CASE 2943: Application of GULF OIL CORP. to combine two existing gas pools, Lea County, New Mexico.

CASE NO.
02413

Application,
Transcripts,
Small Exhibits
ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 20, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation to combine two existing gas pools, Lea County, New Mexico

Case No. 2943

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

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Application of Gulf Oil Corporation to combine two existing gas pools, Lea County, New Mexico. CASE NO. 2943

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

MR. NUTTER: Hearing will come to order, please. Next case is 2943.

MR. DURRETT: Application of Gulf Oil Corporation to combine two existing gas pools, Lea County, New Mexico.

MR. KASTLER: I am Bill Kastler from Roswell, New Mexico appearing on behalf of the Gulf. Mr. Lester Marshall and John Hoover are my two witnesses.

(Witnesses sworn)

LESTER MARSHALL,

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

DIRECT EXAMINATION

BY MR. KASTLER:

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Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-0691

Q Would you please state your full name?

A Lester Marshall.

Q By whom are you employed and where and in what position?

A Gulf Oil Corporation, District Geologist, Roswell, New Mexico.

Q Are you familiar with the Monument-McKee Gas Pools?

A Yes, sir, and the Monument-Ellenburger.

Q Have you made a geologic study of these two gas pools?

A Yes, sir, I have.

Q Would you please give us the results of your study?

A The Monument-Ellenburger is a one well gas pool, the discovery well, and only producer in the pool is Gulf Oil Corporation's Graham-State NCTA Number Five, located in Unit P, Section 36, Township 19 South, Range 36 East, Lea County, New Mexico. This well was complted in the Ellenburger formation on August 13, 1954 for an initial potential of 4,870 MCF of gas per day. Top of the Ellenburger was encountered at 9,750 feet, seven inch casing is set at 9,768 feet, and TD is 9,822 feet. Production is from open hole, 9768 to 9822. The producing formation was cored from 9787 to 9822, TD. From the core description the producing lithology of the Ellenburger pool is predominantly sand with minor amounts of lime-stone, and granite wash. Core analysis shows average permeability of 0.39 millidarcys with maximum of 1.2 millidarcys. Average porosity is 1.84% with a high of 6.9%.

The structural configuration of the Monument-Ellenburger

as well as the Monument-McKee is a Northwest-Southeast trending elongated anticline, faulted on the Northeast flange. The discovery well of the Monument-McKee Pool was Amerada's State F Number Five, located in Unit N, Section 36, Township 19 South, Range 36 East, Lea County, New Mexico. This well was originally completed as a McKee oil well with a high GOR, in November of 1948; it was recompleted as a McKee gas well, in July, 1956. Currently, there are eight wells producing from the Monument-McKee gas pool. Disregarding the thin oil column, which originally existed in the McKee formation, the gas-water contact is picked at minus 6320 feet, plus a minus five feet. And the same gas-water contact is picked for the Ellenburger.

Q Do you have a location plat?

A Yes. That is Exhibit Number One.

Q Will you refer to Exhibit Number One, and explain what is shown there?

A This is a location plat scaled one inch to 2,000 feet, showing the pertinent Ellenburger well circled and located in Unit P, Section 36. That is Gulf's Graham-State NCT-A Number Five well. The McKee wells are also shown with appropriate symbols.

Q What is the size of Gulf's lease on which this Ellenburger well Number Five is located?

A 160 acres.

Q Is that a State lease?

A Yes, sir, that is a State lease.

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Q Do you have other production on that lease which is not shown here which accounts for this being Well Number Five?

A Yes, sir. These plats only show the McKee and Ellenburger wells. There are shallow pools in this same area.

Q Do you have any geologic structure maps?

A Yes, sir. That is Exhibit Number Two. A structure map on top of the Ellenburger formation, 100 foot contour interval. It shows the Northwest-Southeast anticline faulted on the Northeast side, and particular attention is called to the gas-water contact mark at minus 6320 feet. Exhibit Number Three also is a structure map, contoured on top of the McKee formation. You will note that the structural configurations are the same for the Ellenburger and McKee. Particular attention again is called to the gas-water contact at minus 6320 in the McKee.

Q Have you made geological cross sections?

A Yes, I have.

Q Would you refer to Exhibit Four, Five and Six, and explain on each?

A Exhibit Four is a plat showing the lines of cross sections. You will notice we have two cross sections submitted. One is a North-South section, and the other is a Northwest-Southeast Section. Referring now to Exhibit Number Five, which is the North-South cross section, you will note that the Ellenburger will is on the extreme left side of the cross section, and it is producing- - the producing interval in the Ellenburger is from the base of

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casing, TD, of 9822 feet. The center well in the cross section is Amerada's Number Five J. R. Phillips. You will note that this well ran almost continous drillstem tests from the top of the McKee into the Ellenburger. TD is through the McKee, all produced gas. The Ellenburger, however, was encountered below the gas-water contact and drillstem tested 1,170 feet of salt water. The well on the extreme right of the cross section is Amerada's Number Seven J. R. Phillips, and it also DST gas in the upper part of the McKee formation, but the Ellenburger ran structurally very low and DST 5,580 feet of sulphur water.

Next exhibits is Exhibit Number Six, that is the Northwest Southeast Cross Section. Again, Gulf's Ellenburger well is on the extreme left of the cross section. The center well on the section, cross section, is Texaco's Number 11 J. R. Phillips, and attention is called to the DST which bracketed the Basal McKee and into the Ellenburger. DST from 9742 to 9814, flowed one thousand eight-six MCF gas per day. Attention is called to the fact that the Ellenburger lime present in the Gulf well appears to be absent in the Texaco well. This is probably due to a local non-conformity, or possibly non-deposition. In any event, the McKee pool is within about six feet of the Ellenburger pool at that location. The well on the extreme right is Amerada's Number Two L. M. Lambert, which tested the Ellenburger through perforations. The well was perforated at 9832 to 50. It was sand fraced with 5,000 gallons and tested 650 MCF of gas per day. They did not recover all load

oil. Operators plugged back above the Ellenburger pool and completed from perforations in the McKee.

Q Referring back to Exhibit Number Four, your first cross section was in a straight southerly line from Gulf's Graham-State Well Number Five, and your cross section was in a southeasterly direction; is that correct?

A That is correct.

Q As a result of your geological study, what is your conclusion as to the relationship as to the Monument-Ellenburger and Monument-McKee Gas Pools?

A It is my conclusion that the Monument-Ellenburger and Monument-McKee Gas Pools are producing from a common source of supply, and should be considered as one pool.

Q What are the particular similarities between the two pools, and your other reasons for believing this?

A One, both pools are located on the same geologic structure. Two, gas-water contact is the same for the McKee and the Ellenburger. Three, continuous drillstem tests through the McKee and Ellenburger indicate that separation is practically non-existent. Four, geologic consideration, as illustrated in Exhibit Number Six, indicates that the probability that due to a local non-conformity, the McKee and Ellenburger are in contact within the reservoir. Five, analysis of gas samples from McKee and Ellenburger show the gases to be practically identical.

Q Were Exhibits One through Six prepared by you or at your

direction and under your supervision?

A Yes, sir, they were.

MR. KASTLER: I would like to move to admit Exhibits One Two, Three, Four, Five and Six, into evidence at this point.

MR. NUTTER: Gulf's Exhibits One through Six will be admitted in evidence.

Q (By Mr. Kastler) Have you discovered anything in your study of these two pools which would indicate that they were not in the same reservoir?

A I haven't found anything to prove that they are separate reservoirs. In fact, everything indicates, and the great preponderance of the evidence shows that they are a single reservoir.

MR. KASTLER: That is all of the questions I have of this witness on direct.

* * * * *

MR. NUTTER: Are there any questions ofMr. Marshall? Mr. Marshall, did most of the wells that were drilled to the McKee in this area penetrate the Ellenburger?

A The wells that were located structurally high, yes, sir, did penetrate the Ellenburger. Let's refer to the Ellenburger map, Exhibit Number Two, contoured on top of the Ellenburger. Every place we have an Ellenburger top, we have a sub-"C" down point. And they can be picked out so that we have rather excellent for the Ellenburger. Quite a number of wells did go to the Ellenburger.

MR. NUTTER: Your Number Five only one producing?

A Only producer from the Ellenburger pool, yes, sir.

MR. NUTTER: Is Mr. Hoover going to be testifying in pressure and gas analysis, such as that?

MR. KASTLER: Yes, sir, he is.

MR. NUTTER: Are there any other questions of Mr. Marshall? He may be excused.

JOHN HOOVER,

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Will you please state your name, your position, and by whom you are employed?

A Yes, sir. John Hoover, employed by Gulf Oil Corporation, as District Production Engineer, Roswell, New Mexico.

Q Would you please explain the background leading up to this application?

A Yes, sir. We first planned to dual or recomplete our Graham-State Well Number Five- -

(Discussion had off the record)

Q Mr. Hoover, Mr. Marshall has testified that this is the Graham-State NCT-A tract, and Graham A Number Five, and would you clarify that point for us, please?

A Yes, sir. I believe that the designation is in error, which we didn't catch. The Graham-State as is referred to, should be Graham-State F all along and on the exhibit where it shows Graham-State A, should be Graham-State F. To explain the background, we first planned to dual this well, however after closer examination of the facts, the logs and so forth, concerning these reservoirs, we were of the opinion that we could not prove separation. Therefore, to gamble the expense of dual and then to finally arrive at the fact that we couldn't prove separation would not be worth the risk. So, our next step, we approached the purchaser to see if he would take ratibly to our well as to other McKee wells. He advised us he was required to take ratibly from our well as well as others, which we concurred that his logic was correct. So, we dropped this approach. The thing that happened about that time, the Monument-McKee Pool went on prorationing in March of 1961. At that time there were four wells completed in the Monument-McKee Pool, whereas, now there are nine wells. So, it was our thought at the time that as additional McKee wells were developed, that the allowable per well would probably come down with the nominations staying very close to the same for the pool, and the two pools would therefore be in more- - more in line. This did not happen. Then, in 1962, we approached all the operators in the pool to combine the two pools, and there were no objections at thattime. However, it was suggested that we wait until the Ellenburger test well, which was drilled by Sinclair in Section 8, of 20 South, 37 East, that is

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shown on Exhibit one, is in the [illegible] corner. It shows Sinclair's Barber Atkins [illegible], still Barber one, but to wait until [illegible] Ellenburger McKee [illegible] was completed. We also had an interest in this well. We, too, agreed it would be a good idea because if the Ellenburger was also productive, with the McKee being productive, they would probably dual the well. However, the McKee was dry, and it was running low, and the Ellenburger likewise was- - would be low, and under water, so the well did not go to the Ellenburger. This well was plugged and abandoned in September of 1963. And that brings us to our hearing today.

Q Do you have any information concerning the takes from these pools averaged on a per well basis?

A Yes, sir, Ido. I have averaged the monly allowable for the McKee wells, having 160 acres attributed, and from our Ellenburger well is,the production from the well also, which has 160 acres attributed, this average was over the period of March 1961 through September 1963, that takes in the period of the prorationing of the McKee Pool, the McKee well on 160 acres averages 23,797 MCF per month. On our Ellenburger well, it averages 17,179 MCF per month.

Q Do you have a comparison of gas analysis from each pool?

A Yes, sir, we do. This is marked Exhibit Number Seven . We - - what we have shown here, now, I would like to point out that these analyses were not run for this hearing. They were run by the purchaser back in July of '63 with the date of each analysis

shown on the tabulation. And these analyses were run just in his normal course of business. It may be noted that the components are almost identical. For Amerada, these analyses are for J. R. Phillips Number Five, which is a south offset to our Ellenburger well and the Amerada State F Number Five, which is located to the west of our Ellenburger well. The other analysis is on our Graham-State F Well Number Five. It may be noted that the analysis is very similar, all the way through, until you get in the heavier components from the- - especially from the Pentanes on down, and I would like to point out that we would expect a difference in gases down there. The two Amerada wells have coal separation units installed where our well does not. The coal separation will change the recovery in at least your Pentanes and heavier and probably slightly in your Butanes. There is as much difference in the analysis between the two McKee tests as either one of the McKee tests and our well and in my opinion, the similarity is so close there that it could be concluded that it is the same gas.

Q Did Gulf make any calculations of the original gas in place as compared with the wells production to date?

A Yes, we did. We estimated from the information available that the original recoverable gas in place could be from 1,660 MCF to 2,660 MCF, depending on the interpretation of the data. Whereas, our Graham-State F Number Five has produced to October 1, 1963, a total of 2,994 MCF. It is my opinion this extra gas must be coming from another source, namely the McKee. I would also like to point

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out that even though we have produced more gas than we considered originally in place, our well is still an excellent well capable of producing over 3,000,000 a day. Shut in pressure of over 1800 pounds.

Q Assuming, as you do from the evidence available, that these two pools are in common reservoir, are Gulf's correlative rights presently being impaired?

A Yes, sir. We are suffering drainage. I previously testified that the takes from our well are less than the McKee allowables for wells with the same acreage attributed, therefore, we are being drained.

Q And does the consequence of the McKee, Monument-McKee pool of it being prorated?

A Yes.

Q And if the pools are combined, will there be any changes necessary due to spacing requirements?

A No. There would not, because the Monument-McKee field rules provide that the standard unit shall be 160 acres; that the allowables based on acreage dedicated. Our well is also located on 160 acres, and it is also spaced in accordance with the McKee rules, if our well is located 660 feet from the South and East lines of Section 36.

Q Was Exhibit Seven prepared by you, by compiling the data that was available?

A Yes, it was.

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Q Do you have anything else you would like to add in this case?

A The only thing that I would like to add is that if the pools are not combined, then, we would be entitled to a dual completion. It would have to be one or the other, and we recommend that the pools be combined.

MR. KASTLER: I would like to move to admit Exhibit Number Seven into evidence at this time, and this concludes my questions on direct examination.

MR. NUTTER: Gulf's Exhibit Seven is admitted in evidence. Does anyone have any questions of Mr. Hoover?

EXAMINATION

BY MR. NUTTER:

Q Mr. Hoover, just for clarity sake, if your well - - how do you explain the fact that your well has already produced more than its reserves, that you are getting drained?

A Well, what we are saying is it has produced more than what it should have in place, so the gas has to be coming from the same pool that the McKee wells are producing from, and their allowable is more than what our well has produced, or is producing at the present time. So, therefore, we know no other way. We are being drained.

Q Although you have produced more than your reserves?

A Yes, sir, more than the gas in place.

Q Was any drillstem run on your Number Five, was any drillstem tests or other tests made of the McKee?

A On Exhibit Number Five, it shows a drillstem test for our well in the interval, 9737 to 9822, and it flowed 14,000 MCF gas per day. That is bracketed partly in the McKee and partly in the Ellenburger. There wasn't one made- - only- -

Q Actually, the upper portion of that would be in the extremely tight section there were the curves on the log come together, wouldn't it? It would be just about from the narrowest point on the curves.

A Yes, sir. That looks like that would be about right, 9737.

Q What is the Number Five capable of producing today on a 24 hour test?

A We have not made a test on it. However, have checked recent purchases by purchasers in September, and at the volume they took on the days produced, it averaged about three million per day.

Q How does this capability compare with the capability of the McKee wells?

A I have not checked it from that angle. I would say this, that the well is capable of easily producing what the McKee allowable is by many times. The McKee allowable, as I testified, is running about 25,000 MCF per month, which would be 800 MCF per day, and our well can make 3 million a day.

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Q Do you have any initial pressures on these two zones?

A There were no- - as far as I can find, there is no bottom hole pressure information available, except on our well. On the drillstem test, the original pressure was 3365 pounds PSIG. The well initially had a tubing pressure of 2800 pounds. Now, the only pressures that have been reported since that time are shut in tubing pressures, and our well on a - - In August 23, of '63, had a shut in pressure, tubing pressure, of 1849 pounds. I don't believe that the shut in tubing pressures reflect very much here because there are some McKee wells, or one McKee well that I checked, had a lower shut in tubing pressure than our's did and there are some that have higher ones.

Q Do you have any - - Was that drillstem test bottom hole pressure originally 3360 or 65?

A 3365 PSIG.

Q Do you have any original drillstem test pressures in the McKee?

A No, sir.

Q How about the GOR, or gas liquid ratio for these two zones, how do they compare?

A I checked that to try to get a comparison, but the McKee wells vary anywhere from ten barrels per million to 25 barrels per million, because some of the wells have coal separators, coal separation units, and some of them do not. On our well, which has no coal separation unit, it has about 15 barrels per million. I

did check the gravity to see if I could pin anything down there, and I checked the gravity of the condensate from our Mathis Number Six, which is in the - - Corrected API gravity for condensate run in October of this year, 67.4 degrees. Graham-State F was 68.7. There again I would expect the gravity of condensate from our Mathis well to be slightly lower. It also has a coal separation unit on it. And has more - - heavier in comparison in the fluids. But, there was not correlation for any gas-oil ratios, even with the McKee wells that you mentioned.

Q The GOR on your's is 15 barrels per million?

A Yes.

Q There is something else I was going to ask you. I don't know what it was. I will have to ask you next time I see you or something.

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

MR. DURRETT: I have one question, please. Mr. Hoover, who is the purchaser in this field?

A There are three purchasers. Trans-Western, El Paso and Northern.

MR. DURRETT: Who is connected to your Ellenburger well?

A Northern Natural.

MR. DURRETT: They also are connected to some McKee wells?

A Yes, sir.

MR. DURRETT: Thank you.

MR. NUTTER: Are there any other questions? The witness may be excused. Do you have anything further, Mr. Kastler?

MR. KASTLER: Nothing further.

MR. NUTTER: Does anyone have anything they wish to offer in 2943?

MR. DURRETT: We received a telegram from the Amerada Petroleum Corporation stating they have no objection to the approval of the application.

MR. NUTTER: Is there anything further? Take the case under advisement.

* * * * *

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal of Office, this 23rd day of December, 1963.

NOTARY PUBLIC

My Commission Expires:
September 6, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2943, heard by me on 11/20, 1963.

....., Examiner
New Mexico Oil Conservation Commission

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

DRAFT

JMD/esr
December 3, 1963

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. 2943

Order No. R- 2618

NOMENCLATURE

APPLICATION OF GULF OIL CORPORATION
TO COMBINE TWO EXISTING GAS POOLS,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 20, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this _____ day of December, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, 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, Gulf Oil Corporation, seeks consolidation of the Monument-Ellenburger and Monument-McKee Gas Pools, Lea County, New Mexico, into a single pool to be operated and prorated under the existing rules for the Monument-McKee Pool.

(3) That the reservoir information presently available establishes that the Monument-McKee and Monument-Ellenburger Gas Pools constitute a common source of supply.

(4) That in order to prevent waste and protect correlative rights, the Monument-Ellenburger Gas Pool should be abolished, the vertical limits of the Monument-McKee Gas Pool should be extended to include the Ellenburger formation, the Monument-McKee Gas Pool should be redesignated the Monument McKee-Ellenburger Gas Pool, and

the Monument McKee-Ellenburger Gas Pool should be governed by all previous rules, regulations, and orders of the Commission applicable to the Monument-McKee Gas Pool.

IT IS THEREFORE ORDERED:

(1) That the Monument-Ellenburger Gas Pool is hereby abolished.

(2) That the vertical limits of the Monument-McKee Gas Pool are hereby extended to include the Ellenburger formation.

(3) That the Monument-McKee Gas Pool is hereby redesignated the Monument McKee-Ellenburger Gas Pool.

(4) That the Monument McKee-Ellenburger Gas Pool shall be governed by all previous rules, regulations, and orders of the Commission applicable to the Monument-McKee Gas Pool.

(5) That this order shall be effective January 1, 1964.

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

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

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico

Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

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

December 13, 1963

Mr. Bill Kastler
Mr. M. I. Taylor
Gulf Oil Corporation
Post Office Box 1938
Roswell, New Mexico

Re: Case No. 2943
Order No. R-2618
Applicant:
GULF OIL CORPORATION

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC

OTHER

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 11/22/63

Hearing Date 9am 11/20/63 Hobbs & SF

CASE 2943

My recommendations for an order in the above numbered cases are as follows:

Enter an order abolishing the Monument-Ellenburger Gas Pool and Extending the vertical limits of the Monument-McKee Gas Pool to include the Ellenburger formation. Change the Monument-McKee's name to Monument McKee-Ellenburger Gas Pool.

Find that from the evidence now available, it appears that the two pools ~~they are~~ constitute a common source of supply and should be designated as such

Sam Nutter

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

1201 (4-60)

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination

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K TUC291 PD=FAX TULSA OKLA 19 340P CST=
NEW MEXICO OIL CONSERVATION COMMISSION=
LAND OFFICE BUILDING SANTA FE NMEX=

ATTENTION: MR. A. L. PORTER, JR., SECRETARY & DIRECTOR
REFERENCE APPLICATION GULF OIL CORPORATION (CASE NO.
2943) SET FOR 9:00AM NOVEMBER 20, 1963, AS AN OPERATOR
IN THE MONUMENT-MCKEE FIELD AMERADA HAS NO OBJECTION
TO GULF'S APPLICATION.=
AMERADA PETROLEUM CORP R S CHRISTIE=

Docket No. 34-63

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 20, 1963

9:00 A. M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

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

CASE 2939: Application of Texaco Inc. for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Square Lake 31 Unit Area comprising 480 acres, more or less, of Federal land in Section 31, Township 16 South, Range 30 East, Eddy County, New Mexico.

CASE 2940: Application of Texaco Inc. for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Square Lake Pool, Eddy County, New Mexico, by the injection of water into the Premier Sand through six wells located in Section 31, Township 16 South, Range 30 East.

CASE 2941: Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (tubingless) of its L. R. Kershaw Well No. 9, located in Unit B of Section 13, Township 20 South, Range 37 East, Lea County, New Mexico, to produce oil from the Skaggs Glorieta and East Weir Blinebry Pools and gas from the Weir Tubb Gas Pool through parallel strings of 2 7/8 inch casing cemented in a common well bore.

CASE 2942: Application of Sunray DX Oil Company for the creation of a new oil pool and for special temporary pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Bough "C" Oil Pool for its New Mexico State "AO" Well No. 1, located in Unit M of Section 16, Township 10 South, Range 34 East, Lea County, New Mexico, and the establishment of temporary pool rules therefor, including a provision for 160-acre proration units and for fixed well locations.

CASE 2943: Application of Gulf Oil Corporation to combine two existing gas pools, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of the Monument-Ellenburger and Monument-McKee Gas Pools, Lea County, New Mexico, into a single pool to be operated and prorated under the existing rules for the Monument-McKee Pool.

CASE 2944: Application of Socony Mobil Oil Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox location for a proposed triple completion in the Vacuum-Devonian, Vacuum-Wolfcamp and North Vacuum-Abo Pools, Lea County, New Mexico, said well to be drilled at a point 600 feet East of the center of the NW/4 SW/4 of Section 36, Township 17 South, Range 34 East.

Oil Conservation Commission

ir/

Case 3943

Gulf Oil Corporation

ROSWELL PRODUCTION DISTRICT

P. O. Drawer 1938
Roswell, New Mexico

1963 OCT 22 PM 1 18

October 21, 1963

W. B. Hopkins
DISTRICT MANAGER
M. I. Taylor
DISTRICT PRODUCTION MANAGER
F. O. Mortlock
DISTRICT EXPLORATION MANAGER
H. A. Rankin
DISTRICT SERVICES MANAGER

Oil Conservation Commission
State of New Mexico
Post Office Box 871
Santa Fe, New Mexico 87501

Re: Application of Gulf Oil Corporation for Hearing to Combine the Monument-Ellenburger and Monument-McKee Gas Pools, Lea County, New Mexico

Gentlemen:

Gulf Oil Corporation respectfully requests that an Examiner Hearing be set to consider the combining of the Monument-Ellenburger and Monument-McKee Gas Pools and to prorate the combined pools under the existing rules for the Monument-McKee Gas Pool.

In support of this application, the following facts are submitted:

(1) Applicant owns and operates the only well in the Monument-Ellenburger Gas Pool.

(2) Applicant is of the opinion that the existing Monument-Ellenburger and Monument-McKee Gas Pools are in communication in this area.

(3) Applicant believes that the Pools should be combined and prorated on the same basis to insure equal withdrawals and protect correlative rights.

It is requested that this matter be scheduled for the last Examiner Hearing in November, 1963.

Respectfully submitted,

GULF OIL CORPORATION

M. I. Taylor

M. I. Taylor

JHH:dch

cc: New Mexico Oil Conservation Commission
Post Office Box 1980
Hobbs, New Mexico 88240

DOCKET MAILED
Date 11-8-63

GULF

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. 2943
Order No. R-2618
NOMENCLATURE

APPLICATION OF GULF OIL CORPORATION
TO COMBINE TWO EXISTING GAS POOLS,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 20, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 13th day of December, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, 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, Gulf Oil Corporation, seeks consolidation of the Monument-Ellenburger and Monument-McKee Gas Pools, Lea County, New Mexico, into a single pool to be operated and prorated under the existing rules for the Monument-McKee Pool.

(3) That the reservoir information presently available establishes that the Monument-McKee and Monument-Ellenburger Gas Pools constitute a common source of supply.

(4) That in order to prevent waste and protect correlative rights, the Monument-Ellenburger Gas Pool should be abolished, the vertical limits of the Monument-McKee Gas Pool should be extended to include the Ellenburger formation, the Monument-McKee Gas Pool should be redesignated the Monument McKee-Ellenburger Gas Pool, and the Monument McKee-Ellenburger Gas Pool should be governed by all previous rules, regulations, and orders of the Commission applicable to the Monument-McKee Gas Pool.

IT IS THEREFORE ORDERED:

(1) That the Monument-Ellenburger Gas Pool is hereby abolished.

(2) That the vertical limits of the Monument-McKee Gas Pool are hereby extended to include the Ellenburger formation.

(3) That the Monument-McKee Gas Pool is hereby redesignated the Monument McKee-Ellenburger Gas Pool.

(4) That the Monument McKee-Ellenburger Gas Pool shall be governed by all previous rules, regulations, and orders of the Commission applicable to the Monument-McKee Gas Pool.

(5) That this order shall be effective January 1, 1964.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell

JACK M. CAMPBELL, Chairman

E. S. Walker

E. S. WALKER, Member

A. L. Porter, Jr.

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

esr/

New Mexico Oil Conservation Commission

Hobbs, New Mexico

File Case 2743

Report on

MONUMENT McKEE GAS POOL and
MONUMENT ELLENBURGER GAS POOL

By:
John W. Runyan

September 30, 1963

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

MAIN OFFICE OCC
1963 OCT 1 AM 8:12

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

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

P. O. BOX 2045
HOBBS

Sept. 30, 1963

Mr. A. L. Porter, Jr., Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Sir:

Attached is a report prepared by Mr. John Runyan of this office on the Monument McKee and Monument Ellenburger Gas Pools. This report was prepared as a result of Gulf Oil Corporation's inquiry concerning the possibility of classifying these pools as one pool.

Based on the geologic and drill stem test information, it was Mr. Runyan's conclusion that the pools could be combined. However, since we have very little reservoir information and the operators are reluctant to part with what they have, it might be best to have Gulf apply for a hearing on the consolidation of these two pools.

I would suggest that you study this report and we can discuss the problem the next time that I am in Santa Fe.

Yours very truly,

OIL CONSERVATION COMMISSION

Joe D. Ramey

Joe D. Ramey
Supervisor, District I

JDR/mc
Attach.

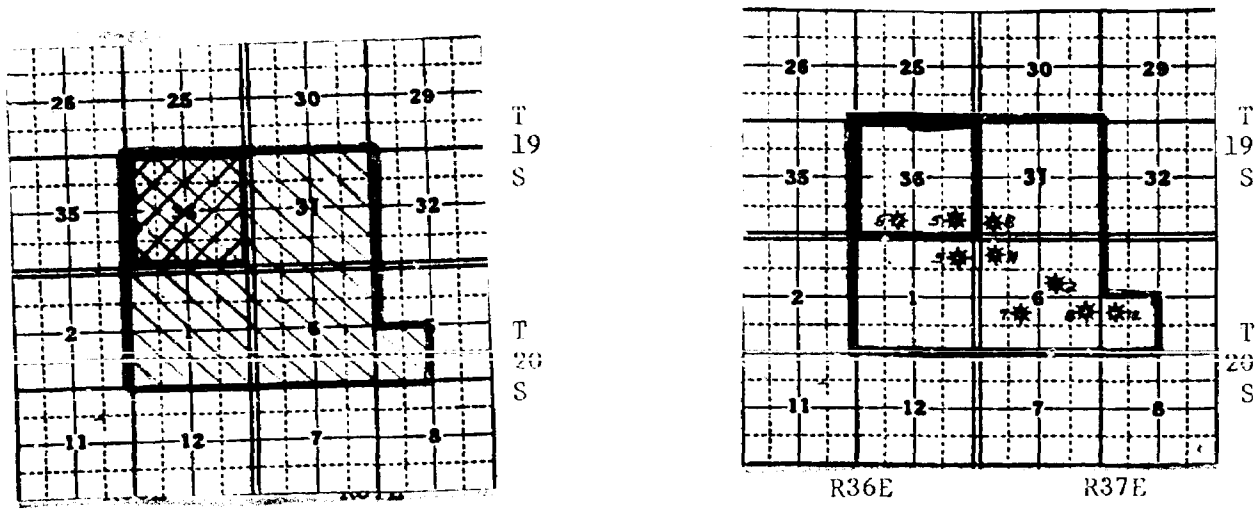
PURPOSE OF REPORT

This study of the Monument-McKee and Monument-Ellenburger Gas Pools is due to a request made by Gulf Oil Corporation in their letter dated September 17, 1963, in which they expressed a desire to combine the two pools. Their reasons are:

(1) To obtain equal withdrawals from the Ellenburger and McKee Pools. Due to purchasers nominations, the allowable for the Ellenburger well is not equal to the McKee wells.

(2) Gulf believes the possibility exists that the McKee and Ellenburger formations are in communication in this area.

MONUMENT ELLENBURGER GAS &
MONUMENT McKEE GAS POOLS.



▬..Monument Ellenburger --T19S R36E, sec. 36 all.

▨..Monument McKee -- T19S R36E, sec. 36 All.
T19S R37E, sec. 31 all.
T20S R36E, sec. 1 all.
T20S R37E, Sec. 6 all &
sec. 5 SW/4.

MONUMENT ELLENBURGER

Gulf #5, P-36-19-36 T. McKee 9485' T. Ellen. 9720' T. Perf. 9785 - 9822.

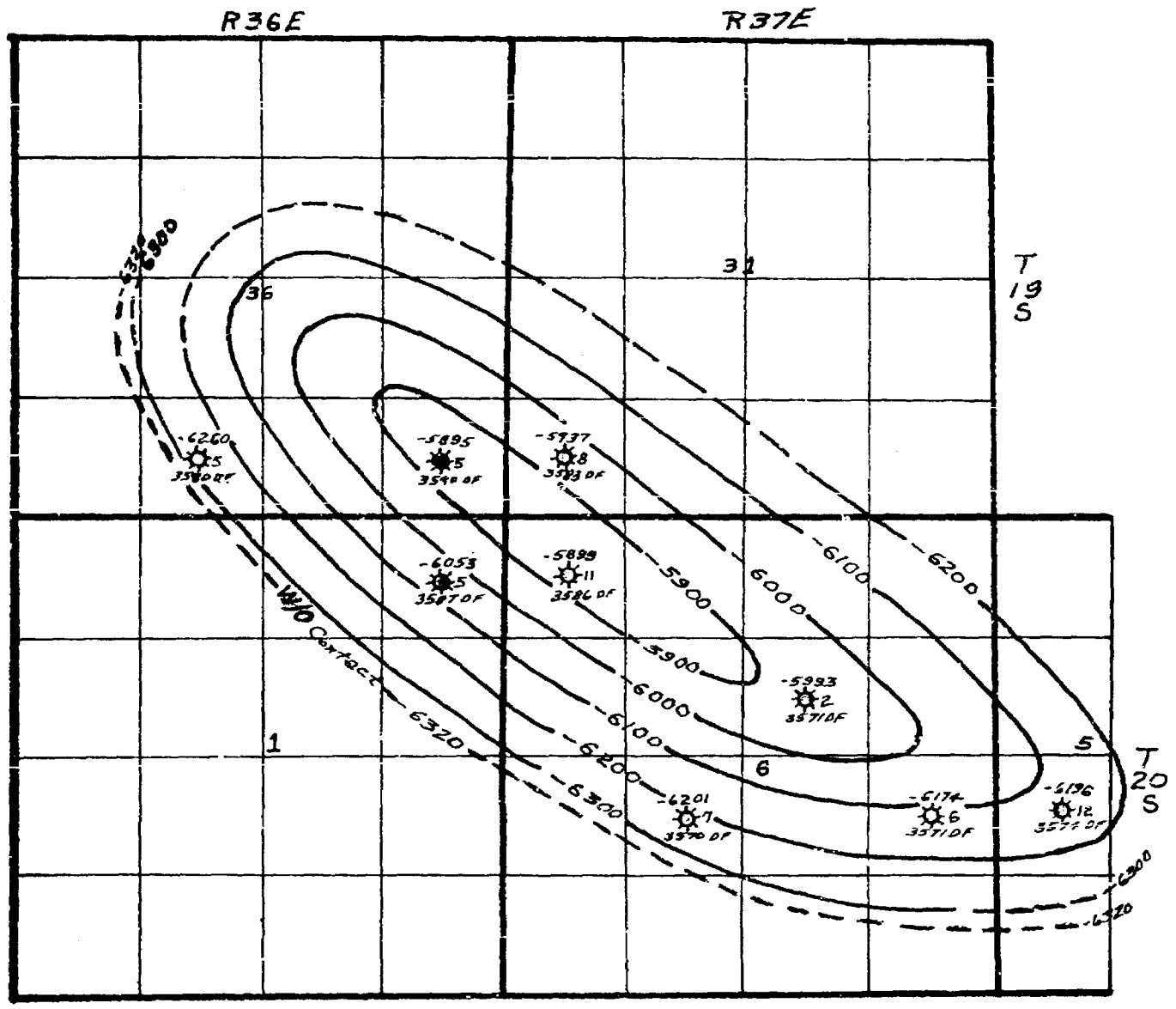
MONUMENT McKEE

Amerada #2, G-6-20-37	T. McKee 9564'	T. Ellen. 9799'	T. Perf. 9568-9786'
Amerada #5, A-1-20-36	T. McKee 9640'	T. Ellen. 9875'	T. Perf. 9610-9870'
Amerada #5, N-36-19-36	T. McKee 9840'	T. Ellen. 10075'	T. Perf. 9834-9890'
Gulf #6, I-6-20-37	T. McKee 9745'	T. Ellen. 9980'	T. Perf. 9746-9812'
Marathon#12, L-5-20-37	T. McKee 9770'	T. Ellen. 10005'	T. Perf. 9773-9822'
Sinclair #8, M-31-19-37	T. McKee 9520'	T. Ellen. 9757'	T. Perf. 9528-9614'
Texaco #11, D-6-20-37	T. McKee 9485'	T. Ellen. 9750'	T. Perf. 9532-9738'
Un. of Tex. #7, K-6-20-37	T.McKee 9771'	T. Ellen. 10006'	T. Perf. 9793-9826'

The above tops are log tops.

MONUMENT McKEE GAS POOL

STRUCTURE MAP



Ellenburger Gas Well

McKee Gas Well

Water/oil contact.

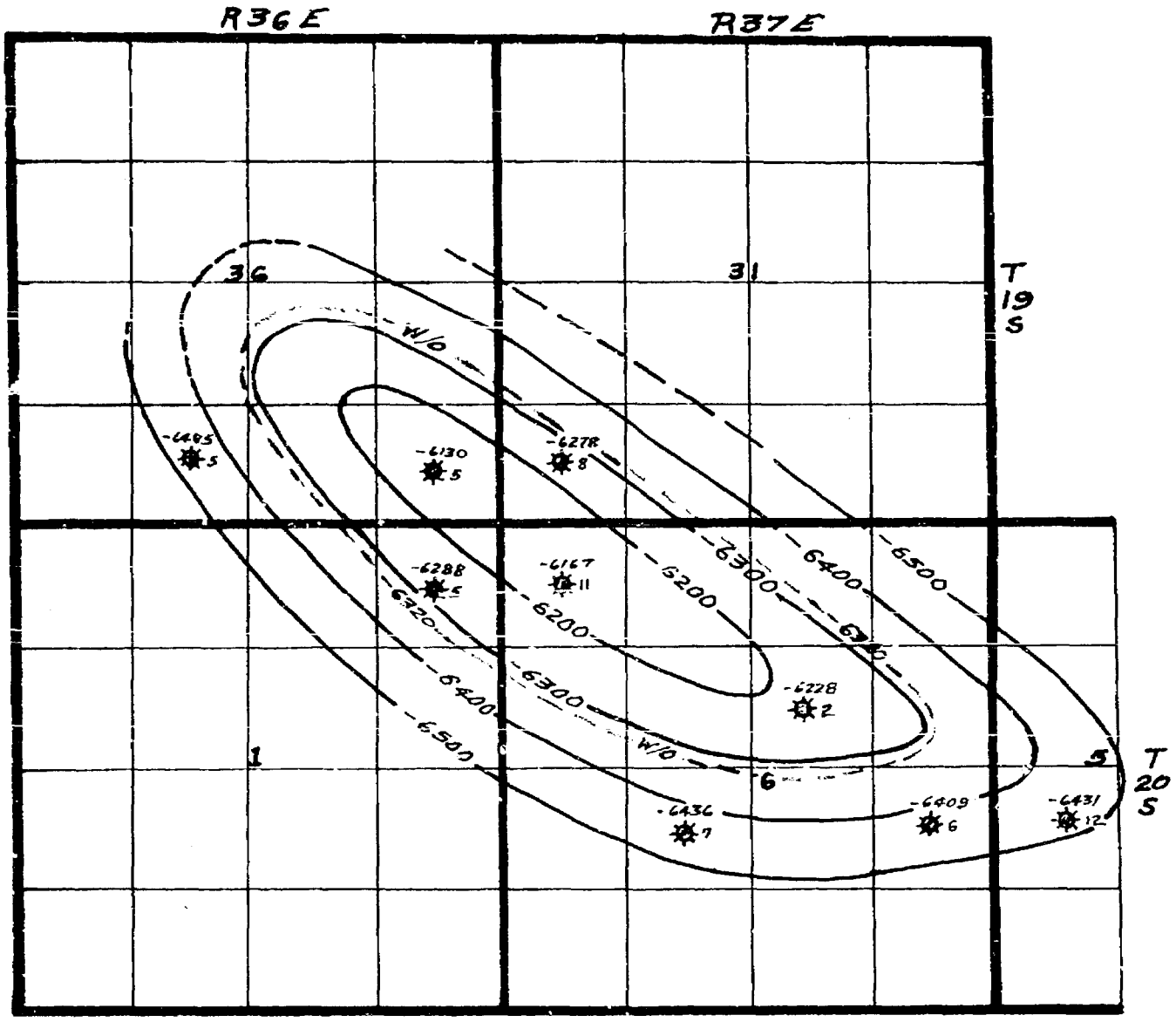
Contour interval 100'

Contoured on top McKee

N.M.O.C.C.
J.W.R.

MONUMENT ELLENBURGER GAS POOL

STRUCTURE MAP



Ellemburger gas well.

McKee gas well.

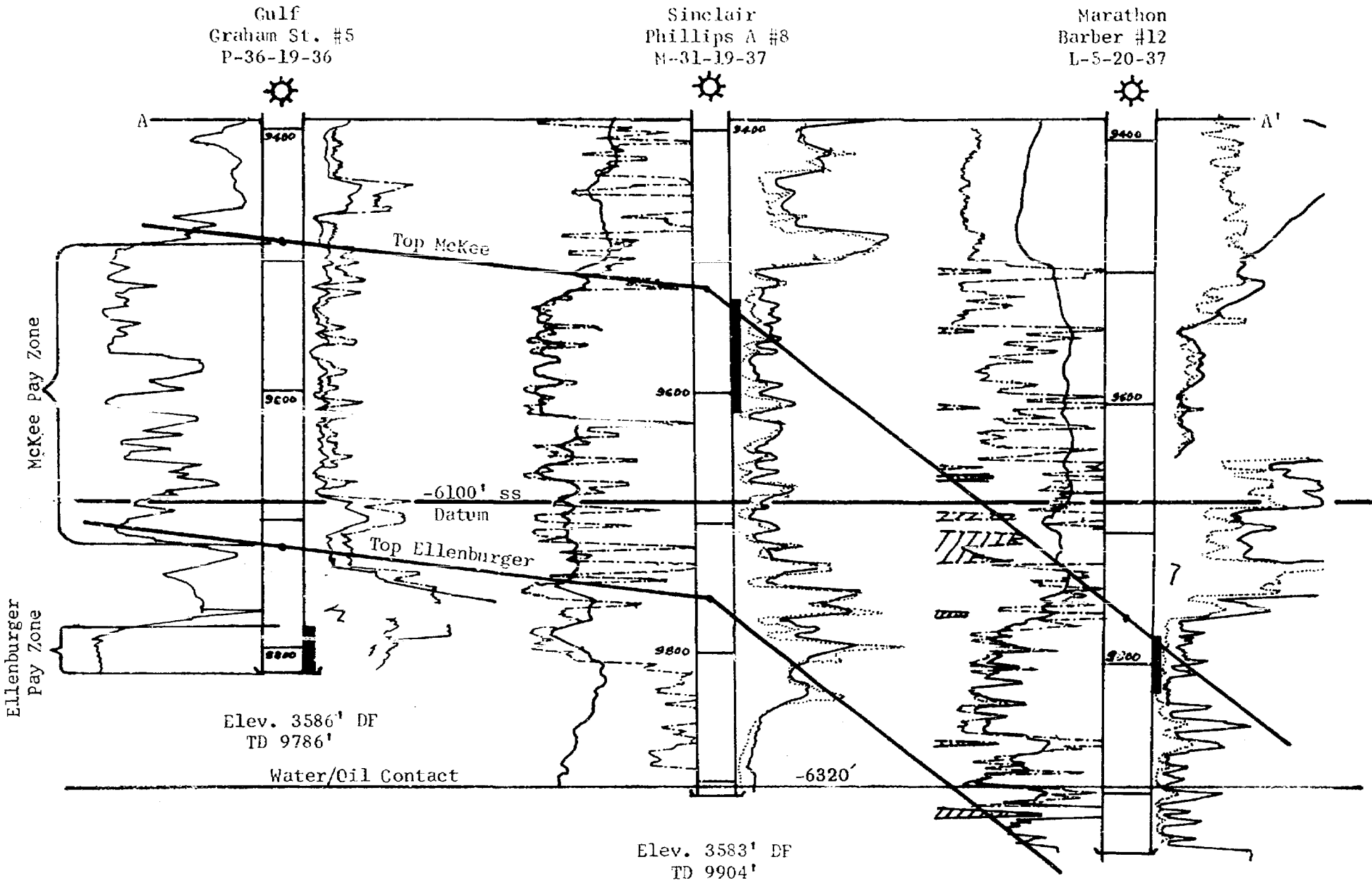
Water/Oil contact.

Contour interval 100'
Contoured on top Ellenburger.

N.M..O.C.C.
J.W.R.

MONUMENT McKEE & ELLENBURGER GAS POOLS

CROSSECTION A - A'



EVALUATION SHEET FROM D.S.T.'S AND COMPLETIONS

Reported Water - DST's

*Union of Texas #7	Water on DST 9895-9925 (-6325 to -6355)	McKee
*Amerada #5-A	Water on DST 9905-9927 (-6318 to -6360)	Ellenburger
Amerada #5-N	Water on DST 10036-10057 (-6446 to -6477)	Ellenburger
Amerada #2	Water with comp. 9568-9786 (-5997 to -6215)	McKee

Indicates water contact at -6320'

No Salt Water Encountered - Completions

Texaco #11	No water to depth of 9814 (-6228)	McKee
Gulf #6	No water to depth of 9779 (-6209)	McKee
Marathon #12	No water to depth of 9822 (-6248)	McKee
Sinclair #8	No water to depth of 9614 (-6031)	McKee
*Gulf #5-P	No water to depth of 9822 (-6222)	Ellenburger

No water above -6248'

Gulf and Sinclair state that the water oil contact is at -6320' for both Ellenburger and McKee Pools.

*The DST and completion information of the Union of Texas #7, Amerada #5-A, and Gulf #5-P shows the water/oil contact of -6320 to be correct and indicates that the water/oil contact is common to both pools.

DST INFORMATION

COMPANY AND WELL	DST	DIST. GRAV.	OIL GRAV.	SHUT-IN PRESSURE DST #	GOR
MONUMENT-MCKEE					
Amerada #5-A 1-20-36	9639-9648	NR	--	3750	--
	9654-9677	68°	--	3800	--
	9681-9709	71.3°	--	3650	--
	9715-9737	NR	--	3625	--
	9742-9776	64.8°	--	3680	--
	9783-9817	61.1°	--	3500	--
	9821-9847	61.3°	--	3500	--
	9849-9850	62.1°	--	3700	--
Amerada #5-N 36-19-36	9836-9855	61.3°	--	3650	37600
	9860-9880	--	56.2°	3865	18267
	9885-9905	--	44.4°	3405	789
	9916-9924	NO OIL OR GAS		--	--
	9968-9976	--	--	--	Air
	10051-10059	--	--	--	Salt Water
Texaco #11-D 6-20-37	9440-9527	NR	--	NR	550 MCFD
	9651-9711	NR	--	NR	450 MCFD
Union Texas #7-K 6-20-37	9760-9800	NR	--	NR	4600 MCFD
	9895-9926	NR	--	NR	Salt Water
MONUMENT-ELLENBURGER					
Amerada #5-A 1-20-36	9877-9902	--	--	--	Air
	9896-9927	--	--	2900	Water
Amerada #5-N 36-19-36	10104-10112	--	--	--	Salt Water
Texaco #11-D 6-20-37	9742-9814	NR	--	NR	1087 MCFD
Gulf #5-P 36-19-36	9737	NR	--	3550	14000 MCFD
Union Texas #7-K 6-20-37	10050-10095	--	--	--	Salt Water

FINDINGS OF STUDY

The Monument-Ellenburger and McKee Gas Pools are both located on a common structural high. The structure consists of a small, closed anticline. The Ellenburger and McKee formations dip to the west of the structure and rise to the east to be truncated by a relative horizontal regional unconformity.

DST information shows that the oil-distillate, gravity, GOR's, and pressure varies from well to well and within each well as shown by the tabulated DST chart.

Shut-in pressure ranges from 2900# to 3865#. GOR's range from 789 to 18,267. Gravity ranges from 61.1° to 74.3°.

DST's indicate, as shown on the Evaluation Sheet, that the water contact for both the McKee and Ellenburger pools are apparently common at -6320 feet.

The chloride content of the water is 110,000 ppm.

Cross section A-A' and other pool logs show that the lower half of the Monument-McKee Pool is separated vertically by a series of shale stringers with small reservoirs between the shale stringers as shown by DST information.

The cross section also indicates that separation between the base of the McKee and top of the Ellenburger pay zones is somewhat questionable since they are separated by a dolomite interval of 60 feet.

The Monument-Ellenburger contour map shows that the maximum area of gas drainage from water contact is approximately 400 acres or 2½ standard gas proration units of 160 acres.

Attached to the back of this report are letters from all operators, except Texaco, Inc., stating that they have no objection to the combining of the two pools.

SUMMARY

Due to pressure, gravities, GOR's, and lithology, the McKee pool actually contains one large reservoir and several small reservoirs separated by shale stringers, which rules out vertical communication between the Ellenburger and McKee pools. The common water table of -6320 feet indicates that the two pools were/are connected laterally. This lateral communication is believed to be due to the regional unconformity to the east which truncates both formations. It is believed that the water table was established during the gas-oil migration and fill-up of the structure.

The Ellenburger reservoir is quite small and is capable of being drained by two wells of standard proration units.

RECOMMENDATIONS AND CONCLUSIONS

Due to the economics of the ultimate gas recovery and because of the small size of the Ellenburger gas pool, and due to the fact that the operators within the pool boundaries have no objection to the combining of the Monument-McKee and Monument-Ellenburger Pools, I recommend that the two pools be combined and called the Monument-McKee-Ellenburger Gas Pool and that Order 1970-D continue in effect with the change.

John W. Runyan
Geologist
New Mexico Oil Conservation Commission

Gulf Oil Corporation

ROSWELL PRODUCTION DISTRICT

W. B. Hopkins
DISTRICT MANAGER
M. I. Taylor
DISTRICT PRODUCTION MANAGER
F. O. Mortlock
DISTRICT EXPLOHATION MANAGER
H. A. Rankin
DISTRICT SERVICES MANAGER

September 17, 1963 SEP 18 PM 4 41

P. O. Drawer 1938
Roswell, New Mexico

New Mexico Oil Conservation Commission
Post Office Box 1980
Hobbs, New Mexico 88240

Attention: Mr. Joe D. Ramey

Gentlemen:

Reference is made to past conversations concerning the combining of the Monument Ellenburger Gas Pool with the Monument McKee Gas Pool, Lea County, New Mexico, and prorate each under the Monument McKee Gas Pool.

Gulf operates the only well in the Monument Ellenburger Gas Pool and in order to obtain equal withdrawals with the McKee gas wells, it is desired to place this well in the prorated McKee Pool. Since the purchasers nominate by pools, the allowables for the Ellenburger well are not equal to the McKee wells on a per well basis.

The possibility exists that the Ellenburger and McKee formations are in communication in this area; therefore, Gulf directed a letter to the Operators to determine if there were any objections to combining the pools. Replies were received from all of those contacted except Texaco, who did not answer our inquiry. There were no objections and it is assumed by no reply that Texaco does not object. A Xerox copy of each reply received is attached.

It is requested that the pools be combined by a nomenclature case; however, in the event this is not possible, please advise. Thank you in advance for your consideration in this matter.

Yours very truly,

M. I. Taylor

Attachments
JHH:sz

John:
Make a study of this, please.

AMERADA PETROLEUM CORPORATION
P. O. BOX 2040
TULSA 2, OKLA.

November 9, 1962

Gulf Oil Corporation
P. O. Drawer 1938
Roswell, New Mexico

Attention: Mr. M. I. Taylor

Gentlemen:

This is in reply to your letter of November 1, 1962, regarding the Monument-McKee and Monument-Ellenburger Gas Pools, Lea County, New Mexico.

Please be advised Amerada Petroleum Corporation has no objection to combining the Monument-Ellenburger and Monument-McGee gas pools.

Yours very truly,

R. S. Christie

R. S. Christie

RSC:dw

cc: D. C. Capps
J. O. Hathaway

AHT
RHC

2455

CONTINENTAL OIL COMPANY

P. O. BOX 1977
ROSWELL, NEW MEXICO

PRODUCTION DEPARTMENT
NEW MEXICO DIVISION
A. B. SLAYBAUGH
DIVISION SUPERINTENDENT
V. C. BISSLER
ASSISTANT DIVISION SUPERINTENDENT

228 PETROLEUM BUILDING
TELEPHONE: MAin 2-4205

September 13, 1963

Gulf Oil Corporation
Drawer 1938
Roswell, New Mexico

Attention: Mr. M. I. Taylor

Gentlemen:

Re: PROPOSAL TO COMBINE
THE MONUMENT ELLENBURGER
& MONUMENT MCKEE GAS
POOLS, LEA COUNTY, NEW MEXICO

This is in reply to your September 9, 1963, letter inquiring if there are any objections to Gulf's proposal to combine the Monument Ellenburger and Monument McKee gas pools, Lea County, New Mexico, since the Sinclair Ellenburger test in the NW/4 of Section 8, T20S, R37E, was dry in the McKee and was not carried to the Ellenburger because it was structurally low in the McKee. This is to advise that since we operate no Monument Ellenburger or McKee gas wells in these pools, Continental has no objection to your proposed application.

Yours very truly,

A B Slaybaugh

RLF-pr

3182

SHELL OIL COMPANY
P. O. Box 1858
Roswell, New Mexico

November 2, 1962

Subject: Monument McKee and
Monument Ellenburger Gas Pools
Lea County, New Mexico

Gulf Oil Corporation
P. O. Drawer 1938
Roswell, New Mexico

Attention Mr. M. I. Taylor

Gentlemen:

Shell Oil Company has no objection to consolidation of the Monument McKee and Ellenburger Gas Pools. Our interest in these pools is limited to a dry hole located in the Northwest 1/4 of Section 36, Township 19 South, Range 36 East.

Yours very truly,

R. L. Rankin

R. L. Rankin
Division Production Manager

SINCLAIR OIL & GAS COMPANY
P. O. BOX 1470
MIDLAND, TEXAS

November 29, 1962

MIDLAND DIVISION

Gulf Oil Corporation
P. O. Drawer 1938
Roswell, New Mexico

Attention: Mr. M. I. Taylor

Re: Monument-McKee and
Monument-Ellenburger
Gas Pools, Lea County,
New Mexico

Dear Sir:

In answer to your letter of November 1, 1962, this is to advise that Sinclair Oil & Gas Company has no objection to the consolidation of the McKee and Ellenburger gas pools and prorating both zones under the Monument-McKee Gas Pool.

Yours very truly,

Joe Mefford
Division Production Supt.

JM:DWC:lw

3512

SKELLY OIL COMPANY

P. O. Box 1650
TULSA 2, OKLAHOMA

November 6, 1962

PRODUCTION DEPARTMENT
C. L. BLACKSHER, VICE PRESIDENT
W. P. WHITMORE, MGR. PRODUCTION
W. G. CARSON, MGR. TECHNICAL SERVICES
ROBERT G. HILTZ, MGR. JOINT OPERATIONS
GEORGE W. SELINGER, MGR. CONSERVATION

Re: Monument-McKee and
Monument-Ellenburger Gas Pools
Lea County, New Mexico

Gulf Oil Corporation
P. O. Box 1938
Roswell, New Mexico

Gentlemen:

At the present time Skelly Oil Company has several properties in and about the area mentioned in your letter of November 1, 1962, and while from an academic standpoint we would not like the Ellenburger and McKee formations consolidated, we have determined that there is a strong possibility of communication between these formations in this immediate area due to fracturing. Therefore, we would see no particular objection to the consolidation of the McKee and Ellenburger Gas Pools and to prorate both zones under the Monument-McKee Gas Pool.

Yours very truly,

George W Selinger

GWS:br

AFF JHH

UNION TEXAS PETROLEUM

A DIVISION OF ALLIED CHEMICAL CORPORATION

LIBERTY BANK BUILDING • OKLAHOMA CITY 3, OKLAHOMA • CENTRAL 6-5641

November 21, 1962

In Re: Our File No. 1709-I

Gulf Oil Corporation
P.O. Drawer 1938
Roswell, New Mexico

Attention: Mr. M. I. Taylor

Gentlemen:

Subject: Monument-McKee and Monument-Ellenburger Gas Pools, Lea County, New Mexico

Reference is made to your letter of November 1, 1962, relative to consolidation of the Monument-McKee and Ellenburger gas reservoirs.

We have not studied this problem in detail; however, we can see no objection to your proposal.

Yours very truly,

James B. Henry
Manager
Economics and Evaluation Department

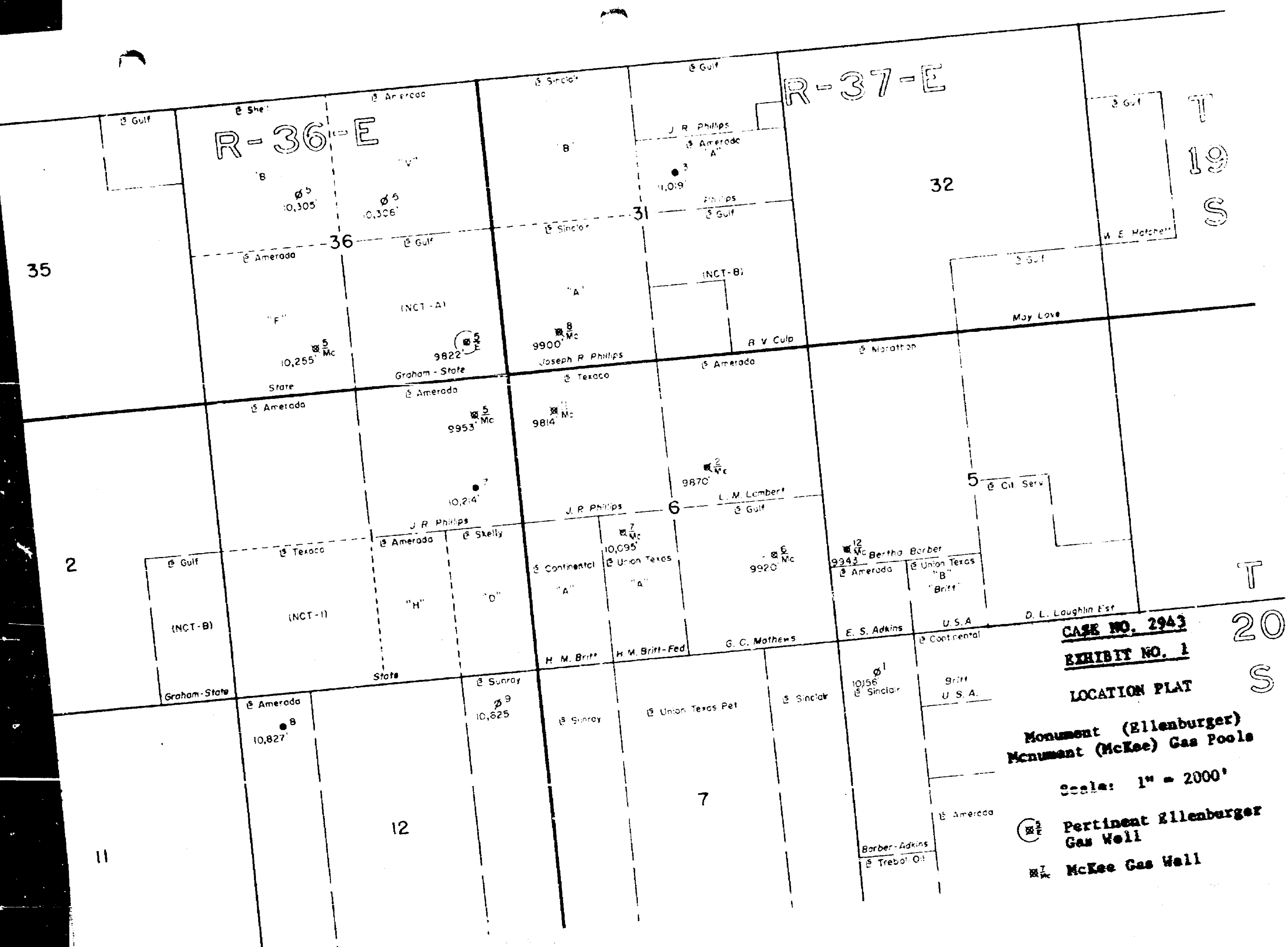
JBH:bm

CASE 2943

Application of Gulf Oil Corporation to combine two existing gas pools, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of the Monument-Ellenburger and Monument-McKee Gas Pools, lea County, New Mexico, into a single pool to be operated and prorated under the existing rules for the Monument-McKee Pool.

LIST OF EXHIBITS FOR CASE NO. 2943

Exhibit No. 1	Location Plat
Exhibit No. 2	Structure Top of Ellenburger
Exhibit No. 3	Structure Top of McKee
Exhibit No. 4	Plat Showing Line of Cross-Sections
Exhibit No. 5	North-South Cross-Section
Exhibit No. 6	Northwest-Southeast Cross-Section
Exhibit No. 7	Gas Analyses Tabulation



CASE NO. 2943

EXHIBIT NO. 1

LOCATION PLAT

Monument (Ellenburger)
Monument (McKee) Gas Pools

Scale: 1" = 2000'

Pertinent Ellenburger Gas Well

McKee Gas Well

MONUMENT (ELLENBURGER) GAS POOL

The Monument (Ellenburger) is a one well gas pool. The discovery well and only producer in the pool is Gulf Oil Corporation's Graham-State (NCT-F) No. 5 located in Unit "P", Section 36, T-19-S, R-36-E, Lea County, New Mexico.

This well was completed in the Ellenburger formation on August 13, 1954 for an initial potential of 4,870 MCFGPD. Top of Ellenburger was encountered at 9,750', 7" casing is set at 9,768' and T.D. is 9,822'. Production is from open hole 9,768-9,822'.

The producing formation was cored from 9,787-9,822' T.D. with the following description:

3.5'	Limestone; sandy, shaly
1.0'	Sand
17.0'	Sand, coarse, limey with thin shale partings
2.5'	Sand; shaly, dolomitic
1.0'	Shale
1.3'	Sand; shaly, dolomitic
2.0'	Limestone
3.45'	Sand; dolomitic
0.25'	Granite wash
3.0'	No recovery
35.00'	Total core cut

From the above description, the producing lithology of the Ellenburger Pool is predominantly sand with minor amounts of limestone and granite wash. Core analyses show average permeability of 0.39 millidarcys with maximum of 1.2 millidarcys. Average porosity is 1.84% with a high of 6.9%.

Structure

The structural configuration of the Monument (Ellenburger) as well as the Monument (McKee) is a NW-SE trending elongated anticline faulted on the NE flank.

History of the Monument (McKee) Pool

The discovery well of the Monument (McKee) Pool was Amerada's State "F" No. 5 located in Unit "N", Section 36, T-19-S, R-36-E, Lea County, New Mexico. This well was completed as a McKee oil well with high GOR in November, 1948. It was recompleted as a McKee gas well in July, 1956. Currently, there are eight wells producing from the Monument (McKee) Gas Pool.

Fluid Contacts

Disregarding the thin oil column which originally existed in the McKee formation, the gas/water contact is picked at -6,390' ± 5'. The same gas/water contact is picked for the Ellenburger.

Similarities and Reasons for Believing Monument (Ellenburger) and Monument (McKee) are one Pool

(1) Both pools are located on same geologic structure.

(2) Gas/water contact is the same for the McKee and Ellenburger.

(3) Continuous drill stem tests through McKee and Ellenburger indicate that separation is practically non-existent.

(4) Geologic considerations as illustrated in Exhibit No. 6 indicate the provability that due to a local unconformity the McKee and Ellenburger are in contact within the reservoir.

(5) Analyses of gas samples from McKee and Ellenburger show the gases to be practically identical.

SIGNIFICANT TESTS OF ELLENBURGER

Unit "A", Section 1, T-20-S, R-36-E

Amerada - Phillips No. 5

Upper part of Ellenburger tight; first porosity was encountered below gas/water contact and tested salt water.

Unit "D", Section 6, T-20-S, R-37-E

Texaco - Phillips No. 11

Ran DST bracketing basal McKee and Ellenburger - flowed 1,086,000 cu. ft. gas per day. Operator chose to complete in McKee.

Unit "G", Section 6, T-20-S, R-37-E

Amerada - Lambert No. 2

Perforated Ellenburger 9,832'-50'. Treated with 5,000 gals. sandfrac. Tested 650,000 cu. ft. gas per day and did not recover all load oil. Operator plugged back and completed from McKee.

Unit "M", Section 31, T-19-S, R-37-E

Sinclair - Phillips "A" No. 8

No tests in Ellenburger. Microlog indicates first porosity in Ellenburger at 9,874' (-6,302') which is too close to gas/water contact for successful completion. Operator completed in McKee.

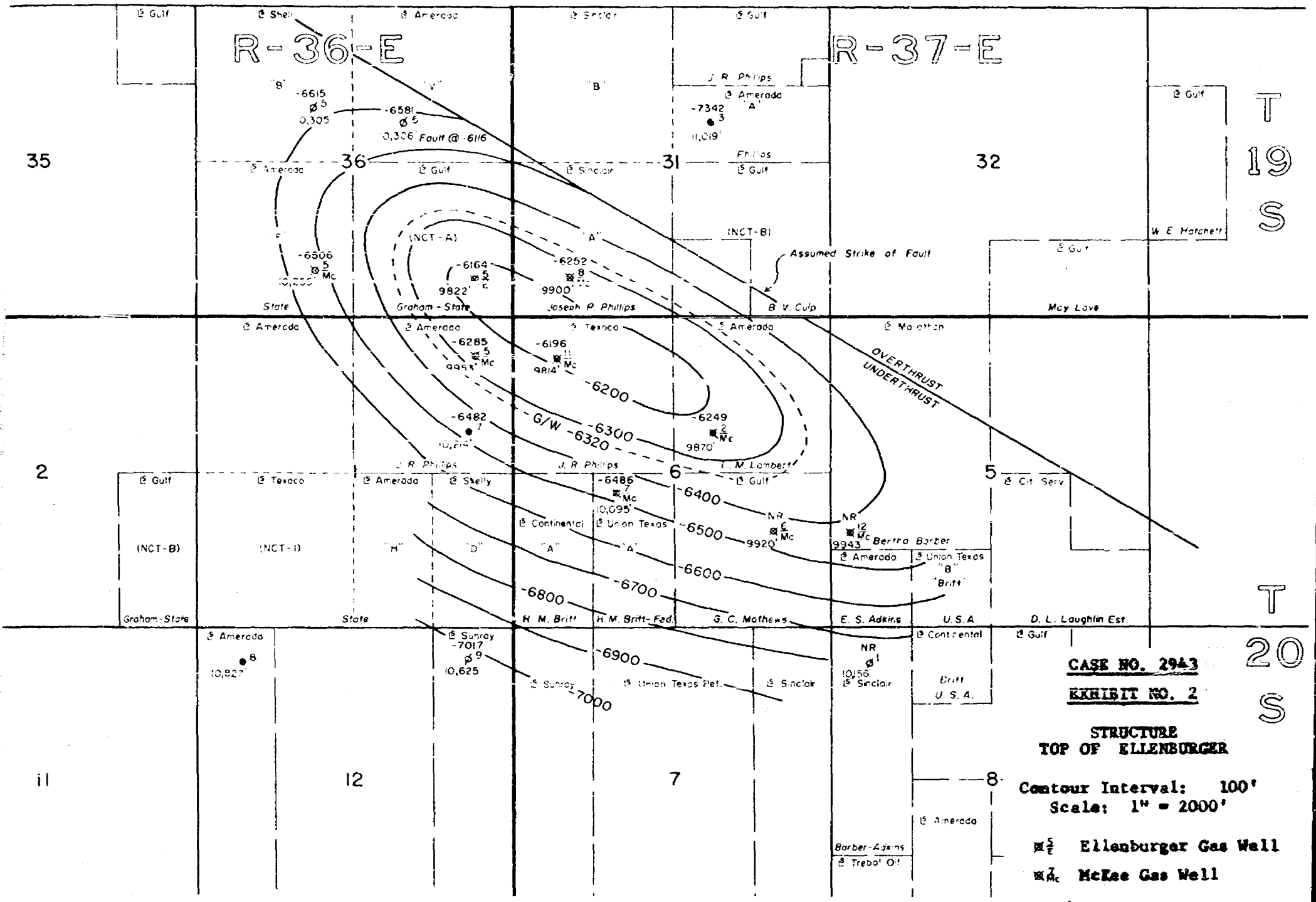


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EXHIBIT NO. 2

STRUCTURE
TOP OF ELLENBURGER

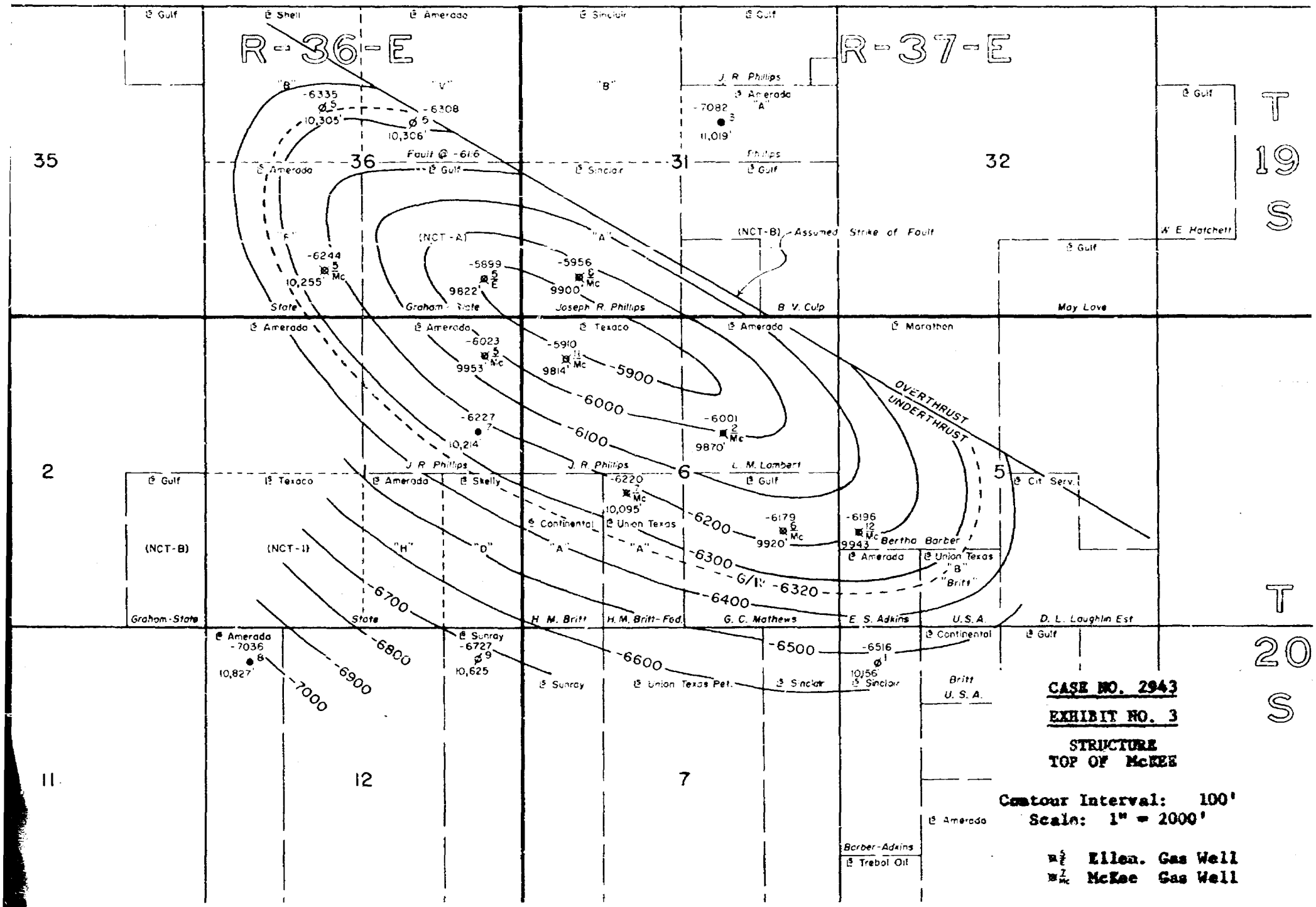

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EXHIBIT NO. 3

STRUCTURE TOP OF McKEE

Contour Interval: 100'
Scale: 1" = 2000'

Ellen. Gas Well
McKee Gas Well

R-36-E

R-37-E

T 19 S

T 20 S

35 | 36 | 31 | 32

2 | 6 | 5

11 | 12 | 7

Gulf | Shell | Amerada | Sinclair | Gulf | Gulf

"B" | "V" | "B" | J. R. Phillips, Amerada "A" | Gulf

Ø 5, 10,305'

Ø 5, 10,306'

3, 11,019'

Amerada | Gulf | Sinclair | Phillips, Gulf

"F" | (NCT-A) | "A" | (NCT-B)

5 Mc, 10,255' | NW 5 E, 9822' | 8 Mc, 9900' | B. V. Culp | W. E. Hatchell | Gulf

State | Graham-State | Joseph P. Phillips | May Love

Amerada | Amerada | Texaco | Amerada | Marathon

5 Mc, 9953' | 11 Mc, 9814'

7, 10,214' S | 2 Mc, 9870' SE

J. R. Phillips | J. R. Phillips | L. M. Lambert

Gulf | Texaco | Amerada | Skelly | Continental | Union Texas | Gulf | Cit. Serv.

7 Mc, 10,095' | 6 Mc, 9920' | 12 Mc, 9943' Bertha Barber

(NCT-B) | (NCT-I) | "H" | "D" | "A" | "A" | Amerada | Union Texas "B" "Britt"

Graham-State | State | H. M. Britt | H. M. Britt-Fed. | G. C. Mathews | E. S. Adkins | U.S.A. | D. L. Laughlin Est

Amerada | Sunray | Sunray | Union Texas Pet. | Sinclair | Sinclair | Continental | Gulf

8, 10,827' | Ø 9, 10,625 | Ø 1, 10,156' | Britt U.S.A.

Barber-Adkins

Trebol Oil

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EXHIBIT NO. 4

Plat Showing Lines of Cross-Sections

Scale: 1" = 2000'

GAS ANALYSES COMPARISON

COMPONENT	AMERADA J. R. PHILLIPS #5 MONUMENT McKEE GAS POOL UNIT A SEC. 1-20S-36E MOL %	AMERADA STATE F #5 MONUMENT McKEE GAS POOL UNIT N SEC. 36-19S-36E MOL %	GULF GRAHAM STATE F #5 MONUMENT ELLENBURGER GAS POOL UNIT P SEC. 36-19S-36E MOL %
Nitrogen	2.88	2.90	2.91
Methane	88.09	88.38	87.75
Ethane	5.34	5.31	5.42
Propane	2.04	1.98	2.01
Iso-Butane	.39	.30	.48
N-Butane	.74	.62	.74
Pentane	.35	.39	.49
Hexanes Plus	.17	.12	.20
Specific Gravity (Calculated)	.6413	.6370	.6463
Specific Gravity (By Balance)	.6490	.6404	.6457
Date of Analysis	7/4/63	7/5/63	7/3/63

CASE NO. 2943
EXHIBIT NO. 7
GULF OIL CORPORATION
November 20, 1963

GAS ANALYSES COMPARISON

COMPONENT	AMERADA J. R. PHILLIPS #5 MONUMENT McKEE GAS POOL UNIT A SEC. 1-20S-36E MOL %	AMERADA STATE F #5 MONUMENT McKEE GAS POOL UNIT N SEC. 36-19S-36E MOL %	GULF GRAHAM STATE F #5 MONUMENT ELLENBURGER GAS POOL UNIT P SEC. 36-19S-36E MOL %
Nitrogen	2.88	2.90	2.91
Methane	88.09	88.38	87.75
Ethane	5.34	5.31	5.42
Propane	2.04	1.98	2.01
Iso-Butane	.39	.30	.48
N-Butane	.74	.62	.74
Pentane	.35	.39	.49
Hexanes Plus	.17	.12	.20
Specific Gravity (Calculated)	.6413	.6370	.6463
Specific Gravity (By Balance)	.6490	.6404	.6457
Date of Analysis	7/4/63	7/5/63	7/3/63

CASE NO. 2943
EXHIBIT NO. 7
GULF OIL CORPORATION
November 20, 1963