BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

May 21, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation for downhole commingling, Lea County, New Mexico.

Case 4131

BEFORE: ELVIS A. UTZ, Examiner

TRANSCRIPT OF HEARING

MR. UTZ; Case 4131.

MR. HATCH: Application of Gulf Oil Corporation for downhole commingling, Lea County, New Mexico.

MR. **KASTLER:** If the Examiner please, I am Bill **Kastler** from Roswell, New Mexico, appearing on behalf of Gulf Oil Corporation. Our witness this morning is Mr. John Hoover.

JOHN HOOVER

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

DIRECT EXAMINATION

BY MR. **KASTLER:**

MR. UTZ: Any other appearances? You may proceed.

MR. **KASTLER:** Will you state your name, by whom you are employed and what capacity?

THE WITNESS: John H. Hoover, employed by Gulf Oil Corporation as District Production Engineer, Roswell, New Mexico.

Q Are you familiar with the downhole commingling application of Gulf in this case?

A Yes, sir.

Q Have you previously testified before the Oil Conservation Commission hearings and Examiner hearings?

A Yes, sir.

MR. **KASTLER:** Are the witness's qualifications acceptable?

MR. UTZ: Yes, they are.

MR. **KASTLER:** Please state, briefly, what Gulf is seeking in this application?

A We are asking approval of downhole commingling in the wellbores of oil and gas production in the Jalmat and South Eunice oil pools in Lea County, New Mexico, and six wells. These wells are Arnott Ramsay, (NCT-D) Well No. 6, in Unit K; Arnott Ramsay (NCT-D) Well No. 7, in Unit M; Arnott Ramsay (NCT-D) Well No. 8 in Unit N; Arnott Ramsay (NCT-D) Well No. 9 in Unit L. All of these in Section 33, Township 21 South, Range 36 East. The J. F. Janda (NCT-D), Well No. 4 in Unit O in Section 32, Township 21 South, Range 36 East; and the J. F. Janda, (NCT-F), Well No. 8 in Unit C in Section 4, Township 22 South, Range 36 East.

Q Have you prepared a plat, showing the location of these wells?

A Yes. It is marked by Exhibit I, and the Arnott Ramsay NCT-D lease is outlined in red in this plat, and is described as all of Section 33, Township 21 South, Range 36 East. The J. F. Janda B lease is outlined in green, and is described as the Southeast quarter of Section 32. The Janda B, Well No. 4, is circled and colored in green; the Arnott Ramsay D -- Wells No. 6, 7, 8, and 9, are circled and colored in red. The J. F. Janda (NCT-F) lease is outlined in orange, and is described as all of Section 4, Township 22 South, Range 36 East, and Well No. 8 is circled and colored in orange.

Q Mr. Hoover, are the reasons for Gulf's request for downhole commingling, in each of these wells, the same for all of them?

A Yes, they are. These wells are all in the same pools; they are close together, and indicated on plat No. 1. They are also duly completed in the same manner -- they are all marginal, with the same operating problems; mainly, pumping through hollow rods, from below a packer, and four of the wells are already shut in in the South unit oil pool, because they are

not economical to restore to production. The four wells shut-in in the South Eunice pool, are the Janda B, No. 4, Janda F, No. 8; the Arnott Ramsay D, Wells No. 7 and 8. As far as the two producing wells, now, the Arnott Ramsay D No. 6, and the No. 9; they will probably be shut-in when mechanical problems dictate such action on those.

Q Are there other Jalmat oil wells near the pertinent wells in this case?

A The only Jalmat oil wells directly offsetting us is the C. E. Long Shell State No. 1, in Unit N of Section 32. Mr. Long, also, has a Jalmat oil well two locations away, being the Petch State No. 1 in Unit L; also, Section 32. There are four wells in the west half of Section 31, Township 21 South, Range 36 East, which are over a mile away; and five wells in Section 6, Township 22 South, Range 36 East, which are, also, over a mile away. There are very few Jalmat oil wells close in this area. In fact, this is an isolated area --

Q As far as the Jalmat is concerned?

A Yes.

Q What is shown on your Exhibit No. 2a, 2b,

2c, 2e, and 2f?

A These are logs of the six wells in question. Exhibit No. 2a is the Arnott Ramsay No. D, No. 6; 2b is for the Arnott Ramsay D No. 7; 2c is for the Arnott Ramsay No. 8; 2d is for the Arnott Ramsay D No. 9; 2e is the Janda B No. 4; and 2f is for the Janda F No. 8. What we have shown on these logs for each well, are the tops and bottoms of the Yates, Seven Rivers, and the Queen formations. The Yates and Seven Rivers, except for the lower 100 feet for the Seven Rivers, makes up the Jalmat pool, and the lower 100 feet of the Seven Rivers and the Queen in this area, is the South Eunice oil pools. I will not go further into each individual log, because the formation tops and perforations are explanatory.

Q Mr. Hoover, will you please identify Exhibit No. 3a, 3b, 3c, 3d, 3e, and 3f?

A Yes. These are schematic diagrams, showing the casing tubing and downhole producing equipment for each well. Each well is identically completed in the same manner. Exhibit 3a is for the Arnott Ramsay D Well No. 6. We have 8 5/8 inch OD casing; set at 276

feet. The cement was circulated. We have 5 1/2 inch OD casing, set at 3,880 feet, and the tops of the cement, by a temperature survey is at 625 feet. We have a string of 2 1/16 inch OD tubing, set at 3,379 feet, in a Baker Parallel Anchor, set at 3,379. We have a Baker Model C Packer, set at 3,442 feet. The total depth was 3,908 feet; the plug back depth is 3,871 feet. The South Eunice perforations from 3,778 feet to 38,58 feet. The Jalmat perforations are at 3,377 feet, and 3,393 feet. We have 2 3/8 inch tubing below the Baker Model C Packer and 2 1/16 inch OD tubing above the packer. And the rod string is 3/4 inch hollow rod. So, we are pumping the South Eunice production through the pump, up the hollow rod. And we have a perforation nipple set in the 2 3/8 inch tubing, below the packer, which acts as a gas vent for the South Eunice gas pool, below the packer. Exhibit No. 3b is for the Arnott Ramsay D Well No. 7 --

MR. KASTLER: Mr. Examiner, do you wish to have Mr. Hoover to go through each one of these, and reiterate data that is shown on the exhibit itself?

MR. UTZ: I don't think so; it looks like they are all completed practically the same, except

for the depths.

MR. **KASTLER:** Yes, sir. They are, identically.

MR. UTZ: Well, I think, the Exhibits speak for themselves.

THE WITNESS: I will just state that the Exhibit No. 3b is the Arnott Ramsay No. 7, which is completed identically with the D No. 6. Exhibit No. 3c is for the Arnott Ramsay No. 8; Exhibit No. 3d is for the Arnott Ramsay D No. 9; and the 3e is for the Janda B Well No. 4; and 3f is for the Janda F No. 8.

MR. **KASTLER:** If the downhole commingling were allowed; how would Gulf complete it -- these wells, then?

A Well, if we would be allowed to downhole commingle, we would take all of the producing equipment out; we would remove the two strings of two and sixteenth inch OD tubing, Baker Parallel Anchor, the Baker Model C Packer -- and we would then have one string of tubing which would be set near the South Eunice perforations -- near the bottom. We would, in all probability, utilize the hollow rod string as strictly as a conventional rod string since we would already have them on hand as

a matter of economics -- they work all right for a rod string, but the production would not go up the hollow rod, but would go up the rod tubing annulus.

Q Furthermore, would Gulf keep the production pump down in the wellbore?

A Yes, sir. Yes, we would.

Q If downhole commingling were allowed, would there be any migration between the existing reservoirs, in your opinion?

A No; in my opinion, there would not be migration, based on the completed state of these reservoirs. We took a bottom hole pressure in our Janda B Well No. 4, which is one of the six wells considered here today, and the results are as follows: for the Jalmat pool, the date of the survey was March 21, 1969; the time shut-in, 193 1/3 hours -- the bottom depth; 3,326 feet, and the datum depth, 3,326 feet. The datum sub-sea depth, plus the 300 feet and the bottom hole pressure at datum, 284 pounds per square inch gauge. In the South Eunice pool -- in the same well. The date of the survey was January 31, 1969, the time shut-in, 192 1/2 hours. The bottom depths, 3,815 feet; and the

datum depth, 3,876 feet. The datum sub-sea depth, minus 250 feet, and the bottom hole pressure at the datum, 246 pounds per square inch gauge. If the Jalmat pressure is corrected to the minus 250 feet datum, based on the pressure gradiant, obtained in the bottom hole pressure survey, to the pressure at this point, would be 290 pounds per square inch gauge, or 44 pounds per square inch gauge difference than the South Eunice bottom hole pressure. This small differential pressure, in my opinion, would not cause significant migration, and also we would keep the production pumped down in the wellbore. Another thing, it takes approximately 8 days to reach this differential pressure.

MR. UTZ: What was the Jalmat pressure --

THE WITNESS: The datum or the corrected depth?

MR. UTZ: I didn't get the --

THE WITNESS: The bottom hole pressure at the datum was 284 psig. And I corrected that pressure to a datum of minus 250 feet, which came out to 290 pounds per square inch gauge.

MR. KASTLER: Would there be any lesser value for the oil if it should be commingled?

THE WITNESS: No, it would not. The production has been commingled on the surface for several years. The Commission permits the commingling on the surface in this area for the production from the Jalmat, the South Eunice, and the Eumont oil pools. And, also, the price that we receive for the Jalmat oil and the South Eunice is the same.

Q You stated previously that these six wells are marginal. Now, do you have any production curve, showing this fact?

A Yes. They are marked in Exhibits 4a, b, c, d, e, and f. 4a is the production curve for the Arnott Ramsay D Well No. 6. The legend on the exhibits show the Jalmat oil production -- not the oil production -- the solid line. The South Eunice oil production by the dotted line. The average production for the Jalmat from January, 1968, through February, 1969, it has been 4 1/2 barrels per day. The average daily production in the South Eunice has averaged 5 1/2 barrels per day -- although, these are plotted on a monthly oil production in barrels, I have given these figures as the daily -- daily figure.

Q Do they have curves for each well, Mr. Hoover?

A Yes, they do.

Q And the exhibits are associated in a uniform manner, as they are in Exhibit 2, 3 and 4; is that correct?

A Yes, except I would like to give a different production for each. Exhibit 4b is for the Arnott Ramsay No.7. This well was shut-in in May, 1967, and, at the time, for the period January, 1967 through May, 1967, it averaged 4 1/2 barrels per day in the South Eunice. The Jalmat is now producing, and from January, 1968 through February,1969, it's averaged 5 1/2 barrels per day. 4c is for the Arnott Ramsay D No. 8. It was shut-in in September of '67, in the South Eunice. The average production for January '67 through September '67, was 6.8 barrels of oil per day. The Jalmat is still producing; it has averaged since January '68 through February '69, 9 1/2 barrels of oil per day. Exhibit 4d is the Arnott Ramsay D No. 9. Both zones are still producing in this well. The South Eunice, for January '68 through February '69 is averaging about 5.6 barrels of oil per day, and the Jalmat 4 1/2 barrels

of oil per day. Exhibit 4e is for the Janda B, Well No. 4. It is currently shut-in the South Eunice. It was shut-in in July of '67 and the average production for January '67 through July '67, was about 7.1 barrels of oil per day. The Jalmat is still currently producing and its average production -- in January '68 through February '69, has been 2.6 barrels of oil per day. And the last Exhibit, 4f, is for the Janda NCT-F Well No. 8. It's also shut-in, in the South Eunice, being shut-in in April, 1968. The average production from January, 1967 through April of'68, has been 5.2 barrels of oil per day in the South Eunice. The Jalmat is still producing, and its average production, January '68 through February '69, has been about 1 barrel of oil per day.

Q Will you please give the dates of the original completions and the pool in which each of these wells were originally completed?

A Yes, sir. The Arnott Ramsay NCT-D Well No. 6, was originally completed August 15, 1956, in the Eumont Oil Pool. It was dualled in the Jalmat oil in June of 1962, and was reclassified from Eumont

oil to South Eunice oil on July 1, 1962. The Arnott Ramsay D Well No. 7 was originally completed February 13, 1957 in the Eumont Oil pool. It was dualled in the Janda oil pool in June of 1962, and reclassified from Eumont oil to South Eunice oil in July 1, 1962. The Arnott Ramsay D No. 8, was originally completed October 31, 1957, in the Eumont oil Pool. It was dualled with Jalmat oil in June of 1962, reclassified from Eumont oil to South Eunice oil on July 1, 1962. The Arnott Ramsay NCT-D No. 9 was originally completed November 14, 1957, in the Eumont oil pool. It was reclassified from Eumont oil to South Eunice oil on July 1, 1962, and it was dualled with Jalmat oil on August 1, 1962. The J. F. Janda NCT-B, Well No. 4, was originally completed on October 5, 1957, in the Eumont Oil pool, and was dualled with the Jalmat oil in June of 1962, reclassified from Eumont oil to South Eunice oil on July 1, 1962. The J.F. Janda NCT-F, Well No. 8, was originally completed October 2, 1956, in the South Eunice pool. It was dualled with Jalmat oil in June of 1962.

Q You stated that there were four of the wells in the South Eunice oil pool that were shut-in. What

is the reason for this?

A The South Eunice is pumped from below a packer. The production is pumped up through hollow pump rods, and paraffin and scale cause expensive repair. Now, the production has now declined to the point that when mechanical trouble is experienced, the wells are shut-in, because they are not economical to repair and return to production. And when trouble is experienced with the two remaining wells which are still currently producing, in the South Eunice, they will also be shut-in. For example, as to economics, the Arnott Ramsay D No. 7, was shut-in in June 1, 1967. The reason for the shut-in was that the rods were sticking, which was caused by paraffin. This trouble occurred approximately every three days; and in order to remove the paraffin, the well has to be hot-oiled. And the cost of each of these hot-oiling jobs, which was required every three days, was $31.00. The well was only producing approximately 3 barrels of oil per day at the time, and it was not economical to continue production, based on this high operating cost. Now, the same trouble occurred on this Arnott Ramsay D No. 8, which was shut-in in September 10, 1967. The rods were plugged with paraffin, and, also

the pump was sanded-up, and this would require a $400.00 pump-pulling job in addition. The well was producing only 8 barrels of oil per day at the time, and it, too, was not considered to be economical in view of the pump job also required. Plus, we have the hollow-rod plugging problem, which was occurring frequently. The Janda B No. 4, was shut-in on July 27, 1967, after pulling the hollow-rods and the pump. Prior to this shut-in --

MR. UTZ: Which one is this?

THE WITNESS: This is the Janda B No. 4.

MR. UTZ: All right.

THE WITNESS: Prior to shutting it in, the pump and rod had scaled-up, and they were pulled. They were re-run again, and the wells started pumping. After 4 hours, the pump stuck again. And we pulled in, and found the same thing -- that the pump was stuck with scale. It was shut-in at the time -- we were only producing 4 barrels of oil per day. So, therefore, we considered it not economical. The J. F. Janda NCT-F, Well No. 8, was shut-in on April 27, 1968. The rods had parted, or the pump had stuck -- it has ceased to produce, anyway. And the paraffin in the hollow rod had to be removed once each week. Due to

the high operating cost that we have been experiencing, we just shut the well in, but at the time, the well was only producing one barrel of oil per day.

MR. KASTLER: How much oil production is now shut-in in these four wells?

THE WITNESS: We estimate approximately 25 barrels of oil per day -- the South Eunice is not being produced.

Q In other words, that's what you may be able to realize if this application is granted?

A Yes. That would be from the four total wells; each well.

Q Do you have any recent production tests from these six wells?

A We have cut test productions on the producing wells, but on the wells which are shut-in -- the four wells shut-in -- those are anywhere from one to two years old. In the Jalmat pool, the Arnott Ramsay D No. 6, which was tested March 12, 1969 -- had 4 barrels of oil per day; no water. The Arnott Ramsay D No. 7, tested March 9, 1969 -- 8 barrels a day; no water. The Arnott Ramsay D No. 8, tested March 11, 1969, 12 barrels

a day; no water.

Q In the Jalmat?

A This is all Jalmat. The Arnott Ramsay D No. 9, March 20, 1969, 4 barrels a day; no water. The Janda B No. 4, April 2, 1969, 3 barrels a day; no water. The Janda F, Well No. 8, March 26, 1969, 1 barrel per day; no water. In the South Eunice, Arnott Ramsay D, No. 6, on March 5, 1969, 7 barrels a day; no water. The Ramsay D, No. 7, on April 9, 1967, produced 7 barrels a day; no water. The Arnott Ramsay D No. 8, on September 16, 1967, 8 barrels a day; no water. The Arnott Ramsay D No. 9, on March 4, 1969, produced 7 barrels; no water. The Janda B No. 4, which the last test was September 1, 1966, produced 9 barrels; no water. And the Janda F Well No. 8, produced 1 barrel of oil; no water.

Q Do you anticipate any objections from the royalty owners under these three leases?

A No, sir. These three leases are State lands, and we furnish the State Land Commissioner a copy of our application for this hearing. We didn't ask for his approval, but he sent us a letter, and a copy was sent to the Oil Conservation Commission, dated May 1,

1969, where he approved our proposed downhole commingling, subject to the Oil Conservation Commission's approval. I believe, the Commission has a copy of that letter. I do have some reproduced copies --

MR. UTZ: Undoubtedly, we didn't get it -- they are not here.

THE WITNESS: Would you like me to give you a copy?

MR. UTZ: Yes, please.

MR. KASTLER: Mr. Hoover, what are Gulf's plans if downhole commingling is not allowed, as a result of this hearing?

THE WITNESS: With the four wells that are now shut-in -- that will remain shut-in -- and when mechanical trouble is encountered with the two remaining wells, they will probably be shut-in, also.

Q To your knowledge, has an application for commingling of these zones, in the wellbore, previously been approved?

A Yes, sir. In Case 3650, Order R-3316, dated September 11, 1967, allowed Mr. Albert Gackle to commingle Jalmat oil and South Eunice in the wellbore of his Esmond B, Well no. 3, Unit H, of Section 33,

Township 22, South, Range 36 East, Lea County, New Mexico. This well is, approximately, 6 miles south of the wells that we are considering here today.

Q Do you have anything further to add?

A I would like to state that our copy of the Land Commissioner's letter, which we have marked as Exhibit No. 5 -- no, sir, I have nothing.

Q In your opinion, would the granting of this application be consistent with the prevention of waste and the protection of correlative rights?

A Yes, sir.

Q Were Exhibits 1, 2a through 2f, and 3a through 3f, 4a through 4f, all prepared by you or at your direction or under your supervision?

A Yes, sir.

Q And is Exhibit No. Five a true copy of the letter received from the Commissioner of Public Lands in the State of New Mexico?

A Yes, it is.

MR. **KASTLER:** At this time, I would move the introduction of Exhibits 1, 2a through 2f, 3a through 3f,

and 4a through 4f, and 5.

MR. UTZ: Without objection, the Exhibits mentioned will be introduced into the record.

(Thereupon, Applicant's Exhibits 1, 2a through 2f, 3a through 3f, 4a through 4f and No. 5 were marked for identification.)

MR. **KASTLER:** This concludes the direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Hoover, in your opinion, how does the pressure in the other wells compare with the pressure in the Janda 4?

A I would say that they are very close, because the tubing pressures are practically the same.

Q Now, would you tell me, again, how you intend to complete these wells?

A Yes, sir. For example, referring to Exhibit 3a, we would remove the two and one-sixteenth inch OD tubing, which is set in the Baker Parallel Anchor. We would, also, remove that Baker Parallel Anchor; we would remove the Baker Model C Packer; we would remove the

pump, and the two and three-eighths inch OD tubing, which is set below that packer. We would remove -- of course, pull the hollow rod, and we would remove the two and sixteenths-inch OD tubing, which is on the South Eunice production. So, in effect, we would pull everything shown on that diagram, and the only thing we have left is the two strings of casing. And then, we would rerun one string of tubing, which would be set near the South Eunice perforations, and we would have the production from the Jalmat perforations and the South Eunice perforations coming through the pump, up the tubing, between the tubing, and the tubing rod annulus. We would have the hollow rods, in all probability, pumping as the -- for the pump rods string, but they would be blanked off. So, they would only be a rod string, in effect, for the pump. So, therefore, that is all we would have left in there; one string of tubing, one pump with rod string. We would not change the perforations -- they would remain as they are now. There would be no additional perforations.

Q So, you would remove everything and rerun the pump, is that right?

A Yes.

Q The pump would be set down at or near the South Eunice perforations?

A Yes. According to that Exhibit 3a, the pump fitting nipple is set in the tubing string at about 3,855 feet, which is almost to the bottom of the South Eunice perforations; they are 3,858 feet. So, we would have the pump set at about that same place, in a pump fitting nipple -- approximately, in that same location. And each one of the wells would be completed identically.

Q In your opinion, both these zones, together, will not produce one normal unit allowable?

A No, sir. They would be one below one unit allowable -- and we would only ask for one allowable, which would still be a marginal allowable with both zones combined.

Q Are these wells making a gas?

A Yes, sir; a little. In fact, that is the -- South Eunice is -- there is some dissolved gas there, and the pumping below the packer does give a little gas problem there. The perforated nipple for the gas vent helps, but the clearances are so close between the two and sixteenths-inch OD tubing and the hollow

rods, that it doesn't work very satisfactorily.

MR. UTZ: Any other questions of the witness? You may be excused. Statements? The case will be taken under advisement.

# INDEX

STATE OF NEW MEXICO )
) ss.
COUNTY OF BERNALILLO )

I, CA FENLEY, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported 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.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4381, heard by me on May 21, 1969.

Examiner
New Mexico Oil Conservation Commission