CASE 1616: Hearing called by OCC to consider reclassification of Angels Peak-Gallup Pool, San Juan County, from a gas pool to an oil pool.

Case No.

1616

Application, Transcript,
Small Exhibits, Etc.

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. 1616
Order No. R-1357

APPLICATION OF THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER THE RECLASSIFICATION OF THE
ANGELS PEAK-GALLUP POOL IN SAN JUAN
COUNTY, NEW MEXICO, FROM A GAS POOL
TO AN OIL POOL.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 18, 1959, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 20th. day of March, 1959, the Commission, a quorum being present, having considered the application and the evidence adduced 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 evidence presented indicates there is more likelihood that the Angels Peak-Gallup Pool in San Juan County, New Mexico, is an oil pool rather than a gas pool.

(3) That unrestricted gas production from said Angels Peak-Gallup Pool will result in waste.

(4) That the Angels Peak-Gallup Pool should be reclassified as an oil pool and produced accordingly with a depth factor for proration purposes of 1.77.

(5) That non-standard oil well locations should be approved for all wells heretofore drilled in said Angels Peak-Gallup Pool on unorthodox oil well-locations.

(6) That the effective date of this order should be April 1, 1959.

IT IS THEREFORE ORDERED:

(1) That the Angels Peak-Gallup Pool in San Juan County, New Mexico, be and the same is hereby reclassified as an oil pool effective April 1, 1959, with a depth factor for proration purposes of 1.77.

(2) That non-standard oil well locations be and the same are hereby approved for all such wells in said pool as were drilled or were drilling on unorthodox oil-well locations prior to March 18, 1959.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

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

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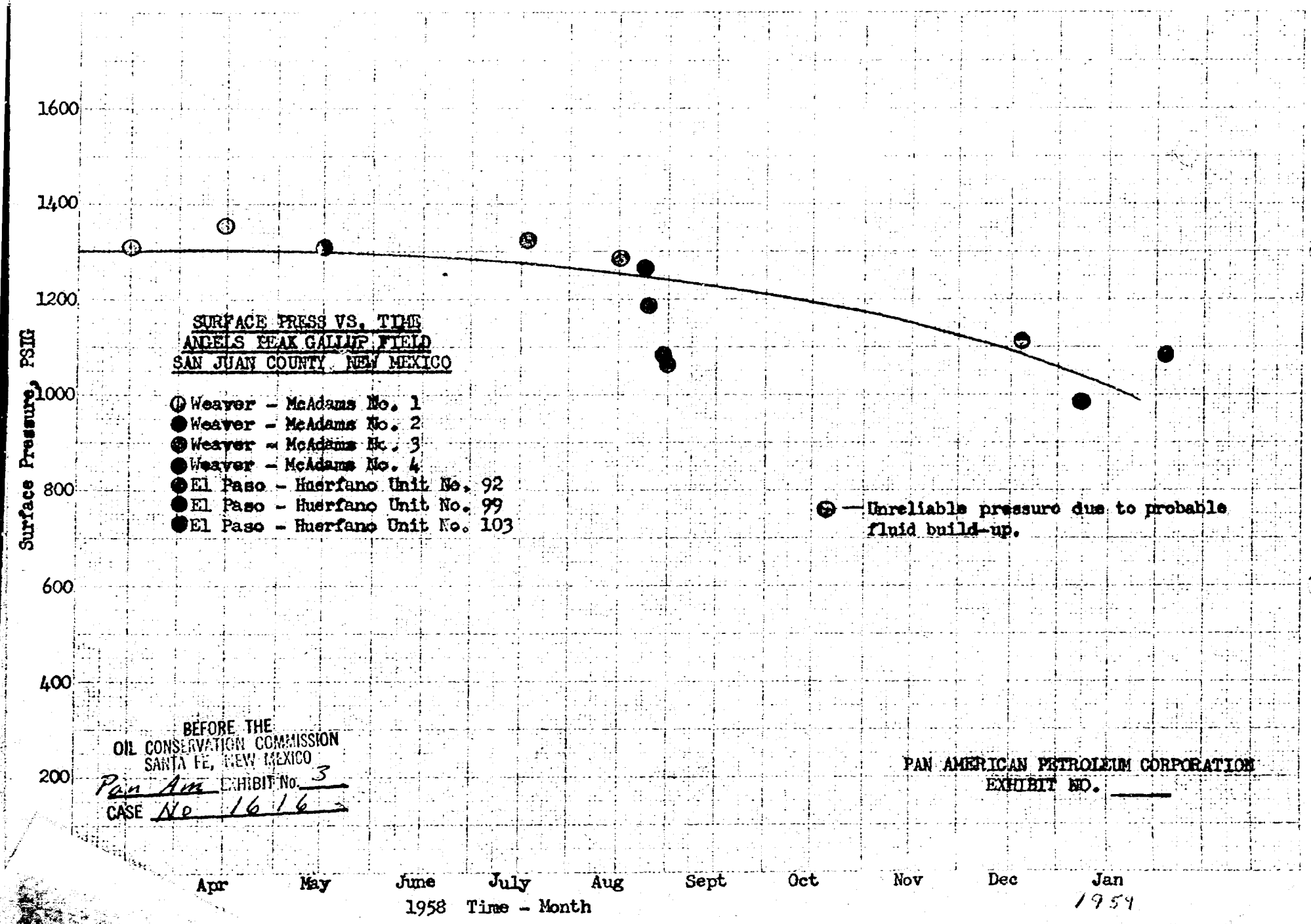


BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Pan Am EXHIBIT No. 3
CASE No 1616

PAN AMERICAN PETROLEUM CORPORATION
EXHIBIT NO. ____

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1616

TRANSCRIPT OF HEARING

March 18, 1959

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
Phone CHapel 3-6691

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

The hearing called by the Oil Conservation Commission on its own motion to consider the reclassification of the Angels Peak-Gallup Pool in San Juan County, New Mexico, from a gas pool to an oil pool.

CASE NO. 1616

BEFORE:

Mr. A. L. Porter, Jr.
Mr. Murray Morgan

TRANSCRIPT OF HEARING

MR. PORTER: The hearing will come to order, please. Take up Case 1616.

MR. PAYNE: Case 1616. In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the reclassification of the Angels Peak-Gallup Pool in San Juan County, New Mexico, from a gas pool to an oil pool.

May it please the Commission, we have one witness, Mr. Emery Arnold.

MR. PORTER: I would like to call for other appearances at this time.

MR. NEWMAN: Kirk Newman of Atwood and Malone from Roswell, and Guy Buell of Forth Worth, Texas, representing Pan

American Corporation. We will have testimony.

MR. PORTER: You will have testimony?

MR. NEWMAN: Yes.

MR. HOWELL: Ben Howell, El Paso Natural Gas. We do not expect to have testimony.

MR. SPERLING: J. E. Sperling, appearing for W. R. Weaver and A. N. Brown. This may be premature, but we would like to make our position clear at this time. We feel that the operators, and particularly my client have not had an opportunity, prior to the time that the matter was submitted to the Commission, to present evidence. We feel that the production history of the so-called oil wells in the area is insufficient as of this time to justify any reclassification action. Now, of course, that does not mean that a continuance would be in order at this time, since the Commission obviously is ready and able to present testimony in connection with the motion, but we would like to request the Commission that we be given an opportunity at a later date at the next regular hearing to present and prepare testimny.

MR. VERITY: George Verity for Southern Union Gas Company.

MR. PORTER: Any other appearances? Mr. Sperling, you will be given the opportunity after the testimony has been heard to move for a continuance or make whatever motion you desire at that time.

MR. SPERLING: Thank you, sir.

MR. PORTER: Mr. Arnold.

(Witness sworn.)

E. C. ARNOLD

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

DIRECT EXAMINATION

BY: MR. PAYNE:

Q Will the witness please state his name and position?

A E. C. Arnold, supervisior of District 3 of the Oil Conservation Commission.

Q Mr. Arnold, in your official capacity with the Oil Conservation Commission, have you had an opportunity to make a recent study concerning the pool in question here?

A Yes, I have.

Q Now, referring, Mr. Arnold, to what has been designated Exhibit No. 1, which is on the far board there, would you explain to the Commission what that depicts?

A Exhibit No. 1 is an area map of, which is marked the Angels Peak Dakota Gas Pool and the Angel Peak Gallup Gas Pool, and the Gallegos Gallup Oil Pool.

Q Mr. Arnold referring to what has been designated as Exhibit 2, I will ask you to state to the Commission what that depicts.

A Exhibit No. 2 is a data sheet on the Angels Peak Gallup Gas Pool. On this are shown all the wells which have

been drilled in the presently defined pool as well as wells which have been drilled in the adjacent area. There are at the present time ten wells completed in the pool, and in the area shown on this exhibit are also the location of these wells, the completion dates, derrick floor elevation, perforated intervals, the Lower Gallup sandstone interval, which is the main producing zone in this area, sea level datum tops on top of this lower producing interval, the initial potentials as reported to the Oil Conservation Commission, and the latest available gas-oil ratio information.

Q All right, sir. Now, referring to what has been designated as Exhibit 3, which is the on the board directly behind you, would you explain to the Commission what you intend to show by that exhibit?

A Exhibit No. 3 is a north-west to south-east cross section made from electric logs from wells in this area. The well on the northwest, or the extreme left is the El Paso Huerfano Unit 105. The second log is Pan American's McAdams B No. 1. The third wells is the W. R. Weaver McAdams No. 1. The fourth wells is the W. R. Weaver McAdams No. 3, and the last well is the El Paso Huerfano Unit No. 107.

Q What did you use as a datum point, Mr. Arnold?

A This cross section is hung on a datum of sea level plus 900 feet. Also shown on the section is a red line which we have used as the top of the Gallup formation in this area, and a yellow bar connects the main producing zone in this area.

You'll notice that with the exception of the Huerfano Unit No. 107, the only perforations are located in this lower sandstone interval.

Q Is any permeability barrier indicated in this cross section?

A No, sir, the correlation of this, particularly of this lower zone is very good across the area, and there appears to be no great permeability difference from well to well.

Q Now, Mr. Arnold, does this exhibit show any structure?

A This cross section is approximately down the strike of the structure in the area, and therefore reflects very little structure.

Q All right, sir. Do you have anything else you would like to say about this exhibit at this time?

A No, sir, I don't believe so.

Q All right. Then, referring to what has been designated Exhibit No. 4, which is on the back wall here, would you explain to the Commission what you intend to show by that exhibit?

A Exhibit No. 4 is also an electric log cross section, extending from southwest to northeast across the Angels Peak Gallup Pool. This section is also hung on a datum of sea level plus 900 feet. The red line shows the top of the Gallup formation, and the yellow bar connects the main producing zone in the Angels Peak Gallup Pool, and the surrounding area. The correlation of the producing interval is also unmistakably across this

cross section.

Q All right, sir. Are any of the wells shown on this cross section perforated on any other zone?

A No, sir, the only well perforated in the lower zone is the Huerfano Unit 107, which is the same well referred to on Exhibit No. 3. I do understand, to return for a moment to section AA prime, Exhibit No. 3, that Pan American Petroleum Corporation has perforated some upper zones also in the McAdams B No. 1; however, the production information that I have shown on the data sheet refers to production from the lower zone only. "Originally completed in the lower zone - run test," that is the information shown on Exhibit 2.

Q What does this exhibit indicate in regard to structure in the area, Mr. Arnold?

A This cross section is approximately down dip in the area which is to the northeast. Total structural relief across the area is approximately one hundred feet, slightly over that, one hundred seven feet.

Q Now, the small exhibit on the bottom of each of these, your section AA prime and BB prime, shows the locations of the sections, is that correct?

A Yes, sir, that's correct, location of the section marked AA prime and BB prime on the plat on each exhibit, and also the shaded area shows the present defined limits of the Angels Peak Gallup Gas Pool.

Q All right, sir. Referring now to what has been designated as Exhibit No. 5, I will ask you to explain to the Commission what this depicts.

A Exhibit No. 5 is a structural contour map of the Angels Peak Gallup Gas Pool in the immediate adjacent area. This structure contour map also reflects that the dip is to the northeast and that structural relief is one hundred and seven feet across the presently developed area.

Q Does the cross-hatched area show the pool boundaries?

A Yes, cross-hatched on this is the present pool boundary.

Q And what is the present contour interval?

A Contour interval is ten feet.

Q All right, sir. Does this exhibit indicate any [illegible] structural closure?

A No, there is no structural closure indicated, it is merely a segment of a northeast dipping monocline.

Q In this regard, is it similar to other Gallup Oil Pools in the San Juan Basin?

A Yes. I don't believe that structure had a great deal to do with accumulation of oil and gas in this Gallup sand any more than it did in either the Gallegos or the Bisti Pools. The separation of oil and gas in the reservoir, of course, is related to the structure.

Q Now, Mr. Arnold, what is the green band on Exhibit No. 5?

A I believe, before answering that question, if I could review --

Q Go right ahead.

A Originally, this pool was classified as a gas pool on the basis of four wells drilled in Section 34. These are the W. R. Weaver 1, 2, and 3, and 4 McAdams. This case came for hearing in April. That's case 1423, and by Order R-1167, this pool was established and it became effective May 1, 1958. Subsequent to that time, there had been an additional six wells drilled in this area. Three of these were drilled up structure on this map and are either gas wells or extremely high gas-oil ratio wells. Three of the wells, however, were drilled down structure and appear to be relatively high gas-oil ratio wells. However, the ratios are low enough that they would have been classified as oil wells. That was because of the discovery of these three wells that this hearing was called. Based upon the Huerfano Unit 105 Well, which had a reported potential in excess of five hundred barrels per day with a gas-oil ratio of 6866 to 1, and upon Pan American's McAdam's B No. 1, which had an initial potential of forty-five barrels of oil per day, with a ratio of 2517 to 1, and upon completion of El Paso's Huerfano Unit 107, which had a potential of two hundred and eighty-seven barrels of oil per day, with a ratio of 4142 to 1, we decided there must be a gas-oil contact present in this area. I realize that it is hard, based upon the development to date, to exactly

fix the gas-oil contact. This shaded area is drawn on this structure contour to show the area where that gas-oil contact probably lies.

Q All right, sir. Are there any oil wells up structure from the green line which you have drawn in here?

A No, all of those wells up structure have been high ratio wells.

Q Now, what is the possible width of this pool?

A The pool limits are not defined as yet and it would be hard at this time to determine what the eventual width of the pool will be; however, there has been some wells drilled in Section 22, which would be immediately north of Section 27 on Exhibit No. 5, so that from present development, it appears that the oil portion of the pool may be narrow, possibly not over a mile, mile and a half wide.

Q Mr. Arnold, is there anything unusual about the McAdams Well No. 3 in the northeast quarter of Section 34, which might indicate it is below the gas-oil contact?

A Well, I do know that the No. 3 McAdams was reported, and it had reached a point where it would no longer produce against the five hundred pound pressure which they were producing these gas wells, and I think that they discovered when they disconnected the well that the reason it wasn't producing was because it was loading up with oil. I do know that since that time they have re-entered the No. 3 McAdams and perforated some additional sand

in the lower zone, and I believe that they are recovering load oil at the present time, so I don't know for sure what the ratio is going to be on that well until a later date. The No. 3 McAdams Well is at a datum of plus 422 feet, and the Huerfano Unit 105 at a datum of plus 431, so it is actually lower than the Huerfano Unit 105, and that being the case, you would expect that it would have at least as low a ratio as the Huerfano Unit 105.

Q Now, Mr. Arnold, further development in Section 26 and 27, which are shown on Exhibit 5 tend to definite establish whether this is a gas pool or an oil pool?

A Yes, development to the north would definitely establish that; also, I would like to say that this gas-oil contact, if it develops that No. 3 is an extremely high gas-oil ratio, possibly we would have to slide the contact down structure; however, it would be impossible for me to state at the present time whether or not that will be necessary. However, on Section 26 and 27 that have been drilled, that will certainly settle the issue.

Q Now, do you have anything further you would like to say about Exhibit No. 5?

A No, sir, I don't believe so.

Q Mr. Arnold, I would like to ask you to state whether or not in your opinion an excessive amount of reservoir energy will be expended if this pool is continued to be produced as a gas-oil pool thereby causing waste?

A Yes, sir. If there is an oil pool down structure and we allow unrestricted gas production from the gas wells which are associated with that pool in the same reservoir, an excessive amount of reservoir energy will be lost early in the life of the pool, and it is in the entire pool that waste will occur.

Q Now, can waste possibly occur if this pool is classified and produced as an oil pool?

A No, sir, because the production then would be controlled. You would assign a well an oil allowable and control gas production with a limiting gas-oil ratio.

Q Now, in your opinion will correlative rights be imparied by producing this pool as an oil pool?

A No, sir, I don't believe so.

Q Is it your opinion that there is more likelihood that this pool is an oil pool than a gas pool, based on the information that you presently have available?

A Yes, sir, I certainly think that three oil wells that have been completed, plus the fact that it seems to be a continuous sand reservoir, from the southwest to the northeast very strongly points to the probability of their being an oil pool on the northeast edge of the area.

Q What about the possibility that it is simply a gas pool with an oil rim?

A Well, as I said before, at the present time it is

very difficult to estimate the width or the northern limits of production, and until that's done, it will certainly be a guess as to how wide the oil pool might be, or how much oil might be in the reservoir.

Q Are there any Gallup Oil Pools in the San Juan Basin which you feel are gas pools with an oil rim?

A No, sir, I don't believe so.

Q All right, sir. What would you recommend to the Commission in this case?

A To prevent the possibility of waste occurring and in accordance with Rule 5 of the Rules and Regulations of the Oil Conservation Commission, I would recommend that an interim order be entered changing the classification of the Angels Peak Gallup Gas Pool to the Angels Peak Gallup Oil Pool. I would also recommend that the gas wells in this pool be prorated as gas cap wells on an oil pool with a limiting gas-oil-ratio.

Q Now, by entering an order, do you mean that the case should again be docketed at some specific date?

A No, sir, I believe that that could be called at any time by any operator, but I don't believe that a specific date should be set.

Q Do you feel that an order should be entered and any interested operator can come in at any time for a reclassification, so to speak?

A That's correct.

Q Do you have anything further you would like to say in this case, Mr. Arnold?

A No, sir, I don't believe so.

Q Were exhibits 1 through 5 prepared under your direction?

A Yes, sir.

MR. PAYNE: If the Commission please, I would like to move for the admission of Exhibits 1 through 5 in Case 1616 at this time.

MR. PORTER: Without objection, the exhibits will be admitted.

MR. PAYNE: That concludes our direct examination.

MR. PORTER: Anyone have any questions of Mr. Arnold? Mr. Sperling.

CROSS EXAMINATION

BY: MR. SPERLING:

Q Mr. Arnold, do you have any record or does the Commission have any record of total oil production for the wells that you mentioned?

A From which wells?

Q Well, the 105?

A No, sir, I don't know what the total oil produced from that is. It hasn't been producing very long. The last production information I had was a four-day rate, during which time the well produced a total of 805 barrels of oil and 5,188

MCF of gas, and that is the figure from which I figured the gas-oil ratio of 5866 to 1.

Q I see. Now, this well was potentialled, you say, at 571 barrels, is that right?

A That was the figure which was reported to the Commission.

Q Do you have any such figure showing the revision downward?

A Yes, sir, that's right, I do. The last daily figure which was reported to me, it was producing at a rate of about 135 barrels aday.

Q So it declined in only four days production from 571 to 134?

A Well, actually, I have reason to believe that probably that initial potential was excessively high. In fact, from conversations I have had with company engineers today, it may be possible that their load oil wasn't even all recovered at the time that potential was recovered; however, their load oil was subsequently recovered, and the producing rate now has been varying between 130 to 150 barrels a day on various chokes and I don't believe that there -- if there has been any further decline, at least I am not aware of it.

Q Do you know whether there has been an increase in gas-oil ratio?

A Gas-oil ratio has varied at various rates of production,

from about 8,000 cubic feet per barrel.

Q Well, is that fluxuation continuing down?

A Not to my knowledge. I really don't know. As you say, probably continued production on this well is going to be necessary to find out what will happen to that ratio.

Q Now, Mr. Arnold, how do you tell the difference between an oil pool with a gas cap and a gas pool with an oil rim?

A Well, I don't know. I would say that in any reservoir, as the percentage of gas increases, the ratio of gas to oil in the reservoir, and if in any oil pool the average percentage of the ratios are excessively high, that you probably are going to have to compromise with pure conservation and increase the limiting gas-oil ratio in order to make it an economic venture to drill the wells in there. I don't know that there is any particular dividing line between, as you say, an oil pool and a gas pool. You simply start from an all gas to all oil-oil, and I am sure that so far as I know, there is nothing in the Oil Conservation Commission rules or regulations which fixes the point where you would change the definition. However, I do think that in any pool where you have both oil and gas associated in the same reservoir, that it certainly is essential to control the production of each and relate the production of each to each other. Unrestricted gas production in any pool which also contains oil could lead to waste.

Q What disposition, if you know, is being made of the

gas that is being produced with the oil from the 105?

A That well is producing into a gas line, I believe. It is my understanding they are producing that well into the high-pressured gathering system in that area.

Q Now, I notice that, with reference to the McAdams B No. 1 Pan American, that no completion date is shown. Has that well been completed?

A No, sir, I think that well is still testing. Pan American originally completed it in the lower zone only, and they tested it in that zone until they had recovered all load oil, and then potentialled the well, and that's where the forty-five barrels per day figure comes from, with a gas-oil ratio of 2517 to 1.

Q That well is not actually producing then at the present time?

A No, sir, they later, because of the fact that they thought that there might be additional production further up in the Gallup section, set a bridge plug and perforated up the hole. I believe that's right, they are testing that upper section at the present time.

Q What about the Huerfano No. 103, which is shown with 27 barrels of oil per day and 2,500 MCF, do you know what total oil production is from that well?

A No, sir. I know that that was another well which originally had a reported potential of some 150 barrels of oil

per day; however, that potential was also run before load oil was recovered. Actually, I wouldn't have expected that that would be a low gas-oil ratio well from where it is located. I don't know what total oil it has produced, but I understand the oil production is declining on it, and you'll notice that the ratio is now 92,307 to 1.

Q Now, do you know whether or not there is a well drilling in Section 27 to the north of Section 34 at the present time?

A No, sir, I don't know whether there is or not.

Q You stated that it would be necessary, in your opinion, for further development to take place in Section 26 to 27 before reaching any final conclusion as to classification of this pool?

A Well, I said that certainly when Sections 26 and 27 have been drilled, we will know a great deal more about the pool.

Q Well, actually on the basis of oil produced, you have a very, very short producing history for these wells that show initial potentials of from twenty-seven barrels of oil a day to five hundred and seventy-one barrels of oil per day, including load oil?

A Yes, sir, that's right. I would like to add that I am quite sure that most of the gas wells shown on Exhibit No. 2 are producing varying amounts of oil, probably somewhere between 27, 35, or 40 barrels a day, I understand, are being recovered with the gas that is produced. I didn't mean to indicate

that the Huerfano Unit 103 was the only gas well making any oil or condensate.

Q Do you know of any other pools in the San Juan Basin that are classified as gas pools that have associated oil production?

A Associated oil or condensate production, yes, sir.

Q What is your opinion with reference to those pools as to their classification?

A I don't know of any other pools at the present time which I would recommend reclassifying on the basis of --

Q Although they may be making substantial quantities of liquid?

A Almost all our gas reservoirs in the San Juan Basin do make some liquid.

Q I assume from that, from your answer, that you do not consider that waste is a factor in the pools that we've spoken of, the other pools where liquid are being made?

A No, sir, I don't know of any place where waste is occurring. If it is brought to my attention that it is happening some place, we will request a hearing.

Q Mr. Arnold, have you made any computation as to what the allowables would be on these wells in view of their gas-oil ratio?

A Assuming what limiting gas-oil ratio?

Q The two thousand.

A Well, no, I haven't made any computations of that information.

Q Do you have any recommendation so far as the Commission is concerned with reference to allowables for these gas wells?

MR. PAYNE: May it please the Commission, I feel that in all good faith, I should point out to Mr. Sperling that this case is advertised as a reclassification case, and it was not advertised to establish special pool rules, so that if an order is entered reclassifying this pool, the limiting gas-oil ratio would have to be the statewide gas-oil ratio of 2,000 to 1. Of course, a subsequent case could be advertised for special rules for the pool.

MR. PORTER: Is it your position, Mr. Payne, that regardless of his recommendations, there is a limit to what we can do?

MR. PAYNE: That's correct, I feel the case is advertised and you either have to reclassify the pool or not reclassify it, and that the statewide rules will continue in effect.

Q (By Mr. Sperling) Let's take for example the Weaver McAdams No. 1 Well, Mr. Arnold, which is drilled on 160-acre spacing. Under the rules presently in effect, what would that well be allowed to produce?

A Well, I believe that this pool would have a depth factor of 1.77. I think I had that figured out for last month's

allowable, with a 52 barrel unit allowable. It would give an oil well in this pool an oil allowable of 93 barrels a day, and this would certainly be a restricted well because of its gas-oil ratio. Its gas allowable would be 186,000 cubic feet per day, using a 2,000 cubic feet --

Q Do you know what that particular well is presently delivering?

A I know it is quite a substantial amount of gas.

Q Would you say considerably in excess of 186,000 MCF?

A I don't have any gas production figure on these individual wells, but I know that it would be -- probably Mr. Harris could furinish the producing --

MR. HARRIS: We have the production figures that the wells are delivering. At the present date, they are presently cut to one half of their deliverability due to pipeline prorationing at the present time. We have those figures here.

A I do know that there has been in excess of a billion cubic feet of gas produced out of the 4 McAdams gas well to date.

MR. BROWN: That particular well is delivered into the line against a 500 pound pressure, and has delivered in excess of 1,500,000 barrels.

MR. PORTER: 1,500,000?

MR. BROWN: Yes, sir.

MR. SPERLING: Do you know how much liquid is being taken out of that?

MR. BROWN: About twenty-five barrels per million. The condensate is fifty-four gravity.

MR. SPERLING: That's all for the moment.

MR. BUELL: I have one or two questions, may it please the Commission.

MR. PORTER: Mr. Buell.

CROSS EXAMINATION

BY: MR. BUELL:

Q Mr. Arnold, in your testimony where you stated that your recommendation would not violate correlative rights, were you relating that to your recommendation of an interim order? In other words, did you visualize this order will only be in effect for a short period of time, and in that short period of time substantial violation of correlative rights could not occur, was that your authority?

A That's right. In the short period of time I don't believe that anyone's rights would be, anybody's correlative rights would be violated because of the fact that the oil production would certainly be very small in the pool during the time of that interim order and the gas production would also be restricted, so I fail to see how operators in the oil portion, or the gas portion, could be seriously hurt.

Q During this interim period?

A Yes.

Q You also testified, did you not, that under your recommendation, or as a result of your recommendation, a gas well that is now located on 160 acres would receive an allowable of 186,000 cubic feet per day?

A During the time of this interim order, that's correct.

Q If the Commission should adopt your recommendation, would an operator with 160 acres and one gas well on it, could he drill three more gas wells?

A If it is an oil reservoir spaced on 40 acres, I see nothing in the rules that would prevent him from drilling additional wells.

Q All right, sir. Then what would be the total gas allowable that, under your recommendation, that would be approved for this 160-acre tract with four gas wells on it?

A Be four times 186,000. 744,000 cubic feet.

Q And if the Commission should adopt your recommendation and if an operator with 160 gas acres selects, he could drill four gas wells and get the gas allowable you just stated in the record?

A Yes, sir. I seriously doubt that he would do that.

Q I know that, but he could, and your recommendation is that he could?

A He could.

MR. BUELL: That's all I have, Mr. Porter.

MR. PORTER: Does anyone else have a question of Mr. Arnold? Mr. Payne.

REDIRECT EXAMINATION

BY: MR. PAYNE:

Q Mr. Arnold, I would like for you to explain to the Commission some of the various ways waste may be caused by producing this reservoir unrestricted, gas production in this reservoir, and waste is a very broad term and it can come about in more ways than one, is that right?

A Yes, that's right.

Q So I wish you would go into some details of these various methods.

A Well, by producing excessive gas, you would lower the reservoir pressure, and this probably is a solution gas drive reservoir at some point. I don't know where that point would be at the present time. You would reach the bubble point pressure and at that time gas would move from the oil into the gas cap, and in so doing would probably also carry some oil up structure so that you would add sand. The oil remaining would also have its viscosity raised because of the fact that it lost the gas.

Q So you have named three separate methods where waste may and probably will occur if gas production is unrestricted, is that right?

A That's right.

Q Now, in answer to a question by Mr. Sperling as to how you tell whether a pool is an oil pool with a gas cap, or a gas pool with an oil rim, I take it from your testimony that it is your opinion that it doesn't make any great difference as to the way production should be handled, is that right?

A That's right, except that I think that you can reach a point in a reservoir where gas is predominent and in those cases, in order to keep from discouraging development, that it is almost going to be imperative that you allow more gas to be produced probably by raising the limiting gas-oil ratio or some other method.

Q But regardless of the theoretical classification as an oil pool or gas pool, if there is a substantial amount of both in the reservoir, you are testifying that it should in effect be produced as an oil pool with an increased GOR, is that right?

A That's right, that way production of each can be controlled and based upon recommendations which can be made after studies have been conducted, a proper ratio can be arrived at.

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

MR. PORTER: Anyone else have a question of Mr. Arnold?

MR. SPERLING: I have one more.

MR. PORTER: Mr. Sperling.

RECROSS EXAMINATION:

BY: MR. SPERLING.

Q Mr. Arnold, do you have any way of knowing whether or not to the south of the Angels Peak field there are substantial or potentially substantial quantities of gas that might be related to the same formation from which these wells are presently producing?

A To the south of the Angels Peak Pool?

Q Yes, sir.

A I don't believe that the south limit of the field has yet been fixed by drilling dry holes.

Q So it is possible that substantial quantities of gas do lie in that area?

A Yes, sir, that's possible.

Q Would there be any oil in that area relating to the gas in the same formation, would you expect that?

A I wouldn't expect that no, because that's up structure and there seems to be gas-oil separation based on structure in this area.

Q So the possibility is not remote that you have a considerable gas area yet to be defined which should properly result in a gas field classification, is that possible?

A Well, I would say possibly we will get more gas by drilling to the south and possibly more oil by drilling to the north, so I don't -- It is still a relative matter there as to what --

Q Isn't it true that the information that you have

at the present time upon which to base an opinion is rather fragmentary?

A Well, I believe that in a reservoir of this kind where you can relate the oil and the gas production to structure, that the discovery of even one oil well can be significant.

Q You feel that the oil production as it presently stands is significant?

A Yes, sir. The Huerfano 107 has a potential, I believe, of 287 barrels, and the Huerfano Unit 105 is producing at oil rates in excess of 130 barrels a day. I'd say that is significant oil production.

Q Well, the 107 was completed December the 16th, 1957, and the 105 on November the 23rd, 1958, they don't have any extensive production history.

A That's right, we don't have very much production history.

MR. SPERLING: That's all.

MR. PORTER: Anyone else have a question of Mr. Arnold? Mr. Payne.

REDIRECT EXAMINATION

BY: MR. PAYNE:

Q Mr. Arnold, admittedly there is no conclusive evidence today as to the proper classification of this pool, is that right?

A No, sir, that's right, not conclusive evidence one way or the other.

Q Now, if it is produced as an oil pool until it is definitely determined what it properly should be, is there any possibility of waste occurring, if produced as an oil pool?

A No, sir.

Q If produced as a gas pool, is there such possibility?

A Yes, sir, there certainly is.

Q Now, Mr. Arnold, you mentioned that you believe that an interim order should be entered in order not to mislead anybody. I would like for you to explain what type order you have in mind that should be entered by the Commission?

A Well, because of the fact I don't feel we have made a thorough study of the pool at this time to make any particular recommendation as to pool rules, and also because of the fact that that is outside the call of the hearing, I merely recommend that we write and enter an interim order changing the classification of this pool to an oil pool, and when we do that, without special pool rules, we would temporarly use statewide limiting gas-oil ratio of 2,000 to 1.

Q This order would be in effect, would it not, until such time as an interested operator came in seeking a reclassification or seeking special pool rules?

A That's right, and I am sure there are interested operators.

MR. PAYNE: Thank you, that's all.

MR. PORTER: Any further questions of the witness?

The witness may be excused.

(Witness excused.)

MR. BUELL: May it please the Commission, Pan American has some brief testimony we would like to put on. We have one witness, Mr. Marshall.

(Witness sworn.)

CHARLES R. MARSHALL

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

DIRECT EXAMINATION

BY: MR. BUELL:

Q State your full name, Mr. Marshall, by whom you are employed, in what capacity, and in what location, please.

A My name is Charles R. Marshall, I am employed with Pan American Petroleum Corporation as a petroleum engineer in their Farmington, New Mexico office.

Q Mr. Marshall, you have testified at prior commission hearings and your qualifications as a petroleum engineer are a matter of public record, are they not?

A That's correct.

MR. PORTER: They are acceptable.

Q Have you made a study of the Angels Peak Gallup Field?

A Yes, sir, I have.

Q With particular regard as to whether or not oil and

gas are contained in this reservoir, on direct communication?

A That's right.

Q As a result of your study, what is your conclusion in that regard?

A My conclusion is that this reservoir does contain oil and gas in direct communication.

Q Are you of the opinion that this reservoir contains substantial quantities of oil?

A I am.

Q Are you of the opinion that this reservoir contains substantial quantities of gas?

A I am.

Q As a reservoir engineer, then, Mr. Marshall, it is pretty obvious that we need a different method of prorating than currently is being applied to the Field, is that not true?

A That's correct.

Q We need to regulate this Field, do we not, to (1) prevent physical waste, do you agree with that?

A Yes.

Q (2) We need to prorate it and regulate it to protect correlative rights, do you agree with that?

A Yes, sir.

Q Briefly, right now, at this point in your testimony, what will be your recommendation in that regard?

A To prorate the Field in such a manner as to prevent

waste and to allow equal voidage on a surface acreage basis from the gas area and oil area.

Q All right, sir. I direct your attention now to what has been marked as Pan American's Exhibit 1. What is that Exhibit?

A Exhibit 1 is a structure map of the Angels Peak Gallup Field area contoured on what I designated the top of the main pay sand.

Q Has your interpretation of this area generally agreed with that of Mr. Arnold?

A Yes.

Q Do you generally agree with his remarks that as far as acreage is concerned, structure is not too poor here?

A That's correct, except for the difference in the oil and gas, acreage of hydrocarbons.

Q What is your contour interval?

A Twenty-five feet.

Q I notice here, Mr. Marshall, to the north and to the south I see two heavy green lines that run generally in a southeast northwest direction. What is the significance of those two green lines? One is north of the orange band, and I see one is south?

A These lines are my estimates of the limits of commercial production based on the data that is presently available.

Q In other words, to the south, that is your estimate of the productive gas area?

A That is correct.

Q And to the north, the green line represents your estimate of the productive oil rim?

A That's correct. They were, my basis for drawing these limits at the places they are drawn were (1) the fact that in Pan American's Gordon "D" No. 1 located in the southeast quarter of Section 22, the pay -- the development of the main Gallup pay is practically non-existent so that we know that the productive limits are somewhere south of that well. The same is true for El Paso's Huerfano unit No. 104. The pay development is poor, if non-existent, in this main Gallup sand, and we know the limit is north of that. These lines are drawn on just a sort of an extrapolation based on the distances of these two wells from the present producing area.

Q All right, sir. Now, with respect to the productive limits in a general easternly direction and general westerly direction, have they been divided?

A There has been no definition of the limits in either of those directions.

Q What is the irregular boundary I notice on Exhibit 1, to the east and to the west? What is the significance of that irregular line?

A In order to have an area to consider, I arbitrarily cut off the reservoir as far as I was considering in my study along those two lines.

Q In other words, you did that so that you would have a volume to look at?

A That's correct.

Q You closed it although you realized it is still open?

A Yes, sir, that's correct.

Q All right, sir. What is the significance of the heavy orange band that I see also trending in a southeast northwest direction?

A This band represents the area in the Field in which oil and gas are directly in communication with the oil underlying the gas in this area.

Q And that, Mr. Marshall, is the area where structurally we have gas overlapping oil?

A That's correct.

Q In other words, in that area a well penetrating the Gallup pay would have free gas in the top and would have an oil column at the bottom?

A Yes, that's correct. In any part of the area that is indicated in orange.

Q All right, sir. I notice in the center of this orange, would it be proper to call that a band?

A Yes.

Q I see a line, it is a solid line, it appears to be darker orange. What is the significance of that?

A This is what I interpret to be the approximate gas-

oil contact. It occurs at an elevation of plus 520 feet. That was drawn based on the performance of the oil wells which -- all the wells which have been drilled to date, and, in my opinion, best explained this performance where the contact was located approximately at that elevation.

Q When you engineers use the word "contact," in this case gas-oil contact, do you mean by that that one inch above plus 520 that you get 100 percent gas,and one inch below it you get 100 percent oil?

A No. There is always a certain degree of transitional area where you will get a portion of each.

Q In other words, normally, a gas-oil contact or water-oil contact is not a rigid line --

A That's correct.

Q -- at least, in a reservoir?

A That's correct.

Q Have you colored the oil wells and the gas wells in any particular color?

A Yes. I've indicated the oil wells in green, and the gas wells in red.

Q How many gas wells have you colored on Exhibit 1?

A There are eight gas wells.

Q You have also colored Weaver's No. 3 Well, which is now being worked over, you colored that in red, in that the operator, to the best of your knowledge, is attempting to make a

gas completion?

A That's correct.

Q And you have colored the oil wells --

A In green.

Q And how many are there?

A Three.

Q Now, looking at that, we look at the orange band, we've got the overlap area to the north of that, at least to the green line, we have the oil area, and south of the orange band to the other green line we are looking at the gas wells?

A That's correct.

Q On a comparative basis, what is the difference in the size of the two areas?

A The gas area is approximately four times the oil area.

Q That is, in the area that you have included in your study?

A Within this area that I am considering.

Q Before we leave Exhibit 1, let me ask you this. Mr. Marshall, does this Exhibit reflect any subsurface conditions that would form an effective barrier between the oil area and the gas area so that there could be no direct communication?

A Well, this Exhibit doesn't exactly reflect that, but that is my opinion, that there is no barrier between.

Q Well, it shows no structural anomaly such as fault-

ing, that's what I meant reflected by this Exhibit?

A There is no indication in the structure that there is no separation on this Exhibit.

Q That's what I intended in my question. Let me direct your attention now to what has been marked as Pan American's Exhibit No. 2. What is that Exhibit, Mr. Marshall?

A This is a cross section. I have designated AA Prime, and the trace of this section is shown on Exhibit 1. It contains six wells starting with the southernmost well, which is El Paso's Huerfano No. 104, next Huerfano unit 103, and then the Weaver McAdams No. 4 and No. 3, Pan American's McAdams "B" 1 and Pan American's Gordon "D" 1.

Q All right, sir. Do you also show the approximate boundaries of the oil area and the gas area as would appear on this Exhibit?

A Yes. This line that I have indicated, designated as "estimated limit of commercial production" corresponds to the green line on Exhibit 1.

Q I see. What is the significance of the green color and the red color that I notice on that section?

A I have indicated the zone which is oil saturated by green color, and that which is gas saturated by a red color.

Q Does this Exhibit reflect, from a cross sectional view -- perhaps I can understand it better where we would find in one well bore free gas as well as oil. In other words, does it

show the overlap pretty vividly?

A Yes. In Weaver's McAdams No. 3, the area which you see, looking in a horizontal plane, as the orange band is reflected here, where the green is underlying the red, the width of this area where the green is underlying the red would correspond to the width of that orange band.

Q Does this Exhibit reflect, Mr. Marshall, the oil area and the gas area, or rather the hydrocarbons themselves are in direct communication one with the other?

A Yes, it does.

Q There is no separation of oil area from gas area?

A That is correct.

Q Directing your attention to what has been marked as Pan American's Exhibit 3, what does that Exhibit reflect?

A This is a plot of measured surface pressure versus time for various wells in this Field, in the Angels Peak Field.

Q What is the significance of the various colors inside the dots?

A I have these pressures representing several wells, so I have colored the pressure point to the well that it was taken on by means of a color. For instance, all the yellow dots would be pressures taken on Weaver's McAdams No. 1.

Q All right, sir. Did I understand you to say that these were surface pressures?

A Surface pressures in the majority, seven-day surface

pressure.

Q And you have not corrected them to bottom hole condition?

A No, I have not.

Q All right, sir, from the examination of these data, Mr. Marshall, what do they reflect from the standpoint of performance?

A As you would expect with the amount of gas volume that has been taken from the reservoir, something in excess of one billion, two hundred million cubic feet, it is reflecting a decrease in the pressure.

Q That is normal and what you would expect for reservoirs of this type, that has production as such?

A That's right.

Q Do you have any other comments to make on that Exhibit?

A No, I don't believe so.

Q Mr. Marshall, in a reservoir such as we have here, where we have gas and oil in communication, what occurs when the gas area is produced disproportionately higher than the oil area?

A It allows the recoverable oil -- a portion of the recoverable oil in the gas area to migrate in the oil area -- to migrate into the gas area and is lost.

Q In your opinion, would such migration of oil into dry gas area -- in your opinion, is that avoidable physical waste?

A Yes, it is.

Q Would you go over to Exhibit 2 and explain how this migration of oil into the dry gas area would occur?

A As the production is taken from the gas area the pressure is reduced in the gas area causing the contact or oil to begin to move up, or effectively, the contact to move up into the dry gas area. Now, this oil that moves up is recoverable oil if it had been allowed to be produced through the well bores. However, as the oil saturation in this gas area is practically non-existent, much of this oil goes to establish the saturation that would be present in any oil reservoir at economical abandonment. You would, under a depletion drive reservoir, you might expect 40 or 50 percent saturation after you had depleted the reservoir by primary. That oil would have to establish that saturation in the gas area.

Q All right, sir. I want to be sure I understand that, Mr. Marshall. You say that waste occurs through recoverable oil migrating from the dry area into the gas area and there being lost because oil has established residual oil saturation?

A That's correct. The only oil that can be moved out of this area is recoverable oil where it moves out through a well bore or out into the gas cap.

Q All right, sir, let me ask you this. Mr. Marshall, based on reservoirs that we are looking at here today, I am going to ask you this question. First, I want you to assume that we

produce the gas area so disproportionately heavier than we do the oil area that we vertically displace the gas-oil contact upward ten feet into the dry gas area. What amount of avoidable physical waste are we looking at, Mr. Marshall?

A In the area I've considered, you would be looking at the lease to recover slightly in excess of five million barrels.

Q And, in your opinion, that would be avoidable physical waste?

A That's correct.

Q Waste that should be prevented?

A Yes, sir.

Q You can sit down, now, Mr. Marshall. Mr. Marshall, in answering this question I want you to only consider one thing and no other. I want you to consider only the standpoint of recovering the maximum amount of oil from this reservoir. How would you, as a reservoir engineer, deplete this Field to recover the maximum amount of oil, ignoring everything else?

A I would deplete it by drilling oil wells, wells in the oil area, in the lower side and producing the entire amount of oil and gas in the reservoir through these oil wells.

Q Could you do that physically, I mean?

A Physically, yes.

Q Of course, if you did that, you ignore the various ownerships that exist in each area, don't you?

A Yes. I assumed that you meant for me to do that.

Q Yes, sir. So these various ownerships do exist, don't they?

A That's correct.

Q So, although that might result in the maximum of oil, to do that would cause extreme violation of correlative rights?

A Yes, sir, their property would entirely be transferred.

Q All right, we've got two extremes. Now, Mr. Marshall, under one extreme we just related, we produce the gas area disproportionately heavier than the oil area and cause migration of oil into the drier gas area. On the other hand, the other extreme, we shut in all the gas wells in your theoretical reservoir a minute ago and depleted the gas and the oil through the oil wells. Now, one of those caused waste, one of them violated correlative rights. Isn't there a happy medium we can achieve that will prevent avoidable physical waste and at the same time protect the correlative rights of all the owners of interest?

A Yes, in my opinion, there is.

Q What would be your recommendation to achieve such a happy medium?

A To so prorate the field as to allow equal voidage on a surface acreage basis of the equal reservoir voidage of the gas area and the oil area.

Q How can this be achieved in a very practical manner,

Mr. Marshall --

A It --

Q -- in this pool?

A In this pool it so happens that the voidage an oil well -- the top allowable oil well -- is creating in the reservoir per well is essentially one-fourth of what a gas well would be voiding. I mean -- excuse me -- vice versa -- it is the gas well is voiding one-fourth of what the oil well would be voiding.

Q In other words, in this pool, which currently is under statewide Rule with 160-acre gas units and 40-acre oil proration units, you would simply allow a gas well that is located on 160 acres to produce four times the top gas limit, is that correct?

A Yes, as it is a gas well and as it is prorated under statewise rules under 160 acres and would have 160 acres of gas reserves dedicated to it, I would recommend that that well be allowed to produce four times the gas limit of what a 40-acre oil acre would be. However, not to allow the well to product liquid in excess of what the top allowable oil unit might.

Q In other words, a gas well will be limited with respect to the top gas well as well as the top liquid limit?

A Yes, that's correct.

Q Under that condition, Mr. Marshall, are you being on the conservative side, what do you think would happen with respect to the movement of the gas-oil contact if we depleted this pool

under that recommendation?

A Using that recommendation, the contact would continue to move down and you would, throughout the producing life of the oil reservoir, you would have pressure maintenance from the gas cap.

Q In other words, the recommended rate of production that you have made would not result in achieving an exact static and stable gas-oil contact?

A That's correct.

Q The oil area would still get a pressure maintenance effect from the standing gas area?

A Yes.

Q You heard Mr. Arnold's answer to my question. Under his recommendation, an operator if he wanted to, if he had 160 gas productive acres, he could drive four gas wells on it and produce them. Under Mr. Arnold's recommendation, would he not be entitled under those circumstances, would not the exact amount of gas come out of that 160-acre gas unit either under your recommendation or Mr. Arnold's, assuming an operator wanted to drill three unnecessary wells?

A Yes, that's correct.

Q So certainly, then, to that extent, your recommendation and Mr. Arnold's are pretty close together?

A That's correct.

Q You carried it one step further realizing that

these gas wells, all of them have at least 160-acre productive acres assigned to it and simply giving credit to that acreage by giving them four times the top gas limit of an oil well?

A Yes, that's correct.

Q Would it be possible, Mr. Marshall, for you as an engineer to devise a formula that would achieve a rate of production from each area that would result in a completely static gas-oil contact?

A It would be possible to devise a formula of that nature. However, it would change with day-to-day production and would be highly impractical to try to attempt to maintain the contact exactly where it was originally.

Q And you feel, then, that your recommendation is a practical recommendation?

A I feel that it is a very simple solution to a pretty complex problem that we have by virtue of the fact that we've got these two extremes of waste, or flagrant violation of correlative rights.

Q Do you feel that your recommendation will prevent the avoidable physical waste that we've discussed?

A Yes, I do.

Q Do you feel that it will more nearly protect the correlative rights of the owners of gas interest, that it will more nearly protect those rights than would the results of Mr. Arnold's recommendation?

A Yes, I do.

MR. BUELL: That's all we have at this time.

MR. PORTER: Any questions of the witness?

MR. PAYNE: No questions.

CROSS EXAMINATION

BY MR. SPERLING:

Q Mr. Marshall, if you reduce the -- or lower the oil-gas contact by production from the oil wells as so classified, that, too, results in migration of gas towards the oil well, isn't that correct?

A By virtue of the fact that we are having pressure maintenance by the gas cap to increase oil recovery, there is some gas migrating in the direction of the oil area.

Q Well, how substantial is some?

A It would depend on this recommendation at the time of depletion of the oil rim or at the time the productive capacity of oil wells has become practical negligent, the gas contact would have moved by the volume that has been voided in that oil reservoir. Now, of course, that is over this area that I have indicated in orange. Now, as the volume of the oil reservoir is only one-fourth the volume of the gas reservoir and as we only have 25 percent recovery in the oil reservoir, the amount of the, and since we have an area inside that orange band of some 1800 acres, the amount of movement of the gas would not be significant. I couldn't give you a figure. I feel sure that it would be less

that, a vertical movement of less than ten feet.

Q Well, isn't it true that as the oil wells reached their depleted stage that gas-oil ratios in those wells would increase?

A By virtue of solution gas coming from the oil which is there in the oil area now, yes.

Q And eventually these oil wells might become gas wells, isn't that true, as a result of migration in the gas cap to the edge of the oil?

A Well, depending on what you would call a gas well. Through the natural depletion where there is no gas present in the oil reservoir, the ratios would increase to rather significant figures, yes.

Q And wouldn't that be the result of migration of that gas from the present classified gas area into the oil area?

A No, that would be a result of gas that has come out of solution in the oil, in the oil area that is in solution in that oil at the present time.

Q In other words, you are saying that by reason of your reservoir pressure maintenance as you have referred to it, that there would be very small quantities of gas that migrate in order to maintain that pressure?

A As long as we have equal voidage on both sides, yes.

Q And that equal voidage, in your opinion, is 4 to 1, roughly?

A A gas well producing four times the normal limit for an oil well would be voiding essentially the same as the oil well.

Q Is that generally accepted engineering principle?

A I don't quite understand. That's the result of this particular calculation.

Q Well, do you know of other areas where it has worked out that way --

A I know of other areas, yes, sir.

Q -- where that same formula has been applied and the results have been as you anticipate them to be in this instance?

A I wouldn't say the same formula, I would say where an attempt was made to create equal voidage on the surface acreage basis.

Q Now, with reference to the Huerfano 104, what did that well potential at in the Gallup?

A 393 barrels of oil per day with a gas-oil ratio of 1500 cubic feet per barrel.

Q Where is that located structurally with reference to your orange band?

A It is located on Section 17 structurally. It is higher than any of the other development on the edge of the Gallup Field.

Q Does that have any significance?

A Were they producing from the same pay zone, it would. However, in my opinion, this 104 is perforated through the entire

Gallup interval. It has an interval opened which could be -- can be correlated to be the same interval as our sand in the rest of the field. However, this interval is not developed. The porosity and permeability from log interpretation would be very very low, if existent at all.

Q What is the perforation interval in that well?

A From 5702 to 5714, from 5720 to 5726, from 5800 to 5806, from 5758 to 5760, 5778 to 5794, 5824 to 5848, and 5864 to 5875.

Q Well now, would you please refer to Commission's Exhibits No. 2 and Huerfano No. 107 appears to have been perforated through sub-shale interval?

A Yes, that's correct.

Q Is there any way of determining where the oil production from any of these wells is actually coming?

A By "any of these wells," you mean any well?

Q Either of these wells, 107 or 104 with such a wide perforation interval, is there any way of actually determining from what zone the oil production is actually coming?

A The 107 which is not on this cross section is in an area very near wells which are completed in a zone that appears identical on the logs to the interval it is completed in. I would certainly strongly suspect that a good portion of oil is coming from the same interval that is coming from the others, which of the individual intervals is contributing, you couldn't

tell.

MR. SPERLING: That's all.

MR. BUELL: May I formally offer, Mr. Commissioner, Pan American's Exhibits 1 through 3 inclusive?

MR. PORTER: Without objection Pan American's Exhibits 1 through 3 will be admitted in the record.

Do you have any more questions, Mr. Payne?

MR. PAYNE: No, sir.

MR. PORTER: The witness may be excused.

(Witness excused)

MR. PORTER: Does that conclude our testimony?

MR. BUELL: Yes, that concludes our testimony.

MR. PORTER: Anyone else have testimony to present?

MR. SPERLING: If the Commission please, at this time we would like to move that this matter be continued until the next regular hearing of the Commission in April of this year, and as ground for that motion, we submit that the information presented at this hearing is by no means conclusive or sufficient to justify the reclassification of this pool at this time. We feel that with additional time and not an unreasonable length of time with which to collect further information and data that we can make a better presentation to the Commission with a view to what the facts are with reference to this lease.

MR. PORTER: Any comment concerning Mr. Sperling's motion for a continuance?

MR. PAYNE: May it please the Commission, without formally opposing such a motion, I would point out that the testimony here presented today indicates that if we continue to produce this reservoir -- produce the gas from this reservoir unrestricted, it will cause waste, whereas if you produce this reservoir as an oil reservoir until the data does become conclusive as to what the pool actually is, it will not cause waste, and I would further point out that the Commission is charged with, and, in fact, only has the authority to protect correlative rights insofar as that can be done without causing waste. Therefore, I personally feel that an order should be entered at this time with an opportunity for any operator to come in at a subsequent date with additional data and ask for a reclassification and/or special rules and regulations.

MR. PORTER: Anyone else have anything to say concerning the motion?

MR. BUELL: May it please the Commission, for Pan American, we hate to be in the position of opposing anyone's motion for continuance where their rights are so completely involved as Mr. Sperling's clients. However, in view of the reservoir data and in view of our study, in our opinion, if the field continues to produce as it has in the past, avoidable physical waste will occur.

MR. PORTER: Have a five-minute recess.

(Short recess)

MR. PORTER: The meeting will come to order, please. Mr. Sperling, the Commission has decided to deny your motion for a continuance. However, you may present testimony at this time if you would like to.

MR. SPERLING: Thank you, Mr. Porter. In view of the Commission's denial of the motion for continuance, and in the event that the Commission is disposed to issue an order in this case, we move that the order not become effective until such time as an opportunity has been afforded, either on the Commission's own motion or on ours, to consider the inauguration of special rules as applicable to this field.

MR. PORTER: Anyone have anything to say concerning Mr. Sperling's motion?

MR. PAYNE: I would point out that it is tantamount to a continuance, and if the denial of the motion to continue was based on the idea that an order would be entered reclassifying the pool, then to grant the motion as just requested would completely thwart that objective. I mean, whether you continue it or whether you make the order effective until such time as the case can be adopted for special pool rules are one and the same.

MR. PORTER: Mr. Sperling, the Commission will deny this motion also.

MR. SPERLING: We don't desire to present any testimony at this time.

MR. PORTER: Does anyone else have anything further

to offer in this case?

The Commission will enter an order in this case reclassifying the pool as an oil pool effective April 1st, and we should advise the operators at this time that they should take gas-oil ratio tests on all wells in the pool prior to April 1st so that allowables can be assigned on that basis. Now, of course, as indicated heretofore, any operator may apply for reclassification of this pool or for pool rules at any time that he sees fit, but an order will be entered effective April 1st reclassifying the pool as an oil pool.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, J. A. Trujillo, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 2nd day of April, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

INDUCTION-ELECTRICAL LOG
GAMMA RAY-NEUTRON
INDUCTION LOG

COUNTY SAN JUAN, N.M.
FIELD or LOCATION WILDCAT
WELL HUERFANO #107 GD
COMPANY EL PASO NATURAL GAS COMPANY

COMPANY EL PASO NATURAL GAS COMPANY
WELL HUERFANO #107 GD
FIELD WILDCAT
LOCATION SEC. 35-27N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Location of Well
1460' FR N/L
1180' FR W/L
SEC. 35-27N-10W

I-ES GR-N IND
(ML TEMP)

Elevation: D.F.: 6660'
K.B.:
or G.L.: 6651'

FILING No.


6300
6200
6100
6000
5900
5800

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

INDUCTION-ELECTRICAL LOG
ELECTRICAL LOG

COUNTY SAN JUAN, NEW M.
FIELD or LOCATION WILDCAT
WELL HUERFANO #99
COMPANY EL PASO NATURAL GAS COMPANY

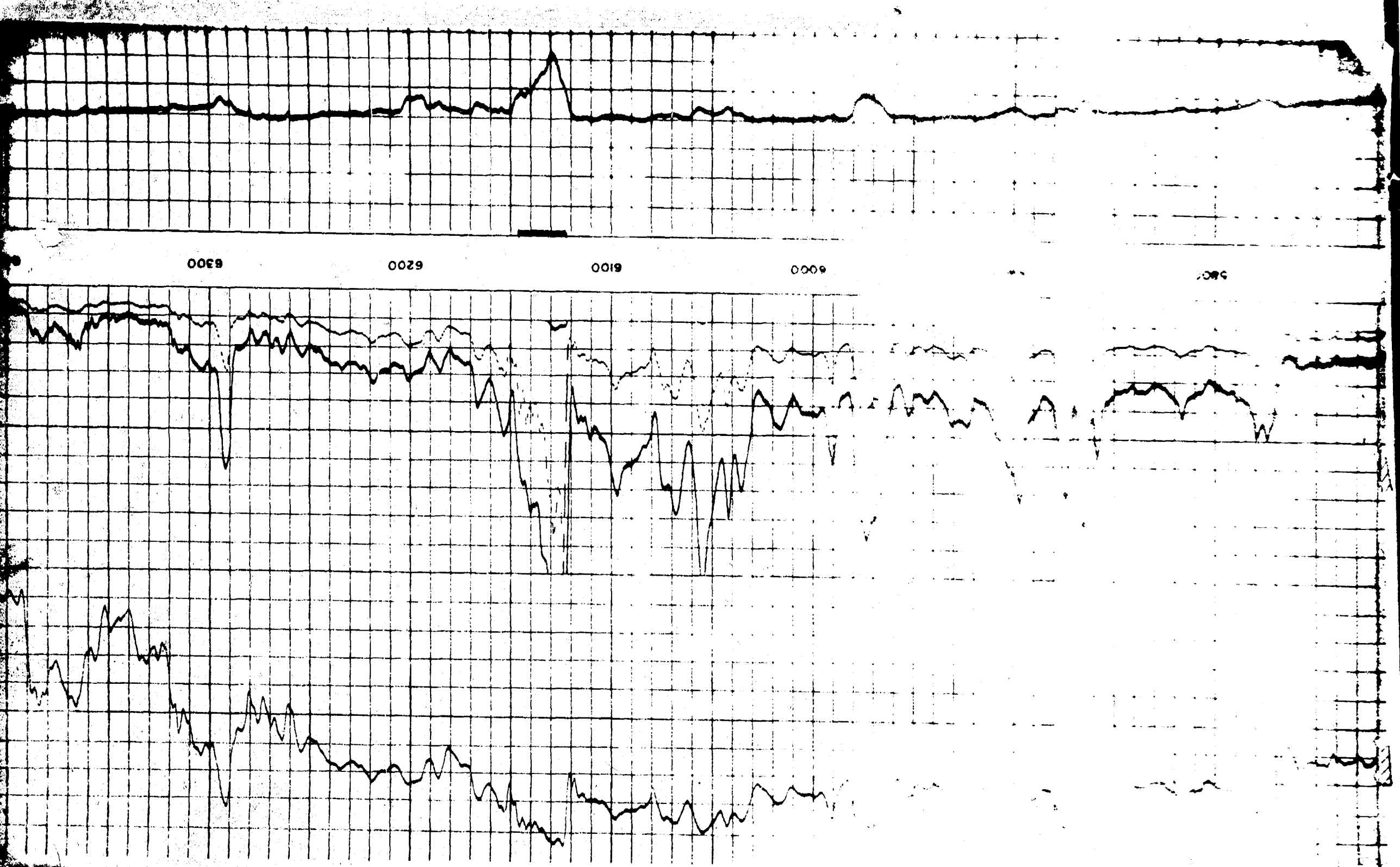
COMPANY EL PASO NATURAL GAS COMPANY
WELL HUERFANO #99 (GD)
FIELD WILDCAT
LOCATION SEC. 2-26N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Location of Well
990' FR N/L
1650' FR W/L
SEC. 2-26N-10W

IND-ES ES
(ML)

Elevation: D.F.: 6604'
K.B.:
or G.L.: 6596'

FILING No.


6300
6200
6100
6000

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Induction-Electrical Log

COUNTY SAN JUAN N.M.
FIELD or LOCATION WILDCAT
WELL HUERFANO #106 GD
COMPANY EL PASO NATURAL GAS COMPANY

COMPANY EL PASO NATURAL GAS COMPANY
WELL HUERFANO #106 GD
FIELD WILDCAT
LOCATION SEC. 33-27N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Other Surveys
GRL SL ML

Location of Well
1550' FR S/L
1850' FR E/L
SEC. 33-27N-10W

Elevation: D.F.: 6183'
K.B.:
or G.L.: 6174'

FILING No.


5300
5400
5500
5600
5700
5800
5900

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

Electrical Log

COMPANY PAN AMERICAN PETROLEUM CORPORATION

WELL C. A. MC ADAMS B #1

FIELD UNDESIGNATED DAKOTA

LOCATION SEC. 28-27N-10W

COUNTY SAN JUAN

STATE NEW MEXICO

Other Surveys
ML SL

Location of Well
1850' FR S/L
1650' FR E/L
SEC. 28-27N-10W

Elevation: D.F.: 6109
K.B.: 6110'
or G.L.: 6100'

FILING No.

COUNTY SAN JUAN
FIELD or LOCATION UNDESIGNATED DAKOTA
WELL C. A. MC ADAMS B #1
COMPANY PAN AMERICAN PETROLEUM CORPORATION


5300
5400
5500
5600
5700
5800

WELEX

RADIOACTIVITY INDUCTION-ELECTRIC LOG

COMPANY EL PASO NATURAL GAS COMPANY
WELL HUERFANO UNIT NO 103 (GD)
FIELD WILDCAT
County SAN JUAN
State NEW MEXICO
File

COMPANY EL PASO NATURAL GAS COMPANY

WELL HUERFANO UNIT NO. 103 (GD)

FIELD WILDCAT

COUNTY SAN JUAN STATE NEW MEXICO

Location

990 FNL &
1650 FWL

RECEIVED
DEC 15 1958
OIL CON. COM.
DIST. 3

Sec. 3 Twp 26N Rge 6W

Other Services
CONTACT
CALIPER

TEMPERATURE

Elevation
KB 6745
DF 6744
GL 6735

Permanent Datum GROUND LEVEL
Log Measured From ROTARY KELLY BUSHING
Drilling Measured From ROTARY KELLY BUSHING


5800
5900
6000
6100
6200
6300
6400

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

SCHLUMBERGER

SIMULTANEOUS

Gamma Ray-Neutron

COMPANY W. R. WEAVER

WELL MCADAMS #1

FIELD HUERFANO

LOCATION SEC. 34-27N-10W

COUNTY SAN JUAN

STATE NEW MEXICO

Other Surveys

PGP

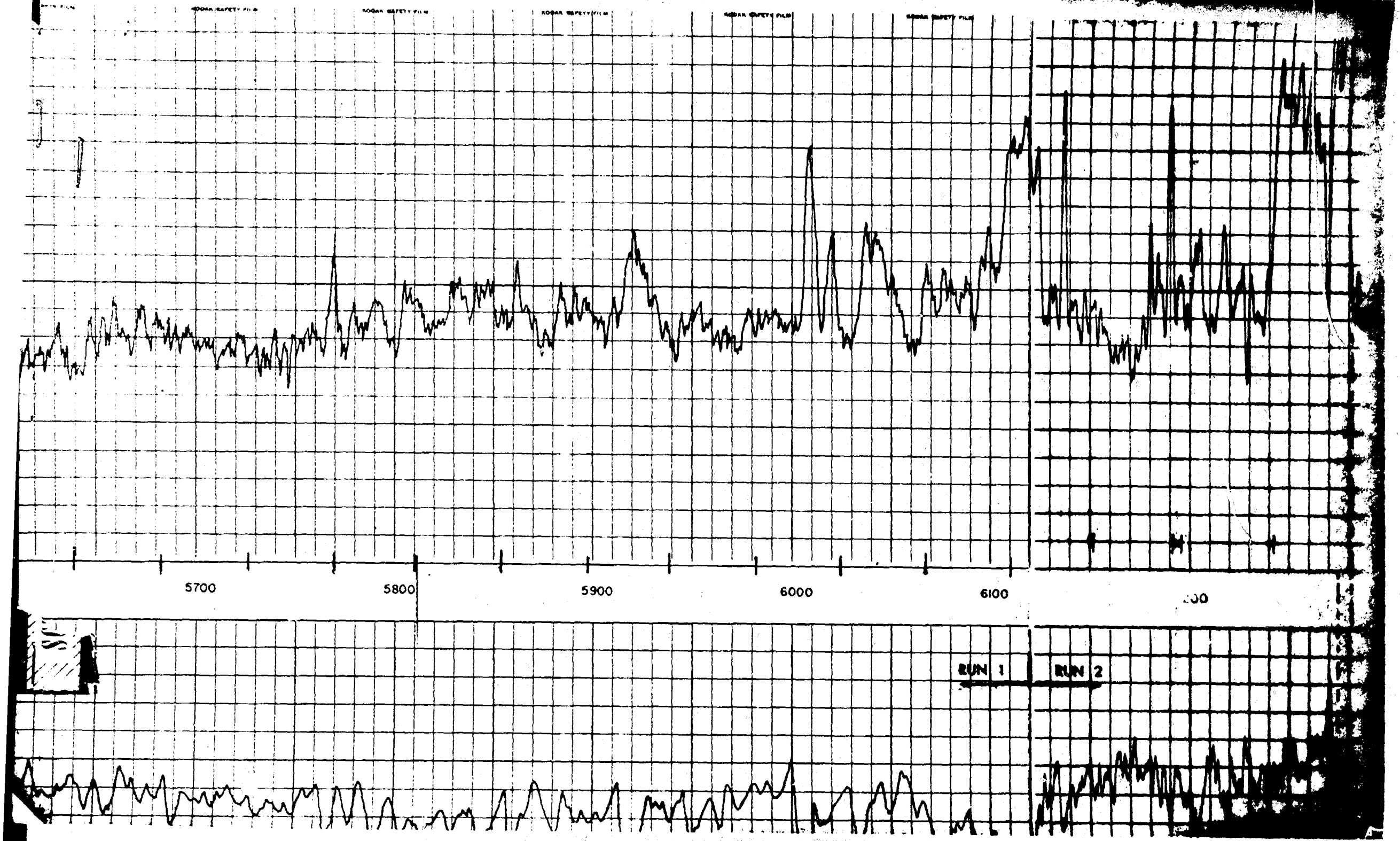
Location of Well

N E 1/4
SEC. 34-27N-10W

Elevation: D.F.:
K.B.:
or G.L. 6720'

FILING No.

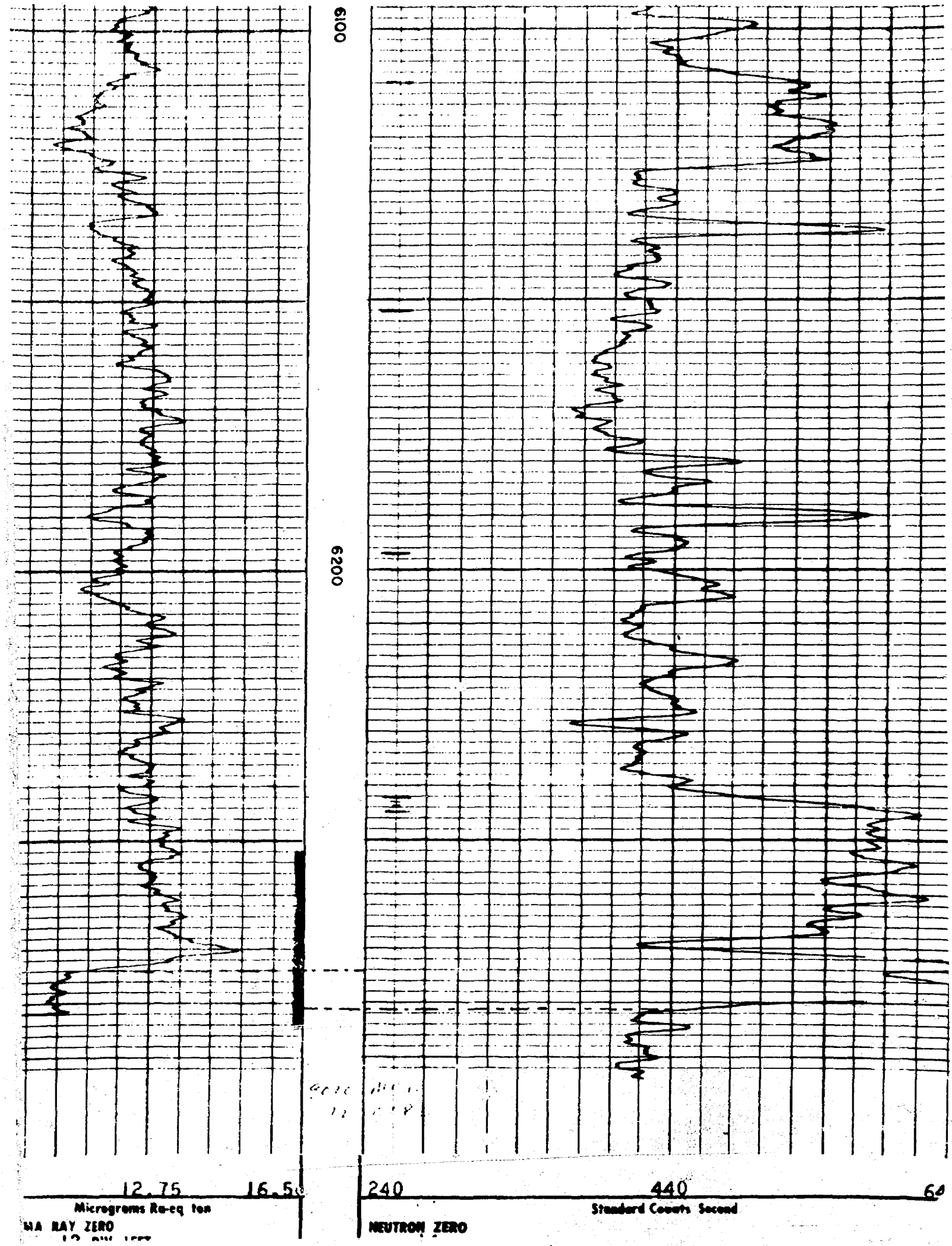
COUNTY SAN JUAN, N. M.
FIELD or LOCATION SEC. 34-27N-10W
WELL MCADAMS #1
COMPANY W. R. WEAVER


5700
5800
5900
6000
6100
RUN 1
RUN 2

W. R. WEAVER #1 MC ADAMS
NE/4 34, 27N, 10W
GALLUP SECTION

RUN 1

RUN 2



SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

INDUCTION-ELECTRICAL
GAMMA RAY & INDUCTION

COMPANY W. R. WEAVER

WELL McADAMS #2

FIELD HUERFANO

LOCATION SEC. 34-27N-10W

COUNTY SAN JUAN

STATE NEW MEXICO

Location of Well

1100' [illegible]
1010' [illegible]
SEC. 3[illegible] [illegible]W

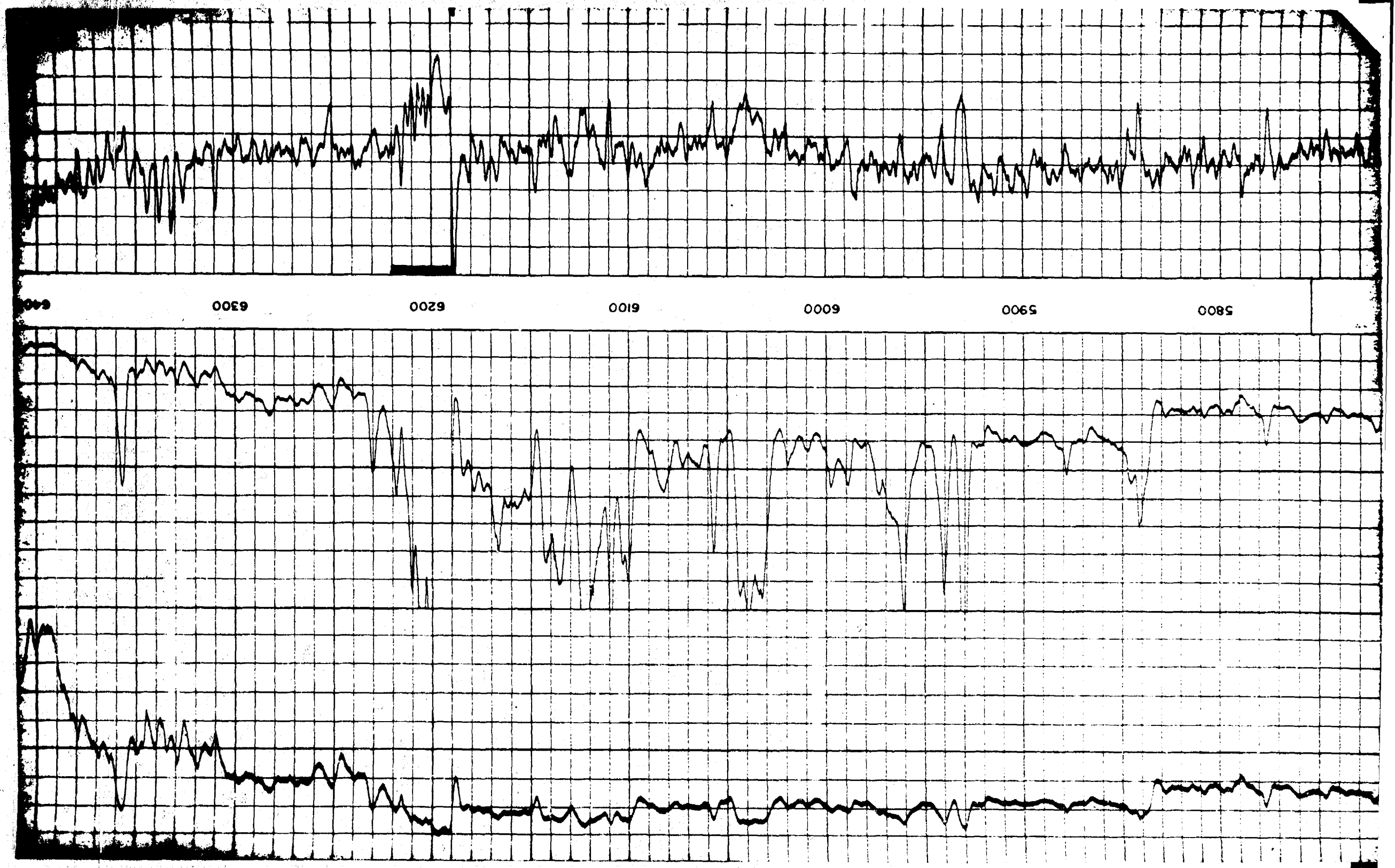
IND-E[illegible] AND
(TEMP[illegible] MI[illegible]

"TIGHT HOLE"

Elevation: D.F.:[illegible]
K.B.:[illegible]
or G.L.:6655'

FILING No. _____

COUNTY SAN JUAN, N.M.
FIELD or LOCATION HUERFANO
WELL McADAMS #2
COMPANY W. R. WEAVER


6400
6300
6200
6100
6000
5900
5800

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

SCHLUMBERGER

INDUCTION-ELECTRICAL
GAMMA RAY LOG
INDUCTION LOG

COUNTY SAN JUAN, N.M.
FIELD or LOCATION ANGEL PEAK GALLUP
WELL McADAMS #3
COMPANY W. R. WEAVER

COMPANY W. R. WEAVER

WELL McADAMS #3

FIELD ANGEL PEAK GALLUP

LOCATION SEC. 34-27N-10W

COUNTY SAN JUAN

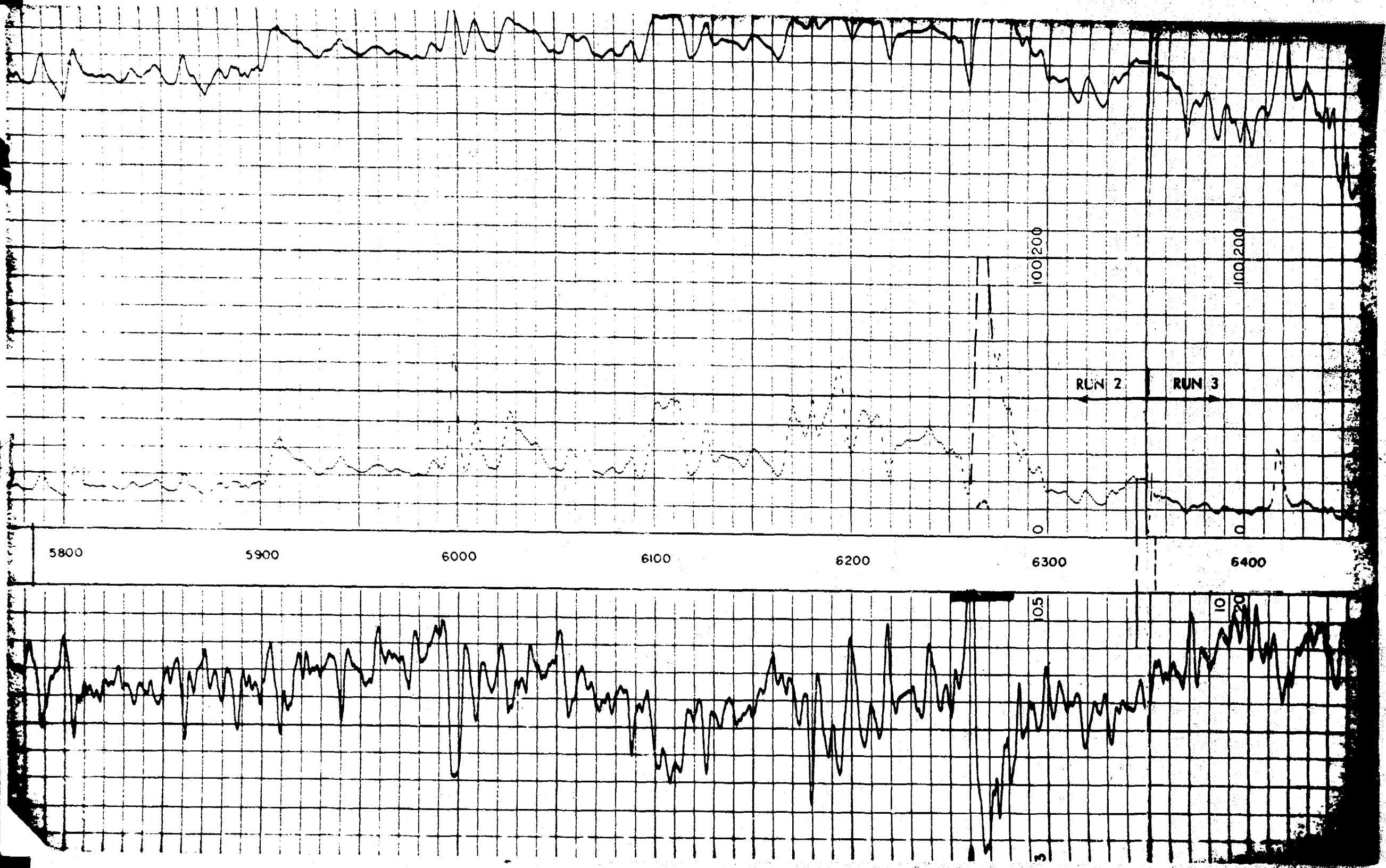
STATE NEW MEXICO

Location of Well
990' FS E/L
1650' FE N/L
SEC. 34-27N-10W

IND-ES GRI
IND
(TEMP.)

Elevation: D.F.: 5672'
K.B.: --
or G.L.: --

FILING No.


100
200
100
200
RUN 2
RUN 3
0
0
5800
5900
6000
6100
6200
6300
6400
105
10
20
3

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

INDUCTION-ELECTRICAL
GAMMA RAY LOG
INDUCTION LOG

COUNTY SAN JUAN, N.M.
FIELD or LOCATION ANGEL PEAK-GALLUP
WELL McADAMS #1
COMPANY W. R. WEAVER

COMPANY W. R. WEAVER

WELL McADAMS #4

FIELD ANGEL PEAK-GALLUP

LOCATION SEC. 34-27N-10W

COUNTY SAN JUAN

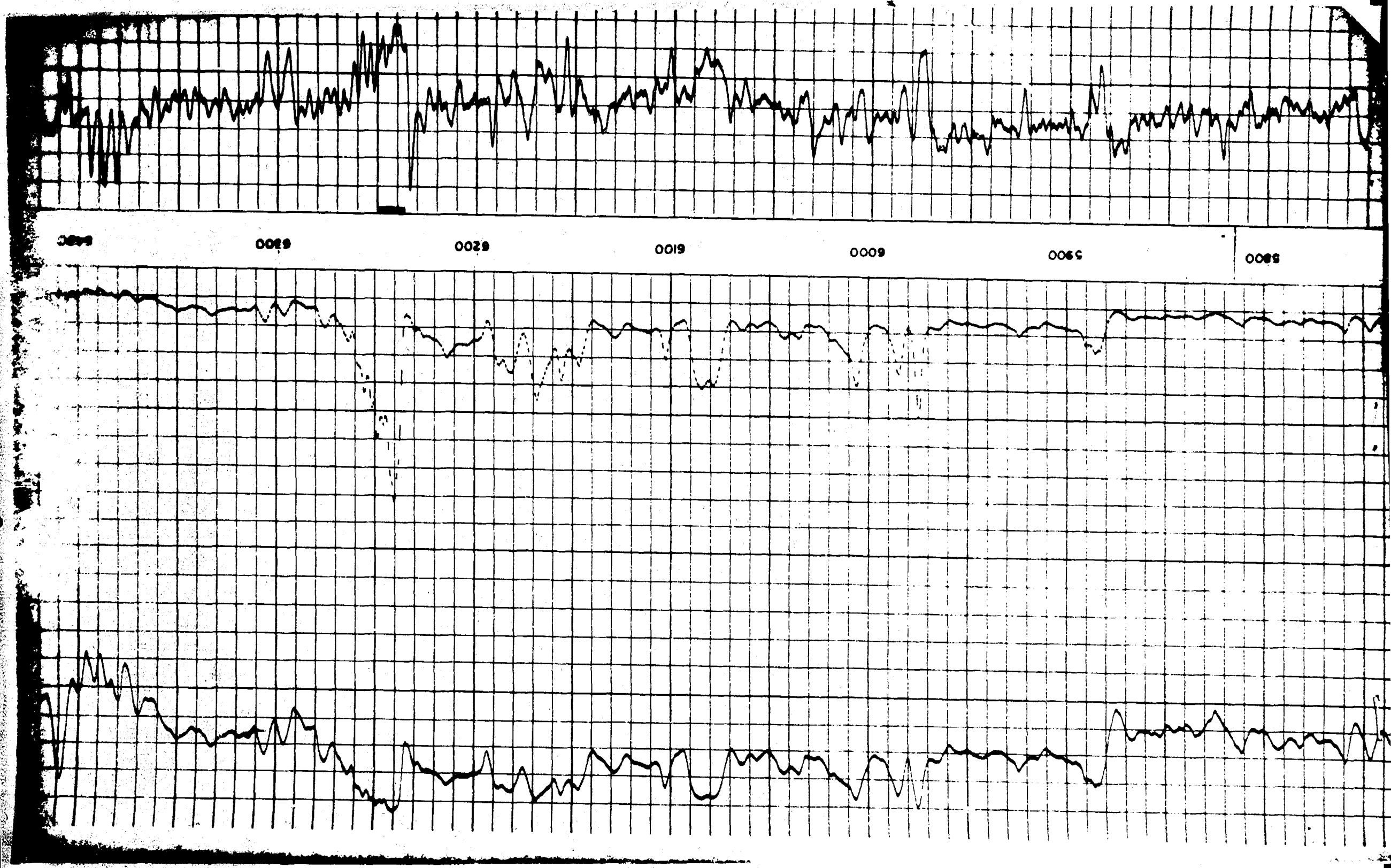
STATE NEW MEXICO

Location of W.
990' FR S.
1650' FR N.
SEC. 34-27N W

IND-ES GRL IND
(TEMP)

Elevation: D F
K.B. 6[illegible]
or G.L. [illegible]

FILING No.


6400
6300
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5900
5800

SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

SCHLUMBERGER

Induction-Electrical Log

COUNTY SAN JUAN
FIELD or LOCATION WILDCAT
WELL HUERFANO #105
COMPANY EL PASO NATURAL GAS COMPANY

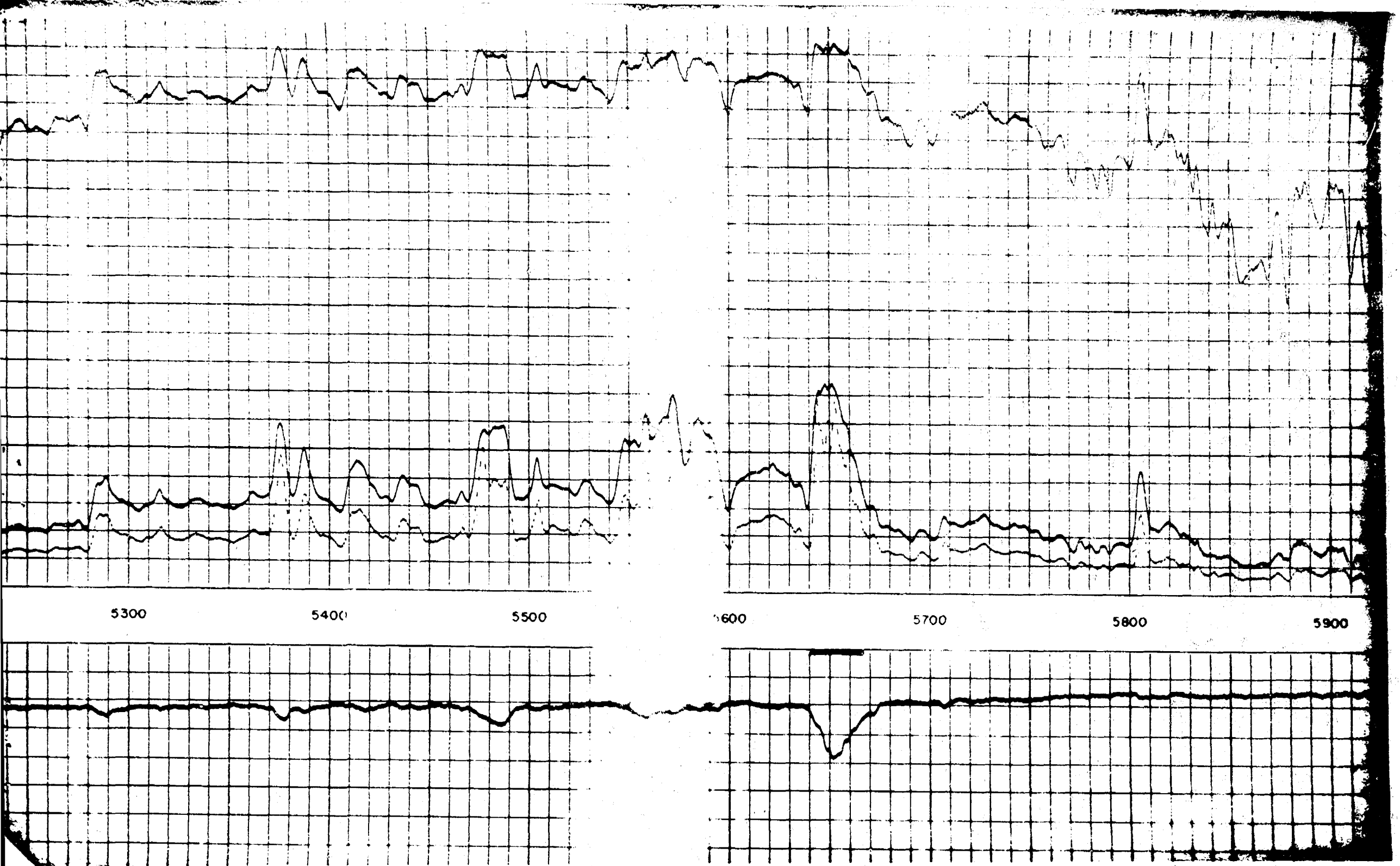
COMPANY EL PASO NATURAL GAS COMPANY
WELL HUERFANO #105
FIELD WILDCAT
LOCATION SEC. 29-27N-10W
COUNTY SAN JUAN
STATE NEW MEXICO

Other Surveys
IE

Location of Well
800' FR S/L
680' FR E/L
SEC. 29-27N-10W

Elevation: D.F.: 6072
K.B.:
or G.L.: 6063

FILING No.


5300
5400
5500
5600
5700
5800
5900

No. 9-59

DOCKET: REGULAR HEARING MARCH 18, 1959

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe

ALLOWABLE: (1) Consideration of the oil allowable for April 1959

(2) Consideration of the allowable production of gas for April 1959 from six prorated pools in Lea County, New Mexico; also consideration of the allowable production of gas from seven prorated pools in San Juan and Rio Arriba Counties, New Mexico, for April 1959.

NEW CASES

CASE 1603: In the matter of the application of Gulf Oil Corporation for an order authorizing it to prorate the purchase of sour crudes only from twenty-five pools in Lea and Eddy Counties, New Mexico, during the course of the Port Arthur Refinery strike.

CASE 1615: Application of Stanley Jones, et al, for an order requiring Malco Refineries, Inc., to purchase oil produced from the Dayton-Abo Pool in Eddy County, New Mexico. Applicants, in the above-styled cause, seek an order requiring Malco Refineries, Inc., to purchase oil produced from wells in the Dayton-Abo Pool in Eddy County, New Mexico, under the provisions of the Common Purchaser Act.

CASE 1616: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the reclassification of the Angels Peak-Gallup Pool in San Juan County, New Mexico, from a gas pool to an oil pool.

CASE 1617: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the extension of the Ballard-Pictured Cliffs Pool in San Juan and Rio Arriba Counties, New Mexico, a prorated gas pool, to include the Canyon Largo-Pictured Cliffs Pool and the Otero-Pictured Cliffs Pool, both in Rio Arriba County, New Mexico, and both of which are non-prorated gas pools, and to include such other adjacent acreage in Rio Arriba County, New Mexico, as is necessary to form a common boundary.

CASE 1618: Southeastern New Mexico nomenclature case calling for an order creating, abolishing, extending and redefining certain pools in Lea, Eddy, and Roosevelt Counties, New Mexico:

(a) Create a new oil pool for San Andres production, designated as the Bishop Canyon-San Andres Pool, and described as:

TOWNSHIP 18 SOUTH, RANGE 38 EAST, NMPM
Section 11: NE/4

(b) Create a new oil pool for Pennsylvanian production, designated as the Bluitt-Pennsylvanian Pool, and described as:

TOWNSHIP 8 SOUTH, RANGE 37 EAST, NMPM
Section 20: NW/4

(c) Create a new oil pool for Delaware production, designated as the Bradley-Delaware Pool, and described as:

TOWNSHIP 26 SOUTH, RANGE 34 EAST, NMPM
Section 19: NW/4

(d) Create a new oil pool for Delaware production, designated as the Brushy Draw-Delaware Pool, and described as:

TOWNSHIP 26 SOUTH, RANGE 29 EAST, NMPM
Section 13: SW/4

(e) Create a new oil pool for Devonian production, designated as the Crosby-Devonian Oil Pool, and described as:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 21: SW/4

(f) Create a new oil pool for Wolfcamp production, designated as the Leamex-Wolfcamp Pool, and described as:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 22: NE/4

(g) Abolish the East Leo-Grayburg Pool described as:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 20: SE/4

(h) Abolish the North Shugart-Grayburg Pool described as:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 9: SE/4
Section 10: S/2
Section 15: N/2 NW/4

(i) Extend the vertical limits of the North Shugart-Queen Pool in Eddy County, New Mexico, to include the Grayburg formation and to rename said pool North Shugart Queen-Grayburg Pool. Further, to extend the horizontal limits of said North Shugart Queen-Grayburg Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 22: SW/4

(j) Extend the Dayton-Abo Pool to include:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM
Section 35: NW/4 NW/4

(k) Extend the Empire-Abo Pool to include:

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 2: NW/4
Section 10: NW/4

(l) Extend the Eumont Gas Pool to include:

TOWNSHIP 21 SOUTH, RANGE 35 EAST, NMPM
Section 3: S/2

(m) Extend the Grayburg-Jackson Pool to include:

TOWNSHIP 17 SOUTH, RANGE 31 EAST, NMPM
Section 3: SE/4, N/2 SW/4 & SE/4 SW/4

(n) Extend the Harkey-Pennsylvanian Gas Pool to include:

TOWNSHIP 24 SOUTH, RANGE 27 EAST, NMPM
Section 27: SW/4

(o) Extend the Justis-Drinkard Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 25: S/2

(p) Extend the Justis-Fusselman Pool to include:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 25: S/2

(q) Extend the Lynch Pool to include:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM
Section 28: SE/4

(r) Extend the East Millman Queen-Grayburg Pool to include:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM
Section 14: N/2

(s) Extend the Pearl-Queen Pool to include:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM
Section 32: N/2

(t) Extend the Roberts Pool to include:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 9: E/2 SW/4

(u) Extend the Robinson Pool to include:

TOWNSHIP 17 SOUTH, RANGE 31 EAST, NMPM
Section 2: SW/4

(v) Extend the Tubb Gas Pool to include:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM
Section 31: NW/4

(w) Extend the Wantz-Abo Pool to include:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 21: NE/4

CASE 1619: Northwestern New Mexico nomenclature case calling for an order extending existing pools in San Juan and Rio Arriba Counties, New Mexico:

(a) Extend the Aztec-Pictured Cliffs Pool to include:

TOWNSHIP 29 NORTH, RANGE 9 WEST, NMPM
Section 32: All
Section 33: W/2

(b) Extend the West Kutz-Pictured Cliffs Pool to include:

TOWNSHIP 27 NORTH, RANGE 11 WEST, NMPM
Section 20: NW/4

(c) Extend the Bisti-Lower Gallup Oil Pool to include:

TOWNSHIP 24 NORTH, RANGE 10 WEST, NMPM
Section 3: SE/4

TOWNSHIP 25 NORTH, RANGE 11 WEST, NMPM
Section 14: SW/4

(d) Extend the Gallegos-Gallup Oil Pool to include:

TOWNSHIP 26 NORTH, RANGE 11 WEST, NMPM
Section 4: SW/4
Section 8: NE/4
Section 9: NW/4 & SE/4
Section 10: S/2
Section 11: S/2

(e) Extend the Horseshoe-Gallup Oil Pool to include:

TOWNSHIP 30 NORTH, RANGE 16 WEST, NMPM
Section 3: SE/4
Section 4: SE/4 SW/4

TOWNSHIP 31 NORTH, RANGE 16 WEST, NMPM
Section 30: SW/4
Section 31: NW/4
Section 34: SW/4 SE/4

TOWNSHIP 31 NORTH, RANGE 17 WEST, NMPM
Section 24: NE/4 & SW/4

(f) Extend the Otero-Gallup Oil Pool to include:

TOWNSHIP 25 NORTH, RANGE 5 WEST, NMPM
Section 31: W/2
Section 33: SW/4

(g) Extend the Verde-Gallup Oil Pool to include:

TOWNSHIP 31 NORTH, RANGE 14 WEST, NMPM
Section 29: NE/4

TOWNSHIP 31 NORTH, RANGE 15 WEST, NMPM
Section 33: E/2

(h) Extend the West Kutz-Dakota Pool to include:

TOWNSHIP 28 NORTH, RANGE 12 WEST, NMPM
Section 26: N/2

CONTINUED CASES

CASE 1569: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the promulgation of an order prohibiting the flaring of casinghead gas from oil wells in San Juan, Rio Arriba, McKinley and Sandoval Counties, New Mexico.

CASE 1597: Application of the Atlantic Refining Company for an order promulgating temporary special rules and regulations for the Horseshoe-Gallup Oil Pool in San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating temporary special rules and regulations for the Horseshoe-Gallup Oil Pool in San Juan County, New Mexico, to provide for 80-acre proration units in said pool.

CASE 1600: In the matter of the application of M. A. Romero and Robert Critchfield concerning the operation of gas prorationing in the Blanco Mesaverde Gas Pool and the ratable taking of gas from said Blanco Mesaverde Gas Pool in Rio Arriba and San Juan Counties, New Mexico, as well as from the Choza Mesa-Pictured Cliffs Gas Pool in Rio Arriba County, New Mexico.

ir/

DATA SHEET
Angel Peak Gallup Pool

Well	Location	Completion Date	DF Elev.	Perfs. Interval Gallup	Lower Gallup SS Int.	Sea Level Datum-Tops	IP	Latest GOR Information
PAN AMERICAN PETROLEUM								
McAdams "B" # 1	J-28-27-10		6109	5704-38	5706-5731	≠ 404	45 BO/D (Lower zone only)	2517/1
W. R. WEAVER								
McAdams # 1	F-34-27-10	2-9-58	6721	6252-84	6272-	≠ 448	9010 MCF	60800/1
McAdams # 2	P-34-27-10	5-27-58	6653	6188-6220	6190-6223	≠ 465	9000 MCF	108,650/1
McAdams # 3	H-34-27-10	5-23-58	6684	6250-72	6262-6290	≠ 422	5800 MCF	
McAdams # 4	N-34-27-10	7-1-58	6716	6236-48	6235-6260	≠ 480	9000 MCF	
EL PASO NATURAL GAS CO.								
Huerfano Unit # 99	C-2-26-10	7-1-58	6606	6122-46	6120-6159	≠ 482	10,157 MCF	96,393/1
Huerfano Unit # 103	C-3-26-10	11-22-58	6744	6241-65	6233-6260	≠ 511	27 BO/D 2500 MCF	92,307/1
Huerfano Unit # 105	P-29-27-10	11-23-58	6072	5640-66	5640-5672	≠ 431	571 BO/D	6866/1
Huerfano Unit # 106	J-33-27-10		6184	5720-56	5730-5762	≠ 453	9387 MCF	
Huerfano Unit # 107	E-35-27-10	12-16-58	6660	5990-97, 6013-09 6018-28, 6095-6108 6018-40, 6021-40 6250-70, 6280-90	6256-6286	≠ 404	287 BO/D	4142/1

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
OCC EXHIBIT No. 2
CASE 1616

R. 10 W

T. 27 N

T. 26 N

R. 10 W

30	29	28	27	26	25
31	32	33	34	35	36
6	5	4	3	2	1
7	8	9	10	11	12

EPNG

Pan American

#1 +404

#105 +431

Huerfano Unit

Mc Adams "B" EPNG

W. R. Weaver

EPNG

#3 +452

#107 +404

#1 +488

#106 +453

+ 400'

#4 +480

#2 +466

Huerfano Unit

Mc Adams

Huerfano Unit

EPNG

#103 +511

EPNG

#99 +482

+ 450'

+ 500'

Huerfano Unit

Huerfano Unit

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
OCC EXHIBIT No. 5
CASE 1616

SECTION A-A'

OPERATOR	WELL	LOCATION	SPACE	DATUM
El Paso Natural Gas Co.	Huerfano # 105	P-29-27N-10W	.63=3325' (Bar)	5172
			22.6	
			.85=4490' (Well-Well)	
Pan American Petr.	McAdams "B" # 1	J-28-27N-10W	.63=3325' (B)	5209
			22.7	
			.95=5015' (W-W)	
Weaver	McAdams # 1	F-34-27N-10W	.45=2375' (B)	5821
			16.2	
			.50=2640' (W-W)	
Weaver	McAdams # 3	H-34-27N-10W	.35=1850' (B)	5784
			12.6	
			.40=2110' (W-W)	
El Paso Natural Gas Co.	Huerfano # 107	E-35-27N-10W		5760

HORIZONTAL SCALE: 36 Inches = 1 mile

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
OCC EXHIBIT No. [redacted]
CASE 1616

SECTION B-B'

OPERATOR	WELL	LOCATION	SPACE	DATUM
El Paso Natural Gas Co.	Huerfano # 103	C-3-26N-10W	.23=1215' (Bar)	5844
			8.3 .375=1980' (Well-Well)	
Weaver	McAdams # 4	N-34-27N-10W	.35=1850' (B)	5816
			12.6 .50=2640' (W-W)	
Weaver	McAdams # 2	P-34-27N-10W	.29=1530' (B)	5753
			10.6 .50=2640' (W-W)	
Weaver	McAdams # 3	H-34-27N-10W	.31=1640' (B)	5784
			11.0 .40=2110' (W-W)	
El Paso Natural Gas Co.	Huerfano # 107	E-35-27N-10W		5760

HORIZONTAL SCALE: 36 Inches = 1 mile

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. [illegible]
CASE 1616

HUERFANO UNIT

1. No of P.C. wells and production 33 wells---5,194,608 MCF
2. Production on 4 weaver wells?

Unable to identify

Sec. 7-26-9

Sec. 2-26-10

No Gallup pool in Huerfano Unit

1 P'S 28-27-10 Pan Americano 2,727 MCF

17-26N-10W all dope

Undesignated Dakota

CAOF 6,863

Choke 1P 5417

Connected 11 Mar 59

First delivery 21 April 59

Dual-Dakota, Gallup

DK T D 6698, Completed 11-25-58

Perf 6516-6524, 6556-6570, 6578-86

Gallup T D 6698 Perf 5580-5874

Test natural 393 24 hrs

60,000 gal oil---60,000 # Dand & 82,141 gal 85,000 Dand &

Dk frac 60,000 & 60,000

	MCF
1-26-9	1460 GL
	1652 DK
2-26-10	2327 DK
	7563 GL
29-27-10	2126 GL
	4814 DK
17-26-10	6863 DK
	9387 GL
33-27-10	4368 DK
35,27-10	GL 281 B O P D
	DK 8376
3-26-10	GL 5327
	DK 5303