, for encroachment of the gas-oil contact. What I tried to explain to Mr. Nutter was that gas-oil contact means different things and in the area that the gas has encroached to the down-dip to the west, I think there is a floodable oil saturation and --

MR. HINKLE: Your answer is, in effect, that you have not penalized any of the tracts on account of gas production; have you?

THE WITNESS: I tried to state what my conclusion was as clearly as I could.

MR. HINKLE: That's all.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

(Witness excused).

MR. NUTTER: Did you have anything further at this time, Mr. Sperling?

MR. SPERLING: No, sir.

(Witness sworn).

JERRY TWEED

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, your residence and by whom you are employed.

A I am Jerry Tweed. I reside in Roswell and I am employed by Atlantic Richfield Company as a petroleum engineer.

Q How long have you been with Atlantic Richfield?

A Three and one half years.

Q Have you previously testified before the Oil Conservation Commission --

A Yes, I have.

Q -- and your qualifications as petroleum engineer are a matter of record with the Commission?

A Yes, they are.

Q Are you familiar with the Langlie-Mattix Queen Unit Area --

A Yes, I am.

Q --- and made a study of the wells that have been drilled?

A As would be warranted by our interest in the area.

Q Under the application, which Mobil has filed with the Commission, they are seeking authority to complete injection Well No. 14.

State to the Commission what Atlantic Richfield's objections are to this well as an injection well.

A Essentially, its location as proposed would prematurely water out our Stewart A No. 1 and would not protect our correlative rights being that close to our producing well.

Q How far is this well from the line proposed, the proposed well?

A The proposed well is one hundred foot from our -- it's proposed one hundred foot from our line.

Q How far is it from your well?

A Approximately four hundred fifty feet.

Q Is there any location that might be acceptable for an injection well as far as Atlantic Richfield is concerned?

A Yes. Stated in our letter, which is part of the evidence, I believe Exhibit 4 was it, our letter of January 2 --

Q Exhibit 4 of January 2, 1970.

A -- in the last sentence we say "in the event that Mobil is still unwilling to accept our proposal, however, we would appreciate the opportunity to meet with your representative to discuss possible alternate locations for the Langlie-Mattix Queen Unit Well No. 14. We are not opposed to an injection well in the vicinity. We are opposed to one being this close to our producing well."

Q You would not oppose a location which, in your opinion, would protect correlative rights; is that correct?

A That is correct.

Q Now, to your knowledge, has Atlantic Richfield been offered by Mobil an opportunity to be taken into the unit as far as the tract upon which the Stewart A No. 1 Well is located on the same basis as other tracts have been taken into the unit?

A No, it has not been offered.

Q Has Mobil ever furnished Atlantic Richfield with a copy of the unit agreement?

A We do not have a copy of the unit agreement in our files. I can't say definitely that they didn't furnish one to Sinclair; but, we have not been furnished one since we have operated the tract and we do not have a copy in our files.

Q Atlantic Richfield comes into this situation by reason of the fact that Atlantic Richfield has acquired the acreage of Sinclair; is that right?

A Yes. In the merger with Sinclair.

Q Would Atlantic Richfield be willing to join the unit if an offer had been made to take this tract in on the same basis other tracts have been taken in?

A Yes, we would.

Q Now, in the event it should be taken in, this tract, on the same basis as other tracts in the unit, what, in your opinion, would be the approximate allocation of production under the secondary recovery?

A Well, in a percentage basis that is as stated in our letter, we said that we had 1.7949 percent of the

cumulative recovery. Our participation in the total unit would be approximately this.

It would be slightly lower, maybe 1.75, 1.76, based on Mr. Kelly's formula that he stated. This would attribute to our tract approximately six-two thousand barrels of oil.

Q Now, refer to figure 2 of Mobil's Exhibit No. 1.

A Prior to getting into this, I would like to comment on this idea of a gas cap.

Q Okay. Go ahead.

A Mr. Kelly stated that there was a gas cap in the area and it had moved down to encompass our well. As I understand his testimony, his testimony is based on production from our Stewart A No. 1 Well.

As I understand his testimony, they plan to flood the Queen Formation. Our Stewart A No. 1 was completed, as he testified, from 3131 to 91 through perforations; open hole 3191 to 3395.

The upper interval or considerable of this upper interval would be in the Seven Rivers. It's my contention and conclusion from studying it that the gas has been produced from this upper zone and that, in effect, there is not a gas cap or gas bearing interval in the Queen under-

lying our tract, at least in the vicinity of the well and also had the similar zones been open in their wells off-setting this lease that they would have made gas from those upper zones.

We do not concede, in other words, that there is a gas cap in the zone that he intends to flood.

MR. NUTTER: Mr. Tweed, do you have Exhibit 1 or do you have this schematic diagram there in your pack of exhibits?

THE WITNESS: Yes, sir.

MR. NUTTER: Is that a correct depiction of the status of the well?

THE WITNESS: These are old records and they vary somewhat. Our records indicate, actually, perforations from 3151 to 91.

MR. NUTTER: Fifty-one rather than thirty-one?

THE WITNESS: Yes, sir, and open hole from 3191 to 3395.

MR. NUTTER: In other words, that casing shoe would be at 3191, the bottom of the perforations?

THE WITNESS: Yes, sir, according to our records.

Q (By Mr. Hinkle) Then, in your interpretation of the log of the well or what other means do you have, what

is the top of the Queen?

A The well has not been logged, but based on the structural position in other wells that have been logged, Seven Rivers is open in our well.

I might comment here. I haven't drawn a structure map on the area. However, one was not submitted and it is my -- I, from what I understand now, would say the structural position does not change greatly in between our well and the offsetting tracts.

We are somewhat structurally higher, but not a lot. However, we are perforated higher in the section, perforated up in the Seven Rivers Section.

Q But, you don't know the actual top of the Queen here?

A The well was not logged. As a general rule, their wells were completed from roughly thirty-three hundred to thirty-five hundred feet.

MR. NUTTER: Can you tell, from this driller's log on the formation record, where the top of the Queen would be?

THE WITNESS: Let's see. No, sir, I couldn't. There's also -- based on the total depth of the well, it is

also our conclusion that there is additional Queen pay below TD. If I am not mistaken, I believe Mr. Kelly also said this is a possibility, which is not exposed in our well.

Q (By Mr. Hinkle) You heard the testimony of Mr. Kelly this morning. Do you agree with his testimony that it wouldn't be feasible to use this well, the Stewart A No. 1, as an injection well?

A That it would not be feasible, you say?

Q Yes.

A Well, first of all, I believe he said that they would be willing to use it under terms of negotiations. It is also my contention and my conclusion that it would be feasible to use this well as an injector.

Q Do you agree with his testimony that to him the picture he paints of this well is that you have a very thin oil section and a large gas section?

A I believe I have already testified to this in the fact that my contention being that the gas was being produced from the Seven Rivers and that our oil production was from the Queen and we have other Queen below TD that could be exposed.

Q So, you do not agree with his testimony?

A That is correct.

Q Now, refer to figure 3 of Exhibit 1.

A Figure 2 of Exhibit 1?

Q Yes; that's right, figure 2 of Exhibit 1.

A Here he shows in green the area that he contends will be swept or flooded to the two producing wells No. 9 and No. 18.

When I evaluated this, I estimated I think this is a real severe estimation of sweep to these two wells based on the offset injection and in this, he estimated that the additional floodable area due to the drilling of No. 14 would be 61 acres.

The area that I calculated, using a less severe sweep and more common practice of figuring sweep area, came out 27.5 acres of additional sweep that the No. 14 Well would contribute.

This would still result in an additional one hundred thousand barrels of recovery due to the drilling of this well based on the 61 acres and two hundred thousand barrels; this is approximately thirty-three hundred barrels per acre that he is saying will be recovered in this area.

Q Do you have any comments with respect to figure

3 of Exhibit 1 that you would like to make?

A I would like to point out here that he points out that the conversion of Stewart A No. 1 would sweep an additional 23 acres. Now, if we also used his figure of thirty-three hundred barrels per acre recovery, then this would be an additional recovery of 75,900 barrels due to the conversion of this well over the conversion of No. 14.

For this to be what I estimated to be incorrect, he would either have to point out that the pay is substantially worse here for some reason or why that they would use a different figure.

Q Now, referring again to Mobil's Exhibit No. 1 and in particular to tract No. 6, in your opinion, is that a comparable situation to the tract of Atlantic Richfield upon which the Stewart A No. 1 is located?

A The tract 6 is also a edge location to the unit as would be our Stewart tract. It is true that the tracts exit undoubtedly down structure of ours, but as previously testified, I don't think structure is significant as to oil production in this general area.

Therefore, I think the tract 6 is similar in the location to ours and I would have anticipated that the

two tracts would be taken in under similar formulas.

It's also true that if you drill an injection well one hundred foot from the line of tract 6, that the incremental barrels of oil that you could then attribute to that tract would be reduced.

Q And correlative rights would not be protected in that instance?

A Yes, had it been left out.

Q Now, as a part of Exhibit No. 4, Mobil's Exhibit No. 4, there is a letter of Atlantic Richfield to Mobil, dated January 2, 1970.

Do you have any comments with respect to that?

A Well, what we stated in here that Mobil's offer was unacceptable to us. They plan here to drill an injection well No. 14 at a cost of \$38,000.00 which will recover less oil than would our Stewart A No. 1.

In our letter we state that our calculations indicate that the value of the well bore of our Stewart A No. 1 would be \$15,500.00. This is the money that they would save in using our well as an injector opposed to drilling the No. 14 well.

This cost includes setting a liner to shut off the gas zones in the Seven Rivers, perforating that liner and

treating the well. Also, this takes into account -- is discounted \$4,500.00 for possible risks, which we think fully discounts the well for risks.

As previously stated, in addition, the well would recover more oil. Mr. Osborne testified to the fact that he said the incremental would be \$12,500.00 and, therefore, he put a value on this -- a discounted value on this of \$8,330.00.

If you add the \$8,300.00, what he said would be the additional value of the oil, to the savings by using this well, you come up with a total worth of the well of \$23,830.00. As a compromise price, we said that we would be willing to accept \$20,000.00

Q You are still willing to accept that?

A Yes, sir, we are. Our position here being that we would certainly be willing to join the unit under the original perimeters or else we would be willing to take the \$20,000.00 cash value, or both of these failing that we would be willing to negotiate an acceptable location for the injection well.

Q Do you have any recommendations to make to the Commission with respect to this matter?

A This previously came to a hearing and the previous

ruling was that this well not be allowed to be drilled. We are still in agreement with the previous ruling and recommend that that be upheld, that the well not be allowed.

Q But, Atlantic Richfield would consider an alternative location for the injection well which would clearly protect your correlative rights; is that right?

A Yes, sir, we would.

Q Do you have any further comments?

A No.

MR. HINKLE: That's all.

CROSS EXAMINATION

BY MR. SPERLING:

Q Mr. Tweed, I believe at the outset, you referred to the Langlie A 1 Well as a producing well.

A It was a producing well. It is now shut in.

Q How long has it been shut in?

A Since 1962.

Q Do you have any information as to the present condition of that well, the well bore?

A As our latest records indicate that it is -- there is no junk in the hole and it is clear to "TD."

Q And there's been no attempt to re-enter to ascertain what the conditions are?

A No, sir, there has not.

Q What do your figures show with reference to the last oil production from the well? Would you agree with the exhibit --

A Yes, we agree with the exhibit, Mr. Sperling.

Q -- which indicates the last oil production to have been 1959?

A Yes. I might add that I don't think this is out of line in that the well was completed in 1938; the last oil production being in 1959, some twenty-one years later, which allowed ample time for the primary depletion of the Queen interval that was open.

Q And I take it that it is still Atlantic's position that the incremental reserves, insofar as the flood is concerned, is 12,500 as previously stated by Mr. Osborne?

A That was previously stated by Mr. Osborne. There is a discrepancy in between what he stated and what Mr. Kelly applies to the area just to the west.

Q Well, I am asking for Atlantic's position with reference to the incremental reserves attributable to the A 1 tract.

A Our position, according to the letter that we wrote, is that we were willing to accept \$20,000.00, which

we felt would be consideration for the use of the well bore, plus consideration for the 12,500 barrels of oil.

Q Well, then, the position with reference to the numerical number of barrels incremental remains the same at 12,500?

A That's what we were willing to accept to be contributed for, along with the well bore. I think that Mr. Osborne was conservative in his estimate and probably rightfully so.

He wasn't attempting to be harsh in his evaluation.

Q If you are unable to locate the top of the Queen in the A 1 Well, the Stewart Well, how can you take a position with reference to its position structurally as to wells lying to the west?

A That would just have to be on general structural configuration. As I stated, I did not draw a structural contour map here.

However, one was also not submitted and it was not established that this gas production came from the Queen Formation by Mr. Kelly.

Q You are satisfied that the oil production, the last of which was 1959, did come from the Queen?

A It would be my conclusion that the oil production

did come from the Queen.

Q Now, Mr. Hinkle asked you concerning alternate locations with reference to unit well No. 14.

A Yes, sir.

Q What do you propose as an alternate location?

A Here, for this, we are not trying to dictate to Mobil where they would put their injection well. What we are concerned about is the distance from our producing well and that would be the contention, is the distance from the producing well.

Q Well, I assume from that answer, then, you are suggesting that the injection well be moved to the west; is that right?

A What I mean -- to be completely specific, what I am saying is that if they were at least 660 feet from our well, we wouldn't particularly care where they put it. They could move it to the south or the west, as long as it was on their acreage on the unit.

We wouldn't be opposed, even it was closer than one hundred foot to our line, if it were at least 660 feet from our well.

Q What plans do you have with reference to the Stewart A 1 Well?

A We have no paper works submitted at this time. Obviously because our negotiations are not complete and we are not considered to be complete with Mobil.

In the event that this area is waterflooded and a Mobil injection well is sufficient distance from ours, not to prematurely water it out, we do plan to re-enter it and make a producing well out of our Stewart A No. 1 Well.

Q That would be dependent upon the alternate location, I assume. Is that it?

A Yes, sir. If the injection well is too close to prematurely water us out, it would not be economically feasible for us to re-enter the well.

Q Have you made any estimates on what you would expect to recover by doing whatever is necessary to recondition the A No. 1 Well, the Stewart Well, as a producing well?

A This would be -- we have made estimates. This would be based on the distance from our well as an injection well. Do you have a specific distance in mind?

Q Well, I will take your distance.

A The distance, 660 feet, we estimate a recovery of some twenty to twenty-five thousand barrels of oil.

Q And what do you base that on?

A The area to be swept and the -- based on one to

one primary in the general area. We calculated the primary recovery on a barrels per acre basis in this area, calculated the area that would be swept from that distance and based our secondary recovery on that.

Q Well, assuming the location of injection well to the west, how much unit oil would move to the Stewart Well?

A I wouldn't be in a position to say how much unit oil. Now, if you put it right on the line, there would be no unit oil moved there. It would all be oil that would be swept to -- across our Stewart Lease to our well.

Q Would it be reasonable to say that if an injection well were located 330 feet from the section line, well, the forty line there, to make it 660 feet from your well that any unit oil would be moved in the direction of the Sinclair Well?

A Pardon me. I'm sorry, I missed your question.

Q Well, assuming the location of an injection well at a distance 660 feet from the Stewart Well --

A Yes, sir.

Q -- would any unit oil move to the Stewart Well?

A That would depend upon the location of the well 660 feet from ours. It is true that if it were directly

west, 660 feet, some of the oil that would be produced would be swept from the unit area to our well; not all of it, by any means.

Q Do you think that any oil moved to the east by injection would be lost and not recovered by anyone due to its movement into the gas cap?

A There is going to be some oil moved to the east that will be lost. I would like to refer to our No. 2 well here on Exhibit 1, figure 1. This well will also push oil off of the unit premises to the east, which will not be recovered by any producing well and I think I could cite other instances of injection wells along the unit boundary that would do this and this would also happen on the 14 well.

Q Have you made any study of the wells, nature and characteristic of the wells to the south of the Stewart A Lease as shown on figure 1 of Exhibit A, El Paso Well?

A No, sir, I have not. It's my understanding that is a Jalmat gas well.

Q Do your records indicate the reason for the disconnection of the well in 1964 by El Paso from its gathering system?

A All that was stated here was that the well died and would no longer flow and, therefore, it was disconnected.

Q That was a gas connection, was it not?

A Yes, sir, it was.

Q Mr. Tweed, you stated, I believe, that your estimate of the recovery from the Stewart Well in the event the injection well were at a location 660 feet from the Stewart Well would result in the recovery of about twenty thousand barrels.

What do you estimate the recovery to be from the Stewart Well in the event the injection well were drilled at its proposed location?

A I don't have those figures with me, either the twenty thousand or your present question. Just refiguring in my mind this would result in roughly 6,600 barrels of oil recovered.

Q So, you would have, then, a differential. I believe the present location is some 430 feet from the Stewart Well, proposed location and in a distance of -- that is of comparing 660 feet to 430 feet, approximately thirteen thousand barrels additional oil would be recovered from the Stewart by moving the 14 location to the west.

A Yes. I might point out here that the area is a square function and moving it an additional one hundred foot adds a considerable amount of area, for instance, an

additional hundred foot, since this is a square function.

Q Well, would it be your opinion that the bulk of the additional recovery, that is the difference between 6,600 and the 20,000 would come from the unit area?

A I said here, again -- I said it depends on where the well is located. It also -- if it was located at a different area, it would also increase the sweep on our tract.

If you located it down to the south, as I indicated before on our line or near our line, then essentially all the oil swept on our well would be from our tract.

Q Now, you referred to the tabulation of well information taken from the Hobbs District Office records and particularly with reference to the gas flows indicated, I believe under what bears a numerical notation "9", that would be on the first sheet of that tabulation.

A Is this the scout ticket you are referring to?

Q No. It's the next page and you see the figure "9" over there on the left hand corner.

A OCC work sheet with notes?

Q Yes, sir; right. Now, considering those test figures indicated in there, does that indicate to you that the gas and the oil was coming from the Seven Rivers at the

time of the completion of this well?

A I believe I missed where they set the packer there.

MR. NUTTER: 3-15-'38.

THE WITNESS: They set a packer at 3-15-'38?

MR. NUTTER: On the date, 3-15-'38.

THE WITNESS: Yes, but I missed the depth the packer was set at.

MR. SPERLING: Three ninety-five.

THE WITNESS: That's the TD of the well. If they set the packer in the open hole, I don't believe they would set a packer there.

MR. NUTTER: Now, over here on the scout ticket it says packer at 3,300 on the first page there. Up above there, Mr. Tweed, on the casing record; seven and five-eighths at 961, four and one-half at 3271, 2-inch tubing at 3395, packer set at 3,300.

THE WITNESS: Yes, sir, I see it.

Q (By Mr. Sperling) Does that have any significance, the difference in the gas production and the oil production there, after the packer was set?

A They said here they set the packer at 3,300. I assumed they flowed below the packer at 70 barrels of oil

per day and just enough gas to flow. Is that correct?

Is that your interpretation of that?

Q I can't reconcile that with the notation opposite 3-15-'38, which says "set packer." We have to assume it was at 3,300 feet; flowed 70 barrels of oil per day and five million gas through casing.

A There is a discrepancy here in between what it says here and what it says on the scout ticket and I am not prepared to say which is correct, sir.

Q I mean, depending upon which is correct, would that make a difference in your testimony?

A If what is shown on the scout ticket -- well, they showed here a flow of 70 barrels of oil per day through casing.

MR. NUTTER: That's through tubing. On the scout ticket it says "flowed 70 barrels of oil per day through the tubing with just enough gas to flow." So, you have a low ratio there through the tubing coming from below the packer.

You get packer over here and on 3-15-'38 they set the packer; they flowed 70 barrels of oil per day. Well, this is from the scout ticket back over here. But, they made five million through the casing.

So, above the packer, evidently the formation was producing quite a bit of gas.

THE WITNESS: I would assume that, and below that point then would be saying below 3300 foot it was essentially oil bearing formation.

MR. NUTTER: If your casing point is correct at 3191, then you had the difference from 3300 to 3191 of open hole, making that gas?

THE WITNESS: Yes, sir, along with the perforations.

MR. NUTTER: I am not sure those perforations were open at that time; were they?

MR. SPERLING: No.

MR. NUTTER: Those perforations were made over here in 1953, on the next page, item 16?

MR. SPERLING: Correct.

THE WITNESS: Okay.

MR. NUTTER: So, that was open hole above the packer?

THE WITNESS: I might add here also that there was, in testimony Mr. Kelly gave, no mention of the difference in structural position between our Stewart tract and their Mobil tract 10, which I don't have the figures on; but, if they are basing their contention there is gas cap, that is

something that I would like to see figures on.

Q (By Mr. Sperling) I believe you said that you felt a fair allocation insofar as the Stewart is concerned would be on the basis of primary production, some sixty-two thousand barrels of oil.

Do you honestly think that the Stewart, if added to the unit, will contribute sixty-two thousand barrels secondary recovery?

A Yes, sir. I honestly think that it will contribute more than that and there, again, I refer to Exhibit 1, figures 2 and 3, which Mr. Kelly testified to, to the sweep.

If No. 14 is not drilled, then you would have the sweep from our well that No. 14 would get, plus an additional sweep area. Now, it's true in any event on a tract that you are thinking of taking in, if you drill next to the line, you cut down what the tract contributes.

It cost you to drill the well, but if you drill next to the line, you cut down what it contributes.

Q But, you think that the sixty-two thousand contribution to the unit as contrasted to the 12,500 incremental barrels as testified to previously, would be a fair participation basis?

A Yes, the incremental -- we are talking about two different things. I think that the sixty-two thousand barrels is fair representation of what the Stewart A No. 1 will contribute.

Like I just stated, any time you drill a well on the line close to a tract, you cut down how much incremental oil it will contribute to the unit. This is true of any tract in the unit here.

MR. SPERLING: That's all I have.

MR. NUTTER: Are there any other questions of Mr. Tweed?

MR. HINKLE: That's all.

MR. NUTTER: He may be excused.

(Witness excused).

MR. NUTTER: Do you have anything further at this time, Mr. Hinkle?

MR. HINKLE: That's all that we have.

MR. NUTTER: Ask for a statement from anyone else if they have any?

MR. SPERLING: We would like a little more redirect, if we could.

MR. NUTTER: Okay. Fine.

REDIRECT EXAMINATION

BY MR. SPERLING:

Q Mr. Kelly, you are the same Pat Kelly that testified previously in this matter?

A Yes, sir.

Q On redirect, Mr. Kelly, I would like to ask if you have any information as to other Queen completions within the area lying immediately to the east of the Langlie-Mattix Queen Unit Area, that is other than the Stewart A No. 1 Well?

A Yes, sir. There are a number of completions to the east of the unit. The nearest Queen completion, with which I am familiar, directly east of the Stewart A No. 1, is shown on the various plats in Exhibit No. 1 as the Federal A 2 on the El Paso tract and the information that I have is from the production records of the OCC, together with the scout tickets and I believe I have seen a log on that well at sometime.

That well was completed in May, 1959, flowing 18 barrels of oil a day and 350 MCF of gas and produced -- has produced to an ultimate recovery of 2,201 barrels of oil from the Queen.

It, in 1968, made almost fifty-eight million

cubic feet of gas from the Queen and I interpret that as being a gas well. I don't show any -- I do show that it made 95 barrels of liquid. I don't know whether that is oil or condensate.

It evidently was sold off their lease, 95 barrels of petroleum hydrocarbon liquid during the year 1968. To the south on the various plats, that I have offered in Exhibit 1, there are two gas wells shown; one is in Section 14, near the center of the section, Well No. 2, immediately east of unit Well No. 21.

That is a -- I have examined the completion interval and log on that well and I can confirm that it is a lowermost Penrose gas well. It is completed in exactly the same interval for gas production that unit Well No. 21 produced oil from up until it's conversion to injection, which is the bottom porosity in the Queen, the Penrose member and that well, during 1968, produced two million cubic feet of gas with no indication of any liquid produced.

The offset gas well to the east of the Langlie eight two, shown operated by El Paso, is the El Paso Langlie 1 which, according to my information, is a Queen well although I don't know precisely what its completion interval is and during the year 1968 it made a total of 2 barrels of

oil and 17 MCF of gas and its cumulative oil production to the end of 1968 was 1,749 barrels.

With further regard to the area east of the unit, it happens that I do have a log in my hands of a well drilled by Sinclair approximately 660 feet east of the Stewart A 1. It is not spotted on this map.

I understand that it is currently a producing well from the Blinebry-Drinkard, or some such, and I have compared this -- the log of this well with logs of wells down-dip in the unit and I have been able to pick the top of the Queen on it, which is at 3103 feet, log depth.

MR. NUTTER: Top of the Queen is 3103 feet?

THE WITNESS: Three thousand one-hundred three feet. I will offer this log as a further exhibit. I will point out that that the right hand curve on this log is one that I am not acquainted with and I don't claim any expertise in evaluating it.

I can confirm that the gamma ray pick is the top of the Queen and I have compared it with other logs in the area. The right hand curve on this log is some kind of a resistivity log. It's titled "focused log."

I don't know what that is. And the truth is, I couldn't find anyone in our office that works with logs

that could evaluate it for me. One geologist did make some guesses as to what porous sand the resistivity curve indicates is present and for whatever it's worth, there is recorded on the log where those picks were made within the Queen interval and they totaled some 90 feet, including three feet below the gas-oil contact, if you plot it.

I will point once again to the well records that are available to the public on the Stewart A 1. They show a casing shoe at 3,271 feet. Maybe these public records are inaccurate and the casing shoe is actually at 3191, as Mr. Tweed indicated his records showed.

In either case, I think there's no question but what the well must be in the Queen interval below the casing shoe. I don't see how there could be that much fall in 660 feet; one location west, that would put this open hole interval up in the Seven Rivers.

I have serious reservations about the perforations being in the Seven Rivers, but without a log on the hole to check it with, I have no way of really knowing. I am of the firm conviction that the open hole interval below the casing shoe indicated to be at 3271 on the records that have been available to me is surely opposite the Queen

interval.

Q (By Mr. Sperling) Is that the extent of the information you have with reference to wells to the east?

A That's all that I have information with me on, I believe.

Q Mr. Kelly, is it your opinion that in the event the proposed unit well No. 14 is not drilled at its location, that there will be lost and unrecovered, with resulting waste, oil in the approximate magnitude of two hundred thousand barrels?

A Yes, sir; that is my opinion.

MR. SPERLING: At this time, I would like to offer Mobil's Exhibit 7.

MR. NUTTER: Mobil's Exhibit 7 will be admitted in evidence.

MR. SPERLING: That's all we have on redirect.

MR. NUTTER: Are there any further questions?

MR. HINKLE: Just one here, Mr. Examiner.

RE CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Kelly, you just testified here to the El Paso 2 A located in the northeast quarter of the northeast

quarter of Section 14, I guess it is.

A Northeast quarter of the southwest quarter of Section 14 is the location that I am looking at, sir.

Q No, the two A. I am talking about the 2 A El Paso.

A Oh, I'm sorry.

Q Directly east of the Stewart A No. 1.

A Yes, sir.

Q Now, what is the structural position of the 2 A Well to the Stewart A No. 1?

A Well, I don't know what structural position the Stewart A No. 1 resides, so I can't describe it in relation to the Stewart A 1.

I seem to remember having picked a subsea datum top of the Queen in that 2 A Well at minus 59 feet. But, I would have to go to my records, which I am not sure whether they are here or in Midland, to confirm that that's where I picked it.

Q Now, in getting up this unit, didn't you prepare a structural map of this whole area?

A No, sir.

Q Never had one?

A No, sir. We had a great deal at stake. We had

a large loan against this property and my aim was to unitize it and place it under flood just as fast as I could. All of the working interest owners within the unitized area were able to come to very rapid agreement, in a matter of an hour or so, on what their interest in this unit should be and we formed it.

Q Well, obviously, 2 A is up structure considerably from the Stewart A No. 1. Is that right -- not right?

A Yes, sir. In preparing for this hearing, I have made some further investigations of wells in the area; yes.

MR. HINKLE: That's all.

MR. NUTTER: Are there any other questions of the witness? He may be excused.

(Witness excused).

MR. NUTTER: Do you have anything further you wish to offer, Mr. Hinkle?

MR. HINKLE: No.

MR. NUTTER: We will take closing statements.

MR. SPERLING: I don't believe I have one.

MR. HINKLE: You fully understand.

MR. SPERLING: I think the Examiner understands

the problem.

MR. HINKLE: I don't think we could add much.

MR. NUTTER: I understand the problem, I don't understand the solution.

If there's nothing further in Case 4202, we will take the case under advisement.

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, GLENDA BURKS, 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.

Notary Public

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4202, heard by me on 1/7, 19 70.
[Signature], Examiner
New Mexico Oil Conservation Commission

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 27, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Mobil Oil Corporation
for a unit agreement, Lea County, New
Mexico.

)
)
)
) Case No.

) 4201
)

Application of Mobil Oil Corporation
for a waterflood project and unorthodox
injection well locations, Lea County,
New Mexico.

)
)
) Case No.

) 4202
)
)

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING



MR. UTZ: Case 4201 and 4202 will be consolidated for the purposes of testimony and separate orders will be written.

MR. HATCH: 4201. Application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico. And Case 4202, application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico.

MR. UTZ: Appearances?

MR. SPERLING: James E. Sperling, Modrall, Seymour, Sperling, Roehl and Harris, Albuquerque, appearing for the Applicant. We have one witness.

MR. UTZ: Any other appearances?

MR. EATON: Paul W. Eaton, Jr., Hinkle, Bondurant and Christy, Roswell, New Mexico, appearing for Atlantic Richfield Company in Case 4202.

MR. UTZ: Swear the witness, please.

(Witnesses sworn.)

MR. UTZ: You may proceed.

(Whereupon, Applicant's Exhibits 1 through 3 were marked for identification.)

PAT KELLY

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Please state your name, your place of residence, the name of your employer and the capacity in which you are employed.

A My name is Pat Kelly, I live in Midland, Texas, and I work for Mobil Oil Corporation as a petroleum engineer.

Q Mr. Kelly, have you on any previous occasion testified before the Commission, so that your qualifications as a petroleum engineer are a matter of record?

A No, sir.

Q Would you please give a brief resume of your educational background, leading to an engineering degree, and your experience in this field.

A I studied petroleum engineering at Texas A & M University, and I graduated with a BS degree in petroleum engineering in 1954. I started to work immediately for the railroad commission in its Corpus Christi District Office as a field engineer.

Thereafter, I served two years in the Air Force,

completing that obligation in 1957, when I returned to the railroad commission and was assigned as an engineering examiner, where I served in such capacity for eight years. In 1965, I was employed by Mobil Oil Corporation as a petroleum engineer and have served in that area since that time.

Q Mr. Kelly, are you familiar with the area which is the subject of the application in these matters?

A Yes, sir.

Q And what connection has your association been with the area?

A That of a petroleum engineer?

Q Yes, sir.

A I have had occasion to make some studies of properties, producing properties, in the Queen Formation in that area, which resulted in Mobil's purchase of some properties, which we are preparing to waterflood following their unitization.

Q Would you state briefly what is sought by the application pertinent to Case 4201?

A Pursuant to the application, styled in Case No. 4201, it is Mobil's request that the unit agreement covering the Langlie-Mattix Queen Unit, in Lea County, New

Mexico, be approved.

Q Would you please refer to what has been marked in Case 4201 as Exhibit No. 1 and advise the Examiner what that is?

A Exhibit No. 1 is the unit agreement that has been prepared covering Langlie-Mattix Queen.

Q Now, would you please identify what's been marked in that case as Exhibit No. 2 here?

A Exhibit 2 is an area plant showing the Langlie-Mattix Queen Unit Area in the approximate center of the plat and showing all of the acreage within a two-mile radius of such property.

It also shows the Gulf operated Stewart Langlie-Mattix Unit immediately offsetting the proposed Langlie-Mattix Queen Unit to the north, and it shows also the Langlie-Mattix Woolworth Unit, operated by Amerada for waterflooding in the Queen Formation, about two miles north of the proposed unit.

Q Now, contained within the unit agreement is a map of the unit area; is it not?

A Yes, sir. There is in the back of the unit agreement a plat marked Exhibit A, which shows the location of all the wells in the unit, and shows the unit

boundary, which encompasses some one thousand forty acres or so.

Q Now, is this area or has this area been productive in the particular formation with which we are concerned? By the way, you might explain what the unitized formation is.

A The unitized formation is to be that interval within the Seven Rivers and Queen Formations, described by the Conservation Commission as comprising the Langlie-Mattix Pool.

That interval takes in the lower one hundred feet of the Seven Rivers Formation, together with all of the Queen Formation.

Q Now, please refer to what has been marked as Exhibit No. 3 in Case 4201 --

MR. UTZ: Do you have another copy of the exhibit? Oh, I'm sorry -- go ahead.

THE WITNESS: Exhibit 3 is a log of the Gulf Oil Corporation, J. A. Stewart, Well No. 9, located three hundred and thirty feet from the north and east lines of Section 10, Township 25 South, Range 37 East. That log is marked at the top of the Queen Formation -- top of the

Penrose Formation, which is a part of the Queen, the lower Queen, and is also marked at a depth of one hundred feet above the top of the Queen and it is marked at the base of the Queen, which coincides with the top of the Grayburg.

The entire interval extending from one hundred feet above the top of the Queen down to the base of the Queen is the unitized interval.

Q Mr. Kelly, give us, briefly, a resume of the history of the development within this particular unit area as described in the unit agreement?

A The Langlie-Mattix Pool was discovered sometime in the 1930's. The first production that was found on proposed Langlie-Mattix Queen Unit was the Sun Oil Company Stewart A, Well No. 1, drilled in location B of the Section 15, Township 25, Range 37.

In May, 1936, there were three additional wells completed in the Queen in 1936, fourteen in 1937, five in 1938, two in 1939 and one each in 1947, '66 and '68.

This brings the total development within the unit area to twenty-eight wells. Those wells, for the most part, were completed open hole, with casing set on

top of the pay. In general, they were shot with some nitroglycerin.

To the end of 1968, the unit area had produced three million two hundred thirty-eight thousand barrels of oil from the Queen Formation.

Q Before continuing with 4202, has the unit agreement, which has been identified as Exhibit No. 1 been submitted to the USGS? I notice that there is federal acreage included within the unit area --

A Yes, sir. Tract 1 operated by Pan-American Petroleum Corporation is a federal tract. The USGS has been consulted in preparation of this agreement and has indicated that it will approve an agreement drawn along the lines of one that has been corrected by them and furnished to us, and this unit has been prepared written along those lines.

And I have confidence that they will approve it.

Q In other words, Exhibit 1 represents a revised unit agreement following its summation to USGS for comment?

A Yes, sir. The first draft was revised according to the comments of the USGS.

Q Now, what percentage of the working interest

does Mobil have within the unit area?

A The unit area is to be operated under the agreement, under a two-phase formula. During phase one, which continues until twenty-three thousand barrels of oil have been produced from and after July 1, 1969, from the unit area.

And phase two begins at the first, on the first day of the month following the exploration of production of twenty-three thousand barrels, and continues thereafter. Phase one is based upon current revenue for the year 1968, for each tract. And phase two is based seven percent on acreage and ninety-three percent on tract accumulated production, as of January 1, 1969.

Mobil's participation, working interest participation, under phase one, is 85.4925 percent and, under phase two, 73.4878 percent.

Q What is the present status of the sign-up of the unit agreement by the various interest owners, both interest owners and royalty interest at this time?

A The unit agreement was only submitted through mail to the working and royalty interest owners on August 13. As of this morning, working interest sign-up,

exclusive of Pan-American Petroleum Corporation, had amounted to 89.4 percent -- weighted according to phase two participation.

Pan-American has furnished Mobil with a letter which states that it has not yet signed the unit agreement, but that it is being processed and that it will be signed, and they authorized us to make that representation to the Commission. With Pan-American's signing the unit will be committed to by ninety-three and a half percent of the working interest owners. As of this time, there are twenty-seven percent of the royalty interest owners which have committed their interest to the unit, according to phase two participation.

Q Do you anticipate any particular problem, other than the lapse of time in completing the execution by the interest owners?

A No, sir. I expect this sign-up to continue at something like the rapid pace that it's progressed at so far.

Q Is the form of the unit agreement, allowing, of course, for certain local variations, a standard form of unit?

A Yes, sir. It's patterned after a federal form.

Q Do you have anything else to add in connection with the unit itself, as contained in the application of 4201?

A I believe not.

MR. SPERLING: I would like to offer at this time, Mr. Examiner, Exhibits 1 through 3 in Case 4201.

MR. UTZ: Without objection, Exhibits 1 through 3 will be entered in the record in this case.

MR. SPERLING: Unless the Examiner wants to inquire as to Case 4201 at this time, we will proceed with that portion of the testimony --

MR. UTZ: The purpose of this unitization is for a secondary recovery; is that correct?

THE WITNESS: Yes, sir.

MR. UTZ: That's all I have.

- - - - -

Q (By Mr. Sperling) Mr. Kelly, with reference to application in 4202, would you state briefly what is sought by that application?

A As a result of the application styled in 4202, Mobil wishes to achieve approval of authority to carry on waterflood operations in the unitized interval beneath

the Langlie-Mattix Queen Unit, using the injection wells which are listed in an attachment which will be made an exhibit in this hearing. And we ask also that the waterflood be operated under Rule 701 E, with regard to the future expansion and allowable.

Q All right. Please refer to what has been marked in 4202 as Exhibit No. 1, which I think is an identical exhibit as Exhibit 2 in 4201.

A Yes, sir; Exhibit 1 is the area plat to a scale of one-inch to four thousand feet. It shows all of the acreage within two-miles of the proposed unit.

Q Now, refer to Exhibit No. 2 and explain what that exhibit shows.

A Exhibit 2 is a map showing the waterflood pattern, which is in the main, an eighty-acre five spot, modified where necessary to conform to the current or planned injections on offset properties, and also, modified to reduce the drilling of additional wells, where possible, to complete the pattern.

Some of the patterns are a little larger than eighty acres. And one or two of them may be a little smaller. In the main, it's an eighty-acre five spot pattern.

The dash lines on the plant, connect wells, which are to be injectors in the waterflood.

Q Now, how many wells are planned as injector wells?

A We plan, ultimately, to utilize seventeen wells for injection.

The wells will include six that will be drilled for injection purposes, and eleven that will be converted. Two of the wells proposed for injectors will not be used initially.

Well No. 30 will be converted to injection after it waters out, down on the south end of the unit, and well No. 14 will be drilled in all probability, in January or February of 1970, to complete the two waterflood patterns that it supports.

Q This will result in how many producing wells within the unit area?

A Ultimately seventeen producing wells. We will have an even number of producers and injectors, a total of thirty-four wells on the unit. They are currently -- the twenty-eight holes that have been drilled on the Queen on the unit.

Q Now then, in connection with the injection wells proposed, please refer to what has been marked as Exhibit 3 and explain what that is.

A Exhibit 3 is a tabulation of the wells that Mobil proposes to use for water injection.

The first tabulation lists those wells that will be converted to injection. They are currently producers, and the second tabulation lists those wells that will be drilled for injection use.

The tabulation shows, in addition to the unit well name, the current name that the wells are operated under. Their location in each section, township and range. And with respect to the wells that will be drilled, the tabulation shows their location, with respect to the nearest section lines, township and range.

There is a discrepancy between the locations shown on Exhibit 3, for three of the wells that are to be drilled, as compared with the similiar tabulations that was submitted within the past week or so, through the mail, to the Oil Conservation Commission.

Those wells are No. 14, 15 and 32. The tabulation, initially furnished the Commission, was in error, with

respect to those well locations. The locations that are shown on Exhibit 3 are the correct locations.

In the case of 14, for example, the surveyor had reported to the individual, transmitting that information to the Commission, a tie on an injection line junction, rather than the well itself. In well No. 15, the surveyor had incorrectly concluded a statement of the locations. The federal authorities would not permit a rig to be raised at the location that I wanted the well at, because it's close to an air strip. We cleared that up with the federal authorities, and have shown on this listing the location that we think will be acceptable to them for a rig to be raised.

With respect to well No. 32, the surveyor learned after the first list was transmitted to the Commission that a surface obstruction would prevent rigging up over the location contained in the tabulation, and the location described on Exhibit 3 for well 32 is one that we can rig up over.

Q Well, then the changes that you have just described result from changes in footages from those previously submitted to the Commission; is that right?

A Yes, sir. There isn't any material difference in the locations that I can see. A few feet in each case.

Q Now, would you give us a brief background of the geologic conditions that prevail in this area with reference to the proposed unitized formation?

A Referring back to Exhibit 1, the area plant, I might point out that the Langlie-Mattix Queen Unit is situated geographically on the west flank of the justice anticline. The crest of the anticline is a short distance east of the unit, approximately one mile, perhaps two miles east of the unit.

The Queen Formation, together with the lower Seven Rivers was contained initially -- contained initially a substantial gas cap which lay on top of an oil column. The gas cap blanketed the crest of the structure and invaded the east side of the Langlie-Mattix Queen Unit.

The oil column lies in a narrow band in this area, about one-mile wide, trending north and south. The injection pattern, that we had planned, that we had put together here, is designed in part to create a barrier, a water barrier, between the oil column and the gas cap, which lies up-dip, to prevent oil from being pushed up into that gas cap, where I am certain it will not be recovered.

Q Have you any other pertinent information as far as the geological conditions are concerned?

A Well, I might point out that the Queen Sand, that we are going to waterflood, is comprised of sand stringers, enters first with dolomite members. Some of these stringers, the sand stringers correlate very well from well to well, where you have logs, but there aren't very many logs in this area.

There are porous members in the lower Seven Rivers. Also, in the upper Queen, and also in the Penrose, that I think contain oil; and I expect to flood concurrently in order to recover some additional oil.

As things stand at this point to production of the unit, it is very near the economic limit, and it is essential that some form of secondary recovery operations be carried on to justify continued operations of the property.

Q Well, in that connection with reference to the production history of this particular area, please refer to what has been marked as Exhibit 4 and indicate what that is designed to show.

A Exhibit No. 4 is a tabulation of production from the unit, oil production. It shows also the number of

producing wells and barrels per day, average barrels per day of oil produced. The tabulation just goes back to 1959. Production did start in 1956 on the unit. Accumulative oil, at the end of each year, is shown alongside the production tabulation, and for the year 1969, production has been set out on a monthly basis, showing that the twenty currently producing wells are making about a barrel and a half of oil a day on an average and during the month of April.

Q Now, concerning your testimony just given with reference to production and the tabulation that you have identified as Exhibit 4, refer to Exhibit 5, which appears to be related, and identify that, please.

A Exhibit 5 is a graphical representation of the same data that is contained, with respect to oil production, on Exhibit 4.

Q Now, would you explain what is contemplated with reference to the installations; the quantity of water that you contemplate injecting, the injection rates, pressures; in other words, a general description of the mechanical installation that you expect to utilize?

A We are intending to obtain supply water from the Grayburg San Andres interval, from a supply well that

will be drilled on the unit in the near future.

This is what is called rough water. It has some H_2S in it. We have an injection station designed to handle that water, and the station will pump at eight hundred pounds surface pressure, 13,500 barrels per day. We won't initially have enough injection wells in service to use all that water. And do intend to inject initially at an average well rate of 750 barrels per day, and intend to restrict the surface injection pressure to one thousand pounds.

I think that we will have very few wells that pressure up within the first year to one thousand pounds. During the second year, I think that injectivity will fall off to perhaps eighty-five percent of the first year, and I expect that we will be able to maintain average injection rates of about five hundred barrels per well per day thereafter.

The station is designed, if necessary, to carry us up to 1800 pounds of surface pressure. I think, in all probability, we won't have to exceed fifteen hundred pounds.

It may be well to point out that the contracts are in the process of being let for the injection station, and I think that construction may well start within the next ten or fifteen days.

Q Now, please refer to what has been marked as Exhibit 6, which is, I believe --

A Exhibit 6 is a log of a well that is not on the Langlie-Mattix Queen Unit; it is on another unit which is the subject of a further hearing this afternoon, the Humphrey Queen Unit. It happens to be the only injection well that we have thus far drilled on either unit, and so, it's the only one that we have a log on.

Marked on that well log, which is identified as our Humphrey Queen Unit No. 20, or the fee name is Liberty Well No. 6.

It was drilled five feet from the west line and one hundred feet from the south line of Section 3, Township 25, Range 37. It shows the entire interval that we expect to be injecting into, which goes from one hundred feet above the top of the Queen, down to the lowermost forced member in the Penrose Section.

Q Well, then, you expect the log which you have just identified as Exhibit 6 to be representative of a typical log of the injection wells which you've proposed, both as they now exist or as they are to be drilled?

A Yes, sir. That log will not show the identical

porosities that we will find in later wells, I'm sure, but it does show the entire interval, and I would class it as a typical injection well.

Q Now, would you please refer to what has been marked, collectively, as Exhibit No. 7, which appears to be diagramatic sketches of completions.

A Exhibit No. 7 is a sheet of well sketches, showing the proposed or existing completion arrangement under injection operations in each case.

The existing wells that will be converted are, for the most part, going to be completed in open hole, as they are now, with a tension packer set a short distance above the casing chute; with injection to take place through cement lined tubing. The casing annulus, in each case, will be loaded with treated water to inhibit corrosion.

The wells that we are going to drill, which on the -- Langlie Unit, No. 6, will all be completed through perforation; they will be cased through the pay, and the porous members, and the porous members selectively perforated, and cement lined tubing set on a packer, above the uppermost perforation and with the casing also loaded with treated water.

The casing in each case, both the surface pipe and the long string will be cemented back to the surface.

Q Any other features you would like to mention with reference to the method of completion of these wells?

A I can't think of anything else. I believe the completion method that we propose will confine the injected water to the pay.

I don't envision there being any likelihood of its escaping to a fresh water zone and to the surface under this arrangement.

MR. SPERLING: That's all we have, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Now, in regard to Exhibit No. 7, Mr. Kelly, did you state whether or not the tubing would be plastic coated?

A The tubing will be cement lined, as will all of the surface injection lines.

Q And are you going to load the annulus --

A With treated water; yes, sir.

Q What are you going to do with the surface of the annulus?

A It is the practice of Mobil to periodically check the casing annulus for the presence of any pressure, and, of course, when it's demonstrated, why, we know we

have got a leak somewhere and set about to correct it.

Q Well, do you leave it open or --

A There will be a valve on it. I don't know whether there will be a gauge on it or not. A lot of times a pumper will carry a gauge around in his pickup, and just screw it into a valve -- if a well won't bleed down immediately, well he opens it up.

MR. UTZ: Any other questions?

CROSS EXAMINATION

BY MR. EATON:

Q Mr. Kelly, with reference to Exhibit 3, what is the distance of unit well number 14 from the north line of Section 14?

A Unit Well No. 14 is to be 660 feet south of the north line of Section 14.

Q Thank you. As you inject water into the formation, what physically happens?

A I think the water enters the porous member, the porous and permeable members, and expands out according to injection within those members.

Q Does it tend to expand out radially?

A Theoretically, it does. It doesn't always, but we make that assumption, usually. It depends on the permeability orientation. I haven't any reason to think

that the water will not expand radially around the wells.

Q Is there any pressure effect that is set up in the formation with the water moving out through the formation?

A The injection of water into a reservoir rock takes place because of a pressure differential, yes, sir. There is a pressure differential from the well bore to the front of the -- flood front; the bleeding edge of the flood front.

Q Then what happens when water from two injected wells, moving toward each other -- what happens when the water meets?

A It goes to the direction of the least pressure.

Q I believe you testified that Well No. 14 will probably be drilled in January or February of 1970?

A Yes, sir.

Q Why do you propose to drill that well at that time?

A The main reason that I have proposed to delay drilling of that well -- to the first part of next year, is to allow sufficient time for Atlantic, if it so chooses, to accept the offer that Mobil has made to it for the currently abandoned or temporarily abandoned well, offsetting proposed well number 14 to the northeast on the Stewart A lease -- because I believe I can tolerate that much delay.

I can tolerate two or three months delay in getting that well on injection, but I can't tolerate anymore than that.

Q Now, do you think that well number 14 is -- is that an ideal location for an effective waterflood sweep?

A No, sir. I don't think it's an ideal location. It's the best location I could find on the unit, on the east side. I don't think there is a better location anywhere on the unit.

Q On the unit?

A Yes.

Q Would you feel that perhaps a location on the Stewart lease may be better than the present well 14 location?

A I think that's highly debatable. The location of what was formerly Sinclair's, and is now Atlantic's Stewart A No. 1, would lend itself to use as an injector and might result in some additional recovery, although it's my opinion that the magnitude of the additional recovery would be of a low order.

The principal benefits that could be derived out of injecting into the Stewart A No. 1, rather than the well number 14, would arise out of the elimination of the need to spend money drilling a well.

Q How about much money does it cost to drill one of the injection wells?

A We have estimated the cost at \$38,000 per well, to drill and complete through perforations.

Q How much do you think it will cost to enter, for example, the Stewart No. 1 well and prepare it for injection?

A I have not prepared an estimate of the cost of doing that work to Stewart A Well No. 1. If I were able to make the assumption that we would encounter no trouble, that the well doesn't have a casing leak or a collapsed casing or -- I should think that we would be able to complete it for injection for somewhere in the neighborhood of ten to thirteen thousand dollars.

Of course, that would be an open hole completion. We wouldn't set a liner with that. And there would be -- well, there is a factor to consider and it is how well you can control where the water goes. You have almost no control in an open hole interval, but you can mechanically control the water -- where the water goes when you have your pipe perforations.

Q Now, if you do go ahead and drill well number 14 in five or six or seven months, and start injecting at that time, I assume that well number 13 will have been in

operation for a while before that time?

A My estimate right now is that by the time we get well number 14 drilled and completed, well number 13 will probably have been on injection for about two and a half to three months.

Q Mr. Kelly, I would assume then that when you start injecting water into well number 14, that there would be a tendency for water to move somewhat rapidly eastward?

A Probably so. I think it would move rapidly in all directions, really. But the area to the east, I am sure, has a higher gas saturation than the area to the west. And I think that it will probably have a higher permeability to water than to the area to the west, and it's also true that the water would probably move a little faster to the east than it does to the west.

Q Also, you would have the pressure problems to the west because of the injection in the well number 13?

A I am almost certain that there would have been no interference within a three month period.

Q Well, at such time as the water injected in number 14, moving westwardly met the well, the water injected in well 13, then there would be a tendency for the well number 14 water to move more easily to the east,

rather than continue westwardly at the same rate?

A If I can make the assumption that the permeability of the rock stays the same, I think that's true.

Q Well, at the outset, I think you said that's true?

A Yes, sir. I think so. It depends on the pressure differential, if we run into a hard streak out there, it will slow down.

Q Do you have any idea as to how soon you think the Stewart A well would be watered out after you started injecting in the well number 14?

A No, sir. I haven't formed an estimate of that. I do know that the Stewart A No. 1 is approximately the same distance from our proposed injector number 14, as our wells, our unit wells number one and eight are from Gulf's Stewart Langlie-Mattix No. 28, which has been on injection December of 1968.

And as far as I can tell, we have seen no effect from that injection as yet in those wells. But, of course, I think there is a high oil saturation down here, and the water would tend to move slower through the area of high oil saturation than it would through an area of high gas saturation, I think.

MR. EATON: That's all I have.

REDIRECT EXAMINATION

BY MR. SPERLING:

Q I have another question or two on redirect. Mr. Kelly, what is the present status of the Atlantic A 1 Stewart?

A The best information that I have, is that it is temporarily abandoned or shut-in. Information in this line has been communicated to me, verbally, by some of the people that were formerly interested in the well in Sinclair.

Q Do you know how long it has been temporarily abandoned?

A Well, I have -- I'm not sure that it has been temporarily abandoned all that time, but the production records don't show any production for it since 1963.

It began production in 1938, and through 1953, it made 61,047 barrels of oil. It shows no production for the years 1954 through 1957.

It shows 917 barrels of oil in 1968. A 116 barrels of oil in 1959, along with 37,720,000 cubic feet of gas.

And it shows on the gas production for 1960 through 1963. Since that time, there hasn't been any

production recorded in the publication for the well. I assume it's been shut-in. It may have been plugged -- I don't really know. I doubt if it's been plugged, I think it's been, just been shut-in.

Q Do you have any information as to the condition of that well?

A I have the information that was reported on the scout ticket, at the time of its completion. I have some other information that has been gleaned from O. C. C. Miles in Hobbs. I do not have information indicating what the situation is in the well bore at this time.

MR. SPERLING: I believe that's all.

RECROSS EXAMINATION

BY MR. UTZ:

Q Mr. Kelly, have you been in contact with Atlantic Richfield regarding the oil in this unit?

A No, sir.

Q Would you be willing or would Mobil be willing to accept the unit?

A Well, of course, Mobil is one of the working interest owners, and the working interest owners collectively make those decisions. From my own standpoint, I would have

no objection to the lease being brought into the unit on an equitable basis. And if we had been or should be successful in purchasing the lease, well it would be our intention, if we are able to unitize the royalty to negotiate it into the unit on an equitable basis.

Q By equitable basis, you mean on the same basis that the rest of it had been agreed upon?

A No, sir. I don't think that basis would afford protection to the remaining interest in the unit. I think if the lease were to participate on the same basis that the other interest would be watered down to an unwarranted degree.

The phase two participation of the well, the tract would approach two percent on the basis of the rest of the properties. When you look at the location of the well, you can see that it's as far down dip as the -- as a regular location can be drilled on the lease. As is, the adjoining well to the west is as far down dip as the location can be drilled on the lease, a regular location.

I am confident that a good quantity of the oil that has been produced from the Stewart A No. 1 has come from the adjoining area to the west. Any regular Drainage pattern would lead you to that conclusion.

I think the amount of oil that the lease would contribute to the unit is -- is somewhere in the neighborhood of one-fifth to one-seventh of the amount of oil that the tract would be credited with if it were to participate under the same phase two formula that the rest of the tracts had come in under. I think this is because the lease hasn't made any oil in a long time. The well is very close to the lease line.

There just isn't any acre feet there to sweep. And those that are are characterized by high gas saturation, and I would expect the waterflood recovery out of those acre feet, the farther up you go to be of a lower order.

Q I understood you to say that the Justice Anticline was a gas cap; is that correct?

A Yes, sir. There was and is a gas cap in the Queen Formation on top of the structure.

Q And that the gas cap has encroached to the west onto your proposed Langlie-Mattix Queen Unit?

A I am not certain that it has encroached. I am certain that it has always been there. It may have progressed down dip to some degree -- to some degree, it surely has. I'm not prepared to say how much.

Q Well, you know, from your study of this area, do you know of any wells on the eastern edge of your proposed unit that has shifted from oil to gas?

A No, sir.

Q Vice-versa?

A From gas to oil?

Q Yes.

A No, sir. One of the wells, the Pan-American Langlie B, No. 3, which is to the unit injector number 27 was initially completed as a gas well in the upper Queen. We intend to deepen that well to expose the oil saturation porosity that lies below and inject it -- assuming we find some oil saturated porosity below.

In like manner, the offsetting well to the south, the Cities Service, Dabs No. 1, penetrate only the upper part of the Queen and was completed open hole from somewhere above the Yates down into the upper part of the Queen and is produced as a gas well throughout its life.

I have an idea its production has come from the Yates. That's where it's been reported at least, and I am skeptical about the amount of fluid that entered the well out of the Queen Formation. I don't think it had much of it open.

Q Well, it would appear then, from your testimony, that the gas-oil contact on that has been relatively stationary?

A I don't intend to represent that it has or has not.

Q The purpose of your number 14 injector, would it be a fair statement to say that it is to push oil to the west, rather than to push some of your unit oil to the east, since you would be putting the second injection well in the same forty-acre tract?

A It is to prevent oil -- pushing oil off of the unit to the east up into what I interpreted as being a gas cap, with a high gas saturation. Where I am sure that little or none of it would ever be recovered.

It is intended to force oil to the producer which will be in the center of the pattern to the northwest and to the producer that will be in the pattern to the southwest.

Q If you are going to use a number 14, do you think the number 13 is necessary?

A Yes, sir. I've got to flood the adjoining pattern to the west, the 14 -- I don't believe I will ever get enough water into it to flood the pattern to the west or

provide an efficient sweep from any of the patterns that surround it.

MR. UTZ: Any further questions?

MR. HATCH: You have three production wells to be drilled and those were not included in this application?

THE WITNESS: No, sir. I have shown the locations that we intend to drill the wells at.

MR. UTZ: Were those standard locations?

THE WITNESS: No, sir. Twenty-six will be right on the section line. The others will be regular locations, unorthodox as to density.

MR. UTZ: You didn't request those; did you?

THE WITNESS: No, sir.

MR. UTZ: Any other questions? The witness may be excused. Statements?

Oh, did you have some more questions?

MR. SPERLING: Yes, and I wanted to offer my exhibits, Mr. Examiner, 1 through 7.

REDIRECT EXAMINATION

BY MR. SPERLING:

Q Mr. Kelly, do you think the approval of the unit agreement and the flood program which you have outlined here would be in the interest of the prevention of

waste and the protection of correlative rights in this unit area?

A Yes, sir.

Q I have the impression, Mr. Kelly, from your outlining of your program that there is a matter of some urgency in connection with the initiation of this flood; is that correct?

A Yes, sir.

Q Can you tell us why?

A We have -- we bought the properties that Mobil will contribute to this unit and also to the other unit, from George Buckles, on May 1. The commitments that we have made in connection with that purchase make it mandatory that we move very rapidly to the secondary recovery operation in the interest of preventing the loss of funds.

And accordingly, we have spared no effort to get this operation under way -- we have taken a lot of risk and carrying a lot of burden by ourselves until we could get an agreement from other parties.

And to that extent, it's very important that we start injection just as soon as we possibly can.

MR. SPERLING: Thank you. That's all I have. I did offer Exhibits 1 through 7, I believe?

THE REPORTER: Yes.

MR. UTZ: Without objection Exhibits 1 through 7 will be entered into the record of this case. And let's take a coffee break.

(Whereupon, a brief recess was taken.)

MICHAEL OSBORNE

the witness, called by Mr. Eaton, having first been duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. EATON:

Q. Will you please state your name, residence, occupation, and your employer?

A. My name is Michael Osborne, and I reside in Roswell, New Mexico. I am employed by Atlantic Richfield Company as an operations engineer.

Q. What is an operations engineers?

A. We work with production engineering -- petroleum engineering.

Q. Have you previously testified before the New Mexico Oil Conservation Commission as a petroleum engineer?

A. Yes, I have.

Q. Were your qualifications accepted at that time?

A. Yes, they were.

Q. Mr. Osborne, to make this as brief as possible, would you just give me Atlantic Richfield's position with respect to the application of Mobil in Case 4202?

A. Well, I am here on behalf of Atlantic Richfield Company today to oppose Mobil's proposal to drill an

unorthodox injection well, located six hundred and sixty feet to the north line and twelve hundred and twenty feet from the west line of Section 14, Township 25 South, Range 37 East.

This has been designated by Mobil, in their Unit, as Unit Well Number Fourteen, which, it has been previously testified, that they intend to drill in January or February of next year.

It is the belief of Atlantic Richfield that this well would rapidly water out the Atlantic Stuart A on Well Number One, located three hundred thirty feet from the north line and sixteen hundred and fifty feet from the west line of that same Section 14.

We feel that the Mobil Number Fourteen would water this well out, so rapidly that it would not make it economical for us to set a pumping unit on this well, which we have had shut in since 1963, saving it for secondary recovery in the area.

We feel that we would like our well included in the unit as an alternate to the Mobil Unit Well Number Fourteen. We feel the use of our well leads to a more efficient sweep of the Queen in this area and we believe that it would lead to the additional recovery of :

approximately twelve thousand five hundred barrels of oil, over that which would be recovered by Mobil's Unit Well Fourteen.

Q. Is Atlantic willing to join the Mobil Unit?

A. Yes -- Atlantic has expressed an interest, at least orally, to Mobil, that we would like to be considered in their unit.

We have at this time, however, received no unit plans or economics or anything from them concerning this.

Q. Would Atlantic be willing to sell its well to Mobil if the parties could agree upon the proper parts?

A. Yes, we feel that if we could reach a reasonable price for the well, that we would be willing to sell it to Mobil.

Q. Is it Atlantic's position at this time that the location of Well Number Fourteen will not be in the interest of conservation and tend to cause waste and infringe upon the correlative rights?

A. This is our belief. The Atlantic Stuart Well, in primary production, recovered slightly over sixty-two thousand barrels of oil.

It is true that this area, under the Atlantic Reese Lease is an area of high gas saturation. However, we do feel

that there are still commercial reserves that could be recovered by conversion of our well to an injector as opposed to the use of Mobil's Unit Well Number Fourteen.

Q. Do you have anything else which you would like to add?

A. No, sir.

MR. EATON: That's all, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q. You don't have any idea then what kind of deal you might be willing to accept as far as on this well as far as joint community is concerned? Not until you see the economics?

A. We feel that we would like to negotiate it further. We have established a price of approximately twenty-five thousand dollars, that we would be willing to sell the well for, and we feel that this is reasonable, in light of the fact that it would add additional reserves to the unit.

However, as far as percentage of the unit, should we be offered a chance to join, we cannot say at this time, because, as I say, we have not seen the study on this flood yet.

Q. Twenty-five thousand dollars would include the production under the lease; would it not?

A. Yes.

MR. UTZ: Any further questions?

CROSS EXAMINATION

BY MR. SPERLING:

Q. Yes, sir. Mr. Osborne, on what do you base your estimate as to incremental oil of twelve thousand five hundred barrels?

A. Well, I base this on the additional area of the sweep that could be obtained by using the Atlantic Well, as opposed to Unit Well Number Fourteen.

Q. Have you made any calculations as to oil in place of -- to support that figure?

A. I base this roughly on primary production, which generally is a good indicator of secondary recovery in this area.

Q. Do you have an opinion as to the source of the primary production?

A. We feel that the primary production was coming from the lower Queen stringers.

Q. Horizontally? The source?

A. I would say, primarily from the east -- no, from

the west, excuse me. Although I cannot say that all of it came from this direction, I feel that some of it was obtained from the east side of the Stuart Well Number One. Assuming, of course, that all of the production did come from the west side of the Atlantic Stuart Well Number One, this would tend to increase the recovery that we could attribute to any area swept to the west, since this is where the primary oil came from, this is the area we are going to sweep and recover oil from the secondary.

Q. Do you know whether or not, Mr. Osborne, there had been negotiations with reference to the sale and purchase of it?

A. Yes, there have been in the past -- well, just very recently, we received an offer from Mobil to purchase our well for twelve thousand dollars. This was an alternate suggestion that they had at that time -- they had planned to drill two injection wells in the south-- in the, well, just one hundred feet off of the northwest, and southwest corners of our lease. And they were requesting that we participate in the drilling of these two wells to the extent of approximately nineteen thousand dollars.

We did not feel that this would be in our best interests, because we would have been faced with the same

problem that we are now, except that instead of having Unit Well Number Fourteen where it is, it would be moved to approximately the same location north and west of our well.

And as an alternative, they suggested they would offer us twelve thousand dollars.

Q. Well, then negotiations have been in progress and are not necessarily concluded?

A. No, they are not.

Q. Well, what is your degree of confidence in the figure of twelve thousand five hundred, based upon the information you have, which I have understood was primarily on a primary production? In other words, do you think this is a pretty exact figure or what?

A. Well, the experience that I've had and the other people in Atlantic with me, I'm sure all of us can say that it's difficult to pin reserves down on this basis, that for a large unit area -- they hold fairly true -- a certain percent of primary oil will be produced in secondary. I would say in this case, reserves could possibly range from anywhere from, say, eight thousand barrels up to around sixteen thousand barrels. I strike a figure of twelve thousand five hundred as being sort of a medium point.

Q. Now, do I understand that that is the suggested figure as the basis for the calculation and participation in the unit; that that figure would be used?

A. I think something roughly around this -- I cannot say at this time.

MR. SPERLING: That's all, thank you.

RECROSS EXAMINATION

BY MR. UTZ:

Q. This well is not now producing; is it?

A. No, it is not. It has been shut in since 1963.

Q. Well, when it produced the sixty-two thousand barrels accumulative, was it flowing?

A. It was flowing, yes.

Q. And it produced that with a high gas-oil ratio, I presume?

A. Yes, it did.

Q. Any idea of the amount of pressure; the bottom hole pressure now?

A. No, I do not have any idea.

Q. You have no idea?

A. No.

MR. UTZ: Any other questions? The witness may be excused. Any other testimony?

MR. SPERLING: Mr. Examiner, for convenience and reference, and we have referred to this earlier -- we have a tabulation of production by year, from the Atlantic Stuart A, Well Number One, that would be of assistance, and we would like to submit it as an exhibit.

MR. UTZ: All right.

MR. SPERLING: Will you mark this as Exhibit Eight in Case 4202.

THE REPORTER: Yes, sir.

(Whereupon, the instrument was marked for identification as Applicant's Exhibit Number 8.)

MR. HATCH: I assume that the Commission will be notified as to the agreement that will be made --

MR. SPERLING: Yes, sir.

MR. UTZ: Mr. Sperling, you are requesting, in this order, administrative approval for further injection wells; are you not?

MR. SPERLING: Yes, sir.

MR. UTZ: Anything further in this case? The case will be taken under advisement.

(Whereupon, Exhibits 1 through 8 were admitted into evidence.)

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E X H I B I T S

	<u>Marked</u>	<u>Admitted</u>
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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) SS

I, CA FENLEY, 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 to me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Wintess my Hand and Seal this 14th day of November, 1969.

CA Fenley

COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4203 heard by me on *Aug 27* 1969.
[Signature] Examiner
New Mexico Oil Conservation Commission

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO 87101
1400 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO 87108

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. 4202
Order No. R-3823-A

THE REOPENING OF CASE 4202 AT THE
REQUEST OF THE APPLICANT, MOBIL OIL
CORPORATION.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on January 7, 1970, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 3rd day of February, 1970, 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 Order No. R-3823, issued September 4, 1969, authorized the applicant, Mobil Oil Corporation, to institute a waterflood project in the Langlie Mattix Queen Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen sand formation through 16 wells at orthodox and unorthodox locations in Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.
- (3) That said order denied the applicant authority to inject water through a proposed injection well to be drilled at an unorthodox location 660 feet from the North line and 1220 feet from the West line of Section 14 of said Township and Range upon finding that injection through said well may cause waste and may violate the correlative rights of the offset operator to the east of the proposed location.

-2-

CASE No. 4202

Order No. R-3823-A

(4) That Case 4202 was reopened at the request of Mobil Oil Corporation to reconsider its request to inject water through said proposed injection well.

(5) That in order for the applicant to establish an efficient injection pattern and avoid driving an excessive amount of oil from under its property, there is a need for an injection well near the eastern edge of said Unit D.

(6) That an injection well located 870 feet from the North line and 1270 feet from the West line of said Section 14 will allow the applicant to complete an injection pattern essentially as efficient as the proposed location.

(7) That an injection well located 870 feet from the North line and 1270 feet from the West line of said Section 14 will be a distance of 660 feet from the Atlantic Richfield (Sinclair) Stuart A Well No. 1 located 330 feet from the North line and 1650 feet from the West line of said Section 14.

(8) That the witness for the operator to the east of the proposed location, Atlantic Richfield Company, stated that said operator would not be opposed to an injection well located in said Unit D as long as it were no nearer than 660 feet to said Atlantic Richfield well.

(9) That in order to afford the applicant an opportunity to produce its just and equitable share of the oil in the subject pool and to otherwise prevent waste and protect correlative rights, the applicant should be permitted to drill its proposed injection Well No. 14 at a location 870 feet from the North line and 1270 feet from the West line of said Section 14 in lieu of the proposed location 660 feet from the North line and 1220 feet from the West line of said Section 14.

IT IS THEREFORE ORDERED:

(1) That the applicant, Mobil Oil Corporation, is hereby authorized to drill its Langlie Mattix Queen Unit Area Well No. 14 as an additional injection well in its Langlie Mattix Unit Waterflood Project for the injection of water into the Queen sand formation at an unorthodox location 870 feet from the North line and 1270 feet from the West line of Section 14, Township 25 South, Range 37 East, NMPM, Langlie-Mattix Pool, Lea County, New Mexico.

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CASE No. 4202

Order No. R-3823-A

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



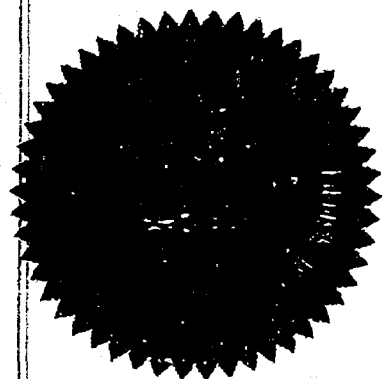
DAVID F. CARGO, Chairman



ALEX J. ARMIJO, Member



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



esr/

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

February 3, 1970

C Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Attorneys at Law
Public Service Building
Post Office Box 2168
Albuquerque, New Mexico 87106

Dear Sir:

O Enclosed herewith is Order No. R-3823-A, entered in Case No. 4202 (reopened), approving an injection well at an unorthodox location in Mobil Oil Corporation's Langlie Mattix Unit Water-flood Project.

P Injection shall be through cement-lined tubing set in a packer which shall be located as near as is practicable to the uppermost perforation.

Y As to allowable, this project's maximum allowables as set forth in our letter of September 8, 1969, will be increased by 14 barrels per day upon commencing injection into the subject well.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir

cc: Oil Conservation Commission - Hobbs, New Mexico (w/ copies of
U. S. Geological Survey - Hobbs, New Mexico order)
Mr. D. E. Gray, State Engineer Office, Santa Fe, N.M.
Mr. Clarence Hinkle - Hinkle, Bondurant & Christy,
Roswell, New Mexico

660' max big box
1270' max

1520

1650

238

330

$$380^2 = 144,400$$

→ 50 ←

330

⊙

540 (= 291,200)

$$x^2 = 291,200$$

$$660^2 = 435,600$$

max box

870' FNL

1270' FWL

1270

⊙

DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 7, 1960

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
A. L. Porter, Jr., Alternate Examiner:

CASE 4286: Application of Gulf Oil Corporation for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicant's Littlefield "AB" Federal Lease, located in Section 22, Township 18 South, Range 31 East, Shugart Field, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by wells on said lease in unlined surface pits in said Section 22.

CASE 4287: Application of Continental Oil Company, for a waterflood expansion and unorthodox injection well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Forest Donahue Waterflood Project, Forest Pool, by the injection of water through one additional well located at an unorthodox location 1960 feet from the North line and 1450 feet from the West line of Section 35, Township 16 South, Range 29 East, Eddy County, New Mexico.

CASE 4288: Application of Wood, McShane and Thams-COLORADO for an unorthodox oil well location and waterflood expansion, Lea County, New Mexico. Applicants, in the above-styled cause, seek authority to drill their Well No. 63, a producing oil well, at an unorthodox location 2740 feet from the south line and 1280 feet from the East line of Section 30, Township 22 South, Range 37 East, as an infill well in the Humble Oil & Refining Company State "M" Lease Waterflood Project, Langlie-Mattix Pool, Lea County, New Mexico. Applicants further seek to expand said project by the conversion to water injection of their Wells Nos. 27 and 39 located, respectively, in Units H and J of said Section 30. Applicants also seek a procedure whereby additional producing wells and injection wells at orthodox and unorthodox locations in said project may be approved administratively.

CASE 4289: Application of Getty Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Custis-Blinabry and Custis-Tubb Drinkard Pools in the wellbore of its State "BB" Well No. 2 located in Unit D of Section 2, Township 25 South, Range 37 East, Lea County, New Mexico.

CASE 4290: Application of Getty Oil Company for a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an 80-acre non-standard proration unit comprising the SE/4 NE/4 and the NE/4 SE/4 of Section 29, Township 18 South, Range 38 East, Hobbs-Drinkard Pool, Lea County, New Mexico, said unit to be dedicated to a well to be drilled at a standard location in the NE/4 SE/4 of said Section 29.

CASE 3993: (Reopened)

In the matter of Case No. 3993 being reopened pursuant to the provisions of Order No. R-3644, which order established 160-acre spacing units for the North Baum-Upper Pennsylvanian Pool, Lea County, New Mexico, for a one-year period. All interested parties may appear and show cause why said pool should not be developed on less than 160-acre units and why the proportional factor of 4.77 assigned to the pool should or should not be retained.

CASE 4202: (Reopened)

In the matter of Case 4202 being reopened at the request of the applicant, Mobil Oil Corporation. Applicant, in the original hearing of this case, sought permission to institute a water-flood project in the Langlie Mattix Queen Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen sand formation through 17 injection wells at orthodox and unorthodox locations in Sections 10, 11, 14, 15, 22, and 23, Township 25 South, Range 37 East, Lea County, New Mexico. The Commission, by Order No. R-3823, authorized the applicant to inject water through 16 wells and denied the applicant authority to inject water through the proposed injection Well No. 14 to be drilled 660 feet from the North line and 1220 feet from the West line of said Section 14. Applicant seeks authority to now complete said Well No. 14 as a water injection well, alleging that negotiations for the acquisition or inclusion of acreage offsetting said Well No. 14 have not been successful, that failure to inject water through the well will result in the loss of approximately 200,000 barrels of oil, and that said injection will not violate the correlative rights of the offset operator.

- CASE 4291: Application of Atlantic Richfield 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 Yates formation in the perforated and open-hole interval from 2892 feet to 3164 feet in its W. B. Managan Well No. 4 located 2173 feet from the South and West lines of Section 12, Township 25 South, Range 36 East, Galmat Pool, Lea County, New Mexico.
- CASE 4292: Application of Continental Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of two existing non-standard gas proration units into one 320-acre non-standard unit comprising the S/2 N/2 and the SE/4 of Section 1, Township 22 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, to be dedicated to its Lockhart B-1 Wells Nos. 4 and 6, located in Units G and P, respectively, of said Section 1. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.
- CASE 4778: (Continued from the December 17th Examiner Hearing and will be dismissed).
Application of Anne Burnett Windfohr, dba Windfohr Oil Company, for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicant's Gissler B Wells Nos. 11 and 12, located, respectively, in Units J and I of Section 23, Township 17 South, Range 30 East, Jackson-Abo Pool, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by said wells in unlined surface pits in the vicinity of said wells.
- CASE 4279: (Continued from the December 17th Examiner Hearing and will be dismissed).
Application of Anne Burnett Windfohr, dba Windfohr Oil Company, for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicant's Gissler B Well No. 4 located in Unit B of Section 8, Township 17 South, Range 30 East, Grayburg-Jackson Pool, Eddy County, New Mexico. Applicant seeks authority to dispose of salt water produced by said well in an unlined surface pit in the vicinity of said well.

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. 4202
Order No. R-3823

APPLICATION OF MOBIL OIL CORPORATION
FOR A WATERFLOOD PROJECT AND UNORTHODOX
INJECTION WELL LOCATIONS, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 27, 1969, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 4th day of September, 1969, 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, Mobil Oil Corporation, seeks permission to institute a waterflood project in the Langlie Mattix Queen Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen sand formation through 17 injection wells at orthodox and unorthodox locations in Sections 10, 11, 14, 15, 22, and 23, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That the applicant further seeks the establishment of an administrative procedure whereby the Secretary-Director of the Commission may authorize additional injection wells at orthodox and unorthodox locations within said waterflood project area as may be necessary to complete an efficient injection pattern without the necessity of showing well response.

-2-

CASE No. 4202

Order No. R-3823

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

(5) That the injection of water through a well proposed to be drilled 660 feet from the North line and 1220 feet from the West line of said Section 14 may cause waste and may violate the correlative rights of the offset operator to the east of the proposed location.

(6) That the applicant's request to drill an injection well 660 feet from the North line and 1220 feet from the West line of said Section 14 should be denied.

(7) That, subject to Finding No. 6, the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(8) That, subject to Finding No. 6, the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations; provided however, that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection, and provided further, that said injection wells are drilled no closer than 330 feet to the outer boundary of the Langlie Mattix Queen Unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary.

IT IS THEREFORE ORDERED:

(1) That the applicant, Mobil Oil Corporation, is hereby authorized to institute a waterflood project in the Langlie Mattix Queen Unit Area, Langlie-Mattix Pool, by the injection of water into the Queen sand formation through the following-described wells at orthodox and unorthodox locations in Township 25 South, Range 37 East, NMPM, Lea County, New Mexico:

Unit Well

<u>No.</u>	<u>Previous Well Name and Number</u>	<u>Unit</u>	<u>Section</u>
7	Mobil-Stuart Tr 1 Well No. 2	P	10
3	To be drilled - 990' FSL & 890' FWL		10
2	To be drilled - 1440' FSL & 1220' FWL		11

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CASE No. 4202

Order No. R-3823

Unit Well No.	Previous Well Name and Number	Unit	Section
13	Mobil-Stuart Tr. 5 Well No. 1	D	14
21	Pan American-Langlie "B" Well No. 4	L	14
27	Pan American-Langlie "B" Well No. 3	M	14
11	Mobil-Stuart Tr. 9 Well No. 1	B	15
17	Mobil-Stuart Tr. 9 Well No. 4	H	15
19	Gulf-Westfall Well No. 2	J	15
25	Gulf-Elliott Well No. 1	P	15
15	To be drilled - 1980' FNL & 1730' FWL		15
30	Mobil-Stuart Comm. Well No. 1	A	22
28	To be drilled - 500' FNL & 2540' FEL		22
32	To be drilled - 2530' FNL & 2600' FEL		22
31	Cities Service - Dabbs Well No. 1	D	23
35	Cities Service - Dabbs Well No. 2	E	23

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

PROVIDED HOWEVER, that the Secretary-Director of the Commission may approve such additional injection wells at orthodox and unorthodox locations within said waterflood project area as may be necessary to complete an efficient injection pattern; provided said wells are drilled no closer than 330 feet to the outer boundary of the Langlie Mattix Queen Unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary, and provided further, that the application therefor has been filed in accordance with Rule 701 B of the Commission Rules and Regulations, and provided further, that a copy of the application has been sent to all offset operators, if any there be, and no such operator has objected within 15 days. The showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection.

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

(4) That that portion of Order No. R-3426, dated June 5, 1968, which approved certain water injection wells in the Langlie Mattix Queen Unit Area is hereby superseded.

-4-

CASE No. 4202

Order No. R-3823

(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



DAVID F. CARGO, Chairman



ALEX J. ARMIÑO, Member



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



esr/



OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

P. O. BOX 2088 - SANTA FE

87801

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMijo
MEMBER

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

September 8, 1969

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Attorneys at Law
Public Service Building
Post Office Box 2168
Albuquerque, New Mexico 87106

Dear Sir:

Reference is made to Commission Order No. R-3823, recently entered in Case No. 4202, approving the Mobil Langlie Mattix Unit Water-flood Project.

Injection is to be through the 16 authorized water injection wells, each of which shall be equipped with a string of cement-lined tubing set in a packer. Packers shall be set within 50 feet of the uppermost perforation, or in the case of open-hole completions, within 50 feet of the casing shoe. The casing-tubing annulus in all wells shall be loaded with a corrosion-inhibited fluid and a pressure gauge installed at the surface to facilitate detection of leakage in the casing, tubing, or packer.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1148 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less. When the three additional proposed producing wells, Unit Well Nos. 9, 23, and 26, have been completed, this maximum allowable will increase to 1190 barrels per day.

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

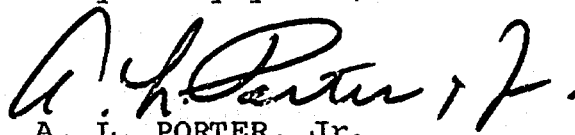
-2-

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Attorneys at Law
Public Service Building
Post Office Box 2168
Albuquerque, New Mexico 87106

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

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

Very truly yours,


A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/ir

cc: Oil Conservation Commission
Hobbs, New Mexico

U. S. Geological Survey
Hobbs, New Mexico

Mr. D. E. Gray, State Engineer Office
Santa Fe, New Mexico

Mr. Paul Eaton
Roswell, New Mexico

ROUGH DRAFT FOR WATERFLOOD LETTERS

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Attorneys at Law
Public Service Building - Box 2168
Albuquerque, New Mexico 87106

Dear Sir:

Reference is made to Commission Order No. ^{recently} R-3823, entered in Case No. 4202, approving the Mobil Rangle Matting Unit Waterflood Project.

Injection is to be through the 16 authorized water injection wells, each of which shall be equipped with a string of cement-lined tubing set in a packer. Packers shall be set within 50 feet of the uppermost perforation, or in the case of open-hole completions, within 50 feet of the casing shoe. The casing-tubing annulus in all wells shall be loaded with a corrosion-inhibited fluid and a pressure gauge installed at the surface to

As to allowable our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1148 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less. When the three additional proposed producing wells, which will not. Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

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

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

Very truly yours,
L. FORSTER, Jr.
Secretary-Director
→ 9, 23, and 26 have been completed, this maximum allowable will increase to 1190 barrels per day.

cc: OCC: Hobbs x
Artesia
Aztec
USGS Hobbs

~~Mr. Frank Eddy~~, State Engineer Office, Santa Fe, New Mexico

Mr. D. E. Gray,

Mr. Paul Eaton, Hinkle, Bondurant & Christy - Roswell

facilitate detection of leakage in the casing, tubing, or packer.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 27, 1969

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

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

- CASE 4191: ✓ Application of Gulf Oil Corporation for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from approximately 4408 feet to 4415 feet in its Roosevelt "AN" State Well No. 3 located in the NW/4 SE/4 of Section 32, Township 7 South, Range 36 East, adjacent to the Todd-Lower San Andres Pool, Roosevelt County, New Mexico.
- CASE 4192: ✓ Application of Southwest Production Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Buffalo Valley "Com" Well No. 2 at an unorthodox location 1650 feet from the North line and 990 feet from the East line of Section 35, Township 14 South, Range 27 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, in exception to the provisions of Rule 2 of the special rules for said pool.
- CASE 4193: ✓ Application of Humble Oil & Refining Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Bowers "A" Federal Com 33 Well No. 33 located in Unit D of Section 29, Township 18 South, Range 36 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Hobbs (Grayburg-San Andres) Pool and the Hobbs-Blaine Pool through parallel strings of tubing.
- CASE 4194: Application of Phillips Petroleum Company for an amendment of Order No. R-3181 and dual completions, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3181, which order established special rules regulating the operation of the Phillips Petroleum Company Vacuum Abo Pressure Maintenance Project, Vacuum-Abo Reef Pool, Lea County, New Mexico. Applicant

CASE 4194 - Continued from Page 1 -

seeks authority to inject gas through two additional wells located in Unit L of Section 34, Township 17 South, Range 35 East and Unit B of Section 4, Township 18 South, Range 35 East and to expand said project area to include the SE/4 NE/4 of Section 33 and the NW/4, N/2 SE/4, and SW/4 SE/4 of Section 34 Township 17 South, Range 35 East. Applicant further seeks authority to dually complete all gas injection wells in the project in such a manner as to permit the production of oil from the lower section of the Abo Reef through tubing and the injection of gas into the upper section of the Abo Reef through the casing-tubing annulus.

CASE 4195: Application of Continental Oil Company for eight non-standard gas proration units and a non-standard gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the rededication of acreage to establish the eight following non-standard gas proration units in Township 20 South, Range 37 East, Tumont Gas Pool, Lea County, New Mexico:

OK A 120-acre non-standard unit comprising the SE/4 NE/4 and E/2 SE/4 of Section 14, to be dedicated to the "SEMU" Well No. 46, located in Unit A of said Section 14;

A 240-acre non-standard unit comprising the NE/4 and E/2 SE/4 of Section 26, to be dedicated to the "SEMU" Well No. 64, located in Unit C of said Section 26;

A 560-acre non-standard unit comprising the W/2 and W/2 SE/4 of Section 26 and the E/2 E/2 of Section 27, to be dedicated to the "SEMU" Well No. 65, located in Unit L of said Section 26;

A 640-acre non-standard unit comprising the W/2 and the W/2 E/2 of Section 14 and E/2 E/2 of Section 15, to be dedicated to the "SEMU" Well No. 66, located in Unit L of said Section 14;

CASE 4195 - Continued from Page 2 -

A 320-acre non-standard unit comprising the SE/4, S/2 NE/4, and E/2 SW/4 of Section 24, to be dedicated to the "SEMU" Well No. 67, located in Unit K of said Section 24;

A 640-acre non-standard unit comprising the E/2 and E/2 W/2 of Section 23 and W/2 W/2 of Section 24; to be dedicated to the "SEMU" Well No. 58, located in Unit J of said Section 23;

An 80-acre non-standard unit comprising the E/2 NW/4 of Section 24, to be dedicated to the "SEMU" Well No. 69, located in Unit F of said Section 24;

A 320-acre non-standard unit comprising the E/2 E/2 of Section 22 and the W/2 W/2 of Section 23, to be dedicated to the "SEMU" Well No. 90, to be completed at a non-standard location 550 feet from the South and East lines of said Section 22.

CASE 4196: Application of Continental Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of three existing non-standard gas proration units into one 360-acre non-standard unit comprising the W/2 and the NW/4 NE/4 of Section 18, Township 23 South, Range 37 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to its Stevens "B" Wells Nos. 15 and 16, located in Units F and K, respectively, of said Section 18. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

CASE 4197: Application of Continental Oil Company for an amendment to Order No. R-3755, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3755 which authorized, among other things, the drilling of a water injection well in the Forest Donahue Waterflood Project area at a location 1980 feet from the North line and 1650 feet from the West line of Section 35, Township 16 South, Range 29 East, Eddy County, New Mexico.

CASE 4197 - Continued from Page 2 -

Applicant now seeks authority to locate said well at an unorthodox location 1980 feet from the North line and 1450 feet from the West line of said Section 35 in the Forest (San Andres) Pool.

CASE 4198: Application of Continental Oil Company for amendment of Order No. R-3487, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3487 which authorized the applicant to utilize its Eaves "A" Well No. 10, located in Unit P of Section 19, Township 26 South, Range 37 East, Scarborough Yates-Seven Rivers Pool, to dispose of salt water into the Seven Rivers formation in the interval from 3208 feet to 3255 feet. Applicant now seeks authority to inject produced salt water into the Yates and Seven Rivers formations in the perforated and open-hole interval from approximately 3107 feet to 3410 feet in said well and the reclassification of said salt water disposal well to a pressure maintenance injection well.

CASE 4199: Application of Burleson & Huff for compulsory pooling and a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the SE/4 of Section 28, Township 25 South, Range 37 East, Lea County, New Mexico. Said 160-acre non-standard gas proration unit to be dedicated to the Burleson & Huff "Cook" Well No. 2, a recompleted well, located 660 feet from the South and East lines of said Section 28. Also to be considered will be the costs of drilling and/or recompleting 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 4200: Application of Burleson & Huff for compulsory pooling and a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the NE/4 of Section 29, Township 25 South, Range 37 East, Lea County, New Mexico. Said 160-acre non-standard gas proration unit to be dedicated to a well,

CASE 4200 - Continued from Page 4 -

to be recompleted, located 660 feet from the East line and 1930 feet from the North line of said Section 29. Also to be considered will be the costs of drilling and/or recompleting 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 4201: Application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Langlie-Mattix Queen Unit Area comprising 1120 acres, more or less, of federal and fee lands in Sections 10, 11, 14, 15, 22, and 23, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 4202: Application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Langlie-Mattix Queen Unit Area by the injection of water into the Queen sand through 17 wells at orthodox and unorthodox locations in Sections 10, 11, 14, 15, 22, and 23, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby additional injection wells at orthodox and unorthodox locations may be approved for said project administratively.

CASE 4203: Application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Humphrey Queen Unit Area comprising 731 acres, more or less, of federal and fee lands in Sections 3 and 4, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 4204: Application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Humphrey Queen Unit Area by the injection of water into the Queen sand through 11 wells at orthodox

CASE 4204 - Continued from Page 5 -

and unorthodox locations in Sections 3 and 4, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby additional injection wells at orthodox and unorthodox locations may be approved for said project administratively.

CASE 4205: Application of Tesoro Petroleum Corporation for four unorthodox injection well locations and amendment of Order No. R-2807, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to inject water into the Hospah Upper Sand Oil Pool in its Hospah Unit Waterflood Project Area through four additional injection wells at unorthodox locations in Section 36, Township 18 North, Range 9 West, McKinley County, New Mexico, said wells to be located as follows:

Well No. 62 located 1900 feet from the South line and 1140 feet from the West line;

Well No. 63 located 1980 feet from the North line and 2310 feet from the West line;

A well to be drilled 1430 feet from the South line and 2625 feet from the East line;

A well to be drilled 30 feet from the South line and 2350 feet from the East line.

Applicant further seeks the amendment of Order No. R-2807, which order authorized the aforesaid waterflood project, to establish a procedure whereby additional injection wells at unorthodox locations, as may be necessary to complete an efficient injection pattern, may be approved administratively.

CASE 4206: Application of Shell Oil Company for an unorthodox oil well location and amendment to Order No. R-2538, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a producing oil well at an unorthodox location 1315 feet from the North line and 2625 feet from the West line of Section 34, Township 19

CASE 4206 - Continued from Page 6 -

South, Range 35 East, as an infill well in its East Pearl-Queen Unit Waterflood Project area, East Pearl-Queen Pool, Lea County, New Mexico. Applicant further seeks the amendment of Order No. R-2538, which order authorized the aforesaid waterflood project, to establish a procedure whereby additional producing wells at unorthodox infill locations in the aforesaid project area, as may be necessary to complete an efficient producing pattern, may be approved administratively.

CASE 4207: Application of C. W. Trainer and DEL-SEA, Inc., for an unorthodox gas well location, Lea County, New Mexico. Applicants, in the above-styled cause, seek an exception to Rule 104 C II to permit the drilling of a well at an unorthodox gas well location 330 feet from the North line and 660 feet from the West line of Section 35, Township 12 South, Range 34 East, West Ranger Lake-Devonian Gas Pool, Lea County, New Mexico. The N/2 of said Section 35 to be dedicated to the well.

CASE 4186: (Readvertised)

Application of Tenneco Oil Company for compulsory pooling and an unorthodox gas well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Dakota Gas Pool underlying the North half of Section 11, Township 29 North, Range 13 West, San Juan County, New Mexico. Said acreage to be dedicated to a well to be drilled at an unorthodox gas well location 2250 feet from the North line and 600 feet from the East line of said Section 11. 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. In the absence of a valid objection an order will be issued upon the record entered in the subject case August 6, 1969.

CASE 4208: Application of John A. Yates of Artesia for several waterflood projects, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute

CASE 4208 - Continued from Page 7 -

several waterflood projects by the injection of water into the Seven Rivers formation through his Mary Lou Well No. 1 located in Unit H of Section 29 and his Caroline Well No. 4 located in Unit E of Section 28, both in Township 19 South, Range 28 East, East Millman-Seven Rivers Pool, Eddy County, New Mexico.

bro 2nd
CASE 4209: Application of Harvey E. Yates Company of Artesia for several pressure maintenance projects Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute several pressure maintenance projects by the injection of water into the Seven Rivers and Queen formations, McMillan (Seven Rivers-Queen) Pool, Eddy County, New Mexico, through the following-described wells in Township 20 South, Range 27 East:

Page & Yates Well No. 8 - Unit M - Section 5
Page & Yates Well No. 6 - Unit I - Section 6
Page & Yates Well No. 7 - Unit J - Section 6
Lillie Yates Well No. 2 - Unit B - Section 7

4202 Mobil
Heard 8-20-69
Rec. 8-20-69

BEST AVAILABLE COPY

Grant Mobil permission to convert 11 wells to H₂O injection & to drill 5 more for H₂O injection. Wells & locations are listed on Exhibit # 3 attached.

Delete that # 14 well to be drilled pending results of negotiations with Atlantic.

Grant an admin. procedure for granting future injection wells & NSL for same. Then if they want it later it can be granted.

All ~~water~~ injection shall be thru cement lined tubing under a packer and the casing. The annulus shall be filled w/ Inhibited H₂O w/ valve at surface to check pressure in annulus.

This is the Mobil Langlie
Matter unit flood

for



OIL CONSERVATION COMMISSION

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

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMijo
MEMBER

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

September 4, 1969

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl &
Harris
Attorneys at Law
Public Service Building - Box 2168
Albuquerque, New Mexico 87106

Re: Case No. 4202
Order No. R-3823
Applicant:
Mobil Oil Corporation

Dear Sir:

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
State Engineer x

Other Mr. Paul Eaton

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 27, 1969

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
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CASE 4194 - Continued from Page 1 -

seeks authority to inject gas through two additional wells located in Unit L of Section 34, Township 17 South, Range 35 East and Unit B of Section 4, Township 18 South, Range 35 East and to expand said project area to include the SE/4 NE/4 of Section 33 and the NW/4, N/2 SE/4, and SW/4 SE/4 of Section 34 Township 17 South, Range 35 East. Applicant further seeks authority to dually complete all gas injection wells in the project in such a manner as to permit the production of oil from the lower section of the Abo Reef through tubing and the injection of gas into the upper section of the Abo Reef through the casing-tubing annulus.

CASE 4195: Application of Continental Oil Company for eight non-standard gas proration units and a non-standard gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the rededication of acreage to establish the eight following non-standard gas proration units in Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico:

A 120-acre non-standard unit comprising the SE/4 NE/4 and E/2 SE/4 of Section 14, to be dedicated to the "SEMU" Well No. 46, located in Unit I of said Section 14;

A 240-acre non-standard unit comprising the NE/4 and E/2 SE/4 of Section 26, to be dedicated to the "SEMU" Well No. 64, located in Unit G of said Section 26;

A 560-acre non-standard unit comprising the W/2 and W/2 SE/4 of Section 26 and the E/2 E/2 of Section 27, to be dedicated to the "SEMU" Well No. 65, located in Unit L of said Section 26;

A 640-acre non-standard unit comprising the W/2 and the W/2 E/2 of Section 14 and E/2 E/2 of Section 15, to be dedicated to the "SEMU" Well No. 66, located in Unit L of said Section 14;

CASE 4195 - Continued from Page 2 -

A 320-acre non-standard unit comprising the SE/4, S/2 NE/4, and E/2 SW/4 of Section 24, to be dedicated to the "SEMU" Well No. 67, located in Unit K of said Section 24;

A 640-acre non-standard unit comprising the E/2 and E/2 W/2 of Section 23 and W/2 W/2 of Section 24, to be dedicated to the "SEMU" Well No. 68, located in Unit J of said Section 23;

An 80-acre non-standard unit comprising the E/2 NW/4 of Section 24, to be dedicated to the "SEMU" Well No. 69, located in Unit F of said Section 24;

A 320-acre non-standard unit comprising the E/2 E/2 of Section 22 and the W/2 W/2 of Section 23, to be dedicated to the "SEMU" Well No. 90, to be completed at a non-standard location 550 feet from the South and East lines of said Section 22.

CASE 4196: Application of Continental Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of three existing non-standard gas proration units into one 360-acre non-standard unit comprising the W/2 and the NW/4 NE/4 of Section 18, Township 23 South, Range 37 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to its Stevens "B" Wells Nos. 15 and 16, located in Units F and K, respectively, of said Section 18. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

CASE 4197: Application of Continental Oil Company for an amendment to Order No. R-3755, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3755 which authorized, among other things, the drilling of a water injection well in the Forest Donahue Waterflood Project area at a location 1980 feet from the North line and 1650 feet from the West line of Section 35, Township 16 South, Range 29 East, Eddy County, New Mexico.

CASE 4197 - Continued from Page 3 -

Applicant now seeks authority to locate said well at an unorthodox location 1980 feet from the North line and 1450 feet from the West line of said Section 35 in the Forest (San Andres) Pool.

CASE 4198: Application of Continental Oil Company for amendment of Order No. R-3487, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3487 which authorized the applicant to utilize its Eaves "A" Well No. 10, located in Unit P of Section 19, Township 26 South, Range 37 East, Scarborough Yates-Seven Rivers Pool, to dispose of salt water into the Seven Rivers formation in the interval from 3208 feet to 3255 feet. Applicant now seeks authority to inject produced salt water into the Yates and Seven Rivers formations in the perforated and open-hole interval from approximately 3107 feet to 3410 feet in said well and the reclassification of said salt water disposal well to a pressure maintenance injection well.

CASE 4199: Application of Burleson & Huff for compulsory pooling and a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the SE/4 of Section 28, Township 25 South, Range 37 East, Lea County, New Mexico. Said 160-acre non-standard gas proration unit to be dedicated to the Burleson & Huff "Cook" Well No. 2, a recompleted well, located 660 feet from the South and East lines of said Section 28. Also to be considered will be the costs of drilling and/or recompleting 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 4200: Application of Burleson & Huff for compulsory pooling and a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the NE/4 of Section 29, Township 25 South, Range 37 East, Lea County, New Mexico. Said 160-acre non-standard gas proration unit to be dedicated to a well,

CASE 4200 - Continued from Page 4 -

to be recompleted, located 660 feet from the East line and 1900 feet from the North line of said Sect on 29. Also to be considered will be the costs of drilling and/or recompleting 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 4201: Application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Langlie Mattix Queen Unit Area comprising 1120 acres, more or less, of federal and fee lands in Sections 10, 11, 14, 15, 22, and 23, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 4202: Application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Langlie-Mattix Queen Unit Area by the injection of water into the Queen sand through 17 wells at orthodox and unorthodox locations in Sections 10, 11, 14, 15, 22, and 23, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby additional injection wells at orthodox and unorthodox locations may be approved for said project administratively.

CASE 4203: Application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Humphrey Queen Unit Area comprising 751 acres, more or less, of federal and fee lands in Sections 3 and 4, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 4204: Application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Humphrey Queen Unit Area by the injection of water into the Queen sand through 11 wells at orthodox

CASE 4204 - Continued from Page 5 -

and unorthodox locations in Sections 3 and 4, Township 25 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby additional injection wells at orthodox and unorthodox locations may be approved for said project administratively.

CASE 4205: Application of Tesoro Petroleum Corporation for four unorthodox injection well locations and amendment of Order No. R-2807, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to inject water into the Hospah Upper Sand Oil Pool in its Hospah Unit Waterflood Project Area through four additional injection wells at unorthodox locations in Section 36, Township 18 North, Range 9 West, McKinley County, New Mexico, said wells to be located as follows:

Well No. 62 located 1900 feet from the South line and 1140 feet from the West line;

Well No. 63 located 1980 feet from the North line and 2310 feet from the West line;

A well to be drilled 1430 feet from the South line and 2625 feet from the East line;

A well to be drilled 30 feet from the South line and 2350 feet from the East line.

Applicant further seeks the amendment of Order No. R-2807, which order authorized the aforesaid waterflood project, to establish a procedure whereby additional injection wells at unorthodox locations, as may be necessary to complete an efficient injection pattern, may be approved administratively.

CASE 4206: Application of Shell Oil Company for an unorthodox oil well location and amendment to Order No. R-2538, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a producing oil well at an unorthodox location 1315 feet from the North line and 2625 feet from the West line of Section 34, Township 19

CASE 4206 - Continued from Page 6 -

South, Range 35 East, as an infill well in its East Pearl-Queen Unit Waterflood Project area, East Pearl-Queen Pool, Lea County, New Mexico. Applicant further seeks the amendment of Order No. R-2538, which order authorized the aforesaid waterflood project, to establish a procedure whereby additional producing wells at unorthodox infill locations in the aforesaid project area, as may be necessary to complete an efficient producing pattern, may be approved administratively.

CASE 4207: Application of C. W. Trainer and DEL-LEA, Inc., for an unorthodox gas well location, Lea County, New Mexico. Applicants, in the above-styled cause, seek an exception to Rule 104 C II to permit the drilling of a well at an unorthodox gas well location 330 feet from the North line and 660 feet from the West line of Section 35, Township 12 South, Range 34 East, West Ranger Lake-Devonian Gas Pool, Lea County, New Mexico. The N/2 of said Section 35 to be dedicated to the well.

CASE 4186: (Readvertised)

Application of Tenneco Oil Company for compulsory pooling and an unorthodox gas well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Dakota Gas Pool underlying the North half of Section 11, Township 29 North, Range 13 West, San Juan County, New Mexico. Said acreage to be dedicated to a well to be drilled at an unorthodox gas well location 2250 feet from the North line and 600 feet from the East line of said Section 11. 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. In the absence of a valid objection an order will be issued upon the record entered in the subject case August 6, 1969.

CASE 4208: Application of John A. Yates of Artesia for several waterflood projects, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute

CASE 4208 - Continued from Page 7 -

several waterflood projects by the injection of water into the Seven Rivers formation through his Mary Lou Well No. 1 located in Unit H of Section 29 and his Caroline Well No. 4 located in Unit E of Section 28, both in Township 19 South, Range 28 East, East Millman-Seven Rivers Pool, Eddy County, New Mexico.

CASE 4209: Application of Harvey E. Yates Company of Artesia for several pressure maintenance projects, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute several pressure maintenance projects by the injection of water into the Seven Rivers and Queen formations, McMillan (Seven Rivers-Queen) Pool, Eddy County, New Mexico, through the following-described wells in Township 20 South, Range 27 East:

Page & Yates Well No. 8 - Unit M - Section 5
Page & Yates Well No. 6 - Unit I - Section 6
Page & Yates Well No. 7 - Unit J - Section 6
Lillie Yates Well No. 2 - Unit B - Section 7

CALCULATION OF WATERFLOOD
RESERVES FOR LMQU #9 AND #18

Assumptions:

W/F Oil = 1/1/69 cumulative oil

LMQU #14 drilled and used for WIW @ requested location.

Floodable area in #9 pattern = 52 acres

Average 1/1/69 cumulative oil for #9 pattern = 3100 B/Ac

W/F Oil = 52 acres x 3100 B/Ac = 161,200 Bbls.

Floodable area in #18 pattern = 61.23 acres

Average 1/1/69 cumulative oil for #18 pattern = 2899 B/Ac

W/F Oil = 61.23 acres x 2899 B/Ac = 177,506 Bbls.

Assume LMQU #14 is not allowed:

Floodable area in #9 pattern = 30.10 acres

W/F Oil = 30.1 acres x 3100 B/Ac = 93,310 Bbls.

Oil lost from pattern = 161,200 - 93,310 = 67,890 Bbls.

Floodable area in #18 pattern = 30.97 acres

W/F recovery from the swept area of the open pattern will be half that of the closed pattern.

W/F Oil = 30.97 acres x 1/2 x 2899 B/Ac

= 44,891 Bbls.

Oil lost from pattern = 177,506 - 44,891

= 132,615

Total oil lost = 67,890 + 132,615 = 200,505 Bbls.

1/1/70

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

App EXHIBIT NO. 3

CASE NO. 4202

Mobil Oil Corporation

P.O. BOX 633
MIDLAND, TEXAS 79701

June 26, 1969

Atlantic Richfield Company
P. O. Box 1470
Midland, Texas 79701

BEFORE EXAMINER NUTTER	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	4
CASE NO.	79701

Attention: Mr. L. M. Sellers

LINE AGREEMENT, STUART LEASES
LANGLIE MATTIX QUEEN POOL
LEA COUNTY, NEW MEXICO

Gentlemen:

Mobil Oil Corporation has recently purchased certain tracts in Lea County, New Mexico from George Buckles. The acreage purchased includes tracts which are a west offset to your 40-acre Stuart A lease (formerly Sinclair) in the NE/4 of NW/4 of Sec. 14, T-25-S, R-37-E, Lea County, New Mexico. We expect to have Mobil's acreage in this area under waterflood in the Queen formation within a few months and currently plan to drill water injection wells approximately 50' west of the NW and SW corners of your Stuart A lease. Injectors are required near the east line of Mobil's leases in this area to insure that all of the waterflood oil beneath the leases is trapped down-dip to the west and to form a water block to prevent migration of waterflood oil up-dip to the gas cap on the east. We are anxious to proceed with the waterflood plans as rapidly as possible and, for this reason, are interested in exploring cooperative injection along the common line dividing our properties. We would like for Atlantic to participate in the two injection wells cited to the extent of 25%, which would amount to approximately \$19,000. Advice concerning your position in this matter will be appreciated.

Because the Atlantic Stuart A Well #1, former Langlie Mattix Queen producer, is situated only about 330' east of your west lease line, it has occurred to us that an outright purchase by Mobil of the Queen rights beneath the 40 acres may be more attractive to Atlantic than participating in the two line injection wells. If Atlantic should sell Mobil the Langlie Mattix Queen rights beneath this tract, it would be our plan to convert the Stuart A Well #1 in lieu of drilling one of the line injectors. In this connection, Mobil would be willing to offer \$12,000 for a net 0.875 working interest in the Langlie Mattix Queen (as defined by the NMOCC: 100' above the base of the Seven Rivers to the base of the Queen) beneath the Stuart A 40-acre lease to include the Stuart A Well #1, together with its tubing, provided of course that your records do not indicate collapsed casing or other conditions in the well which would prevent its use for injection into the Queen. Please let us hear from you as soon as possible.

Yours very truly,


Don B. Cooper

Joint Interest Administrator
Midland Division.

PWK:llv/huc

Atlantic Richfield Company

North American Producing Division
New Mexico-Arizona District
Post Office Box 1978
Roswell, New Mexico 88201
Telephone 505 622 4041

Jack Biard
District Landman

RECEIVED		
JOINT INTEREST		
JUL 27 1969		
DATE	FILE	BY
DE	CS	ROUTE

Handwritten: 7/27/69
Approved for
Eng. J.

July 22, 1969

Line Agreement, Stuart Leases
Langlie Mattix Queen Pool
Lea County, New Mexico

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

Attention: Mr. Don B. Cooper

Gentlemen:

We have reviewed your proposals regarding our 40-acre Stuart "A" lease (formerly Sinclair) covering the NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 14, T-25-S, R-37-E, Lea County, New Mexico, and find that neither alternative is acceptable. We appreciate your desire to place this area under waterflood in the Queen formation within a few months and would like to be able to work with you toward this end. We, therefore, would like to hear from you regarding the basis on which our Stuart "A" lease might participate in the proposed waterflood.

Yours very truly,

ATLANTIC RICHFIELD COMPANY

Handwritten signature: Jack Biard
Jack Biard
District Landman

JB/dlm

cc: Mr. W. P. Tomlinson

November 14, 1969 ✓

Atlantic Richfield Company
P. O. Box 1978
Roswell, New Mexico 88201

Attention: Mr. A. D. Kloxin

PROPOSED ENLARGEMENT TO INCLUDE
ATLANTIC'S STUART "A" LEASE,
LANGLIE-MATTIX QUEEN UNIT, LEA
COUNTY, NEW MEXICO

Gentlemen:

This will continue correspondence on the above subject ending with Atlantic's letter of July 22, 1969.

Mobil is in the process of endeavoring to enlarge the subject unit with the addition of Mobil's Federal "X" Lease located in the SW/4 Section 15, the Eppenauer Lease which is the NE/4 NW/4 Section 22, and is also interested in bringing in Atlantic's Stuart "A" Lease located in the NE/4 NW/4 Section 14, all subject to the approval of the Langlie-Mattix Queen Unit Working Interest Owners. Mobil would be willing to recommend to the Working Interest Owners that the Atlantic-Stuart "A" Lease be brought into the unit with a Phase II participation of 0.3504%. It is anticipated that Phase II will be effective on approximately January 1, 1971. The Stuart "A" Lease would be expected to pay any adjustment necessary under the unit inventory adjustment procedure and to also pay its share of the unit investment from the time the unit was formed. The total of the unit inventory is approximately \$73,700 and it is expected that the unit investment over the entire life of the unit will amount to approximately \$1,150,000. Slightly over half of this amount will have been spent by January 1, 1970. Should Atlantic desire not to enter the Stuart "A" Lease in the Langlie-Mattix Queen Unit, Mobil would be willing to offer \$12,000 (subject to the lease coming into the unit) for a net 0.875% working interest in the Langlie-Mattix Queen (as defined by the NMCCC: 100' above the base of the Seven Rivers to the base of the Queen) beneath the Stuart "A" 40-acre lease to include the Stuart "A" Well No. 1; provided, of course, that your records do not indicate collapsed casing or other conditions in the well which would prevent its use for injection into the Queen.

We would appreciate an early reply as to your acceptance of either of the above proposals.

Yours very truly,
Original Signed By
E. R. FRAZIER

John D. Howard
Joint Interest Administrator
Midland Division


ERFrazier/bg

Atlantic Richfield Company North American Producing Division
New Mexico-Arizona District
Post Office Box 1978
Roswell, New Mexico 88201
Telephone 505 622 4041

Jack Biard
District Landman



November 18, 1969

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

RECEIVED		
JOHN D. HOWARD		
NOV 19 1969		
JDH	ERE ✓	CHS
JWE	GS	DG
DE	FILE	ROUTE

Attention: Mr. John D. Howard

Re: NE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 14, T25S, R37E
Lea County, New Mexico
Our File SOC #5028

Gentlemen:

Your letter of November 14, 1969 addressed to Mr. A. D. Kloxin has been forwarded to me for reply. Atlantic Richfield does not wish to commit its Stuart "A" Lease to the Langlie-Mattix Queen Unit as a working interest owner. This would give us a working interest participation of approximately 0.35% of Phase II.

We have discussed your cash offer of \$12,000 for the well and leasehold rights in the unitized interval and have concluded that this is inadequate. We have discussed this matter thoroughly among our interested departments and are agreed that unless you can raise your offer to \$20,000 we will be unable to recommend the sale of this property to management.

Yours very truly,

ATLANTIC RICHFIELD COMPANY

Jack Biard
Jack Biard
District Landman
JB/rr

December 11, 1969 ✓

Atlantic Richfield Company
P. O. Box 1978
Roswell, New Mexico 88201

Attention: Mr. A. D. Kloxin

PROPOSED ENLARGEMENT TO INCLUDE
ATLANTIC'S STUART "A" LEASE
LANGLIE MATTIX QUEEN UNIT
LEA COUNTY, NEW MEXICO

Gentlemen:

We would like for Atlantic to reconsider its rejection of our November 14, 1969 proposal concerning enlargement of the Langlie Mattix Queen Unit to include your Stuart "A" lease in the NE/4 of the NW/4 of Section 14, T-25-S, R-37-E. Because the Eppenauer tract referred to in our November 14 letter has now been withdrawn from consideration for inclusion in the unit, the basis for computation of Phase II participation has changed slightly bringing the proposed participation for your Stuart "A" tract to 0.3614% instead of 0.3504% suggested earlier. This Phase II participation for your Stuart "A" lease is based upon the relationship of 12,500 barrels of Stuart "A" lease incremental reserves, to January 1, 1969 cumulative recovery for the total unit. The 12,500 barrels figure is the reserve testified to by Atlantic's witness at the August 27, 1969 waterflood hearing before the NMOC in Santa Fe. Participation to this extent will assure the tract of ultimately recovering 12,500 barrels or more, if waterflood reserves are equal to or better than primary recovery which is taken to be January 1, 1969 cumulative. There are several Lea County, New Mexico Queen waterfloods that are sufficiently mature to demonstrate a secondary to primary ratio of one or more.

With respect to your November 18, 1969 proposal to recommend the sale of the Stuart "A" lease for \$20,000, we would like to point out that our estimates indicate at least \$18,000 will be expended in placing the Stuart "A" No. 1 in condition to receive injection water which would bring the total cost to \$38,000 including the selling price of \$20,000. This is approximately what a new well would cost at the present time. Because the Stuart "A" No. 1 was shot with nitroglycerin, some question exists as to whether the well might lend itself to controlled injection in the desired intervals even if a liner is set through the open hole section without any trouble. The fact that the casing in the well is

Atlantic Richfield

2

December 11, 1969

more than 30 years old raises the question of future casing leaks if they do not already exist. These prospective difficulties when balanced against use of a new well with new casing perforated opposite selected intervals make it appear less risky and more efficient to drill the new well if the monetary considerations are about the same.

We believe the prior offer of \$12,000 for the Queen rights beneath the Stuart "A" lease is generous in view of risks involved and will probably afford Atlantic as many dollars now as might be generated in profit over the 17 year flood life. We believe that either of the proposals herein will afford Atlantic an ample opportunity to receive payment at least equal to the value of the property to be contributed to the unit.

We need very much to bring this matter to a conclusion as soon as possible in order to begin injection along the east side of the unit in the vicinity of Unit Well No. 14 or the Stuart "A" No. 1. Injection has already commenced in the downdip input wells and it is imperative to initiate a waterblock between the oil reservoir and the gas cap on the east very soon. We are accordingly asking the NMOCC to schedule a hearing on Mobil's application to drill and use LMQU No. 14 for injection should Atlantic not be inclined to accept either of the proposals herein.

Yours very truly,

Original Signed By

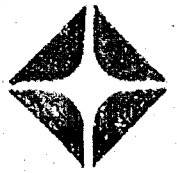
J. D. Howard
Joint Interest Administrator
Midland Division

PWKelly/tlb

cc: Mr. Jim Sperling

Earth American Producing Division
New Orleans Air Mail Division
P.O. Box 12170
Houston, Texas 77255
Telephone 835-4221

W. P. Toddman
District Engineer



January 2, 1970

Mobil Oil Corporation
P. O. Box 633
Midland, Texas 79701

Attention: Mr. J. D. Howard

Gentlemen:

We are unable to accept either of Mobil's offers as presented in your letter of December 11, 1969 because neither offer fairly reflects the value of our Stuart "A" No. 1 contained in Unit C of Section 14, Township 25 South, Range 37 East. As we understand these proposals Mobil is offering a Phase II participation of 0.3614% in the unit for our Stuart "A" tract or \$12,000 for our well. The Phase II participation is based on 12,500 barrels of incremental reserves for the Stuart "A" Lease.

We are unable to accept your offer of participation in the unit on the basis of the Stuart "A" incremental reserves only. These 12,500 barrels of incremental reserves testified to by Mr. Osborne before the New Mexico Oil Conservation Commission in Santa Fe on August 27, 1969, refer to the additional reserves which will be recovered by use of the Stuart "A" No. 1 which would not be recovered by drilling the Langlie Mattix Queen Unit Well No. 14. Since the use of our Stuart well would recover these additional reserves and also save the cost of drilling the Langlie Mattix Queen Unit No. 14, we believe that Atlantic Richfield should be compensated not only for the value of the incremental oil to be recovered but also for the value of our well as a replacement for the LMQU No. 14.

Participation of our well in the unit on the basis of reserves only should be based on the relationship of the primary recovery of our well to the cumulative primary recovery for the total unit. Please note that our Stuart "A" No. 1 has recovered 62,080 barrels of oil on primary as of January 1, 1969, which would give us a 1.7949% participation in Phase II.

If participation of our well is to be based on the aforementioned incremental reserves, we feel that two considerations should be made in determining the value of our well. First, we request compensation for the value of our wellbore as a replacement for the proposed Unit Well No. 14. Second, we believe that the use of our well as an injection well will result in the recovery of 12,500 barrels of incremental reserves for which Atlantic should be compensated.

January 2, 1970
Page 2

In calculating the value of our Stuart "A" No. 1 as a replacement wellbore for the LMQU Well No. 14, we have considered the cost of drilling and completing a new well to be \$38,000. We estimate that approximately \$18,000 would be expended in preparing the well for injection. Based on our experience, this work should have a 25% risk factor or \$4,500 of additional risk. This reduces the value of the wellbore to \$15,500.

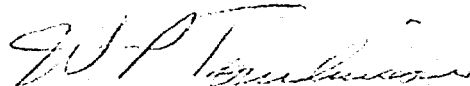
In addition to the value of the Stuart "A" No. 1 as a wellbore, we have considered the value of the incremental oil which will be recovered by the use of our well which would not be recovered by using the LMQU Well No. 14. This additional recovery has been calculated to be 12,300 barrels of oil which is equivalent to a Phase II participation in the unit of 0.3614%, as stated in Mobil's letter of December 11, 1969.

Combining the value of the wellbore and the incremental oil, we consider the Stuart "A" No. 1 to be worth \$15,500 plus a Phase II participation of 0.3614%.

As an alternate proposal to our participation in the unit, we would be willing to accept a cash settlement for the value of this incremental oil in addition to \$15,500 for the replacement wellbore. Using a \$1.00 per barrel net profit after tax the undiscounted value of this incremental oil is \$12,500 or discounting at 10% the present worth value of this oil is \$8,330.

Combining the value of the wellbore and the incremental oil, we consider the Stuart "A" No. 1 to be worth \$23,830. We believe that our proposal to sell the well for \$20,000, as a compromise figure, is equitable to both parties. In the event that Mobil is still unwilling to accept our proposal, however, we would appreciate the opportunity to meet with your representative to discuss possible alternate locations for the LMQU Well No. 14.

Yours very truly,



W. P. Tomlinson

MAO:jcb

STATE	New Mexico	PARISH OR COUNTY	Lea	DISTRICT	8-37 K-2670
OPERATOR	Carl B. King Drilling Co. No. 1-A FARM Stuart				
TWP. OR SURVEY	14-253-37E				ELEV. 3129'
DATE	2/2/38	CASINO RECORD	7-5/8" 961', 4" 0		
COMM.	5/15/38	3271', 2" 3395, pack 3300, perf below			
COMP.		I. P. fl 70 BOPD thru tbg, just enough			
TOP	A. 910'	MARKERS	gas to flow. P. 3305'		
BASE					
T. D.	3395'	lime.			
LOCATION:		330' fr N & 1650' fr W			
		3/10/38 shot 140 qts 3326-95.			
		ES fl est 3 BOPH.			
		AS fl 70 BOPD thru csg,			
		5,240,000 gas.			
		5/15/38 tr 1000 gals acid.			
		BA fl 70 BOPD thru tbg.			
		AA - IP. OVER			

3/15/38 Tested 5.24 MM CF FR Csg 4 Fl 70 BOPD

Ph @ 3300'
- 3129
- 171

4 3/4" @ 3271'

3129
150
3279' DEPTH OF
- 150 PWTM

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
APP EXHIBIT NO. 2
CASE NO. 202

Stearl 1A Unit C, Sec 14, T-255, R-37E

Habbs OCC Records

1. Intention to Drill - King Dry Co. 1-10-38
2. Surf. Csg -
3. Surf. Csg set
4. Surf. Csg tested
5. Cond. Pipe set
6. Oil string set
7. Oil string plow
8. Well record - 4-9-38

Formation Record - Partial

2380-2393	Gas sd light showing
2393-2410	Lime-Brown
2410-2430	Bri. Lm - Gas smell strong
2430-2444	Hard Gray lime - No Gas showing
2446-2550	Brown lime
2550-2560	Showing Brown lime - Light Gas above
2560-3117	Lime
3117-3121	Gas sand
3121-3157	Sand
3157-3198	Lime
3198-3215	Sand
3215-3394-6	Lime

Treatment - 140 gts Nitro 3324-3395
Cleaned out to 3395

→ Production 116 bbls oil, no water 3-15-38 start
Oil Sands 3324-3394

9. OCC work sheet w/ notes

3-1-38	at TD	3305L	est 2 MM gas
3-8-38	at TD	3392L	testing 4.79 MM gas
3-15-38	TD	3395L	set pk, flowed 70 BOPD, 5,24 MM gas thru casing
3-22-38	TD	3395L	testing to much gas
3-29-38	TD	3395L	sin storage
4-5-38	TD	3395L	testing preparing to put packer est 5,24 MM
4-19-38	TD	3395	testing G.D. on bottom
5-3-38			testing no gauge
5-9-38	TD	3395	116 BO 24 hrs
5-17-38	TD	3395	I.P. 70 BOPD

10. Transport Oil - Shell P/L Co. 7-3-47
Western Nat'l Gas Co.

11. S.I.P. Report 588#, 24 hr S.I. 4-20-50

12. Transporter - Shell P/L Co 6-30-50
Change to Western Nat'l Gas Co.

13. S.I.P. Report - 543.3#, 24 hr S.I. 10-3-50

14. O.F. Tests 972 MCFPD @ 15,025# 180°

15. S.I.P. Report 453 ff, 24 hr S.I. 1-24-51
16. Allowable Request 12-9-53 C-104
Perfs 3171-91 w/ 20 shots Pay Top 3131
3131-96 w/ 23 shots

7 MMCFPD - Initial Test, AOF

Transporter - El Paso Natural Gas

17. Transporter - El Paso Natural Gas 12-7-53
still owned by Western Natural Gas Co.

18. Notice to Western Natural Gas Co. 12-31-53
Form C-104 approved but —
1) outside boundaries of designated pool
2) File Form C-123
3) Assigned 40 acre allowable till further notice

Interpreted as extension to Langmat and not Justis
as shown on C-104

19. Transporter - Shell P/L Oil or Condensate 10-19-56
El Paso Gas
Reclassified from Jalmat to Langlic Mattix

20. Transporter - Shell P/L 11-26-63
El Paso NG
Change owner to Sinclair
Called Stuart "A" WN Lease

21. El Paso NG Letter 8-13-64
Disconnect notice to OCC

~~~~~ End of File ~~~~~

Note: Stuart #2 "A" WN is located  
330' FNL + 2310 FWL, Sect 14, 255, 37E

Now a Blinbry - Drinkard dual

J.C. Gordon, Jr.  
8-20-69

TABULATION OF PRODUCTION  
ARCO (SINCLAIR) STUART A WELL NO. 1  
LANGLIE-MATTIX FIELD  
LEA COUNTY, NEW MEXICO

| <u>Operator</u>           | <u>Year</u> | <u>Bbls.<br/>Oil</u> | <u>MCF<br/>Gas</u> | <u>Bbls.<br/>Cum. Oil</u> |
|---------------------------|-------------|----------------------|--------------------|---------------------------|
| Carl B. King<br>Drig. Co. | 1938        | 15,257               |                    | 15,257                    |
|                           | 1939        | 17,102               |                    | 32,359                    |
| Western Natural<br>Gas    | 1940        | 3,314                |                    | 35,673                    |
|                           | 1941        | 2,641                |                    | 38,314                    |
|                           | 1942        | 3,954                |                    | 42,268                    |
|                           | 1943        | 2,708                |                    | 44,976                    |
|                           | 1944        | 2,483                |                    | 47,459                    |
|                           | 1945        | 2,088                |                    | 49,547                    |
|                           | 1946        | 2,038                |                    | 51,585                    |
|                           | 1947        | 845                  |                    | 52,430                    |
|                           | 1948        | 1,836                |                    | 54,266                    |
|                           | 1949        | 1,530                |                    | 55,796                    |
|                           | 1950        | 962                  |                    | 56,758                    |
|                           | 1951        | 2,040                |                    | 58,798                    |
|                           | 1952        | 1,457                |                    | 60,255                    |
|                           | 1953        | 792                  |                    | 61,047                    |
|                           | 1954        | -                    |                    | 61,047                    |
|                           | 1955        | -                    |                    | 61,047                    |
|                           | 1956        | -                    |                    | 61,047                    |
|                           | 1957        | -                    |                    | 61,047                    |
|                           | 1958        | 917                  |                    | 61,964                    |
| Sinclair                  | 1959        | 116                  | 37,720             | 62,080                    |
|                           | 1960        | -                    | 8,866              | 62,080                    |
|                           | 1961        | -                    | 5,787              | 62,080                    |
|                           | 1962        | -                    | 4,113              | 62,080                    |
|                           | 1963        | -                    | 1,235              | 62,080                    |
|                           | 1964        | -                    |                    | 62,080                    |
|                           | 1965        | -                    |                    | 62,080                    |
|                           | 1966        | -                    |                    | 62,080                    |
|                           | 1967        | -                    |                    | 62,080                    |
|                           | 1968        | -                    |                    | 62,080                    |

COMPLETION DATA:

Completed 2/15/38.  
7-5/8" surface pipe @ 961'.  
4-3/4" prod. str. @ 3271'.  
2' tbg. set through pkr @ 3395 (pkr @ 3300)

Shot w/140 qts @ 3326'-95'  
Acidized w/1000 gal

TD @ 3395  
Top pay 3305

PWKelly/kim  
7/31/69

Stuart # 1-A

7 5/8" @ 961'

Perfs

3131'

3151'

3146'

3171

Perfs

3191

1000' 1000'

4 1/2" @ 3271

shot Hole

TD 3395'



TABULATION OF PRODUCTION  
ARCO (SINCLAIR) STUART A WELL NO. 1  
LANGLIE-MATTIX FIELD  
LEA COUNTY, NEW MEXICO

| <u>Operator</u>           | <u>Year</u> | <u>Bbls.<br/>Oil</u> | <u>NCF<br/>Gas</u> | <u>8bbls.<br/>Cum. Oil</u> |
|---------------------------|-------------|----------------------|--------------------|----------------------------|
| Carl B. King<br>Orig. Co. | 1938        | 15,257               |                    | 15,257                     |
|                           | 1939        | 17,102               |                    | 32,359                     |
|                           | 1940        | 3,314                |                    | 35,673                     |
|                           | 1941        | 2,641                |                    | 38,314                     |
|                           | 1942        | 3,954                |                    | 42,268                     |
| Western Natural<br>Gas    | 1943        | 2,708                |                    | 44,976                     |
|                           | 1944        | 2,483                |                    | 47,459                     |
|                           | 1945        | 2,088                |                    | 49,547                     |
|                           | 1946        | 2,038                |                    | 51,585                     |
|                           | 1947        | 845                  |                    | 52,430                     |
|                           | 1948        | 1,836                |                    | 54,266                     |
|                           | 1949        | 1,530                |                    | 55,796                     |
|                           | 1950        | 962                  |                    | 56,758                     |
|                           | 1951        | 2,040                |                    | 58,798                     |
|                           | 1952        | 1,457                |                    | 60,255                     |
|                           | 1953        | 792                  |                    | 61,047                     |
|                           | 1954        | -                    |                    | 61,047                     |
|                           | 1955        | -                    |                    | 61,047                     |
|                           | 1956        | -                    |                    | 61,047                     |
|                           | 1957        | -                    |                    | 61,047                     |
| Sinclair                  | 1958        | 917                  |                    | 61,964                     |
|                           | 1959        | 116                  | 37,720             | 62,080                     |
|                           | 1960        | -                    | 8,866              | 62,080                     |
|                           | 1961        | -                    | 5,787              | 62,080                     |
|                           | 1962        | -                    | 4,113              | 62,080                     |
|                           | 1963        | -                    | 1,235              | 62,080                     |
|                           | 1964        | -                    |                    | 62,080                     |
|                           | 1965        | -                    |                    | 62,080                     |
|                           | 1966        | -                    |                    | 62,080                     |
|                           | 1967        | -                    |                    | 62,080                     |
|                           | 1968        | -                    |                    | 62,080                     |

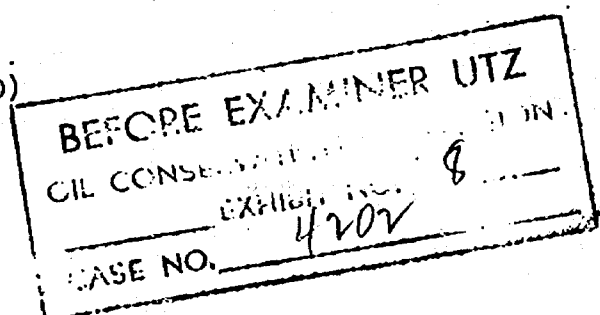
COMPLETION DATA:

Completed 2/15/38.  
7-5/8" surface pipe @ 961'.  
4-3/4" prod. str. @ 3271'.  
2' tbg. set through pkr @ 3395 (pkr @ 3300)

Shot w/140 qts @ 3326'-95'  
Acidized w/1000 gal

TD @ 3395  
Top pay 3305

PWKelly/kim  
7/31/69







MOBIL OIL CORPORATION  
 TABULATION OF OIL PRODUCTION  
 PROPOSED LANGLIE-MATTIX QUEEN UNIT  
 LEA COUNTY, NEW MEXICO

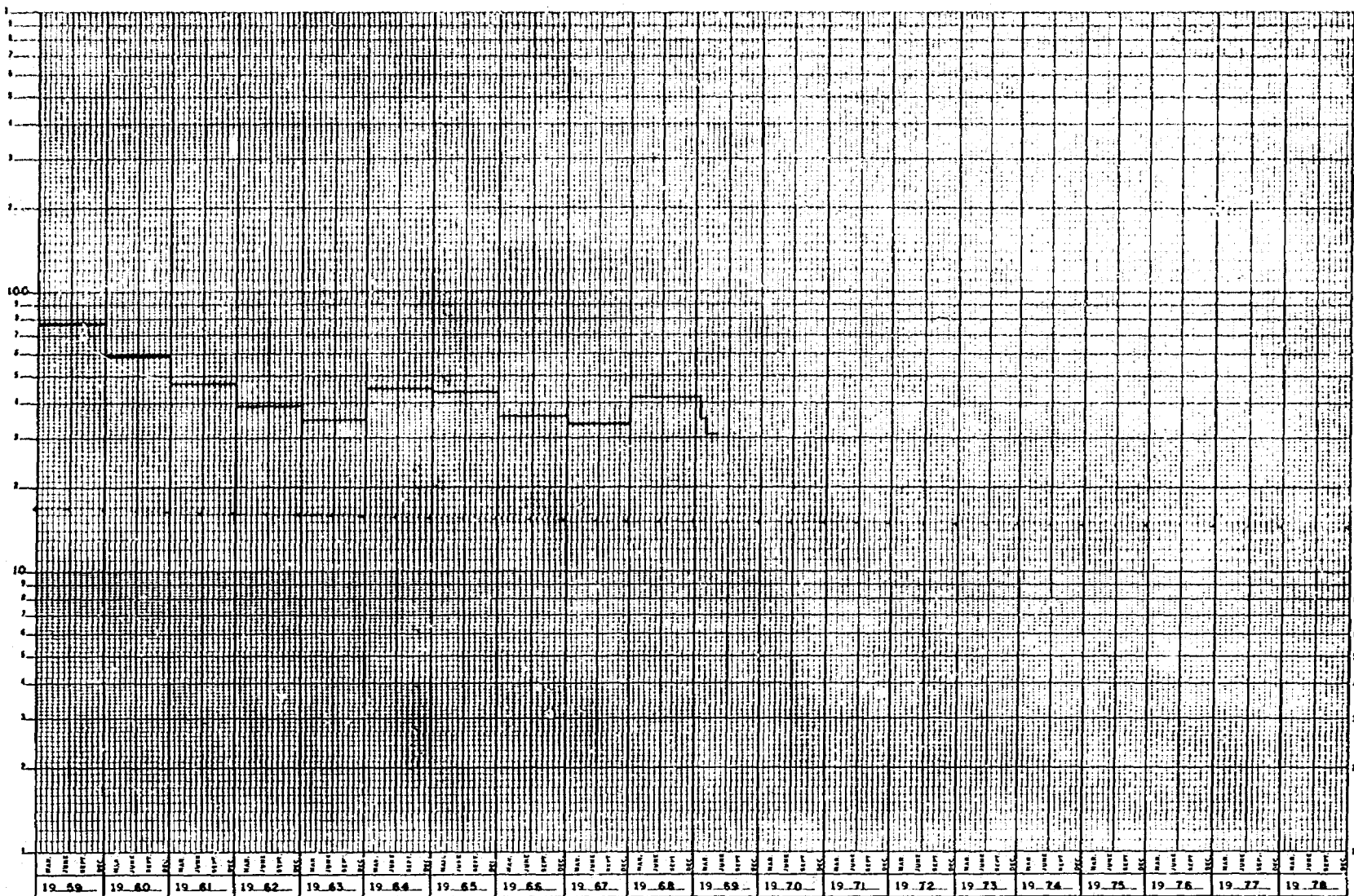
| <u>YEAR</u> | <u>OIL PRODUCTION,<br/>BBLs.</u> | <u>CUMULATIVE OIL,<br/>BBLs.</u> | <u>NUMBER OF<br/>PRODUCING WELLS</u> | <u>BOPD</u> |
|-------------|----------------------------------|----------------------------------|--------------------------------------|-------------|
| 1959        | 28077                            | 3,099,214                        | 18                                   | 77          |
| 1960        | 21537                            | 3,120,751                        | 19                                   | 59          |
| 1961        | 17259                            | 3,138,010                        | 17                                   | 47          |
| 1962        | 14297                            | 3,152,307                        | 17                                   | 39          |
| 1963        | 12918                            | 3,165,225                        | 18                                   | 35          |
| 1964        | 16308                            | 3,181,533                        | 18                                   | 45          |
| 1965        | 16047                            | 3,197,580                        | 16                                   | 44          |
| 1966        | 13146                            | 3,210,726                        | 16                                   | 36          |
| 1967        | 12378                            | 3,223,104                        | 17                                   | 34          |
| 1968        | 15383                            | 3,238,487                        | 19                                   | 42          |
| 1969        |                                  |                                  |                                      |             |
| Jan.        | 1307                             | 3,329,794                        | 20                                   | 42          |
| Feb.        | 989                              | 3,240,783                        | 20                                   | 35          |
| Mar.        | 973                              | 3,241,756                        | 20                                   | 31          |
| Apr.        | 921                              | 3,242,677                        | 20                                   | 31          |

BEFORE EXAMINER UTZ  
 OIL CONSERVATION COMMISSION  
 EXHIBIT NO. 4  
 CASE NO. 4202

PWKelly/kim  
 8/25/69

BEST AVAILABLE COPY

BOPD



BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

EXHIBIT NO. 4

CASE NO.

404

CASE NO.

EXHIBIT NO.

OIL CONSERVATION COMMISSION

BEFORE EXAMINER UTZ

**Mobil Oil Corporation**

EXPLORATION AND PRODUCING DEPARTMENT  
MOLAND DIVISION

GRAPH OF DAILY OIL PRODUCTION  
BEGINNING 1959  
PROPOSED LANGLE-MATTIX QUEEN UNIT  
LANGLIE-MATTIX FIELD  
Lea County, New Mexico

SCALE

DATE 8-21-69  
DRAWN BY ARM  
CHECKED BY JWA  
APPROVED  
REVISED

Diagrammatic Well Sketch  
 Longlie-Mattix Queen Unit Well No. 7 W.W.W.  
 Longlie-Mattix (Queen) Field  
 Lea County, New Mexico

Elev. = 3,109' - 6.1.

13 1/4" - 15 1/4" PL Gr. NA. set w/ 150 ss  
 Min. Burst Press. N.A.

91'

BEST AVAILABLE COPY

*Cemented*

8 5/8" - 32 1/4" PL Sols set w/ 150 ss  
 Min. Burst Press. 2,850 psi

1,293'

BEFORE EXAMINER UTZ  
 OIL CONSERVATION COMMISSION  
 EXHIBIT NO. 7  
 CASE NO. 4002

17" 2 1/4" PL Gr. NA. set w/ 150 ss  
 Min. Burst Press. N.A.  
 Injection Packer & 2" GL 76g

3,100'  
 3,246'

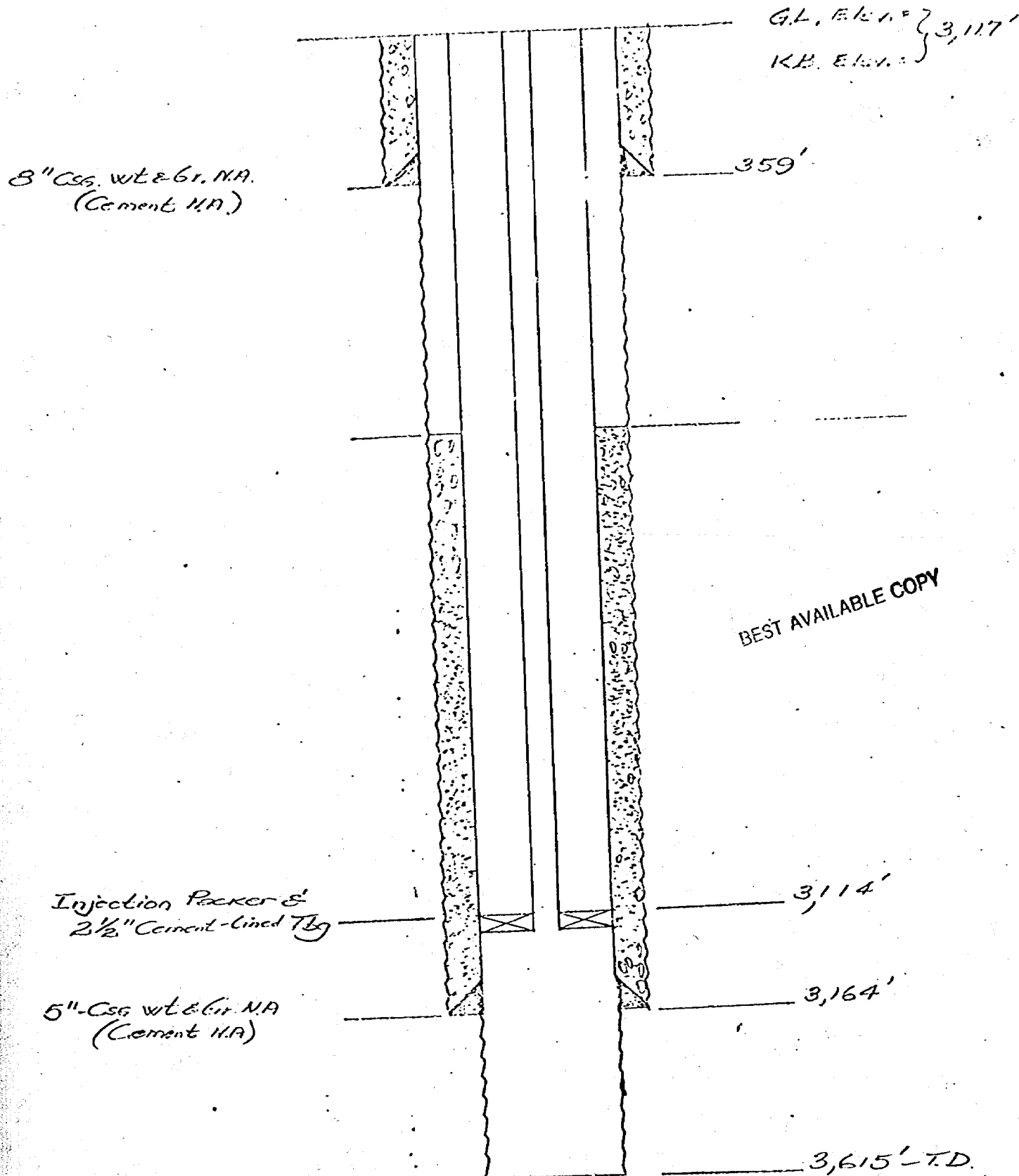
5 1/2" - 17 1/4" PL Gr. NA. set w/ 150 ss  
 Min. Burst Press. 5,200 psi

3,296'

3,540' - T.D.

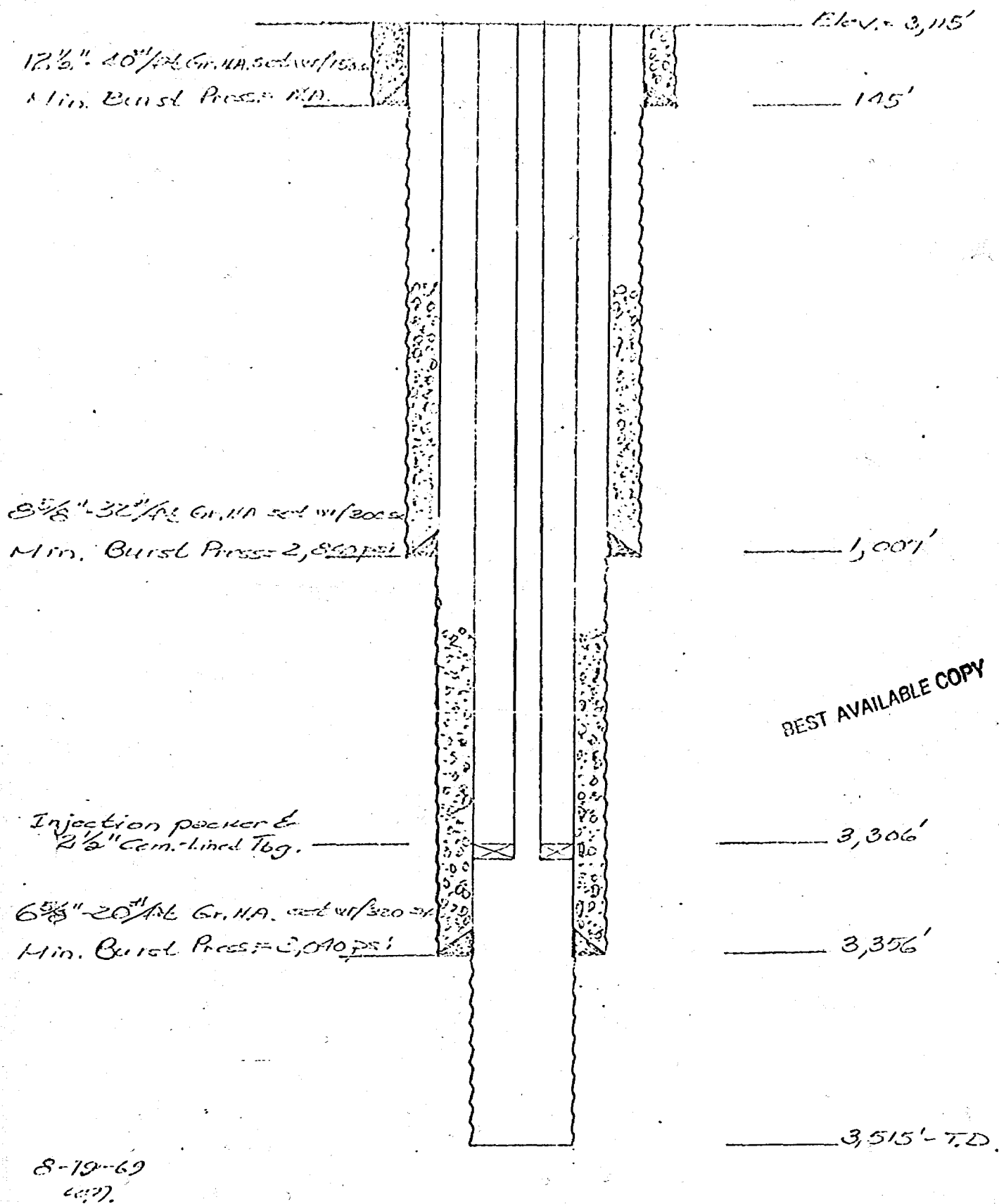
8-19-69  
 (127)

Diagrammatic Well Sketch  
 Langlie Mottix Queen Unit Well # 11 W.I.N.N.  
 Langlie Mottix (Queen) Field  
 Lea County, New Mexico



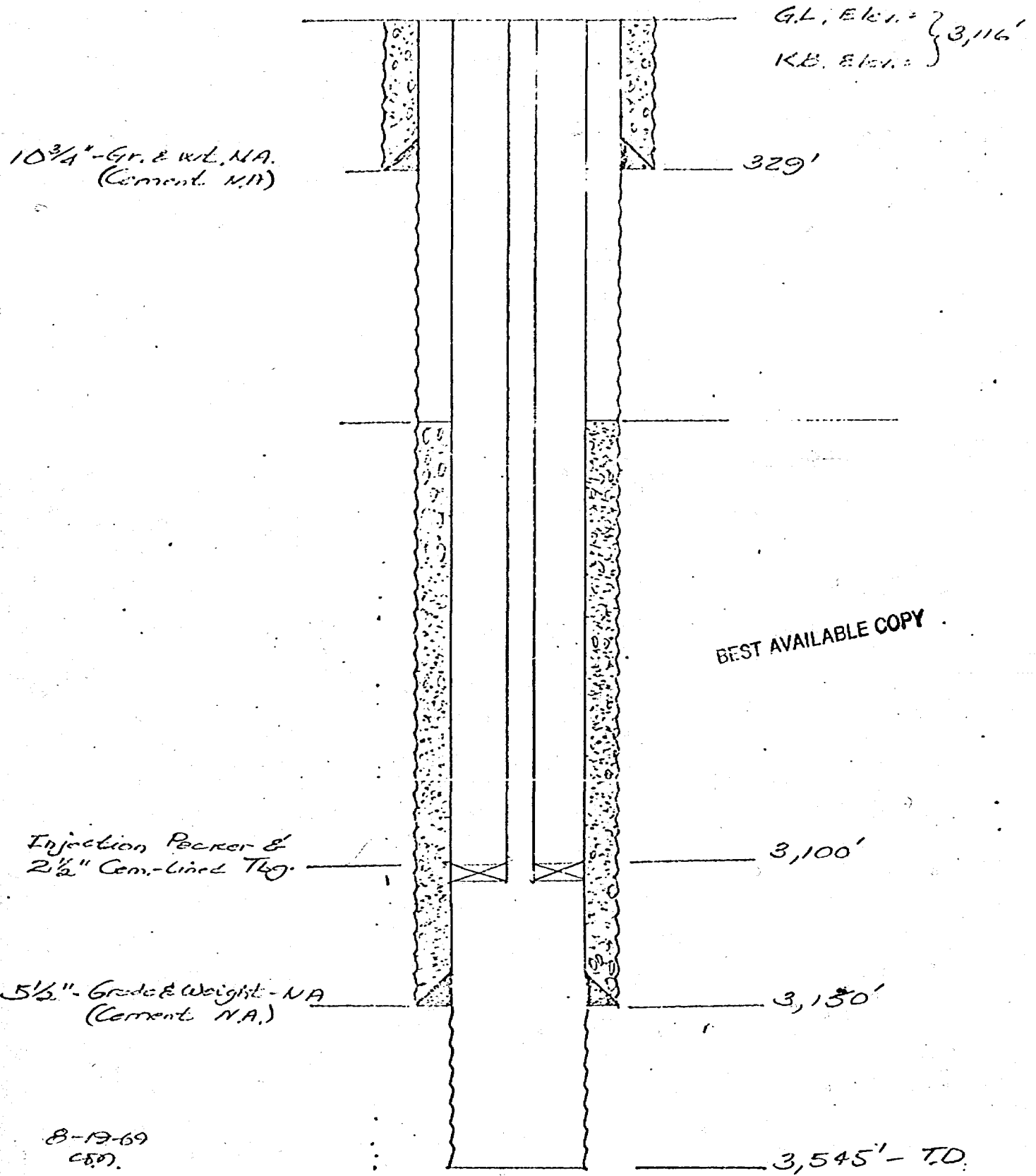
8-19-69  
 C.D.

Diagnostic Well Sketch  
 Longlie Mottie Queen Unit Well No. 13 W.W.  
 Longlie Mottie (Queen) Unit  
 Lea County, New Mexico

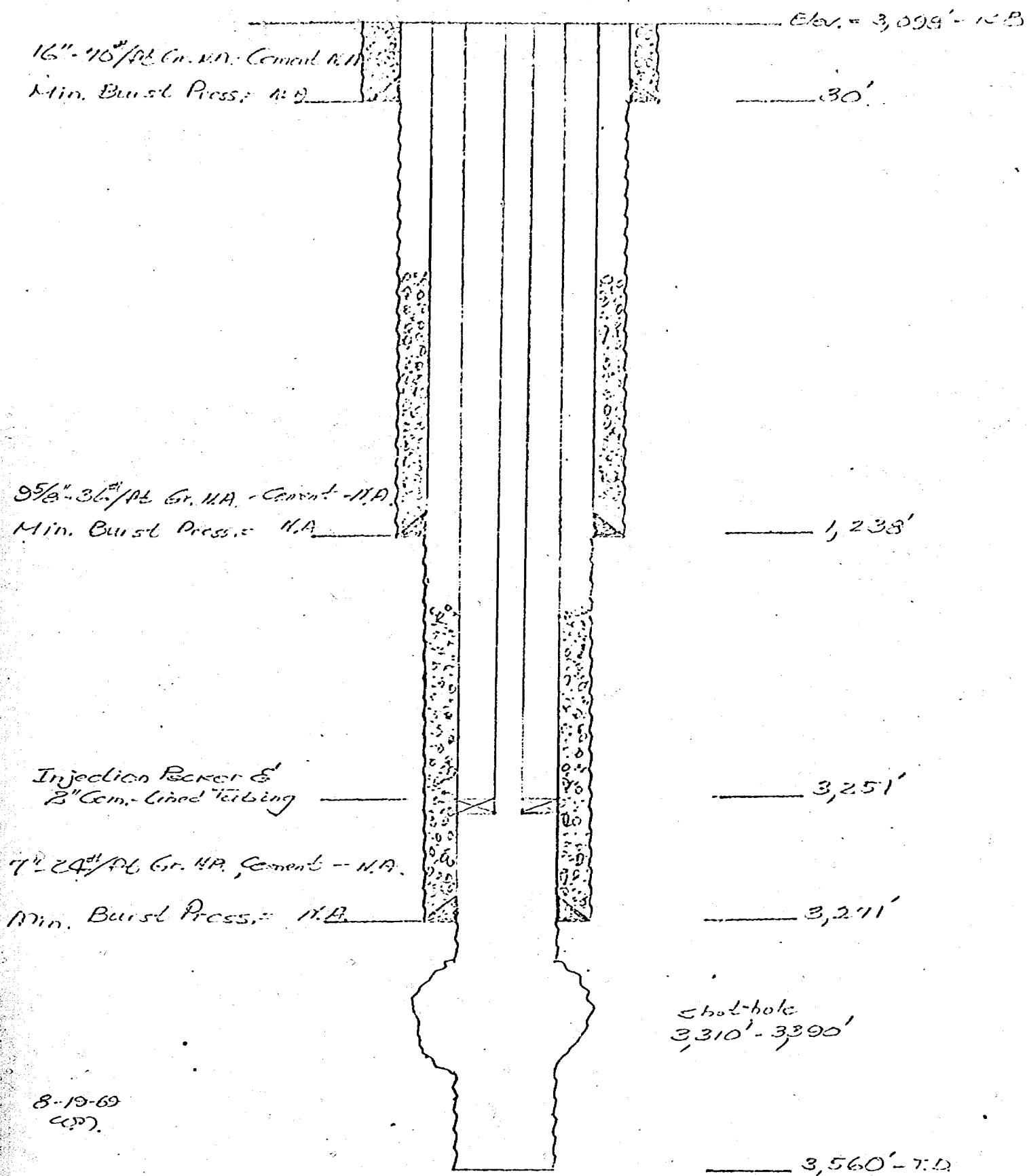


BEST AVAILABLE COPY

Diagrammatic Well Sketch  
Langlie Mottley Queen Unit Well No. 17 W.I.W.  
Langlie-Mottley (Queen) Field  
Lea County, New Mexico

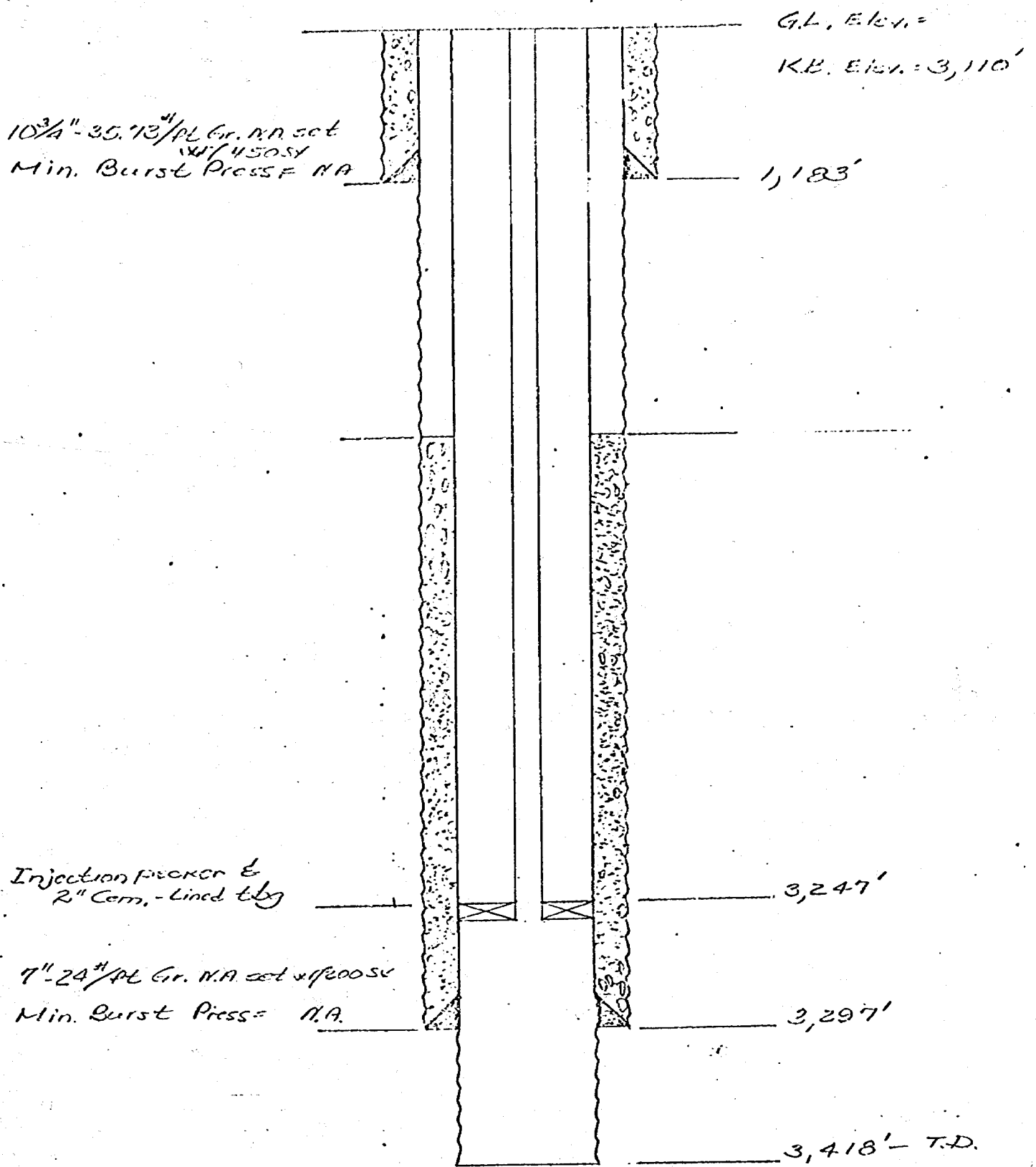


Diagrammatic Well Sketch  
 Longlie-Hottler Queen Unit Well No. 19. W.M.S.  
 Longlie-Hottler (Queen) Field  
 Lea County, New Mexico





Diagrammatic Well Schematic  
 Langlie-Mottley Queen Unit Well #21 W.W.  
 Langlie-Mottley (Queen) Field  
 Lea County, New Mexico



8-19-69  
 cm

Diagrammatic Well Sketch

Langlie-Mottix Queen Unit Well No. 25 W.M.

Langlie-Mottix (Queen) Field

Lea County, New Mexico

Elev. - 3,095' - G.L.  
3,096' - KB

13 3/8" - 45' PL Gr. NA Cement 45'

Min. Burst Press. 1730 psi

14'

7 5/8" - 26.4' PL Gr. NA - Cem. NA

Min. Burst Press. = NA

1,239'

Injection packer &  
2" Cement-lined Tbg.

3,150'

Perforations

3,200' - 3,237' w/2 spt

Total 74 holes

5 1/2" - 17' PL Gr. NA - Cement NA

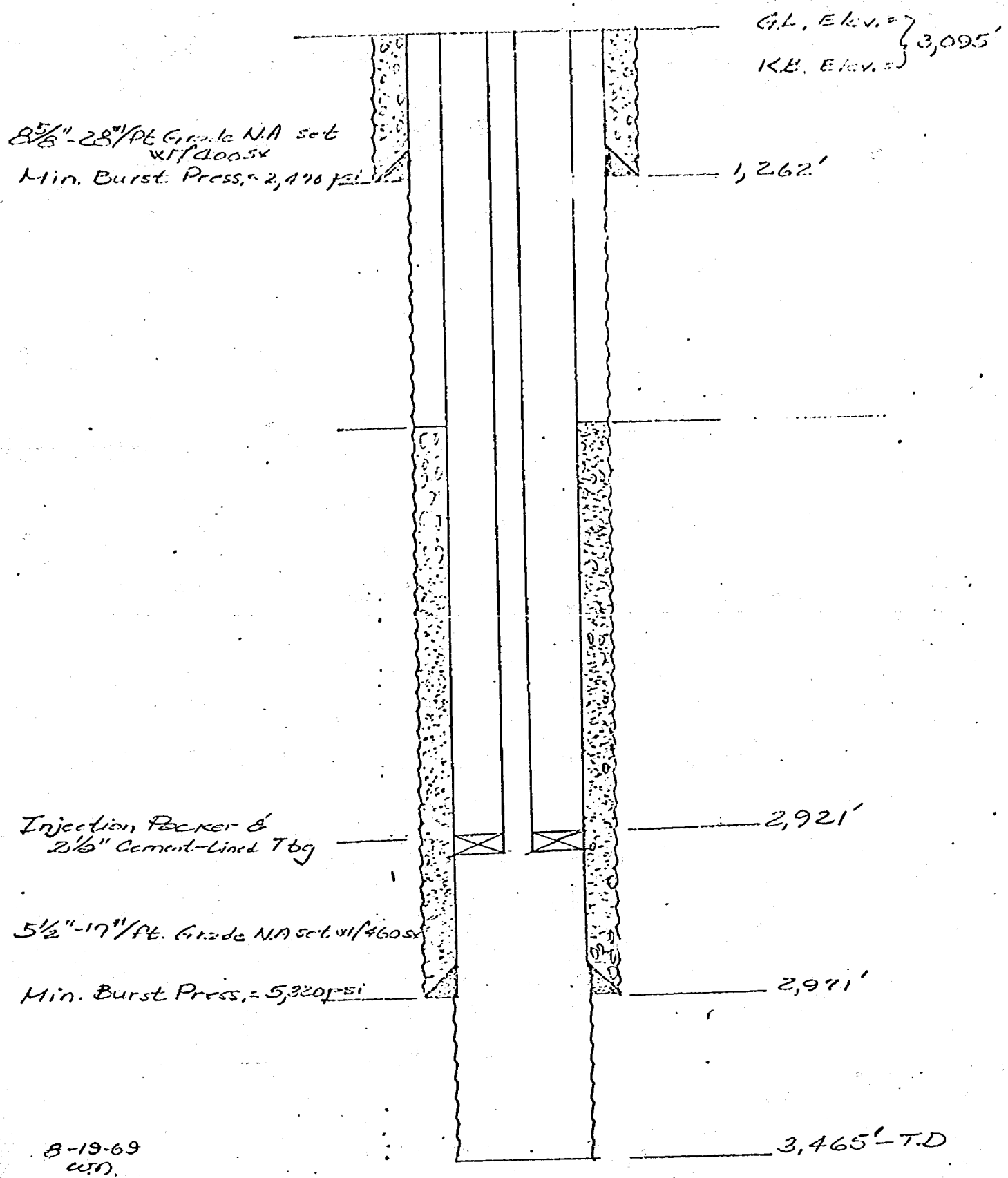
Min. Burst Press. = 5,220 psi

3,240'

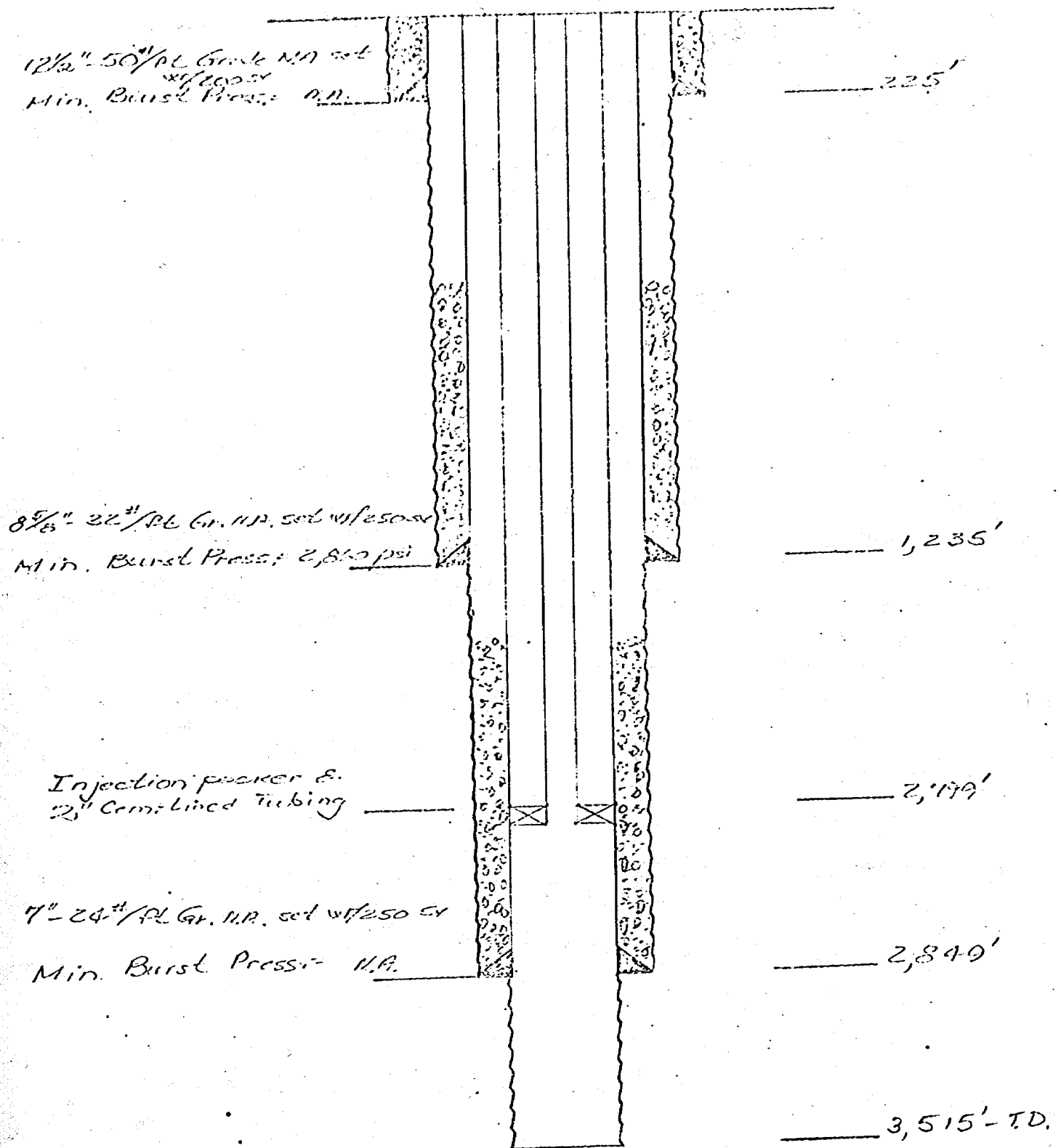
3,510' - T.D.

8-19-69  
C.M.

Diagrammatic Well Sketch  
 Langlie-Mattley Queen Unit Well No. 27 W.I.W.  
 Langlie-Mattley (Queen) Field  
 Lea County, New Mexico

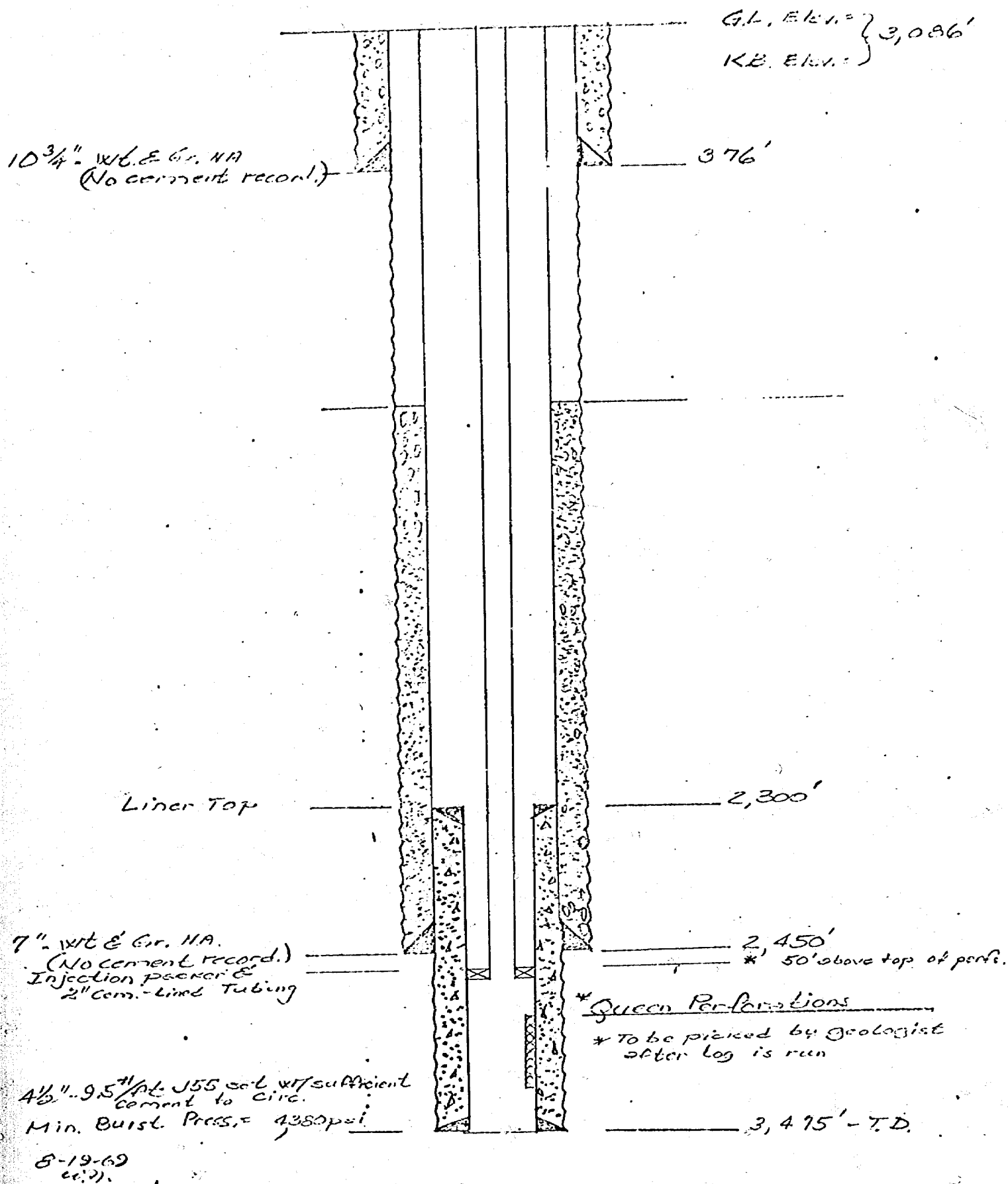


Diagrammatic Well Sketch  
 Langlie Mottly Queen Unit Well No. 30 W.W.  
 Langlie Mottly (Queen) Field  
 Lea County, New Mexico



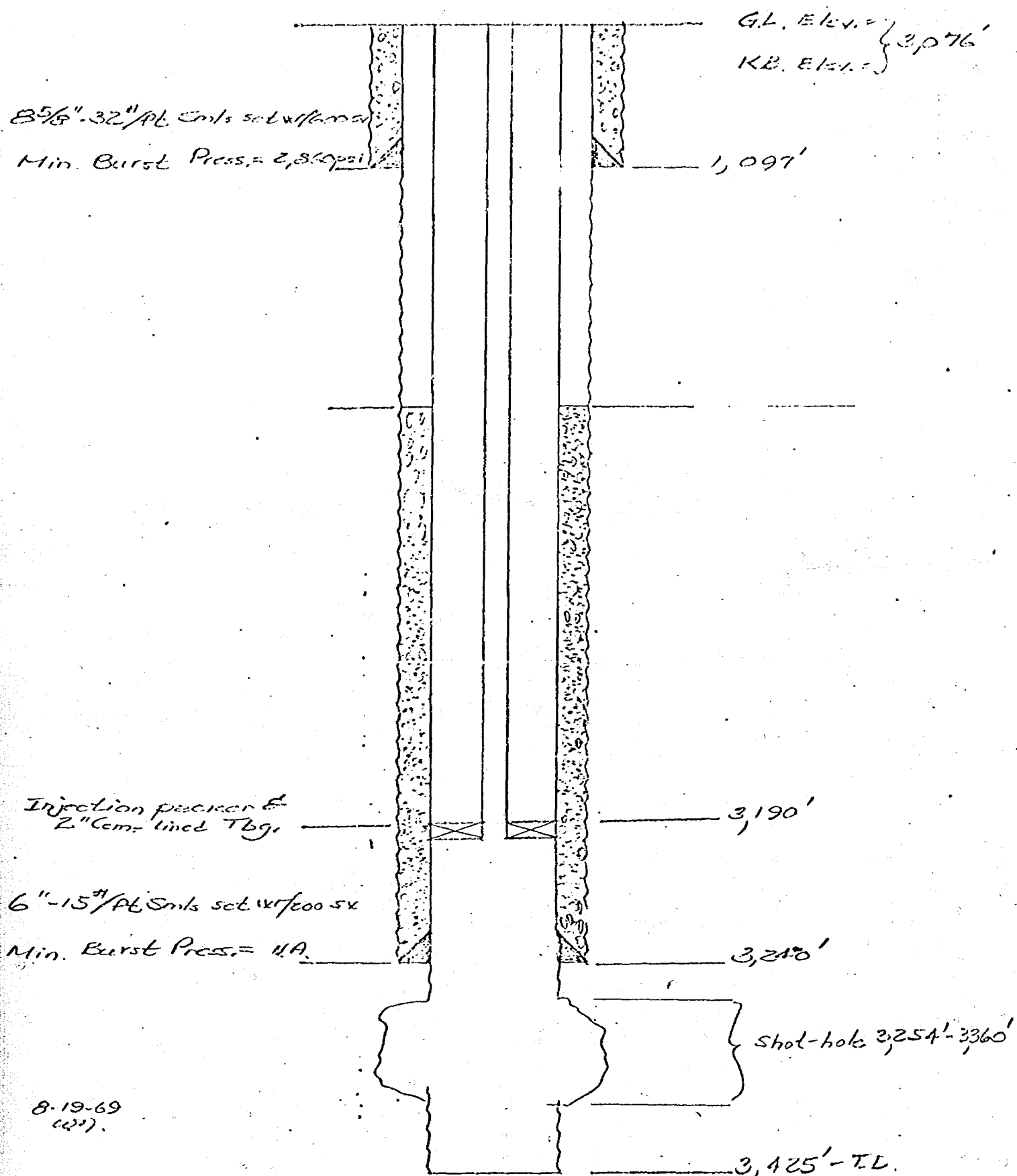
8-20-69  
 W.T.

Diagrammatic Well Sketch  
 Langlie-Mottix Queen Unit Well #31 W.N.W.  
 Langlie-Mottix (Queen) Field  
 Lea County, New Mexico



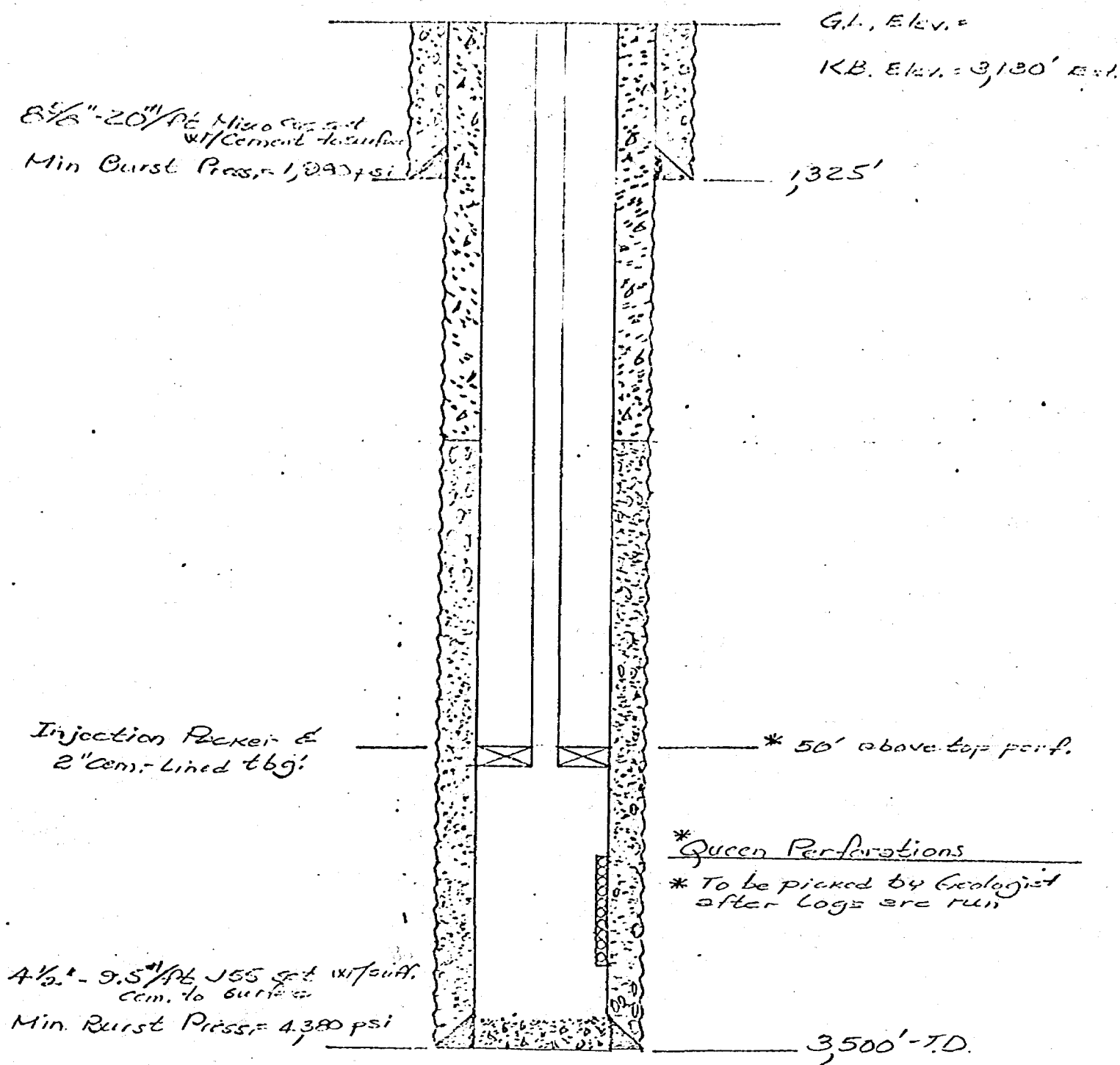
8-19-69  
 (C. J.)

Diagrammatic Well Sketch.  
 Langlie Mattie Queen Unit Well No. 35 Y.V.I.W.  
 Langlie Mattie (Queen) Field  
 Lea County, New Mexico



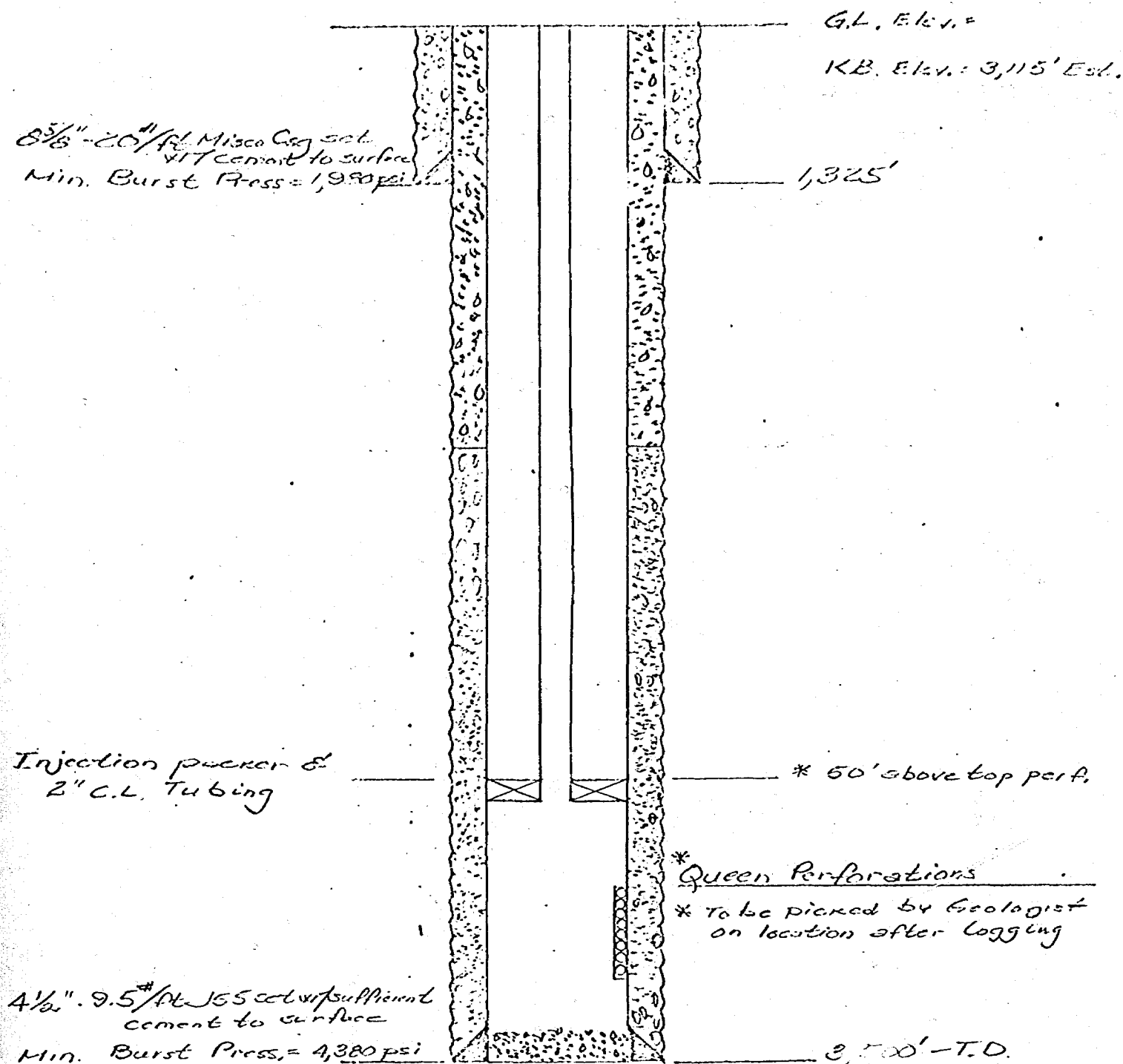
8-19-69  
 (27)

Diagrammatic Well Sketch  
 Langlie Mather Queen Unit Well No. 2 W.I.W.  
 Langlie - Mather (Queen) Field  
 Lea County, New Mexico



8-19-69  
 (W)

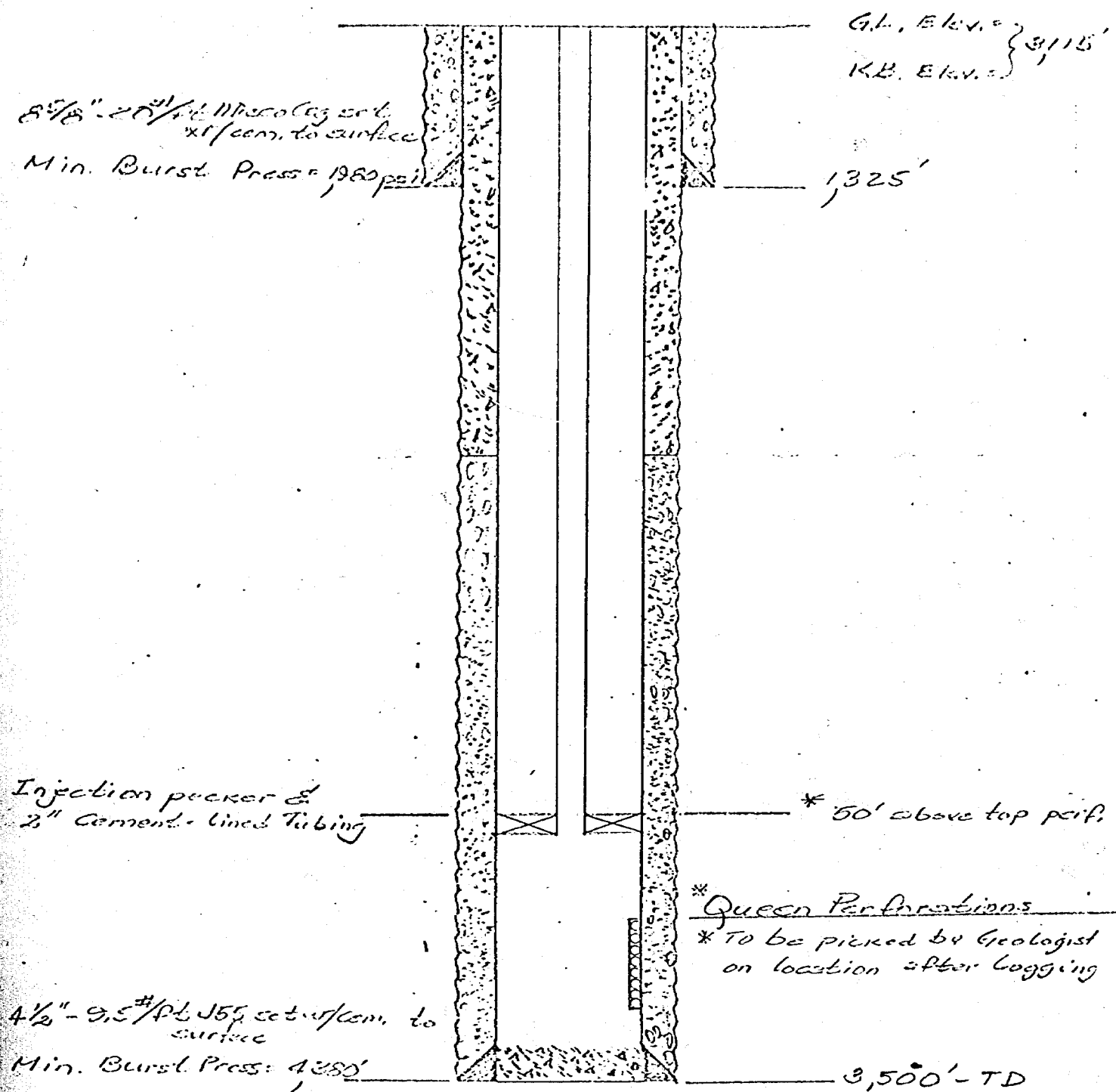
Diagrammatic Well Sketch  
 Longlie Mottley Queen Unit Well No. 3 W.I.W.  
 Longlie-Mottley (Queen) Field  
 Lea County, New Mexico



8-19-69  
 W.M.

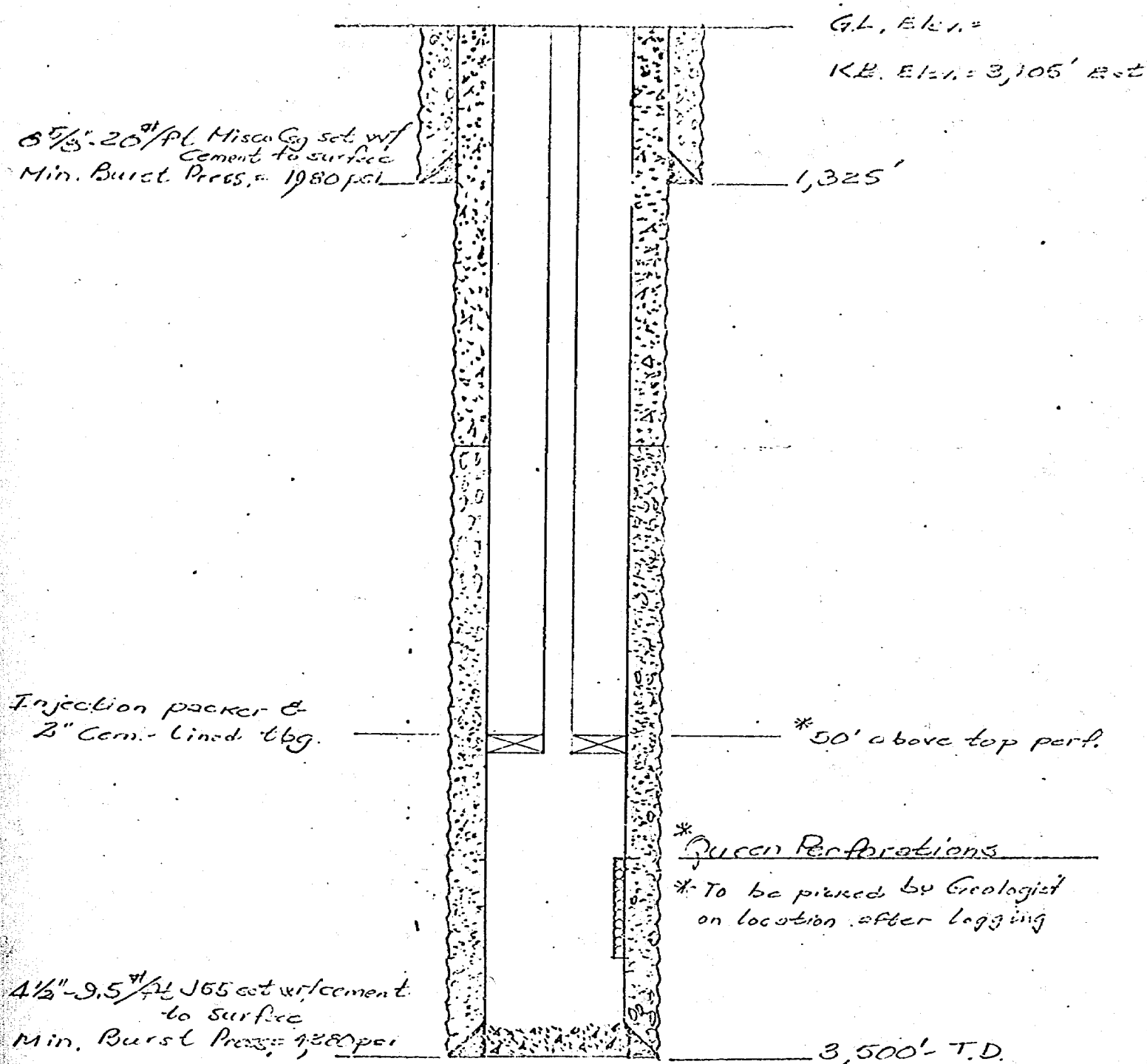


Diagrammatic Well Sketch  
 Langlio-Miller Queen Unit Well No. 14 W.I.W.  
 Langlio-Miller (Queen) Field  
 Lea County, New Mexico



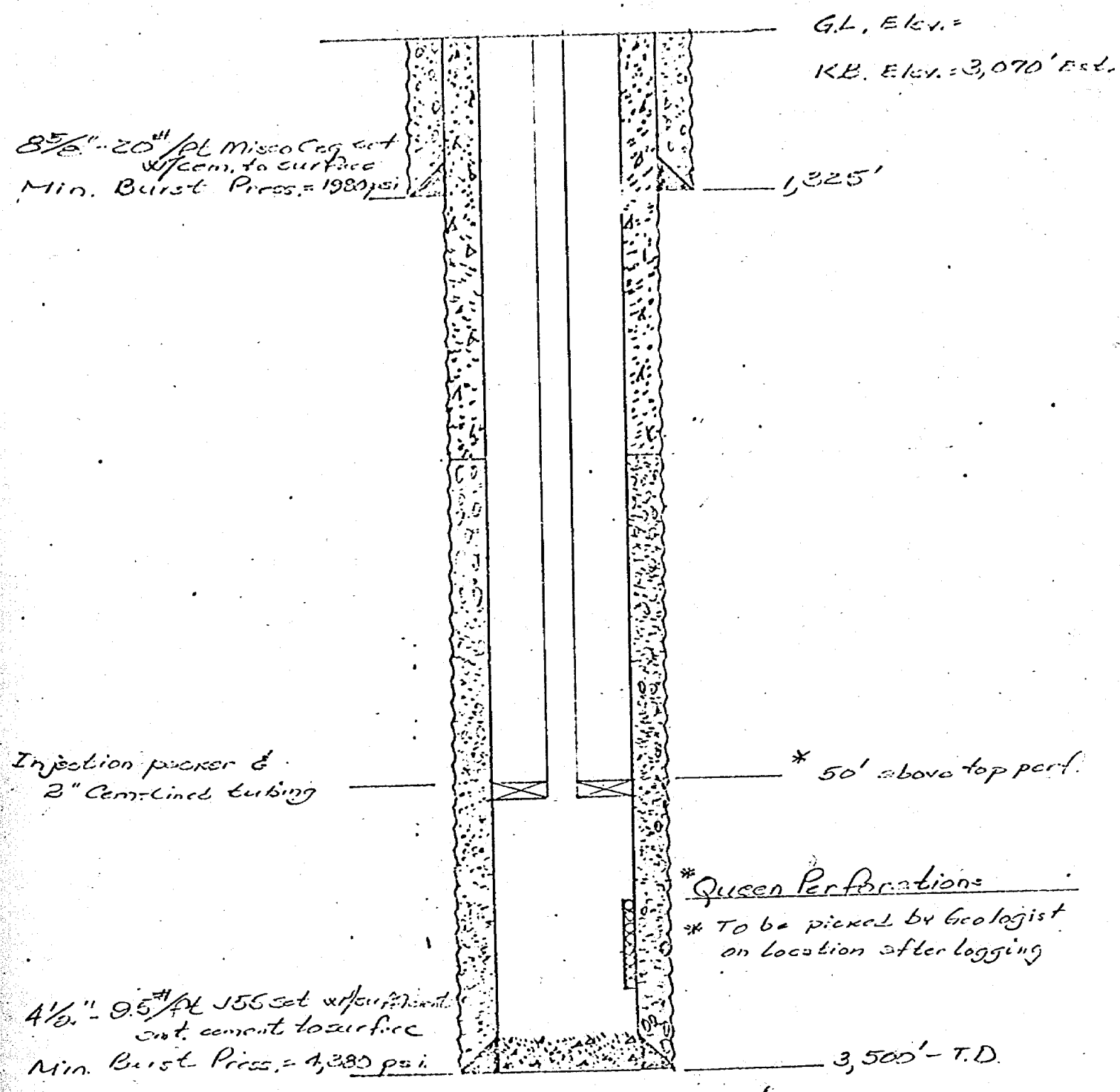
8-20-69  
 W.I.W.

Diagrammatic Well Sketch  
Langlie-Mattix Queen Unit Well No. 15 W.L.W.  
Langlie-Mattix (Queen) Field  
Lea County, New Mexico



8-20-69  
con.

Diagrammatic Well Sketch  
 Langlie-Mottix Queen Unit Well No. 28 W.W.  
 Langlie-Mottix (Queen) Field  
 Lea County, New Mexico



8-20-69  
 W.M.

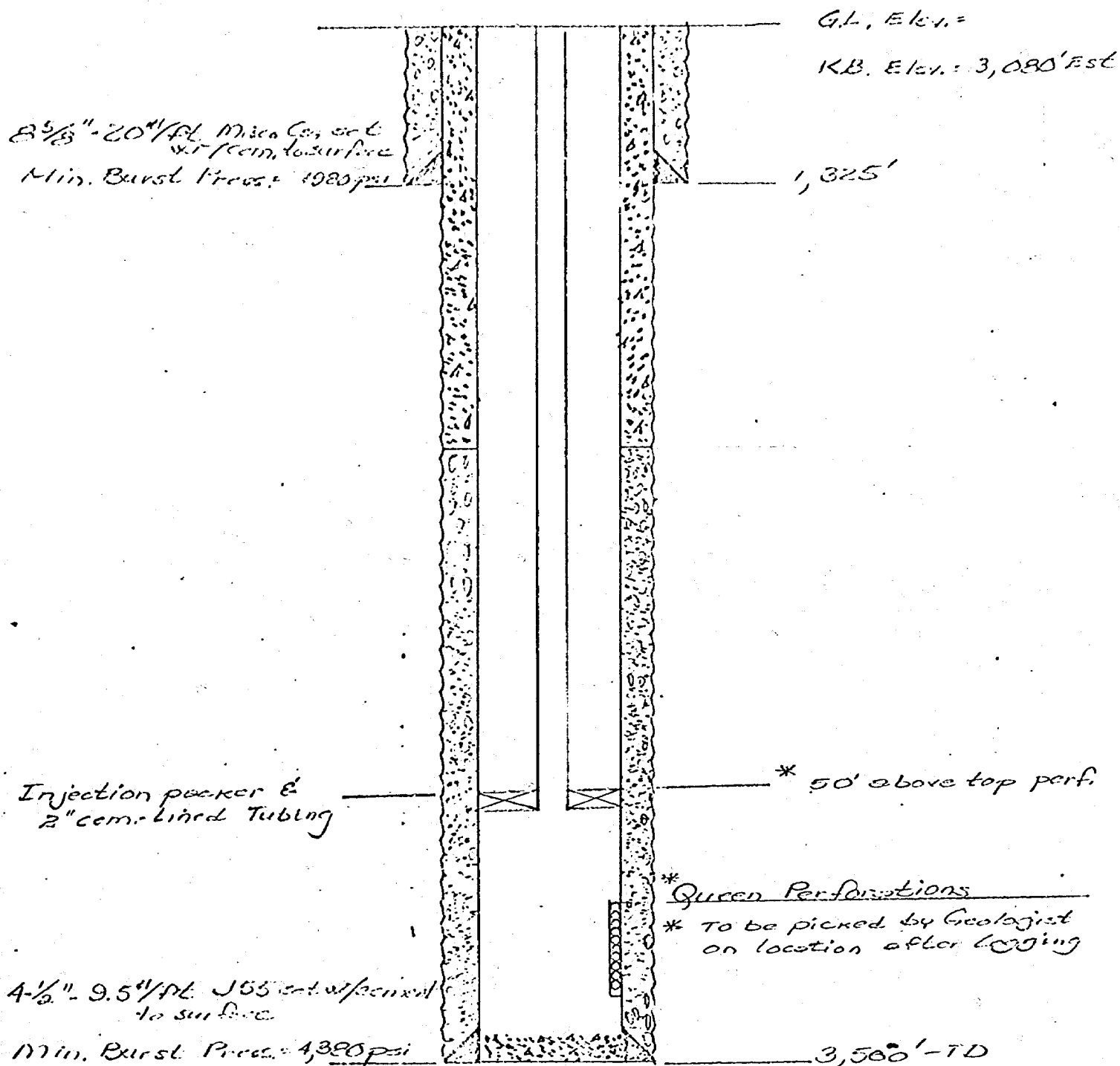
Diagrammatic Well Sketch

Langlie Mattie Queen Unit Well No. 32

W.I.W.

Langlie-Mattie (Queen) Field

Lea County, New Mexico



8-19-69  
copy

TABULATION OF PROPOSED  
WATER INJECTION WELLS  
MOBIL OIL CORPORATION'S  
LANGLIE-MATTIX QUEEN UNIT  
LANGLIE-MATTIX POOL  
LEA COUNTY, NEW MEXICO

*Case 1202  
3 = 3*

| CONVERSIONS   |                          | LOCATION |      |          |       |
|---------------|--------------------------|----------|------|----------|-------|
| UNIT WELL NO. | PREVIOUS WELL NAME & NO. | UNIT     | SEC. | TOWNSHIP | RANGE |
| 7             | Mobil's Stuart Tr. 1 #2  | P        | 10   | 25-S     | 37-E  |
| 11            | Mobil's Stuart Tr. 9 #1  | B        | 15   | 25-S     | 37-E  |
| 13            | Mobil's Stuart Tr. 5 #1  | D        | 14   | 25-S     | 37-E  |
| 17            | Mobil's Stuart Tr. 9 #4  | H        | 15   | 25-S     | 37-E  |
| 19            | Gulf's Westfall #2       | J        | 15   | 25-S     | 37-E  |
| 21            | Pan Am's Langlie "B" #4  | L        | 14   | 25-S     | 37-E  |
| 25            | Gulf's Elliott #1        | P        | 15   | 25-S     | 37-E  |
| 27            | Pan Am's Langlie "B" #3  | M        | 14   | 25-S     | 37-E  |
| 30            | Mobil's Stuart CORNER #1 | A        | 22   | 25-S     | 37-E  |
| 31            | Cities Service Dabbs #1  | D        | 23   | 25-S     | 37-E  |
| 35            | Cities Service Dabbs #2  | E        | 23   | 25-S     | 37-E  |

INJECTION WELLS TO BE DRILLED

| UNIT WELL NO. | SEC. LINE TIES                      | LOCATION     |               |                 |                 |
|---------------|-------------------------------------|--------------|---------------|-----------------|-----------------|
|               |                                     | UNIT         | SEC.          | TOWNSHIP        | RANGE           |
| 2             | 1440' FSL & 1220' FWL               | L            | 11            | 25-S            | 37-E            |
| 3             | 990' FSL & 890' FWL                 | M            | 10            | 25-S            | 37-E            |
| <del>14</del> | <del>660' FNL &amp; 1220' FWL</del> | <del>D</del> | <del>14</del> | <del>25-S</del> | <del>37-E</del> |
| 15            | 1980' FNL & 1730' FWL               | F            | 15            | 25-S            | 37-E            |
| 28            | 500' FNL & 2540' FEL                | B            | 22            | 25-S            | 37-E            |
| 32            | 2530' FNL & 2600' FEL               | G            | 22            | 25-S            | 37-E            |

*there are cases  
they are different  
from those already  
applied*

*Revised*

CRKreuz/mw  
8-20-69

TABULATION OF PRODUCTION  
ARCO (SINCLAIR) STUART A WELL NO. 1  
LANGLIE-MATTIX FIELD  
LEA COUNTY, NEW MEXICO

| <u>Operator</u>           | <u>Year</u> | <u>Bbls.<br/>Oil</u> | <u>MCF<br/>Gas</u> | <u>Bbls.<br/>Cum. Oil</u> |
|---------------------------|-------------|----------------------|--------------------|---------------------------|
| Carl B. King<br>Drig. Co. | 1938        | 15,257               |                    | 15,257                    |
|                           | 1939        | 17,102               |                    | 32,359                    |
| Western Natural<br>Gas    | 1940        | 3,314                |                    | 35,673                    |
|                           | 1941        | 2,641                |                    | 38,314                    |
|                           | 1942        | 3,954                |                    | 42,268                    |
|                           | 1943        | 2,708                |                    | 44,976                    |
|                           | 1944        | 2,483                |                    | 47,459                    |
|                           | 1945        | 2,088                |                    | 49,547                    |
|                           | 1946        | 2,038                |                    | 51,585                    |
|                           | 1947        | 845                  |                    | 52,430                    |
|                           | 1948        | 1,836                |                    | 54,266                    |
|                           | 1949        | 1,530                |                    | 55,796                    |
|                           | 1950        | 962                  |                    | 56,758                    |
|                           | 1951        | 2,040                |                    | 58,798                    |
|                           | 1952        | 1,457                |                    | 60,255                    |
|                           | 1953        | 792                  |                    | 61,047                    |
|                           | 1954        | -                    |                    | 61,047                    |
|                           | 1955        | -                    |                    | 61,047                    |
|                           | 1956        | -                    |                    | 61,047                    |
|                           | 1957        | -                    |                    | 61,047                    |
| Sinclair                  | 1958        | 917                  |                    | 61,964                    |
|                           | 1959        | 116                  | 37,720             | 62,080                    |
|                           | 1960        | -                    | 8,866              | 62,080                    |
|                           | 1961        | -                    | 5,787              | 62,080                    |
|                           | 1962        | -                    | 4,113              | 62,080                    |
|                           | 1963        | -                    | 1,235              | 62,080                    |
|                           | 1964        | -                    |                    | 62,080                    |
|                           | 1965        | -                    |                    | 62,080                    |
|                           | 1966        | -                    |                    | 62,080                    |
|                           | 1967        | -                    |                    | 62,080                    |
|                           | 1968        | -                    |                    | 62,080                    |

COMPLETION DATA:

Completed 2/15/38.  
7-5/8" surface pipe @ 961'.  
4-3/4" prod. str. @ 3271'.  
2' tbg. set through pkr @ 3395 (pkr @ 3300)

Shot w/140 qts @ 3326'-95'  
Acidized w/1000 gal

TD @ 3395  
Top pay 3305

PWKelly/kim  
7/31/69

*Case 4202*  
*E.H.B.*



**UNIT AGREEMENT**  
**LANGLIE - MATTIX QUEEN UNIT**  
**LEA COUNTY, NEW MEXICO**

*Dec 4201  
E/ #1*



UNIT AGREEMENT

LANGLIE-MATTIX QUEEN UNIT

LEA COUNTY, NEW MEXICO

|                   |  |
|-------------------|--|
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| Schedule of Ownership . . . . .           | Exhibit B |
| Schedule of Tract Participation . . . . . | Exhibit C |

UNIT AGREEMENT  
LANGLIE-MATTIX QUEEN UNIT  
LEA COUNTY, NEW MEXICO

I N D E X

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EXHIBIT A (Map of Unit Area)

EXHIBIT B (Schedule of Ownership)

EXHIBIT C (Schedule of Tract Participation)

UNIT AGREEMENT

LANGLIE-MATTIX QUEEN UNIT  
LEA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 1st day of August, 1969, by and between the parties subscribing, ratifying or consenting hereto, and herein referred to as "Parties hereto",

W I T N E S S E T H:

WHEREAS, the parties hereto are the owners of working, royalty or other oil or gas interests in the land subject to this Agreement; and

WHEREAS, the Oil Conservation Commission of the State of New Mexico is authorized by law (Chap. 72, Laws of 1935, as amended by Chap. 193, Laws of 1937, Chap. 166, Laws of 1941, and Chap. 168, Laws of 1949) to approve this Agreement, and the conservation provisions hereof; and

WHEREAS, the Mineral Leasing Act of February 25, 1920 (41 Stat. 437, as amended, 30 U.S.C. Sections 181 et seq.) authorizes Federal Lessees and their representatives to unite with each other or jointly or separately with others in collectively adopting and operating a cooperative or unit plan of development or operation of any oil or gas pool, field or like area or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the parties hereto hold sufficient interests in the Langlie-Mattix Queen Unit Area, comprised of land hereinafter described, to give reasonably effective control of operation therein; and

WHEREAS, it is the purpose of the parties hereto to enable institution and consummation of secondary recovery operations, conserve natural resources, to prevent waste and secure the other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions and limitations herein set forth:

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their respective interests in the Unitized Formation underlying the Unit Area (as those terms are defined hereinafter), and agree severally among themselves as follows:

SECTION 1. ENABLING ACT AND REGULATIONS: The Mineral Leasing Act of February 25, 1920, as amended, *supra*, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder and valid, pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this Agreement.

SECTION 2. UNIT AREA AND DEFINITIONS: The area described by tracts in Exhibit B and depicted on Exhibit A attached hereto is hereby designated and recognized as constituting the Unit Area, containing 1,040 acres, more or less, in Lea County, New Mexico. Said land is described as follows:

Township 25 South, Range 37 East, New Mexico Principal Meridian

Section 10: S/2 S/2

Section 11: W/2 SW/4

Section 14: W/2 W/2

Section 15: E/2 NW/4 and E/2

Section 22: NE/4

Section 23: W/2 NW/4

For the purpose of this Agreement, the following terms and expressions as used herein shall mean:

(a) "Commission" is defined as the Oil Conservation Commission of the State of New Mexico.

(b) "Director" is defined as the Director of the United States Geological Survey.

(c) "Secretary" is defined as the Secretary of the Interior of the United States of America or any other person duly authorized to exercise the powers vested in that office.

(d) "Department" is defined as the Department of the Interior of the United States of America.

(e) "Supervisor" is defined as the Oil and Gas Supervisor of the United States Geological Survey for the region in which the Unit Area is situated.

(f) "Unitized Formation" is defined as that stratigraphic interval underlying the Unit Area extending from a point 100' above the base of the Seven Rivers formation to the base of the Queen formation, said interval being more specifically the equivalent of the continuous interval occurring between the depths of 3,104 feet and 3,518 feet as shown on the Gamma-Ray Sonic log ran on January 1, 1964, in Gulf Oil Corporation's J. A. Stuart No. 9 well located 330 feet from the north and east lines of Sec. 10, T- 25 S., R. 37 E., Lea County, New Mexico. Said log was measured from a Kelly bushing elevation of 3,137 feet above sea level.

(g) "Unitized Substances" is defined as all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within the Unitized Formation underlying Unitized Land.

(h) "Working Interest" is defined as an interest in Unitized Substances by virtue of a lease, operating agreement, fee title, or otherwise, including a carried interest, the owner of which interest is chargeable with and obligated to pay or bear, either in cash or out of production or otherwise, all or a portion of the cost of drilling, developing, producing and operating the Unitized Formation; however, any carved-out interest created from a Working Interest subsequent to the effective date of this agreement shall continue to be subject to such Working Interest burdens and obligations as are stated in this agreement and the Unit Operating Agreement.

(i) "Working Interest Owner" is defined as a party hereto who owns a Working Interest.

(j) "Royalty Interest" is defined as a right to or interest in any portion of the Unitized Substances or proceeds thereof other than a Working Interest.

(k) "Royalty Owner" is defined as and shall mean the owner of a Royalty Interest.

(l) "Tract" is defined as each parcel of land described as such and given a Tract number in Exhibit B.

(m) "Tract Participation" is defined as the percentages of Unitized Substances allocated hereunder to a Tract during Phase I and Phase II, as hereinafter defined.

(n) "Unit Participation" of each Working Interest Owner is defined as the sum of the percentages obtained by multiplying each Working Interest Owner's fractional Working Interest in each Tract by the applicable Tract Participation of each Tract. However, for the purpose of Working Interest Owner voting rights under this Unit Agreement, Unit Participation shall mean Unit Participation during Phase II.

(o) "Phase I" is defined as that period of time beginning at 7:00 A.M. on the effective date hereof and continuing until 7:00 A.M. on the first day of the calendar month next following the recovery of a total of 23,000 barrels of oil produced on and after July 1, 1969, from the Unitized Formation underlying the Unit Area (as such area is depicted in the original Exhibit A).

(p) "Phase II" is defined as the remainder of the term of this Agreement after the end of Phase I.

(q) "Tract Current Revenue" is defined as the value (based on \$2.98/bbl. of oil and \$0.1175/MCF of gas), as determined by the Working Interest Owner, of the total oil and gas volumes produced from the Unitized Formation under such Tract during the period from January 1, 1968 to December 31, 1968, inclusively.

(r) "Unit Area Current Revenue" is defined as the total Tract Current Revenue of all Tracts that are qualified under this Agreement in accordance with the provisions hereof.

(s) "Tract Cumulative Primary Recovery" is defined as the cumulative total number of barrels of oil produced from the Unitized Formation under such Tract prior to January 1, 1969, as officially reported to the Commission.

(t) "Unit Area Cumulative Primary Recovery" is defined as the total Tract Cumulative Primary Recovery of all Tracts that are qualified under this Agreement in accordance with the provisions hereof.

(u) "Tract Surface Acres" is defined as the total number of acres within a Tract.

(v) "Unit Area Surface Acres" is defined as the total Tract Surface Acres of all Tracts that are qualified under this Agreement in accordance with the provisions hereof.

(w) "Unit Operating Agreement" is defined as any agreement or agreements (whether one or more entered into separately or collectively) by and between the Unit Operator and the Working Interest Owners as provided in Section 9, infra, and shall be styled "Unit Operating Agreement, Langlie-Mattix Queen Unit, Lea County, New Mexico".

(x) "Unit Manager" is defined as the person or corporation appointed by the Working Interest Owners to perform the duties of the Unit Operator until the selection and qualification of a successor Unit Operator as provided for in Section 8 hereof.

(y) "Paying Quantities" is defined as production of Unitized Substances in quantities sufficient to pay for the cost of producing same from wells on the Unitized Land.

(z) "Unit Operations" is defined as all operations conducted pursuant to this Agreement and the Unit Operating Agreement.

(aa) "Unit Equipment" is defined as all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for the joint account for use in Unit Operations.

(bb) "Unit Expense" is defined as all cost, expense, or indebtedness incurred by Working Interest Owners or Unit Operator pursuant to this Agreement and the Unit Operating Agreement for or on account of Unit Operations.

SECTION 3. EXHIBITS. Exhibit A, attached hereto, is a map showing the Unit Area and, to the extent known to Unit Operator, the boundaries and identity of Tracts and leases in said Unit Area. Exhibit B, attached hereto, is a schedule showing, to the extent known to Unit Operator, the acreage comprising each Tract, Land description, and the percentage and kind of ownership of oil and gas interests in each Tract in the Unit Area. Exhibit C, attached hereto, is a schedule showing the Tract Participation assigned to each Tract during both Phase I and Phase II. However, nothing herein or in said schedules or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedules as owned by such party. Exhibits A, B and C shall be revised by the Unit Operator whenever changes render such revision necessary or when requested by the Supervisor, and not less than four copies thereof shall be filed with the Supervisor.

SECTION 4. EXPANSION. The Unit Area may when practicable be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purposes of this Agreement. Such expansion shall be effected in the following manner:

- (a) The Working Interest Owner or Owners of a Tract or Tracts desiring to qualify such Tract or Tracts under this Agreement shall file an application therefor with Unit Operator requesting such admission.
- (b) Unit Operator shall circulate a notice of the proposed expansion to each Working Interest Owner in Unitized Land and in the Tract or Tracts proposed for inclusion in the Unit Area, setting out the basis for admission, the Tract Participation (both Phase I and Phase II) proposed to be assigned to each such Tract, and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise), if Working Interest Owners having a combined Unit Participation of eighty percent (80%) or more have agreed to the inclusion such Tract or Tracts under this Agreement, then Unit Operator shall:

- (1) After preliminary concurrence by the Director, prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the Phase I and Phase II Tract Participations to be assigned to each such Tract and the proposed effective date thereof; preferably 7:00 a.m. on the first day if a month subsequent to the date of notice; and

- (2) Deliver copies of said notice to the Supervisor, and to each Working Interest Owner, lessee, and lessor whose interests are affected, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

- (3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above with the Supervisor the following:

- (a) Evidence of mailing or delivering copies of said notice of expansion;
    - (b) An application in sufficient number for approval of such expansion;
    - (c) An instrument containing the appropriate joinders in compliance with the requirements of Sections 14 and 31 infra; and
    - (d) A copy of any objections received.



The expansion shall, after due consideration of all pertinent information and approval by the Commission and the Supervisor, become effective as of the date prescribed in the notice thereof, or on such other date as may be set by the Commission and the Supervisor in the order or instrument approving such expansion. The revised Tract Participations (both Phase I and II) of those Tracts which were qualified for participation under this Agreement prior to any such expansion shall remain in the same ratio one to the other.

SECTION 5. UNITIZED LAND AND UNITIZED SUBSTANCES. All land committed to this Agreement as to the Unitized Formation shall constitute land referred to herein as "Unitized Land" or "Land Subject to this Agreement". All oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within the Unitized Formation underlying Unitized Land are unitized under the terms of this Agreement and herein are called "Unitized Substances". Nothing herein shall be construed to unitize, pool or in any way affect the oil, gas and other minerals contained in or that may be produced from any formation other than the Unitized Formation as above defined.

SECTION 6. UNIT OPERATOR. Mobil Oil Corporation is hereby designated the Unit Operator, and by signing this instrument as Unit Operator it agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in Unitized Substances and the term "Working Interest Owner" when used herein shall include the Unit Operator as the owner of a Working Interest when such an interest is owned by it.

SECTION 7. RESIGNATION OR REMOVAL OF UNIT OPERATOR. Unit Operator shall have the right to resign at any time, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after written notice of intention to resign has been given by Unit Operator to all Working Interest Owners and the Supervisor, and until all Unit wells are placed in a condition satisfactory to the Supervisor for suspension,

abandonment, or operations, whichever is required by the Supervisor, unless a new Unit Operator shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

The Unit Operator shall, upon default or failure in the performance of its duties or obligations hereunder be subject to removal by vote of Working Interest Owners having a combined Unit Participation of eighty-five percent (85%) or more, exclusive of the Unit Participation of the Working Interest Owner who is the Unit Operator. Such removal shall be effective upon notice thereof to the Supervisor.

In all such instances of effective resignation or removal, until a successor to Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for the performance of the duties of the Unit Operator and shall, not later than thirty (30) days before such resignation or removal becomes effective, appoint a Unit Manager to represent them in any action to be taken hereunder.

The resignation or removal of Unit Operator under this Agreement shall not terminate its rights, title or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, books and records, materials, appurtenances and any other assets used in conducting the Unit Operations and owned by the Working Interest Owners to the new duly qualified successor Unit Operator or to the Unit Manager if no such new Unit Operator is elected, to be used for the purpose of conducting Unit Operations hereunder. Nothing herein shall be construed as authorizing the removal of any material, equipment or appurtenances needed for the preservation of any wells. Nothing herein contained shall be construed to relieve or discharge any Unit Operator who resigns or is removed hereunder from any liability or duties accruing to or performable by it prior to the effective date of such resignation or removal.

SECTION 8. SUCCESSOR UNIT OPERATOR. Whenever the Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, the Working Interest Owners shall select a successor Unit Operator as herein provided. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall have been approved by the Supervisor.

If no successor Unit Operator is selected and approved as herein provided, the Director, at his election, may declare this Agreement terminated.

In selecting a successor Unit Operator the affirmative vote of the Working Interest Owners having a combined Unit Participation of eighty percent (80%) or more shall prevail; provided, that if any one Working Interest Owner has a Unit Participation of more than twenty percent (20%), its negative vote or failure to vote shall not serve to disapprove the selection of a new Unit Operator approved by eighty-five percent (85%) or more of the voting interest of the remaining Working Interest Owners, and provided further that the Unit Operator shall not vote to succeed itself.

SECTION 9. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT. Costs and expenses incurred by Unit Operator in conducting Unit Operations hereunder shall be paid, apportioned among and borne by the Working Interest Owners in accordance with the Unit Operating Agreement. Such Unit Operating Agreement shall also provide the manner in which the Working Interest Owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases or other independent contracts and such other rights and obligations as between Unit Operator and the Working Interest Owners as may be agreed upon by the Unit Operator and the Working Interest Owners; however, no such Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement, and in case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Unit Agreement shall prevail. Three true copies of any Unit Operating Agreement executed pursuant to this Section shall be filed with the Supervisor prior to approval of this Unit Agreement.

SECTION 10. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR. Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Upon request, acceptable evidence of title to said rights shall be deposited with said Unit Operator, and together with this Agreement, shall constitute and define the rights, privileges and obligations of Unit Operator. Nothing herein, however, shall be construed to

transfer title to any land or to any lease or operating agreement it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

SECTION 11. PLAN OF OPERATIONS. It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances in paying quantities and that the object and purpose of this Agreement is to formulate and to put into effect a secondary recovery project in order to effect additional recovery of Unitized Substances, prevent waste and conserve natural resources. The parties hereto agree that the Unit Operator may, subject to the consent and approval of a plan of operation by the Working Interest Owners, the Supervisor and the Commission, inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil and any one or more other substances or combination of substances, whether produced from the Unitized Formation or not, and that the location of input wells and the rates of injection therein and the rate of production shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. After commencement of secondary operations, Unit Operator shall furnish the Supervisor with monthly injection and production reports for each Unit well. The Working Interest Owners and the Supervisor shall be furnished periodic reports on the progress of the plan of operation and any revisions or changes thereto necessary to meet changed conditions or to protect the interests of all parties to this Agreement, which revisions and changes shall be subject to approval by the Commission and the Supervisor. Subject to like approval the Plan of Operations may be revised as conditions may warrant.

The initial plan of operation shall be filed for approval with the Supervisor and the Commission concurrently with the filing of this Unit Agreement for final approval. Said initial plan of operation and all revisions thereof shall be as complete and adequate as the Supervisor and the Commission may determine to be necessary for timely operation consistent herewith. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of operation. Thereafter, from time to time before the expiration of any

existing plan, the Unit Operator shall submit for like approval a plan for an additional specified period of operation.

Notwithstanding anything to the contrary, herein contained, if Unit Operator fails to commence Unit Operations for the secondary recovery of Unitized Substances from the Unit Area within six (6) months after the effective date of this Agreement or any extension thereof approved by the Supervisor, this Agreement shall terminate automatically upon the expiration of said six (6) month period.

SECTION 12. EASEMENTS OR USE OF SURFACE. The parties hereto, to the extent of their rights and interest, hereby grant to Working Interest Owners the right to use as much of the surface of the land within the Unit Area as may reasonably be necessary for Unit Operations and for the removal of Unitized Substances from the Unit Area; provided, that nothing shall be construed as leasing or otherwise conveying to the Working Interest Owners a site for water, gas injection, processing or other plants, or a camp site. The parties hereto, to the extent they have the right to do so, hereby grant Unit Operator the right to use brine or water (or both) produced from any formation underlying the Unitized Land for injection into the Unitized Formation. The grant of this right shall not preclude the use of brine or water (or both) produced from any formation other than the Unitized Formation for injection into such other formations. Unit Operator shall not be entitled to take water from any well, lake, pond, or irrigation ditch belonging to a Royalty Owner without negotiating with such party for the use of such water.

SECTION 13. TRACT PARTICIPATION. In Exhibit C attached hereto, there are listed and numbered the various Tracts within the Unit Area, and set forth opposite each Tract are figures which represent the Tract Participation percentages allocated to that Tract, under both Phase I and Phase II, calculated on the basis of all Tracts within the Unit Area being committed to this Agreement as of the effective date hereof. The Tract Participation of each Tract within the Unit Area as set forth in Exhibit C have been calculated and determined in accordance with the factors and formula set out below, and such Tract Participations shall govern the allocation of Unitized Substances produced from the Unit Area from and after the effective date hereof, subject to any revision or revisions of the Unit Area or the Exhibits to this Agreement in accordance with the provisions hereof.

The percentage of Tract Participations set forth in Exhibit C for each Tract within the Unit Area have been calculated and determined in accordance with the following formula:

$$\begin{aligned} \text{Phase I} &= 100\% \frac{\text{Tract Current Revenue}}{\text{Unit Area Current Revenue}} \\ \text{Phase II} &= 93\% \frac{\text{Tract Cumulative Primary Recovery}}{\text{Unit Area Cumulative Primary Recovery}} \\ &+ 7\% \frac{\text{Tract Surface Acres}}{\text{Unit Area Surface Acres}} \end{aligned}$$

In the event less than all of the Tracts within the Unit Area are committed to this Agreement as of the effective date hereof, Unit Operator shall promptly prepare a revised Exhibit C setting forth opposite each of the qualified Tracts (as determined from Section 14 hereof, Tracts Qualified for Participation), the revised Tract Participations (both Phase I and Phase II), which shall be calculated and determined by using the factors and formula set forth in this section, but applying the same only to the qualified Tracts. Unit Operator shall promptly file copies of such revised Exhibit C with the Supervisor, and unless such revised Exhibit C is disapproved by the Supervisor within sixty (60) days after such filing, the revised Exhibit C shall be effective as of the effective date of this Agreement, and shall thereafter govern the allocation of all Unitized Substances subject to any further revision or revisions of Exhibit C in accordance with the provisions (Sections 3, 4, 30, and 31) hereof.

SECTION 14. TRACTS QUALIFIED FOR PARTICIPATION, On and after the effective date hereof the Tracts within the Unit Area that shall be entitled to participate in the production of Unitized Substances therefrom shall be those Tracts more particularly described in Exhibit B that corner or have a common boundary (Tracts separated only by a public highway or a railroad right-of-way shall be considered to have a common boundary), and that otherwise qualify as follows:

- (a) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest therein have become parties to this Agreement and as to which Royalty Owners owning seventy-five percent (75%) or more of the Royalty Interest therein have become parties hereto.

(b) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest therein have become parties hereto and as to which Royalty Owners owning less than seventy-five percent (75%) of the Royalty Interest therein have become parties hereto and, further, as to which: (1) All Working Interest Owners in any such Tract have joined in a request for the acceptance of such Tract as qualified for participation under this Agreement, and (2) Seventy-five percent (75%) of the combined "voting interests" of Working Interest Owners in all Tracts that meet the requirements of Section 14 (a) above have voted in favor of the acceptance of such Tract. For the purpose of this Section 14 (b) the "voting interest" of a Working Interest Owner shall be equal to the ratio expressed as a percentage that its Unit Participation in all Tracts which qualify under Section 14 (a) bears to the total Unit Participation of all Working Interest Owners in all Tracts which qualify under Section 14 (a).

(c) Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest therein have become parties hereto, regardless of the percentage of Royalty Interest therein that is committed hereto and, further, as to which: (1) The Working Interest Owner who operates the Tract and all other Working Interest Owners in such Tract who have become parties hereto have joined in a request for acceptance of such Tract and have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners that are parties hereto, their successors and assigns, against all claims and demands that may be made by the owners of Working Interests in such Tract who are not parties hereto and which arise out of the acceptance of the Tract as qualified for participation under this Agreement, and (2) Seventy-five percent (75%) or more of the combined "voting interest" of the Working Interest Owners in all Tracts that meet the requirements of Section 14 (a) and 14 (b) have voted in favor of the acceptance of such Tract. For the purpose of this Section 14 (c), the "voting interest" of each Working Interest Owner shall be equal to the ratio expressed as a percentage that its Unit Participation in all Tracts which qualify under Sections 14 (a) and 14 (b) bears to the total Unit Participation of all Working Interest Owners in all Tracts which qualify under Sections 14 (a) and 14 (b). Upon the acceptance of such a Tract as qualified for

participation under this Agreement, the Unit Participations (both Phase I and Phase II) which would have been attributed to the non-subscribing owners of the Working Interest in such Tract, had they become parties to this Agreement and the Unit Operating Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such Agreements in proportion to their respective Working Interests in the Tract.

As the objective of this Unit Agreement is to have lands in the Unit Area operated and entitled to participation under the terms hereof, it is agreed that, notwithstanding anything else herein, no joinder shall be considered a commitment to this Unit Agreement unless the Tract involved is qualified pursuant to this Section. The lessee of record shall supplant the Royalty Interest Owner with respect to Federal lands for qualification purposes under this Section.

If, on the effective date of this Agreement, there is any Tract or Tracts which have not been qualified as above provided, then such Tract or Tracts shall not be entitled to participate hereunder. Unit Operator shall, when submitting this Agreement for final approval by the Supervisor, file a schedule of those Tracts which are entitled to participate in the production of Unitized Substances. Said schedule shall set forth opposite each such qualified Tract the assigned Tract number, the lease number, the owner of record of the lease and the Tract Participation percentage which shall be computed according to the participation formula set out in Section 13 (Tract Participation) above.

SECTION 15. ALLOCATION OF UNITIZED SUBSTANCES. All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on Unitized Land for drilling, operating, camp, other production or development purposes and for pressure maintenance or unavoidably lost) shall be apportioned among and allocated to the qualified Tracts within the Unit Area in accordance with the respective Tract Participation effective hereunder during the respective periods, either Phase I or Phase II, in which such Unitized Substances are produced, as set forth in the schedule of participation in Exhibit C or any revision thereof. The amount of Unitized Substances so allocated to each Tract, and only that amount (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract) shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.



The Unitized Substances allocated to each Tract shall be distributed among or accounted for to the parties executing, consenting to or ratifying this Agreement entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions, as they would have participated and shared in the production from such Tract, or in the proceeds thereof, had this Agreement not been entered into, and with the same legal force and effect.

No Tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances, and nothing herein contained except as provided in Section 39 hereof, shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the joinder of any Tract.

If the Working Interest or Royalty Interest in any Tract, on or after the effective date hereof, is divided with respect to separate parcels or portions of such Tract and owned severally by different persons, the percentage Tract Participation (both Phase I and II) assigned to such Tract shall, in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each Tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of oil and gas rights therein or by purchase from such owners. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on Unitized Land, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto. Subject to Section 16, (Royalty Settlement), hereof, any extra expenditure incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the party responsible for the payment of such expense.

If any party fails to take in kind or separately dispose of its share of Unitized Substances, Unit Operator shall have the right but not the obligation,

for the time being and subject to revocation at will by the party owning the share, to purchase for its own account or sell to others such share; provided that, all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year and at not less than the prevailing market price in the area for like production. The proceeds of the Unitized Substances so disposed of by Unit Operator shall be paid to the party entitled thereto.

Any party receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any Tract or receiving the proceeds therefrom shall be responsible for making payment therefor to the parties entitled thereto, and shall indemnify all parties hereto, including Unit Operator, against any liability for all royalties, overriding royalties, production payments, and all other payments chargeable against or payable out of such Unitized Substances or the proceeds therefrom.

If, after the effective date of this Agreement, there is any Tract or Tracts that are subsequently committed hereto, as provided in Section 4 (Expansion) hereof, or any Tract or Tracts within the Unit Area not qualified hereunder as of the effective date hereof but which are subsequently qualified for participation under the provisions of Section 14 (Tracts Qualified for Participation) and Section 31 (Nonjoinder and Subsequent Joinder), or if any Tract is excluded from this Agreement as provided for in Section 30 (Loss of Title), the schedule of participation (both Phase I and II) as shown in Exhibit C, subject to Section 13 (Tract Participation) of Section 31 (Nonjoinder and Subsequent Joinder), whichever is appropriate, shall be revised by the Unit Operator and distributed to the Working Interest Owners and the Supervisor to show the new Tract Participation of all the then qualified Tracts; and the revised Exhibit C, upon approval by the Supervisor, shall govern all the allocation of Unitized Substances produced on and after the effective date thereof until the effective date of a new schedule so approved by the Supervisor. In any such revised Exhibit C pursuant to this paragraph, the Phase I and Phase II Tract Participations of the previously qualified Tracts shall remain in the same ratio one to the other.

SECTION 16. ROYALTY SETTLEMENT. The United States of America and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the substances produced from any Tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such Tract, and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for Royalty Interest not taken in kind shall be made by Working Interest Owners responsible therefor under existing contracts, laws and regulations, on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any royalty due under their leases, except that such royalty shall be computed in accordance with the terms of this Unit Agreement.

Royalty due to the United States shall be computed as provided in the operating regulations and paid in value or delivered in kind as to all Unitized Substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the rate specified in the respective Federal leases or at such lower rate or rates as may be authorized by law or regulation; provided, that for any Federal lease committed hereto on which the royalty rate depends on the daily average production per well, such average production shall be determined in accordance with the operating regulations as though the Unitized Land were a single consolidated lease.

If the amount of production or the proceeds thereof accruing to any Royalty Owner (except the United States of America) in a Tract depends upon the average production per well or the average pipeline run per well from such Tract during any period of time, then such production shall be determined from and after the effective date hereof by dividing the quantity of Unitized Substances allocated hereunder to such Tract during such period of time by the number of wells located thereon capable of producing as of the effective date hereof.

All royalty due Royalty Owners hereunder other than the United States shall be computed and paid on the basis of all Unitized Substances allocated to the respective Tract or Tracts qualified hereunder, in lieu of actual production from such Tract or Tracts.

Each Royalty Owner (other than the United States of America) that ratifies this Agreement represents and warrants that he is the owner of a Royalty Interest in a Tract or Tracts within the Unit Area as his interest appears in Exhibit B attached hereto. If any Royalty Interest in a Tract or Tracts should be lost by title failure or otherwise in whole or in part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interest of all parties in the affected Tract or Tracts shall be adjusted accordingly.

If gas obtained from lands or formation not subject to this Agreement is introduced into the Unitized Formation for use in repressuring, stimulation of production or increasing ultimate recovery in conformity with a plan of operation first approved by the Supervisor, a like amount of gas, less appropriate deduction for loss of depletion from any cause may be withdrawn from the Unitized Formation royalty free as to dry gas, but not as to the products extracted therefrom; provided, that such withdrawal shall be at such time and pursuant to such conditions and formulas as may be prescribed in the approved plan of operation or as may otherwise be consented to by the Supervisor as conforming to good petroleum engineering practices and provided further, that such right of withdrawal shall terminate on the termination date of this Unit Agreement.

SECTION 17. RENTAL SETTLEMENT. Rentals or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof, due under their leases. Rental or minimum royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America, unless such rental or minimum royalty is waived, suspended or reduced by law or by approval of the Secretary or his duly authorized representative.

SECTION 18. CONSERVATION Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to Federal and State laws and regulations.

SECTION 19. DRAINAGE The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

SECTION 20. LEASES AND CONTRACTS CONFORMED AND EXTENDED The terms, conditions and provisions of all leases, subleases and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect, and the parties hereto hereby consent that the Secretary, by his approval hereof, or by the approval hereof by his duly authorized representative, does hereby establish, alter, change or revoke the drilling, producing, rental, minimum royalty and royalty requirements of Federal leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this Agreement.

Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every part or separately owned Tract subject to this Agreement, regardless of whether there is any development of any particular part or Tract of the Unitized Land, notwithstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto or their respective predecessors in interest, or any of them.

(b) Drilling, producing or secondary recovery operations performed hereunder upon any Tract of Unitized Land shall be accepted and deemed to be performed upon and for the benefit of each and every Tract of Unitized Land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on land therein embraced.

(c) Suspension of drilling or producing operations on all Unitized Land pursuant to direction or consent of the Supervisor or his duly authorized representative, shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every Tract of Unitized Land.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development or operation for oil and gas which by its terms might expire prior to the termination of this Agreement is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Termination of this Agreement shall not affect any lease which, pursuant to the terms thereof or any applicable laws, shall continue in force and effect thereafter.

(f) Any lease which is made subject to this Agreement shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(g) The segregation of any Federal lease committed to this Agreement is governed by the following provision in the fourth paragraph of Section 17 (j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960, (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization: Provided, however, that any such lease as to the nonunitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in paying quantities." In the application of this provision the terms "Area" and "Lands" shall be the Unit Area as defined in the first paragraph of Section 2 hereof.

SECTION 21. MATHEMATICAL ERRORS. It is hereby agreed by all parties to this Agreement that Unit Operator is empowered to correct any mathematical or clerical errors which might exist in the pertinent exhibits to this Agreement upon approval by the Supervisor.

SECTION 22. COVENANTS RUN WITH LAND. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

SECTION 23. EFFECTIVE DATE AND TERM. This Agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective as of 7:00 A. M. of the first day of the calendar month next following:

(a) The execution or ratification of this Agreement and the Unit Operating Agreement by Working Interest Owners owning a combined Phase II Unit Participation of eighty percent (80%) or more, and the execution or ratification of this Agreement by Royalty Owners owning a combined interest of sixty-five percent (65%) or more of the Phase II Royalty Interest in said Unit Area; and

(b) The approval of this Agreement by the Commissioner and the Secretary or his duly authorized representative; and

(c) The filing of at least one counterpart of this Agreement for record in the office of the County Clerk of Lea County, New Mexico, by the Unit Operator; and provided, further, that if (a), (b) and (c) above are not accomplished on or before December 1, 1969, this Agreement shall ipso facto expire on said date (hereinafter called "expiration date") and thereafter be of no further force or effect, unless prior thereto this Agreement has been executed or ratified by Working Interest Owners owning a combined Unit Participation of seventy percent (70%) or more, and such Working Interest Owners

have voted to extend said expiration date for a period not to exceed twelve (12) months (hereinafter called "extended expiration date"). If said expiration date is so extended and (a), (b) and (c) are not accomplished on or before said extended expiration date, this Agreement shall ipso facto expire on said extended expiration date and thereafter be of no further force and effect.

Unit Operator shall, within thirty (30) days after the effective date of this Agreement, file for record in the office where a counterpart of this Agreement is recorded, a certificate to the effect that this Agreement has become effective according to its terms and stating further the effective date.

The term of this Agreement shall be for and during the time that Unitized Substances are or can be produced in paying quantities from the Unit Area and so long thereafter as drilling, reworking or other operations (including secondary recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days, and so long thereafter as such Unitized Substances can be produced as aforesaid, unless sooner terminated by Working Interest Owners in the manner hereinafter provided.

This Agreement may be terminated at any other time and for any other reason with the approval of the Supervisor by Working Interest Owners owning eighty-five percent (85%) or more of the Unit Participation. Notice of any such approved termination shall be filed with the County Clerk of Lea County, New Mexico, and given to all parties hereto by the Unit Operator within thirty (30) days after the effective date of termination.

Upon termination of this Agreement, Unit Operations shall cease and the parties hereto thereafter shall be governed by the terms and provisions of the leases and contracts affecting the separate Tracts.

If not otherwise provided by the leases unitized under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six (6) months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit Operations.



SECTION 24. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION. The Director is hereby vested with authority to alter or modify from time to time in his discretion the quantity and rate of production under this Agreement when such quantity and rate of production under this Agreement is not fixed pursuant to Federal or State law or does not conform to any statewide voluntary conservation or allocation program, which is established, recognized, and generally adhered to by the majority of operators in such State, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification. Without regard to the foregoing, the Director is also hereby vested with authority to alter or modify from time to time in his discretion the rate of prospecting and development and the quantity and rate of production under this Agreement when such alteration or modification is in the interest of attaining the conservation objectives stated in this Agreement and is not in violation of any applicable Federal or State law. No such alteration or modification shall be effective as to any privately-owned lands subject to this Agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Commission.

Powers in this Section vested in the Director and the Commission shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice.

SECTION 25. NONDISCRIMINATION. In connection with the performance of work under this Agreement, Unit Operator agrees to comply with all of the provisions of Section 202 (1) to (7) inclusive of Executive Order 11246, (30 F.R. 12319), which are hereby incorporated by reference in this Agreement.

SECTION 26. APPEARANCES. Unit Operator shall have the right to appear for or on behalf of any and all interests affected hereby before the Department and the Commission, and to appeal from any order issued under the rules and regulations of the Department or the Commission, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Department or the Commission, or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

SECTION 27. NOTICES. All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 28. NO WAIVER OF CERTAIN RIGHTS. Nothing in this Agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any Federal or State law, or rules and regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive; provided, however, that each party hereto covenants that during the term of this Agreement such party will not resort to any action at law or in equity to partition the Unit Area or the facilities used in the development or operation hereof and to that extent waives the benefits of all laws authorizing such partition.

SECTION 29. UNAVOIDABLE DELAY. All obligations under this Agreement requiring the Unit Operator to commence or continue secondary recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this Agreement shall be suspended while, but only so long as, the Unit Operator despite the exercise of due care and diligence is prevented from complying with such obligations, in whole or in part, by strikes, acts of God, Federal, State or municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

No Unit obligation which is suspended pursuant to this Section shall become due less than thirty (30) days after it has been determined that the suspension is no longer applicable. Determination of creditable "unavoidable delay" time shall be made by Unit Operator subject to the approval of the Supervisor.

SECTION 30. LOSS OF TITLE. In the event title to any Tract of Unitized Land shall fail so as to render the Tract inoperable under this Agreement and the true owner cannot be induced to join this Unit Agreement, such Tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In such event, Unit Operator shall recompute the Phase I and II Tract Participations of each of the Tracts remaining subject to this Agreement and shall revise Exhibit C accordingly. The revised Exhibit C shall be effective as of the first day of the calendar month in which such failure of title is finally determined. The Phase I and II participation percentages so recomputed for qualified Tracts shall remain the same ratio one to the other as before the loss of title was determined.

If title to a Working Interest fails, the rights and obligations of Working Interest Owners by reason of the failure of title shall be governed by the Unit Operating Agreement. If title to a Royalty Interest fails, but the Tract to which it relates remains qualified, the parties whose title failed shall not be entitled to share hereunder with respect to such interest. In the event of a dispute as to title as to any Royalty, Working Interest or other interest subject hereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided, that as to Federal land or leases, no payments of funds due the United States of America shall be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

SECTION 31. NONJOINDER AND SUBSEQUENT JOINDER. If the owner of any substantial interest in a Tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the Working Interest in that Tract may withdraw said Tract from this Agreement by written notice to the Supervisor and the Unit Operator prior to the approval of this Agreement by the Supervisor.

Any Oil and Gas Interest in the Unitized Formation not committed hereto prior to the effective date of this Agreement may thereafter be committed hereto upon compliance with the applicable provisions of this Section and of Section 14 (Tracts Qualified for Participation) hereof, at any time during a period of one (1) month after the effective date of the Unit Agreement on the same basis of participation as provided in Section 13, by the owner or owners thereof subscribing, ratifying or consenting in writing to this Agreement, and if the interest is a Working Interest, by the owner of such interest also subscribing to the Unit Operating Agreement.

It is understood and agreed, however, that after such one month period the right of subsequent joinder by a Working Interest Owner as provided in this Section shall be subject to such requirements or approval, as provided by the Unit Operating Agreement, if any, and on such equitable basis as may be agreed upon by Working Interest Owners having a combined Unit Participation of eighty percent (80%) or more with the approval of the Supervisor. To be effective such joinder must be accompanied by a joinder to the Unit Operating Agreement. After the aforementioned one-month period joinder by the owner of a Royalty Interest must be evidenced by his execution or ratification of this Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder in behalf of such Royalty Owner. Except as may be otherwise herein provided, subsequent joinder to this Agreement shall be effective at 7:00 A. M. of the first day of the month following the filing with the Supervisor of duly executed counterparts of any and all documents necessary to establish effective commitment of any Tract or interest to this Agreement, unless objection to such joinder by the Supervisor is duly made within sixty (60) days after such filing.

SECTION 32. COUNTERPARTS. This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the land within the above described Unit Area.

SECTION 33. JOINDER IN DUAL CAPACITY. Execution as herein provided by any party either as a Working Interest Owner or as a Royalty Owner shall commit all interests that may be owned or controlled by such party; provided, that if the party is the owner of a Working Interest he must also execute the Unit Operating Agreement.

SECTION 34. TAXES. Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the Unitized Land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No such taxes shall be charged to the United States nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

SECTION 35. CONFLICT OF SUPERVISION. Neither the Unit Operator nor the Working Interest Owners, nor any of them, shall be subject to any forfeiture, termination or expiration of any rights hereunder or under any leases or contracts subject hereto, or to any penalty or liability on account of delay or failure in whole or in part to comply with any applicable provisions hereof to the extent that the said Unit Operator or the Working Interest Owners, or any of them, are hindered, delayed or prevented from complying therewith by reason of failure of the Unit Operator to obtain, in the exercise of due diligence, the concurrence of proper representatives of the United States and/or proper representatives of the State of New Mexico in and about any matters or things concerning which it is required herein that such concurrence be obtained. The parties hereto, including the Commission, agree that all powers and authority which by any provisions of this Agreement are vested in the Commission shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico.

SECTION 36. BORDER AGREEMENTS. Unit Operator, with concurrence of Working Interest Owners having a combined Phase II Unit Participation of seventy-five percent (75%) or more, may, subject to approval of the Supervisor, enter into a border-protection agreement or agreements with the Working Interest Owners of adjacent lands along the exterior boundary of the Unit Area with respect to the operations in the border area for the maximum ultimate recovery, conservation purposes and proper protection of the parties and interests.

SECTION 37. PERSONAL PROPERTY EXCEPTED. All lease and well equipment, materials, and other facilities heretofore or hereafter placed by any of the Working Interest Owners on the lands subject to this Agreement shall be deemed to be and shall remain personal property belonging to such parties and may be removed by the Working Interest Owners. The rights and interests therein as among Working Interest Owners are covered by the Unit Operating Agreement.

SECTION 38. NO PARTNERSHIP. The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This Agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

SECTION 39. OIL IN LEASE TANKAGE ON EFFECTIVE DATE. Unit Operator shall make a proper and timely gauge of all lease and other tanks on the Unitized Land in order to ascertain the amount of merchantable oil above the pipe line connection in such tanks as of 7:00 A. M. on the effective date hereof. All such oil which has then been produced legally as a part of prior allowables of the well or wells from which produced shall be and remain the property of the Interest Owners entitled thereto the same as if this Unit had not been formed; and the Working Interest Owner responsible therefor shall promptly remove said oil from the Unitized Land. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owner under the terms and provisions of this Agreement and shall be, subject to the payment of all royalty to Royalty Owners under the terms and provisions of the applicable lease or leases and other contracts affected. All such oil as

is in excess of the prior allowable of the well or wells from which the same was produced shall be regarded and treated the same as Unitized Substances produced after the effective date hereof. If, as of the effective date hereof, any Tract is overproduced with respect to the allowable of the well or wells on that Tract and the amount of such overproduction has been sold or otherwise disposed of, such overproduction shall be regarded and included as a part of the Unitized Substances produced after the effective date hereof and the amount thereof charged to such Tract as having been delivered to the persons entitled to Unitized Substances allocated to such Tract.

SECTION 40. LIEN OF UNIT OPERATOR. Unit Operator shall have a lien upon the interests of Working Interest Owners in the Unit Area to the extent provided in the Unit Operating Agreement.

SECTION 41. LIMITATION OF APPROVALS. Notwithstanding anything herein contained to the contrary, if no Federal lands are committed to this Agreement, then no consents or approvals provided herein shall be required of the Department, the Secretary, the Director, or the Supervisor; and it shall not be necessary to file any instrument hereunder with said offices or agencies unless and until Federal lands are committed to this Agreement."

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date first above written and have set opposite their respective names the date of execution.

MOBIL OIL CORPORATION

By \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 1969, by \_\_\_\_\_, \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf of said corporation.

My Commission Expires:

\_\_\_\_\_

Notary Public

\*\*\*\*\*

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 1969, by \_\_\_\_\_, \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf of said corporation.

My Commission Expires:

\_\_\_\_\_

Notary Public

\*\*\*\*\*

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 1969, by \_\_\_\_\_.

My Commission Expires:

\_\_\_\_\_

Notary Public

\*\*\*\*\*

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 1969, by \_\_\_\_\_.

My Commission Expires:

\_\_\_\_\_

Notary Public





EXHIBIT B  
TO  
UNIT AGREEMENT  
LANGLIE-MATTIX QUEEN UNIT  
LEA COUNTY, NEW MEXICO

| TRACT<br>NUMBER                                            | DESCRIPTION                      | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|------------------------------------------------------------|----------------------------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
| FEDERAL LANDS                                              |                                  |                    |                                   |                  |                  |                                        |                                      |
| 1                                                          | Township 25 South, Range 37 East | 120                | LC-032511-(b)                     | U.S.A. A11       | Pan American     |                                        | Pan American                         |
|                                                            | Section 14: W/2 SW/4             |                    | 6-30-76                           | (Schedule D)     | Petroleum Corp.  |                                        | Petroleum Corp.                      |
|                                                            | Section 15: SE/4 NW/4            |                    |                                   |                  |                  |                                        | 100%                                 |
| Total: One Federal Tract - 120 Acres or 11.5% of Unit Area |                                  |                    |                                   |                  |                  |                                        |                                      |

|           |                                  |    |     |                            |                 |                 |                 |
|-----------|----------------------------------|----|-----|----------------------------|-----------------|-----------------|-----------------|
| FEE LANDS |                                  |    |     |                            |                 |                 |                 |
| 2         | Township 25 South, Range 37 East | 40 | HBP | Jessie B. Crump            | Mobil Oil Corp. | Gordon M. Cone  | Mobil Oil Corp. |
|           | Section 11: NW/4 SW/4            |    |     | 7.1428                     |                 | .0078125        | 100%            |
|           |                                  |    |     | Joe & Jessie Crump Fund    |                 | June D. Speight |                 |
|           |                                  |    |     | 7.1428                     |                 | .0234375        |                 |
|           |                                  |    |     | Eunice Gray                |                 |                 |                 |
|           |                                  |    |     | 1.7857                     |                 |                 |                 |
|           |                                  |    |     | Hendrick Memorial Hospital |                 |                 |                 |
|           |                                  |    |     | 14.2858                    |                 |                 |                 |
|           |                                  |    |     | Mattie H. James            |                 |                 |                 |
|           |                                  |    |     | 3.5714                     |                 |                 |                 |
|           |                                  |    |     | Nelson H. James            |                 |                 |                 |
|           |                                  |    |     | 1.7857                     |                 |                 |                 |
|           |                                  |    |     | J. Hiram Moore             |                 |                 |                 |
|           |                                  |    |     | 17.8570                    |                 |                 |                 |
|           |                                  |    |     | John J. Moran              |                 |                 |                 |
|           |                                  |    |     | 14.2858                    |                 |                 |                 |
|           |                                  |    |     | Richard J. Moran, Exec     |                 |                 |                 |
|           |                                  |    |     | of Estate of W. J. Moran   |                 |                 |                 |
|           |                                  |    |     | 14.2858                    |                 |                 |                 |
|           |                                  |    |     | Charles Pfile              |                 |                 |                 |
|           |                                  |    |     | 14.2858                    |                 |                 |                 |
|           |                                  |    |     | J. Don Wiet                |                 |                 |                 |
|           |                                  |    |     | 3.5714                     |                 |                 |                 |

| TRACT<br>NUMBER | DESCRIPTION                                               | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC                                                           |         | LESSEE OF RECORD    | OVERRIDING ROYALTY |        | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-----------------------------------------------------------|--------------------|-----------------------------------|-----------------------------------------------------------------|---------|---------------------|--------------------|--------|--------------------------------------|
|                 |                                                           |                    |                                   | ROYALTY                                                         | ROYALTY |                     | OWNER AND AMOUNT   | AMOUNT |                                      |
| 3               | Township 25 South, Range 37 East<br>Section 11: SW/4 SW/4 | 40                 | HBP                               | Gordon M. Cone<br>8.3334                                        |         | Mobil Oil Corp. 1/2 |                    |        | Mobil Oil Corp.<br>50%               |
|                 |                                                           |                    |                                   | Marjorie C. Kastman, Gdn<br>of Est. of S. E. Cone<br>16.6666    |         | Gordon M. Cone 1/4  |                    |        | Gordon M. Cone<br>25%                |
|                 |                                                           |                    |                                   | First Natl. Bank of<br>Artesia, N. M.<br>2.0834                 |         | Hugh Corrigan 1/4   |                    |        | Hugh Corrigan<br>25%                 |
|                 |                                                           |                    |                                   | Wm. Flynn Ind. & as Adm. of<br>Est. of Alice H. Flynn<br>2.6042 |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | William D. Flynn<br>2.6042                                      |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | B. B. Ginsberg<br>1.5000                                        |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | J. H. Herd<br>3.7500                                            |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | William B. Johnston<br>0.5000                                   |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Donald L. Jones<br>4.1666                                       |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Estelle Andrews Mehltrop<br>10.4167                             |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Rosalind Redfern<br>3.7500                                      |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | J. Cecil Rhodes<br>10.4166                                      |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Roy K. Stovall<br>7.5000                                        |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Mary Ella Stuart<br>12.1666                                     |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | V. S. Welch<br>2.6042                                           |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Harvey E. Yates<br>2.0833                                       |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | John A. Yates<br>2.0834                                         |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Martin Yates, Jr.<br>2.6042                                     |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | Martin Yates, III<br>2.0833                                     |         |                     |                    |        |                                      |
|                 |                                                           |                    |                                   | S. P. Yates<br>2.0833                                           |         |                     |                    |        |                                      |

| TRACT<br>NUMBER | DESCRIPTION                                               | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY                                                                                      | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-----------------------------------------------------------|--------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------|------------------|----------------------------------------|--------------------------------------|
| FEE LANDS       |                                                           |                    |                                   |                                                                                                       |                  |                                        |                                      |
| 4               | Township 25 South, Range 37 East<br>Section 10: S/2 SE/4  | 80                 | HBP                               | Amerada Petroleum Corp<br>31.2499                                                                     | Mobil Oil Corp.  | Scope Industries<br>.109375            | Mobil Oil Corp.<br>100%              |
|                 |                                                           |                    |                                   | Bank of the Southwest<br>National Association<br>Houston Trustee U/W of<br>Hubert E. Clift<br>11.7932 |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Bank of the Southwest<br>National Association<br>Houston Trustee for<br>Jeannette C. Clift<br>11.7932 |                  |                                        |                                      |
|                 |                                                           |                    |                                   | San Angelo Natl. Bank<br>Indep. Exec. U/W of the<br>Est. of Lorraine Liftwich<br>11.7932              |                  |                                        |                                      |
|                 |                                                           |                    |                                   | San Angelo Natl. Bank<br>Successor Tr of the Ralph<br>W. Leftwich Trust<br>11.7932                    |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Sabine Royalty Corp.<br>21.5773                                                                       |                  |                                        |                                      |
| 5               | Township 25 South, Range 37 East<br>Section 10: SE/4 SW/4 | 40                 | HBP                               | Amerada Petroleum Corp<br>25.0000                                                                     | Mobil Oil Corp.  | Scope Industries<br>.109375            | Mobil Oil Corp.<br>100%              |
|                 |                                                           |                    |                                   | Charles T. Bates, Jr.<br>0.5555                                                                       |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Docia Bates<br>1.9445                                                                                 |                  |                                        |                                      |
|                 |                                                           |                    |                                   | James Ray Bates<br>0.5555                                                                             |                  |                                        |                                      |
|                 |                                                           |                    |                                   | K. C. Bates<br>0.5555                                                                                 |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Lucille Chism Bates<br>0.3907                                                                         |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Warren J. Bates<br>0.5555                                                                             |                  |                                        |                                      |
|                 |                                                           |                    |                                   | Glenn O. Briscoe<br>6.2500                                                                            |                  |                                        |                                      |

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS

5 (Contd)

Ether Chism  
2.6042  
Hugh Corrigan, III  
9.3750  
J. Patrick Corrigan  
9.3750  
Catherine L. Dumraese  
4.1667  
T. J. Galbraith  
6.2500  
Wilma Chism Lain  
0.3907  
Norma Chism McCarthy  
0.3907  
Midwest Oil Corp.  
18.7500  
Mary Louise Nommensen  
0.3906  
Barbara Jean Robertson  
2.0833  
Mary Helen Seeton  
6.2500  
F. Walter Voss  
2.0833  
Thomas G. Voss  
2.0833

6 Township 25 South, Range 37 East  
Section 10: SW/4 SW/4

40

HBP

Amerada Petroleum Corp Mobil Oil Corp.  
25.0000  
Mary Helen Seeton  
6.2500  
Thomas G. Galbraith  
6.2500  
Hugh Corrigan, III  
9.3750  
J. Patrick Corrigan  
9.3750  
Docia Bates  
1.9445

Mobil Oil Corp.  
100%

| TRACT<br>NUMBER | DESCRIPTION               | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|---------------------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
| FEE LANDS       |                           |                    |                                   |                  |                  |                                        |                                      |
| 6 (Contd)       |                           |                    |                                   |                  |                  |                                        |                                      |
|                 | Kenneth C. Bates          | 0.5555             |                                   |                  |                  |                                        |                                      |
|                 | Warren J. Bates           | 0.5555             |                                   |                  |                  |                                        |                                      |
|                 | Chas. T. Bates, Jr.       | 0.5555             |                                   |                  |                  |                                        |                                      |
|                 | James Ray Bates           | 0.5555             |                                   |                  |                  |                                        |                                      |
|                 | Catherine L. Dumraese     | 16.6667            |                                   |                  |                  |                                        |                                      |
|                 | Robert T. Morgan, Trustee | 5.4687             |                                   |                  |                  |                                        |                                      |
|                 | Bill S. Morgan, Trustee   | 5.4687             |                                   |                  |                  |                                        |                                      |
|                 | J. I. Ginnings            | 1.5625             |                                   |                  |                  |                                        |                                      |
|                 | F. Walter Voss            | 2.0833             |                                   |                  |                  |                                        |                                      |
|                 | Thomas G. Voss            | 2.0833             |                                   |                  |                  |                                        |                                      |
|                 | Barbara Jean Robertson    | 2.0834             |                                   |                  |                  |                                        |                                      |
|                 | Lucille Chism Bates       | 0.3907             |                                   |                  |                  |                                        |                                      |
|                 | Ether Chism               | 2.6042             |                                   |                  |                  |                                        |                                      |
|                 | Wilma Chism Lain          | 0.3907             |                                   |                  |                  |                                        |                                      |
|                 | Norma Chism McCarthy      | 0.3907             |                                   |                  |                  |                                        |                                      |
|                 | Mary Louise Nommensen     | 0.3906             |                                   |                  |                  |                                        |                                      |



| TRACT<br>NUMBER  | DESCRIPTION                                                             | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY                                                                                                                                                                                                                                                                                                                | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|------------------|-------------------------------------------------------------------------|--------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------|--------------------------------------|
| <u>FEE LANDS</u> |                                                                         |                    |                                   |                                                                                                                                                                                                                                                                                                                                 |                  |                                        |                                      |
| 9                | <u>Township 25 South, Range 37 East</u><br><u>Section 15: E/2 NE/4</u>  | 80                 | HBP                               | Boys Clubs of America<br>5.0000<br>Elk's Natl. Foundation<br>5.0000<br>Robert J. Leonard<br>8.3333<br>Patrick J. Leonard<br>8.3334<br>Timothy T. Leonard<br>8.3333<br>New Mexico Boy's Ranch, Inc.<br>5.0000<br>Shattuck School<br>5.0000<br>Sunshine Royalty Co.<br>50.0000<br>Regents of The Univ. of<br>New Mexico<br>5.0000 | Mobil Oil Corp.  | Sun Oil Company<br>.1250000            | Mobil Oil Corp.<br>100%              |
| 10               | <u>Township 25 South, Range 37 East</u><br><u>Section 14: NW/4 NW/4</u> | 40                 | HBP                               | Katherine Drake Trust<br>6.2500<br>F. W. & Y Oil Co.<br>12.5000<br>B. B. Girsberg<br>1.5000<br>J. H. Heyd<br>3.7500<br>Higgins Trust, Inc.<br>25.0000<br>William B. Johnston<br>0.5000<br>Lovellace Foundation, Inc.<br>3.7500<br>Rosalind Redfern<br>3.7500<br>Lela H. Stoval<br>3.7500                                        | Mobil Oil Corp.  |                                        | Mobil Oil Corp.<br>100%              |



| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS

10 (Contd)

Mary Ella Stuart  
8.0000  
Harvey E. Yates  
4.6875  
John A. Yates  
4.6875  
Martin Yates, Jr.  
12.5000  
Martin Yates, III  
4.6875  
S. P. Yates  
4.6875

11 Township 25 South, Range 37 East  
Section 14: SW/4 NW/4 40

HBP

Mobil Oil Corp.

Mobil Oil Corp.  
100%

B. B. Ginsberg  
1.5000  
J. H. Herd  
3.7500  
Higgins Trust, Inc.  
25.0000  
William B. Johnston  
0.5000  
Lovellace Foundation, Inc.  
3.7500  
Rosalind Redfern  
3.7500  
Lela H. Stovall  
3.7500  
Mary Ella Stuart  
33.0000  
Harvey E. Yates  
3.1250  
John A. Yates  
3.1250  
Martin Yates, Jr.  
12.5000  
Martin Yates, III  
3.1250  
S. P. Yates  
3.1250

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS

|    |                                                          |    |     |                                                                                                                                                                                                                                                                                                                                      |                |  |                        |
|----|----------------------------------------------------------|----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|------------------------|
| 12 | Township 25 South, Range 37 East<br>Section 15: E/2 SE/4 | 80 | HBP | Patrick J. Leonard<br>8.3336<br>Robert J. Leonard<br>8.3336<br>Timothy T. Leonard<br>8.3328<br>Elks National Foundation<br>5.0000<br>Boys Club of America<br>5.0000<br>Shattuck School<br>5.0000<br>New Mexico Boys Ranch, Inc.<br>5.0000<br>Regents of the University<br>of New Mexico<br>5.0000<br>Sunshine Royalty Co.<br>50.0000 | Gulf Oil Corp. |  | Gulf Oil Corp.<br>100% |
|----|----------------------------------------------------------|----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|------------------------|

|    |                                                          |    |     |                                                                                                                                                                                                                                                  |                |  |                        |
|----|----------------------------------------------------------|----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|------------------------|
| 13 | Township 25 South, Range 37 East<br>Section 15: W/2 SE/4 | 80 | HBP | Sabine Royalty Corp.<br>3.1248<br>Atlantic Richfield Co.<br>0.6248<br>John H. Hendrix<br>2.5000<br>Edwin G. Bradley<br>9.3752<br>Judith Ann Kalk<br>3.1248<br>M. H. McGrail<br>3.1248<br>Louise Benischek<br>2.0832<br>Mary Ellen Todd<br>2.0832 | Gulf Oil Corp. |  | Gulf Oil Corp.<br>100% |
|----|----------------------------------------------------------|----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--|------------------------|

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
13 (Contd)

|  |                                                        |  |  |         |  |  |  |
|--|--------------------------------------------------------|--|--|---------|--|--|--|
|  | Maybelle E. Westfall                                   |  |  | 3.1256  |  |  |  |
|  | Junia W. Brown Estate                                  |  |  | 23.4584 |  |  |  |
|  | The Alamo Natl. Bank of<br>San Antonio, Texas, Trustee |  |  | 1.5416  |  |  |  |
|  | Midwest Oil Corporation                                |  |  | 12.5000 |  |  |  |
|  | Arnold P. Scharbauer, Trustee                          |  |  | 6.2504  |  |  |  |
|  | Lucky Wright Royalty Syndicate                         |  |  | 3.1248  |  |  |  |
|  | Roy G. Barton, Jr.                                     |  |  | 6.2504  |  |  |  |
|  | A. E. Smith                                            |  |  | 2.0832  |  |  |  |
|  | Rebel Oil Company                                      |  |  | 3.7496  |  |  |  |
|  | The Chase Manhattan Bank,<br>Assignee                  |  |  | 11.8752 |  |  |  |

B-10

|    |                                                                                               |    |     |         |                 |                                         |      |
|----|-----------------------------------------------------------------------------------------------|----|-----|---------|-----------------|-----------------------------------------|------|
| 14 | Township 25 South, Range 37 East<br>Sec. 22: NW/4 NE/4                                        | 40 | HBP |         |                 |                                         |      |
|    | The Wechovia Bank &<br>Trust Co., Trustee of<br>the Richard C. Allen<br>& Lillian Allen Trust |    |     | 2.0834  |                 |                                         |      |
|    | Amerada Petroleum Corp.                                                                       |    |     | 18.1818 |                 |                                         |      |
|    | Ione Bearly Atkins                                                                            |    |     | 0.2291  |                 |                                         |      |
|    | Atlantic Richfield Co.                                                                        |    |     | 7.2222  |                 |                                         |      |
|    | James Henry Bearly                                                                            |    |     | 0.2292  |                 |                                         |      |
|    |                                                                                               |    |     |         | Mobil Oil Corp. |                                         |      |
|    |                                                                                               |    |     |         |                 | Amerada Petroleum Corp. Mobil Oil Corp. |      |
|    |                                                                                               |    |     |         |                 | .0625000                                |      |
|    |                                                                                               |    |     |         |                 | A. R. Eppenauer                         |      |
|    |                                                                                               |    |     |         |                 | .0625000                                |      |
|    |                                                                                               |    |     |         |                 |                                         | 100% |

7/7/69

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
14 (Contd)

|  |                           |         |  |  |  |  |  |
|--|---------------------------|---------|--|--|--|--|--|
|  | Odella N. Clark           | 1.1667  |  |  |  |  |  |
|  | Bank of the Southwest     |         |  |  |  |  |  |
|  | Natl. Assn. Houston       |         |  |  |  |  |  |
|  | Trustee U/W of            |         |  |  |  |  |  |
|  | Hubert E. Clift           | 1.1364  |  |  |  |  |  |
|  | Bank of the Southwest     |         |  |  |  |  |  |
|  | Natl. Assn. Houston       |         |  |  |  |  |  |
|  | Trustee for Jeannette     |         |  |  |  |  |  |
|  | C. Clift                  | 1.1364  |  |  |  |  |  |
|  | Elizabeth Bearly Dudley   | 0.2292  |  |  |  |  |  |
|  | Julie Ann Erickson        | 0.1736  |  |  |  |  |  |
|  | Marion McNair Heard       | 0.1736  |  |  |  |  |  |
|  | San Angelo Natl. Bank     |         |  |  |  |  |  |
|  | Indep. Exec. U/W of the   |         |  |  |  |  |  |
|  | Est. of Lorraine Leftwich | 1.1363  |  |  |  |  |  |
|  | San Angelo Natl. Bank     |         |  |  |  |  |  |
|  | Successor Tr of the       |         |  |  |  |  |  |
|  | Ralph W. Leftwich Tr.     | 1.1364  |  |  |  |  |  |
|  | Josephine W. Lundy        | 10.0000 |  |  |  |  |  |
|  | Margaret Bearly Marlow    | 0.2291  |  |  |  |  |  |
|  | Midwest Oil Corp.         | 33.3334 |  |  |  |  |  |
|  | Ritts Royalty Company     | 7.2222  |  |  |  |  |  |

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
14 (Contd)

Sabine Royalty Corp.  
3.9394  
Robert C. Sharp  
7.2222  
Elinor Shaughnessy  
0.1736  
O. W. Skirvin  
2.0833  
Marion Taylor Underwood  
Estate  
1.5625

15 Township 25 South, Range 37 East  
Section 22: NE/4 NE/4 40 HBP

The Wachovia Bank & Trust Co. Trustee of the Richard C. Allen & Lillian Allen Trust  
1.5625  
Amerada Petroleum Corp.  
16.1364  
Ione Bearly Atkins  
0.1719  
Atlantic Richfield Co.  
13.6666  
James Henry Bearly  
0.1719  
Junia W. Brown Estate  
5.8647  
Odella N. Clark  
0.8750  
Bank of the Southwest Natl. Assn. Houston Trustee U/W of Hubert E. Clift  
0.8523

Mobil Oil Corp.  
Cities Serv. Oil Co.  
Amerada Petroleum Corp. Mobil Oil Corp.  
.0468750  
A. R. Eppenauer  
.0468750  
Cities Service Oil Co. 25%

| TRACT<br>NUMBER | DESCRIPTION                                                                       | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-----------------------------------------------------------------------------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
| FEE LANDS       |                                                                                   |                    |                                   |                  |                  |                                        |                                      |
| 15 (Contd)      |                                                                                   |                    |                                   |                  |                  |                                        |                                      |
|                 | Bank of the Southwest<br>Natl. Assn. Houston<br>Trustee for Jeannette<br>C. Clift | 0.8523             |                                   |                  |                  |                                        |                                      |
|                 | Elizabeth Bearly Dudley                                                           | 0.1718             |                                   |                  |                  |                                        |                                      |
|                 | Julie Ann Erickson                                                                | 0.1302             |                                   |                  |                  |                                        |                                      |
|                 | Edward Galt                                                                       | 0.3853             |                                   |                  |                  |                                        |                                      |
|                 | Marion McNair Heard                                                               | 0.1302             |                                   |                  |                  |                                        |                                      |
|                 | Harvey A. Heiler, Jr.                                                             | 3.8750             |                                   |                  |                  |                                        |                                      |
|                 | San Angelo Natl. Bank<br>Indep. Exec. U/W of the<br>Est. of Lorraine Leftwich     | 0.8523             |                                   |                  |                  |                                        |                                      |
|                 | San Angelo Natl. Bk.<br>Successor Tr. of the<br>Ralph W. Leftwich Tr.             | 0.8523             |                                   |                  |                  |                                        |                                      |
|                 | C. S. Longcope                                                                    | 4.1250             |                                   |                  |                  |                                        |                                      |
|                 | Josephine W. Lundy                                                                | 7.5000             |                                   |                  |                  |                                        |                                      |
|                 | Margaret Bearly Marlow                                                            | 0.1719             |                                   |                  |                  |                                        |                                      |
|                 | Midwest Oil Corp.                                                                 | 25.0000            |                                   |                  |                  |                                        |                                      |
|                 | Ritts Royalty Co.                                                                 | 5.4166             |                                   |                  |                  |                                        |                                      |
|                 | Sabine Royalty Corp.                                                              | 2.9546             |                                   |                  |                  |                                        |                                      |

| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
15 (Contd)

Robert C. Sharp  
5.4166  
Elinor Shaughnessy  
0.1302  
O. W. Skirvin  
1.5625  
Marion Taylor Underwood  
Estate  
1.1719

Junia W. Brown  
Estate  
23.4588  
The Alamo Natl. Bank of  
San Antonio, Trustee of  
Edward Galt Trust  
1.5412  
Atlantic Richfield Co.  
1.6500  
Chase Manhattan Bank  
Assignee  
31.3500  
Constance E. Byers, Executrix  
of Est. of Everett M. Byers,  
Dec'd.  
15.5000  
Harvey A. Heller &  
Harvey A. Heller, Jr.  
15.5000  
C. S. Longcope  
1.0000  
Amerada Petroleum Corp.  
10.0000

16 Township 25 South, Range 37 East  
Section 23: W/2 NW/4

Cities Service Oil Co.  
100%

| TRACT<br>NUMBER | DESCRIPTION                                                                               | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD                        | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT                    |
|-----------------|-------------------------------------------------------------------------------------------|--------------------|-----------------------------------|------------------|-----------------------------------------|----------------------------------------|---------------------------------------------------------|
| FEE LANDS       |                                                                                           |                    |                                   |                  |                                         |                                        |                                                         |
| 17              | Township 25 South, Range 37 East<br>Section 22: SE/4 NE/4                                 | 40                 | HBP                               |                  |                                         |                                        |                                                         |
|                 | The Machovia Bank &<br>Trust Co., Tr. of the<br>Richard C. Allen &<br>Lillian Allen Trust |                    |                                   | 1.5626           | Mobil Oil Corp.<br>Cities Serv. Oil Co. |                                        | Mobil Oil Corp.<br>75%<br>Cities Service Oil<br>Co. 25% |
|                 | Amerada Petroleum Corp.                                                                   |                    |                                   | 16.1364          |                                         |                                        |                                                         |
|                 | Ione Bearly Atkins                                                                        |                    |                                   | 0.1718           |                                         |                                        |                                                         |
|                 | Atlantic Richfield Co.                                                                    |                    |                                   | 0.6834           |                                         |                                        |                                                         |
|                 | James Henry Bearly                                                                        |                    |                                   | 0.1718           |                                         |                                        |                                                         |
|                 | Junia W. Brown Estate                                                                     |                    |                                   | 5.8647           |                                         |                                        |                                                         |
|                 | The Chase Manhattan Bank,<br>Assignee                                                     |                    |                                   | 12.9833          |                                         |                                        |                                                         |
|                 | Odella N. Clark                                                                           |                    |                                   | 0.8750           |                                         |                                        |                                                         |
|                 | Bank of the Southwest<br>Natl. Assn. Houston Trustee<br>U/W of Hubert E. Clift            |                    |                                   | 0.8523           |                                         |                                        |                                                         |
|                 | Bank of the Southwest NA<br>Trustee for Jeanette C. Clift                                 |                    |                                   | 0.8523           |                                         |                                        |                                                         |
|                 | Elizabeth Bearly Dudley                                                                   |                    |                                   | 0.1718           |                                         |                                        |                                                         |
|                 | Julie Ann Erickson                                                                        |                    |                                   | 0.1302           |                                         |                                        |                                                         |
|                 | Edward Galt                                                                               |                    |                                   | 0.3853           |                                         |                                        |                                                         |
|                 | Marion McNair Heard                                                                       |                    |                                   | 0.1302           |                                         |                                        |                                                         |
|                 | Harvey A. Heller, Jr.                                                                     |                    |                                   | 3.8750           |                                         |                                        |                                                         |



| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
17 (Contd)

|  |                                                                               |         |  |  |  |  |  |
|--|-------------------------------------------------------------------------------|---------|--|--|--|--|--|
|  | San Angelo Natl. Bank<br>Indep. Exec. U/W of the<br>Est. of Lorraine Leftwich | 0.8523  |  |  |  |  |  |
|  | San Angelo Natl. Bk.<br>Successor Tr. of the<br>Ralph W. Leftwich Trust       | 0.8523  |  |  |  |  |  |
|  | C. S. Longcope                                                                | 4.1250  |  |  |  |  |  |
|  | Josephine W. Lundy                                                            | 7.5000  |  |  |  |  |  |
|  | Margaret Bearly Marlow                                                        | 0.1719  |  |  |  |  |  |
|  | Midwest Oil Corp.                                                             | 25.0000 |  |  |  |  |  |
|  | L. C. Ritts                                                                   | 5.4166  |  |  |  |  |  |
|  | Sabine Royalty Corp.                                                          | 2.9546  |  |  |  |  |  |
|  | Robert C. Sharp                                                               | 5.4166  |  |  |  |  |  |
|  | Elinor Shaughnessy                                                            | 0.1302  |  |  |  |  |  |
|  | O. W. Skirvin                                                                 | 1.5625  |  |  |  |  |  |
|  | Marion Taylor Underwood<br>Estate,                                            | 1.1719  |  |  |  |  |  |



| TRACT<br>NUMBER | DESCRIPTION | NUMBER<br>OF ACRES | LEASE NO. &<br>EXPIRATION<br>DATE | BASIC<br>ROYALTY | LESSEE OF RECORD | OVERRIDING ROYALTY<br>OWNER AND AMOUNT | WORKING INTEREST<br>OWNER AND AMOUNT |
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|
|-----------------|-------------|--------------------|-----------------------------------|------------------|------------------|----------------------------------------|--------------------------------------|

FEE LANDS  
18 (Contd)

|  |                                                                        |         |  |  |  |  |  |
|--|------------------------------------------------------------------------|---------|--|--|--|--|--|
|  | San Angelo Natl. Bk.<br>Successor Tr of the<br>Ralph W. Leftwich Trust | 1.1360  |  |  |  |  |  |
|  | Josephine W. Lundy                                                     | 10.0000 |  |  |  |  |  |
|  | Margaret Bearly Marlow                                                 | 0.2296  |  |  |  |  |  |
|  | Midwest Oil Corp.                                                      | 33.3334 |  |  |  |  |  |
|  | Ritts Royalty Co.                                                      | 7.2224  |  |  |  |  |  |
|  | Sabine Royalty Corp.                                                   | 3.9392  |  |  |  |  |  |
|  | Robert C. Sharp                                                        | 7.2224  |  |  |  |  |  |
|  | Elinor Shaughnessy                                                     | 0.1736  |  |  |  |  |  |
|  | O. W. Skirvin                                                          | 2.0832  |  |  |  |  |  |
|  | Marion Taylor Underwood<br>Estate                                      | 1.5625  |  |  |  |  |  |

|             |                                                 |  |  |  |  |  |  |
|-------------|-------------------------------------------------|--|--|--|--|--|--|
| Total       | 17 Fee Tracts - 920 Acres or 88.5% of Unit Area |  |  |  |  |  |  |
| Grand total | 18 Tracts - 1,040 Acres - 100% of Unit Area     |  |  |  |  |  |  |

EXHIBIT C  
TO  
UNIT AGREEMENT  
LANGLIE-MATTIX QUEEN UNIT  
LEA COUNTY, NEW MEXICO

| Tract<br>Number | Description of Tract                                            | Tract Participation, Percentage |                 |
|-----------------|-----------------------------------------------------------------|---------------------------------|-----------------|
|                 |                                                                 | Phase I                         | Phase II        |
| 1.              | W/2 SW/4 Section 14 and SE/4 NW/4<br>Section 15, T-25-S, R-37-E | 6.4292                          | 4.1166          |
| 2.              | NW/4 SW/4 Section 11, T-25-S,<br>R-37-E                         | 12.8019                         | 3.4412          |
| 3.              | SW/4 SW/4 Section 11, T-25-S,<br>R-37-E                         | 0.8407                          | 3.9553          |
| 4.              | S/2 SE/4 Section 10, T-25-S,<br>R-37-E                          | 11.3810                         | 11.2957         |
| 5.              | SE/4 SW/4 Section 10, T-25-S,<br>R-37-E                         | 1.2619                          | 5.3144          |
| 6.              | SW/4 SW/4 Section 10, T-25-S,<br>R-37-E                         | 0.0000                          | 1.7797          |
| 7.              | NE/4 NW/4 Section 15, T-25-S,<br>R-37-E                         | 1.0816                          | 3.3961          |
| 8.              | W/2 NE/4 Section 15, T-25-S,<br>R-37-E                          | 13.7862                         | 10.2706         |
| 9.              | E/2 NE/4 Section 15, T-25-S,<br>R-37-E                          | 15.6033                         | 7.6201          |
| 10.             | NW/4 NW/4 Section 14, T-25-S,<br>R-37-E                         | 3.1518                          | 3.5067          |
| 11.             | SW/4 NW/4 Section 14, T-25-S,<br>R-37-E                         | 4.5395                          | 3.8328          |
| 12.             | E/2 SE/4 Section 15, T-25-S,<br>R-37-E                          | 0.2800                          | 5.3377          |
| 13.             | W/2 SE/4 Section 15, T-25-S,<br>R-37-E                          | 0.0727                          | 9.5800          |
| 14.             | NW/4 NE/4 Section 22, T-25-S,<br>R-37-E                         | 10.5888                         | 9.0236          |
| 15.             | NE/4 NE/4 Section 22, T-25-S,<br>R-37-E                         | 4.1334                          | 4.3897          |
| 16.             | W/2 NW/4 Section 23, T-25-S,<br>R-37-E                          | 6.0446                          | 3.2096          |
| 17.             | SE/4 NE/4 Section 22, T-25-S,<br>R-37-E                         | 0.9087                          | 4.7733          |
| 18.             | SW/4 NE/4 Section 22, T-25-S,<br>R-37-E                         | 7.0947                          | 5.1569          |
| TOTAL           |                                                                 | <u>100.0000</u>                 | <u>100.0000</u> |

6/25/69

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF MOBIL OIL CORPORATION FOR  
AUTHORITY TO INSTITUTE A WATERFLOOD  
PROJECT IN THE LANGLIE-MATTIX POOL,  
LEA COUNTY, NEW MEXICO

Case No. 4202

A P P L I C A T I O N

Applicant, Mobil Oil Corporation, whose address is Post Office Box 633, Midland, Texas 79701, hereby requests the Commission to authorize the institution of a waterflood project by the injection of water into the Queen Sand in the Langlie-Mattix Pool, Lea County, New Mexico, and in support of its request states:

1. Injection will be into the Queen Sand through 17 wells  
located in Sections 10, 11, 14, 15, 22 and 23, Township  
25 23 South, Range 37 East, NMPM, Lea County, New Mexico.
2. Four of the seventeen (17) wells will be located at  
unorthodox locations.

Applicant further seeks an administrative procedure whereby said project could be expanded to include additional lands and injection wells in the area of the said project as may be necessary in order to complete an efficient injection pattern; that said administrative procedure should provide for administrative approval for conversion to water injection in exception to the well response requirements of Rule 701 E-5 of the Commission Rules and Regulations.

WHEREFORE, applicant requests that this matter be set for hearing as provided by law and that following hearing the Commission issue its order granting authority to institute said waterflood project.

Respectfully submitted,  
MOBIL OIL CORPORATION

By:

Ira B. Stitt  
Ira B. Stitt  
Division Operations Engineer  
Midland Division  
Mobil Oil Corporation

DOCKET MAILED

Date 8-15-69

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF MOBIL OIL CORPORATION FOR  
APPROVAL OF THE LANGLEIE-MATTIX QUEEN  
UNIT AGREEMENT IN THE LANGLEIE-MATTIX  
POOL, LEA COUNTY, NEW MEXICO

Case No. 4201  
~~4201~~

A P P L I C A T I O N

Applicant, Mobil Oil Corporation, whose address is Post Office Box 633, Midland, Texas 79701, hereby requests Commission approval of the Langlie-Mattix Queen Unit Agreement in the Langlie-Mattix Pool, Lea County, New Mexico, and in support of its request states:

The proposed Langlie-Mattix Queen Unit is comprised of 1120 acres, more or less, of Federal and Fee lands described as follows:

Lea County, New Mexico

Township 25 South, Range 37 East, NMPM

Section 10: S/2 S/2

Section 11: W/2 SW/4

Section 14: W/2 W/2

Section 15: E/2 & E/2 NW/4

Section 22: NE/4

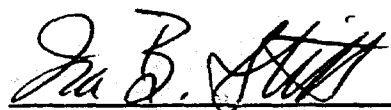
Section 23: W/2 NW/4

WHEREFORE, applicant requests that this matter be set for hearing as provided by law and that following hearing the Commission issue its order approving said Unit Agreement.

Respectfully submitted,

MOBIL OIL CORPORATION

By



Ira B. Stitt  
Division Operations Engineer  
Midland Division  
Mobil Oil Corporation

# Mobil Oil Corporation

P.O. BOX 633  
MIDLAND, TEXAS 79701

Aug 11 PM 5 25  
August 7, 1969

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Att: Mr. A. L. Porter

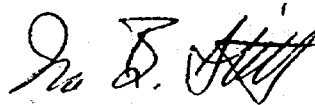
4201  
APPLICATIONS OF MOBIL OIL  
CORPORATION FOR A UNIT AGREEMENT  
AND WATERFLOOD PROJECT - LANGLEIE-  
MATTIX QUEEN UNIT, LANGLEIE-MATTIX  
POOL, LEA COUNTY, NEW MEXICO

Dear Mr. Porter:

Enclosed herewith please find above-referenced applications which we would appreciate your filing and docketing for the August 27, 1969 Examiner's Hearing.

This matter was discussed by Messrs. George Hatch and C. R. Kreuz by telephone on August 7, 1969.

Very truly yours,



Ira B. Stitt  
Division Operations Engineer

CRKreuz/bje  
Enclosures

DOCKET MAILED

Date 8-15-69

J. R. MODRALL  
JAMES E. SPERLING  
JOSEPH E. ROEHL  
GEORGE T. HARRIS, JR.  
DANIEL A. BISK  
LELAND S. SEDBERRY, JR.  
ALLEN C. DEWEY, JR.  
FRANK H. ALLEN, JR.  
JAMES P. SAUNDERS, JR.  
JAMES A. PARKER

JOHN R. COONEY  
KENNETH L. HARRIGAN  
PETER J. ADAMS  
DALE W. EK  
PETER J. BROULLIRE, II  
CAMERON R. GRAHAM

LAW OFFICES OF  
**MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS**  
PUBLIC SERVICE BUILDING  
P. O. BOX 2188  
ALBUQUERQUE, NEW MEXICO 87103

JOHN F. SIMMS (1885-1954)  
AUGUSTUS T. SEYMOUR  
(1907-1965)

TELEPHONE 243-4511  
AREA CODE 505

December 12, 1969

Mr. A. L. Porter, Jr.  
Secretary-Director  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Case No. 4202 - Application of Mobil  
Oil Corporation

Dear Pete:

Enclosed is application of Mobil for hearing on the drilling of an injection well within the approved waterflood unit area. We are asking that this case be reopened under the retained jurisdiction of the Commission for the purpose of considering the granting of permission to drill the well. I assume that the filing of the application will be in time to be placed on the docket for the January 7, 1970, hearing.

Very truly yours,

  
James E. Sperling

JES:jv

Enclosures (3)

cc: Mr. Ira B. Stitt, w/encl.  
Mobil Oil Corporation

DOCKET MAILED

Date 12-24-69



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF MOBIL OIL CORPORATION FOR A  
WATERFLOOD PROJECT AND UNORTHODOX  
INJECTION WELL LOCATIONS, LEA  
COUNTY, NEW MEXICO.

Case No. 4202

A P P L I C A T I O N

Mobil Oil Corporation hereby requests that this matter be reopened for the purpose of considering the drilling of an injection well at a location 660 feet from the north line and 1220 feet from the west line (proposed Unit Injection Well No. 14) of Section 14, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico, and in support of said application states:

1. This matter was heard on August 27, 1969, before Examiner Elvis A. Utz, and Commission Order No. R-3823 was issued on September 4, 1969. The Order authorized Mobil to institute a waterflood project in the Langlie-Mattix-Queen Unit Area in the Langlie-Mattix Pool by injection of water into the Queen sand formation at certain designated orthodox and unorthodox locations as specified in that Order. The Order denied applicant's request to drill an injection well at the location hereinabove specified, which denial was based upon a finding to the effect that the injection of water at that location may cause waste and may violate the correlative rights of the offset operator to the east of the proposed location. The Order provided for retention of jurisdiction of the cause for the entry of such further Orders as the Commission may deem necessary. This application seeks to invoke the retained jurisdiction of the Commission and as grounds therefor states:

A. The offset operator to the east of the proposed injection well location is Atlantic Richfield Company (Arco), operator of the Stuart "A" Well No. 1 in the NE/4 of the NW/4 of Section 14. At the hearing in Case No. 4204 held on August 27, 1969, testimony was given to the effect that negotiations were in progress between Mobil and Arco which might result either in the acquisition of the Stuart "A" No. 1 Well by Mobil, or the inclusion of the acreage dedicated to the well in the unit area and with Arco to participate in production on an assigned participation factor basis. Negotiations have not been successful.

B. The injection of water at a location in the vicinity of the proposed Unit Well No. 14 is essential to the success of the waterflood project. Failure to inject water in this area will result in the loss of otherwise recoverable oil approximating 200,000 barrels. Failure to permit recovery of this oil results in substantial impairment of the correlative rights of the royalty and working interest owners within the unit area. Unless an injection well is present in the approximate location of Unit Well No. 14 to provide a barrier, the injection of water in presently authorized injection wells in the unit area will result in movement of oil into the gas cap area of the reservoir where it will be lost and incapable of recovery by anyone by any method. Injection of water is presently in progress pursuant to the Commission's Order, and delay in injection at a location in the vicinity of Unit Well No. 14 will result in movement of oil with the result described above within the unit area itself.

C. Mobil is prepared to show that the drilling of a well for injection purposes at the Unit Well No. 14 location will not impair the correlative rights of Arco and that Arco is now and will be afforded an opportunity to recover such

waterflood oil as may underlie its lease boundaries. Mobil is further prepared to show that adequate protection of the rights of Arco has been offered through the alternatives of joining in unit participation or the sale of the Arco well at a figure commensurate with its value, including its contribution to total recovery from the unit area. The Arco well has produced no oil and no gas since 1963, and has produced no oil since 1959, during which year total oil production was 116 barrels and gas production was 37,720 mcf. Gas production for 1963, the last year of any reported production, was a total of 1,235 mcf, with no oil. The well was completed in 1938.

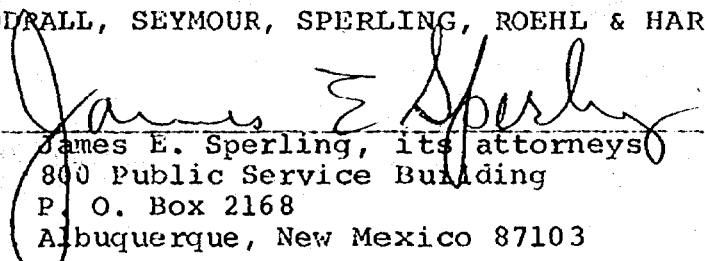
WHEREFORE, Mobil requests that this case be reopened, set for hearing and that it be authorized to drill an injection well at the location proposed for Unit Well No. 14, and for this purpose invokes the retained jurisdiction of the Commission.

Respectfully submitted,

MOBIL OIL CORPORATION

BY: MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS

By

  
James E. Sperling, its attorneys  
800 Public Service Building  
P. O. Box 2168  
Albuquerque, New Mexico 87103

# Mobil Oil Corporation

P.O. BOX 633  
MIDLAND, TEXAS 79701

November 21, 1969

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Att: Mr. A. L. Porter

APPLICATION OF MOBIL OIL CORPORATION  
FOR A WATERFLOOD PROJECT EXPANSION  
LANGLIE-MATTIX QUEEN UNIT  
LANGLIE-MATTIX POOL  
LEA COUNTY, NEW MEXICO

Dear Mr. Porter:

Enclosed herewith please find above-referenced application which we would appreciate your filing and docketing for the December 17, 1969 Examiner's Hearing.

By copy of this letter and attachments we are informing Atlantic Richfield Company of this application.

Very truly yours,

DOCKET MAILED

Ira B. Stitt  
Division Operations Engineer

Date

12-24-69

CRKreuz/bje  
Enclosure

cc: Atlantic Richfield Company  
P. O. Box 1610  
Midland, Texas 79701

NOV 23 1969  
Do not set this for  
hearing as another  
application has been  
filed for the reopening of  
case 4202 -  
file in  
case 4202

George

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF MOBIL OIL CORPORATION FOR  
AUTHORITY TO EXPAND THE WATERFLOOD  
PROJECT IN ITS LANGLEIE-MATTIX QUEEN  
UNIT IN THE LANGLEIE-MATTIX POOL,  
LEA COUNTY, NEW MEXICO BY THE  
DRILLING OF AND INJECTION INTO ITS  
LANGLIE-MATTIX QUEEN UNIT WELL NO. 14

Case No. \_\_\_\_\_

A P P L I C A T I O N

Applicant, Mobil Oil Corporation, whose address is Post Office Box 633, Midland, Texas 79701, hereby requests the Commission to authorize the expansion of the waterflood project on its Langlie-Mattix Queen Unit by the drilling of its Langlie-Mattix Queen Unit Well No. 14 and by injecting water into the Queen Sand through said Well No. 14 and in support of its request states:

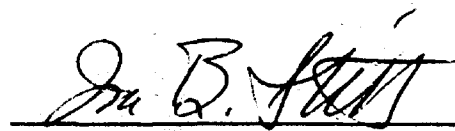
1. The proposed location of Well No. 14 is 660' FNL and 1220' FWL of Section 14 (Unit D), T-25-S, R-37-E, NMPM, Lea County, New Mexico.
2. Attached hereto and made a part hereof is:
  - A. A plat showing all wells within a two mile radius of Well No. 14
  - B. A plat of the Langlie-Mattix Queen Unit
  - C. A diagrammatic sketch of Well No. 14
3. Authority to institute a waterflood project in the Langlie-Mattix Queen Unit was granted by Commission Order No. R-3823 issued September 4, 1969.
4. The granting of this Application will result in the prevention of waste and will protect correlative rights in the project area.

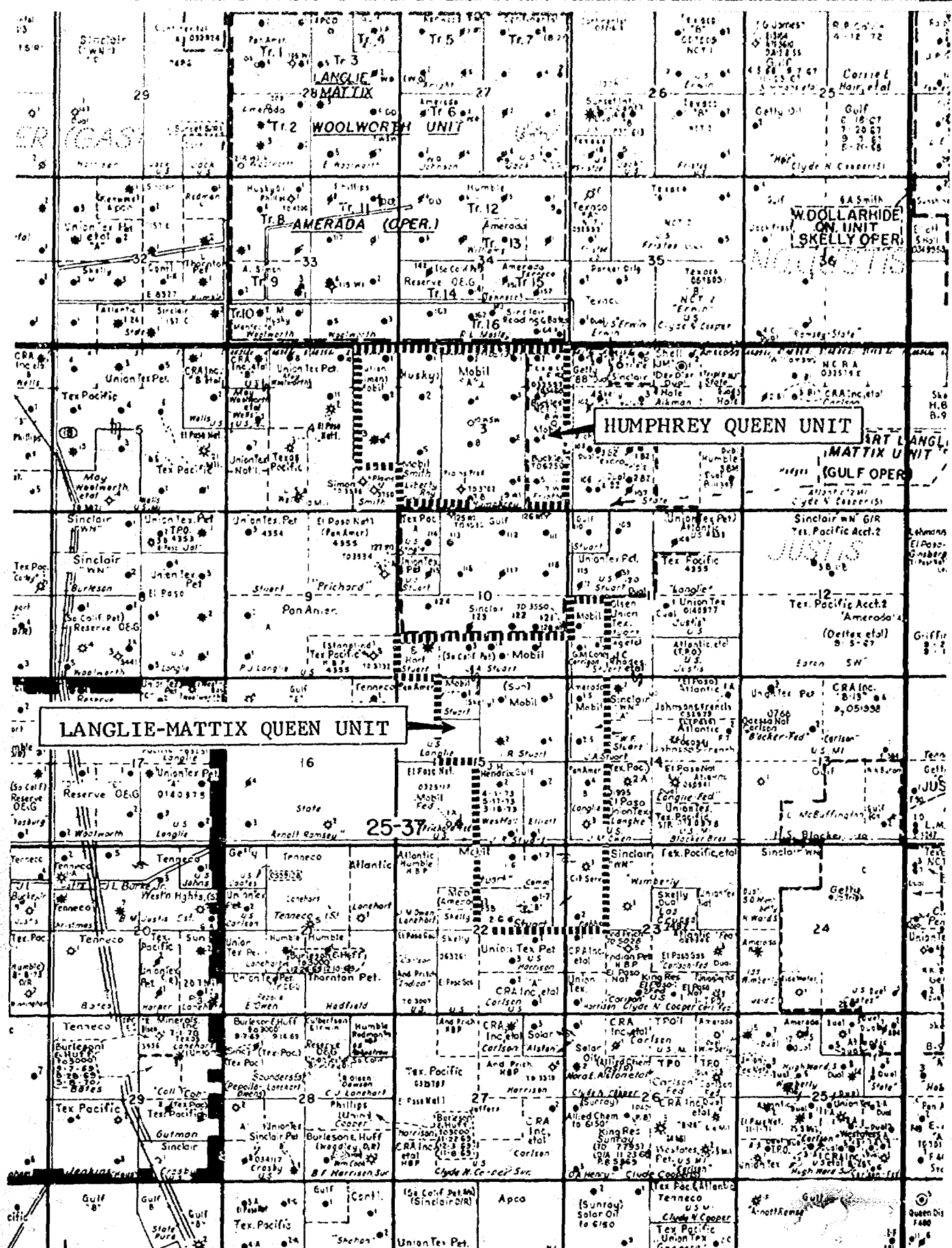
WHEREFORE, applicant requests that this matter be set for hearing as provided by law and that following hearing the Commission issue its order approving said expansion.

Respectfully submitted,

MOBIL OIL CORPORATION

By:

  
Ira B. Stitt  
Division Operations Engineer  
Midland Division  
Mobil Oil Corporation



# Mobil Oil Corporation

EXPLORATION AND PRODUCING DEPARTMENT  
MIDLAND DIVISION

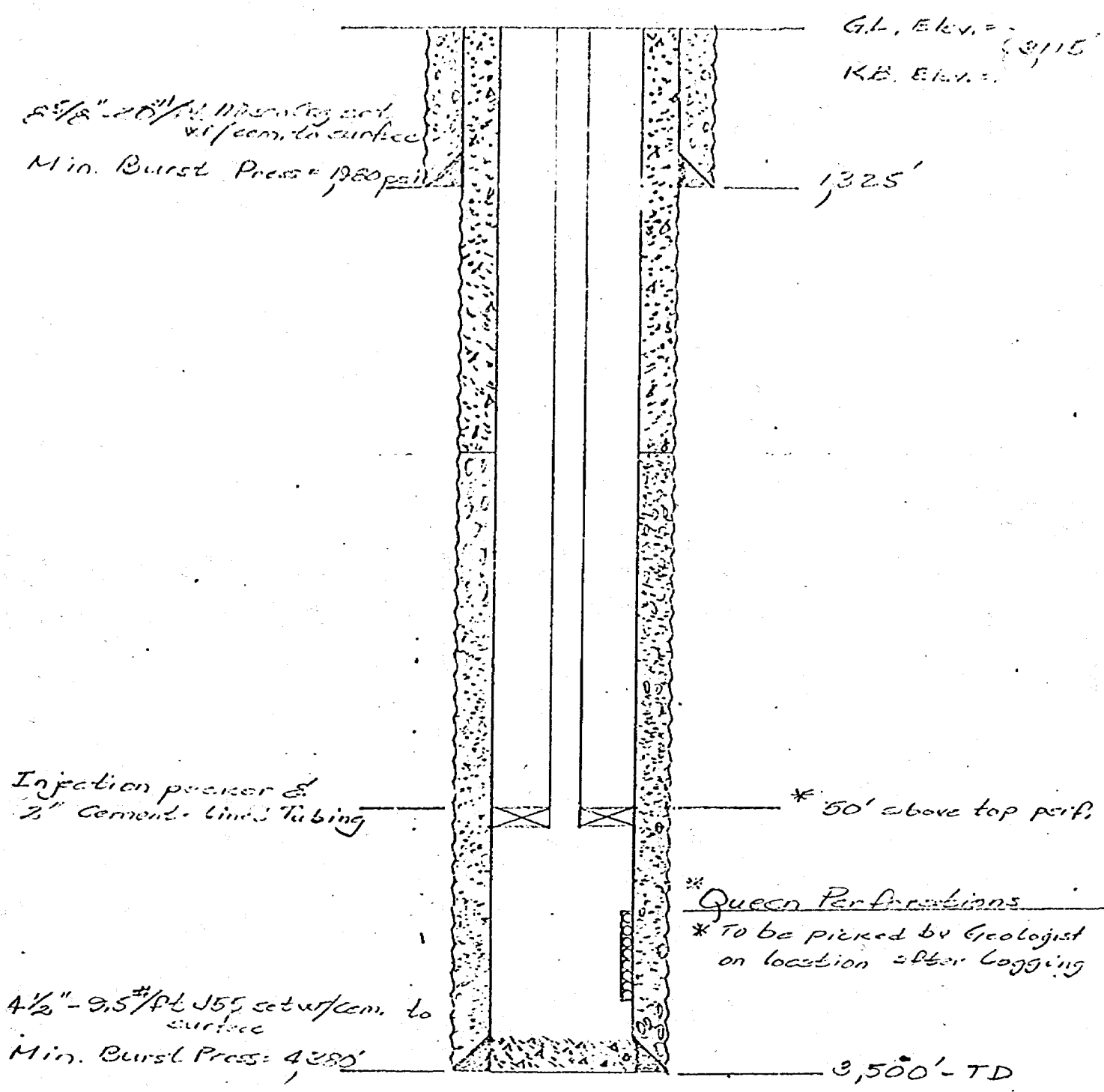
## AREA MAP

PROPOSED LANGLIE-MATTIX  
QUEEN UNIT &  
HUMPHREY QUEEN UNIT  
Lea County, New Mexico

SCALE 1" = 4000'

DATE 8-21-69  
DRAWN BY HRA  
CHECKED WZ  
APPROVED  
REVISED

Diagrammatic Well Sketch  
 Langlie-Mittler Queen Unit Well No. 14 W.W.  
 Langlie-Mittler (Queen) Field  
 Lea County, New Mexico



8-20-69  
 W.M.

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. 4202

Order No. R- 3823

APPLICATION OF MOBIL OIL CORPORATION  
FOR A WATERFLOOD PROJECT / LEA COUNTY,  
NEW MEXICO.

AND UNORTHODOX INJECTION WELL LOCATIONS,

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 27, 1969,  
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 21st day of SEP, 1969, 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, Mobil Oil Corporation,  
seeks permission to institute a waterflood project in the         
Langlie-Mattix Queen Unit Area, Langlie-Mattix Pool, by  
the injection of water into the Queen sand formation  
through 17 ~~orthodox~~ orthodox and unorthodox locations  
in Sections 10, 11, 14, 15, 22, and  
23, Township 25 ~~North~~ South, Range 37 ~~West~~ East, NMPM,  
Lea County, New Mexico.

(3) That the applicant further seeks the establishment of  
an administrative procedure whereby the Secretary-Director of  
the Commission may authorize ~~expansion of said project to include~~  
additional ~~lands and~~ injection wells at orthodox and unorthodox  
locations <sup>within said waterflood project area</sup>, as may be necessary to complete an efficient injection  
pattern without the necessity of showing well response.

(SEE UNDER)

*(proposed to be drilled) well 660 feet from the North line and  
1220 feet from the West line of said Section  
14 may cause waste and, <sup>they</sup> violate the  
regulatory right of the oil and gas operator to the*



subject to Finding No. 6,

(9/16) That, the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations; provided, however,

that the showing of well response as required by Rule 701 E-5 shall not be necessary before obtaining administrative approval for the conversion of additional wells to water injection, and provided further, that said injection wells are drilled no closer than 330 feet to the outer boundary of the Langlie Mattix Queen Unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary, nit Area, Langlie-Mattix Pool,

by the injection of water into the Queen sand formation at orthodox and unorthodox locations through the following-described wells/in Township 25

~~North~~, South, Range 37 ~~West~~ East, NMPM, Lea

County, New Mexico:

| <u>Unit Well No.</u> | <u>Premium Well Name and Number</u>          | <u>Unit Section Location</u> |
|----------------------|----------------------------------------------|------------------------------|
| 7                    | Mobil-Stuart Tr. 1 Well No. 2                | P - 10                       |
| 3                    | to be drilled - 990 FSL + 890 FWL            | - 10                         |
| 2                    | to be drilled - 1440 FSL + 1220 FWL          | - 11                         |
| 13                   | Mobil-Stuart Tr. 5 Well No. 1                | D - 14                       |
| 21                   | Pan American-Langlie "B" Well No. 4          | L - 14                       |
| 27                   | Pan American-Langlie "B" Well No. 3          | M - 14                       |
| 11                   | Mobil-Stuart Tr. 9 Well No. 1                | B - 15                       |
| 17                   | Mobil-Stuart Tr. 9 Well No. 4                | H - 15                       |
| 19                   | Gulf-Westfall Well No. 2                     | J - 15                       |
| 25                   | Gulf-Elliott Well No. 1                      | P - 15                       |
| 15                   | to be drilled - 1980 FNL + 1730 FWL          | - 15                         |
| 30                   | Mobil - Stuart Comm. Well No. 1              | A - 22                       |
| 28                   | to be drilled - 500 FNL + 2540 FEL           | - 22                         |
| 32                   | to be drilled - 2530 FNL + 2600 FEL          | - 22                         |
| 31                   | Cities Service - Dabbs Well No. 1            | D - 23                       |
| 35                   | Cities Service - Dabbs Well No. 2<br>(under) | E - 23                       |

are drilled no closer than 330 feet to the outer boundary of the Langlie Mattix Queen Unit nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary, and provided further, that the application therefor has been filed in accordance with Rule 701 B of the Commission Rules and Regulations, and provided further, that a copy of the application has been sent to all offset operators, if any there be, and no

DRAFT

GMH/esr  
January 30, 1970

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. 4202

Order No. R-3823-A

*The Reopening*  
~~IN THE MATTER OF~~ CASE 4202 BEING-  
REOPENED AT THE REQUEST OF THE  
APPLICANT, MOBIL OIL CORPORATION.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on January 7, 1970,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this \_\_\_\_\_ day of February, 1970, 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 Order No. R-3823, issued September 4, 1969, autho-  
rized the applicant, Mobil Oil Corporation, to institute a water-  
flood project in the Langlie Mattix Queen Unit Area, Langlie-Mattix  
Pool, by the injection of water into the Queen sand formation  
through 16 wells at orthodox and unorthodox locations in Township  
25 South, Range 37 East, NMPM, Lea County, New Mexico.
- (3) That said order denied the applicant authority to inject  
water through ~~the~~ proposed injection ~~well No. 14~~ to be drilled at  
an unorthodox location 660 feet from the North line and 1220 feet  
from the West line of Section 14 of said Township and Range  
upon finding that injection through said well may cause waste and may

violate the correlative rights of the offset operator to the east of the proposed location.

(4) That Case 4202 was reopened at the request of Mobil Oil Corporation to reconsider its request to inject water through said ~~Well No. 14.~~ *proposed injection well.*

(5) That in order for the applicant to establish an efficient injection pattern and avoid driving an excessive amount of oil from under its property, there is a need for an injection well near the eastern edge of said Unit D.

(6) That an injection well located 870 feet from the North line and 1270 feet from the West line of said Section 14 will allow the applicant to complete an injection pattern essentially as efficient as the proposed location.

(7) That an injection well located 870 feet from the North line and 1270 feet from the West line of said Section 14 will be ~~located~~ a distance of 660 feet from the Atlantic Richfield (Sinclair) Stuart A Well No. 1 located 330 feet from the North line and 1650 feet from the West line of said Section 14.

*witness for the*  
(8) That the ~~operator~~ to the east of the proposed location, Atlantic Richfield Company, stated that said operator would not be opposed to an injection well located in said Unit D as long as it were no nearer than 660 feet to said Atlantic Richfield well.

(9) That in order to afford the applicant an opportunity to produce its just and equitable share of the oil in the subject pool and to otherwise prevent waste and protect correlative rights, the applicant should be permitted to drill its proposed injection Well No. 14 at a location 870 feet from the North line and 1270 feet from the West line of said Section 14 in lieu of the proposed location, *660 feet from the North line and 1220 feet from the West line of said Section 14.*

-3-

CASE No. 4202

Order No. R-3823-A

IT IS THEREFORE ORDERED:

(1) That the applicant, Mobil Oil Corporation, is hereby authorized to drill its Langlie Mattix Queen Unit Area Well No. 14 as an additional injection well in its Langlie Mattix Unit Waterflood Project for the injection of water into the Queen formation at an unorthodox location 870 feet from the North line and 1270 feet from the West line of Section 14, Township 25 South, Range 37 East, NMPM, Langlie-Mattix Pool, Lea County, New Mexico.

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

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

FOR WATERFLOOD PROJECT & UNORTH-  
ODOX INJECTION WELL LOCATIONS.