CASE 3932: Application of PAN AM. FOR DOWNHOLE COMMINGLING, LEA COUNTY, NEW MEXICO.

Case Number 3932

Application

Trascripts

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 12, 1968

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for downhole commingling, Lea County, New Mexico

Case No. 3932

BEFORE: D. S. NUTTER

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. We'll call as the next case, Case 3932.

MR. HATCH: Application of Pan American Petroleum Corporation for downhole commingling, Lea County, New Mexico.

MR. BUELL: Same appearances for Pan American, Mr. Examiner.

(Applicant's Exhibits 1 through 8 marked for identification.

* * * * * *

WILLIAM C. WELLS, JR., called as a witness, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Wells, you are the same Mr. Wells who has testified in the previous two cases of Pan American, are you not?

A Yes, sir.

Q In connection with your testimony here today, I wish you would look first at what has been identified as Pan American Exhibit No. 1. What is that exhibit?

A Exhibit No. 1 is a plat of the southern portion, actually a structure map of the southern portion of the Justis-Blinebry and Fusselman pool area. The map is contoured

on top of the Blinebry, we have color coded the wells on the map as follows; the Blinebry completions are colored green, the Fusselman completions are colored gold.

Q There are other pays that are productive in this area, are there not, Mr. Wells?

A Yes, sir, the Tubb, Queen and Paddock all produce in this area but as they are not pertinent to our application, we have not indicated each of these wells on the map.

Q Would you locate for the Examiner and for the record the Pan American State "AJ" No. 6, the well in which we propose to commingle the Blinebry and the Fusselman?

A Yes, sir, the State "AJ" Well No. 6 is located in Unit M of Section 30, Township 25 South, Range 37 East, it's located in the southwest corner of the southwest quarter of Section 30 and is designated by a red arrow.

Q With respect to your structure on top of the Blinebry, would you consider that an edge well?

A Yes, sir, it is definitely on the edge of the field development.

Q It's just about as edgy as any of them?

A It certainly is.

Q What is its current status, Mr. Wells?

A It's currently a Blinebry Fusselman dual completion.

The Blinebry produced in the latest test in August of this year 11 barrels of oil and 12 barrels of water per day, with the G-O-R of 2390. The Fusselman produces 24 barrels of oil and 1 barrel of water per day, with a G-O-R of 1411.

Q Do you have any more comments on Exhibit 1?

A No, sir, I don't.

Q Let's pass to Exhibit 2; what is that exhibit?

A Exhibit 2 is a Gamma Ray Neutron log of the subject well, State "AJ" Well No. 6. We have posted on this log the top of the Blinebry, at 5,059 feet; we also have the current Blinebry producing interval, these perforations are shown over an interval from 5172 to 5330. Lower down on the log we have shown the top of the Fusselman to be at 6818 and the current producing interval in the Fusselman being 6862 to 68 and 6938 to 54.

Q Do you have any other comments on the log?

A No, sir, I don't.

Q Would you turn your attention, then, to Exhibit 3; what is that exhibit?

A Exhibit 3 is a mechanical sketch of the State "AJ" Well No. 6. We have shown on this sketch that there is 13 and 3/8ths-inch surface pipe.

Q Let me ask you this so we'll be straight. Is this the proposed commingle installation, in the event the Commission

approves our application?

A Yes , this is shown as it would be set up for commingled production.

Q Go ahead.

A The 13 and 3/8ths-inch surface casing is set at 320 feet with 250 sacks of cement which was circulated; we show 9 and 5/8ths-inch casing set at 3211 with 250 sacks which provides the top of cement at 2425. We also show our 7-inch oil string set at 7,020 feet with 600 sacks, the top of cement behind the oil string of 2520 feet. The Blinebry perforations are shown as indicated on the previous log, as are the current Fusselman perforations. We show that under commingled operations we would produce both zones through 2 and 3/8ths-inch tubing in a pump set at 6960.

Q What is the mechanical installation in this well at this time under dual operations?

A There are two strings of tubing, two strings of rod, two pumping units. The Fusselman is produced below a packer.

Q Mr. Wells, why is a commingled installation such as we see here on Exhibit 3, more efficient than the current installation in the well?

A From field experience in general and in particular

on this well, we've experienced something on the order of 20 rod breaks per year in the Fusselman interval which produces below the packer. We believe a large cause of this is due to the fact we are producing this below a packer. Of course if we produced it through one string of tubing we wouldn't have this problem. Also when you produce under a packer, you can't be sure that you are producing that particular interval as most efficient means. There's a possibility of back pressure on the formation, gas locking of your pump, these are things that would be just easier to watch.

Q You say we experienced an average of 20 rod failures a year in the Fusselman string. What about the Blinebry, I know it's not producing through a packer, now, is it?

A No, sir, it's producing above the packer and we have seen about, on the average of one rod failure per year in the Blinebry.

Q Do you have any other comments on the diagrammatic sketch, Exhibit 3?

A No, sir, I don't.

Q Let's look now, at what has been marked as Exhibit 4; what is that exhibit?

A Exhibit 4 is a pertinent data sheet showing pertinent factors pertaining to this application and to our State "AJ"

Well No. 6. We show a cumulative production from the Blinebry of 59,941 barrels of oil. Our Fusselman cumulative is 146,515 barrels of oil. The latest test we mentioned earlier on our Exhibit 1, the crude gravities from both zones are very similar, the Fusselman being 35.6 degrees, that was the Blinebry being 35.6 degrees API, the Fusselman being 37.8 degrees API. Current crude value under dual operations, the Blinebry is worth $2.90 per barrel, it is a sour crude. The Fusselman is worth $3.08 a barrel, it's a sweet crude.

Q What about the effect of commingling sour and sweet, what would you end up with?

A You would have approximately an 18¢ per barrel price reduction in the commingled crude.

Q The commingled would sell for $2.90?

A Yes, sir.

Q As does the sour now?

A Yes.

Q Go to your next item on Exhibit 4.

A We show that producing mechanism for both zones is identical, solution gas drive. The next item we show a current bottom hole pressure from the Blinebry, at the Blinebry datum, of 435 pounds; converting this to a Fusselman datum, we get a Blinebry pressure at Fusselman datum of 1119

pounds. Also, we have a current bottom hole pressure of the Fusselman at Fusselman datum of 1158 pounds. If you convert this upwards to the Blinebry datum, it gives you a pressure of 556 pounds. The pressures are very similar.

Q They're very similar, but we do have a difference?

A Yes, sir, we do.

Q In your opinion, will this amount of pressure differential that we have result in the interchange of fluids from one zone to another?

A No, sir. You'll notice that the Blinebry pressure converted to Fusselman datum is somewhat less, some 40 pounds less, than the Fusselman pressure at Fusselman datum. We intend to keep the well pumped down at all times and in this way, due to pressure differential, for one thing, in favor of the Fusselman, and the fact we plan to keep the well pumped down, no exchange of fluid could occur.

Q You know, we certainly from time to time, have pump failures?

A Yes, sir.

Q Let's assume for the purpose of this question we have a pump failure and even with the small pressure differential we have migration of Fusselman oil into the Blinebry formation. In your opinion, will this in any way cause waste?

A No, sir, for two reasons. Due to our field surveillance and the way our field people watch these wells, it would be for a minimum period of time, in the first place. We have also looked at water samples from each zone. The water seems to be very compatible, we can't invision any detrimental effect at all.

Q What about producing mechanisms, do both formations have the same producing mechanism?

A Yes, they do.

Q With all these factors being like they are, and of course we have common ownership, do we not, between the Blinebry and Fusselman?

A Yes.

Q Even if there should be some interchange of fluid there would be no waste or no violation of correlative rights in any way?

A No.

Q Go on to your next item.

A We have shown our current operating expense for each zone on here. The Blinebry, the current expense for the Blinebry is $175.00 per month. You'll notice the Fusselman operating expense is averaging $485.00 per month. As we mentioned earlier, we have experienced something on the order

of 20 rod breaks per year in the Fusselman, this is the cause for this high operating expense. We show a current economic limit for the Blinebry of 74 barrels of oil per month and for the Fusselman of 193 barrels of oil per month. Again this is due to the high cost of producing below a packer. The remaining reserves for the Blinebry from the current point to its abandonment or economic limit, will be 10,800 barrels of oil. The Fusselman will be 11,900 barrels of oil, which gives a net value to Pan American, of remaining reserves under the current dual operation, of $25,500.00 in the Blinebry and $29,900.00 in the Fusselman.

Q You say net to Pan American, is that after taxes and royalty?

A Yes, sir, it is.

Q What is the source for the last three items you have on Exhibit 4?

A Our economic limit values are based on actual field experience, what we have seen in the past year, year and a half in the field. The remaining reserves are based on decline curve analysis to the economic limit under current operations. The net value of these reserves is similarly based.

Q Speaking of decline curve, would you look now at

what has been identified as Pan American Exhibit No. 5; what is that exhibit?

A Exhibit 5 is a decline curve from the Blinebry interval in this well, State "AJ" No. 6, showing a remaining life on the order of 7 years, to the 74 barrel of oil per month economic limit. This, as mentioned earlier, gives us remaining reserve of 10,800 barrels of oil.

Q Which you showed on your previous exhibit?

A Yes, sir.

Q Any other comment on this decline curve at this time?

A No.

Q Let's look at Exhibit 5; what is it?

A Exhibit 5 is a similar decline curve for the Fusselman, --

Q I am sorry, Exhibit 6.

A Exhibit 6 is a similar decline curve for the Fusselman zone showing the remaining life of approximately 3 years to the 193 barrel of oil per month economic limit explained earlier. This provides us with remaining recoverable Fusselman reserves of 11,900 barrels of oil.

Q Let's go to Exhibit 7. What is that exhibit?

A This is a combined decline curve of both the Fusselman

and Blinebry as if they were produced together. It shows under commingled operations, we would have a remaining life of some 9 years to the 93 barrels of oil per month economic limit. This would give us remaining recoverable reserves of 34,000 barrels of oil.

Q It would certainly be the thrust of your testimony up to this point that commingling the Blinebry and the Fusselman in this well would prevent both economic and physical waste?

A Yes, sir.

Q In that connection, let's look at Exhibit No. 8; what is that exhibit?

A Exhibit 8 is a tabulation of conservation and economic benefits that we would derive due to producing this under commingled operations. It shows that recoverable reserves from September 1st, 1968 to the economic limit which would be reached in September, 1977, 93 barrels of oil per month, would be 34,000 barrels of oil. This was shown on the previous decline curve. It also shows an incremental reserves over and above those those recoverable under current dual operation is some 11,300 barrels of oil. The value net to Pan American after royalty and taxes of these incremental reserves would be $26,650.00. We would have a reduction in operating expenses over the life of the project of $6900.00,

we would have also a reduction in crude value due to mixing your sweet and sour crudes, of $2140.00. All this compared, provides a net economic gain to Pan American, by producing both zones commingled of some $31,410.00.

Q Mr. Wells, it's obvious from this summary that as far as Pan American is concerned, our share of the increase in ultimate recovery, our share of the reduced operating expenses, the reduction in crude value does not adversly affect our economic position, does it?

A Yes, sir, right.

Q But this Commission has to also consider the royalty owner. Now, the royalty owner, of course, shares none of the expenses of operations, right?

A Right.

Q What are the operators' position insofar as this reduction in crude value is concerned, in your opinion, will it in any way be detrimental to the royalty owner?

A No, we feel the royalty owner should benefit from our being allowed to produce this under commingled operation.

Q This $2140.00, does that represent 8/8ths of the reduction in crude value?

A Yes, sir.

Q What would the royalty owners share,his 1/8th of

this $2140.00 amount to involve?

A Over the life of the project, $250.00.

Q He is also going to participate in the 11,000 barrels of oil increase in ultimate recovery, is he not?

A Yes.

Q Can you think of any other way the royalty owner would be benefitted should the Commission approve the commingled operation?

A Yes, if we were allowed to produce this under commingled operation, we anticipate from the lower zone, the Fusselman Zone, that our present income or present production basis, production would increase.

Q Why is that?

A Well, as I mentioned earlier, during the past year to year and a half we have experienced some 20 rod breaks per year. Now this causes down-time. You will notice on one of the previous exhibits --

Q I believe the Fusselman is Exhibit 6, you are talking about the decline curve?

A -- yes, the decline curve on the Fusselman, you will notice for the past year and a half how erratic production has been over that period. The major contributing factor to this has been down-time in the field due to repairing rods failures. Should we be able to correct these, we will be

able to produce the well more consistently which will increase the current production.

Q Really, what you are saying is under a commingled operation, the current income to the royalty owner should be greater even though there is a slight reduction in the value of crude due to commingling?

A Yes, sir.

Q What worries me, looking at Exhibit 5, when you were talking about Exhibit 6, now, this is on the Blinebry where we average only one rod failure a year, but I notice the peaks and valleys of production in the Blinebry are almost identical to those in the Fusselman. Why is that?

A Well, every time we have a rod failure in the Fusselman and have to shut it down to repair it, pull a rod string, we are forced to shut down the Blinebry too. Again, if we were able to decrease the number of pulling jobs on our Fusselman, it would help the Blinebry.

Q So you certainly think on balance that the royalty owner is going to be benefitted, as will Pan American should the Commission approve our commingling request?

A Yes. Also, if we were able to remove that packer and produce the Fusselman more efficiently, we feel that we'll get some slight increase in production from the Fusselman.

Q In your opinion, will the increased, or the total production from the commingled installations exceed one allowable, say for the deeper zone, the Fusselman?

A Oh, no, sir.

Q Would that be your recommendation to this Commission, that the allowable for this well be set, based on the Fusselman allowable?

A On the Fusselman allowable, yes.

Q Do you have anything else that you care to add at this time, Mr. Wells?

A No, sir.

MR. BEULL: May it please the Examiner, that's all we have by way of direct. I would like to formally offer our Exhibits 1 through 8.

MR. NUTTER: Pan American's Exhibits 1 through 8 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 8, offered and admitted in evidence.)

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Wells, this is kind of a negative way to look at it, but every time you have a rod failure and you shut both zones down, you actually extend the life of the well, don't you?

A And extend operating costs, yes, sir.

Q Where is the pump set at present in the Blinebry zone?

A In the Blinebry?

Q Yes.

A I don't know; I think it's essentially right opposite the Blinebry perforation.

Q Right down at the preforations?

A Yes.

Q So you don't have a substantial amount of fluid standing in the hole?

A No.

Q How about the Fusselman?

A The Fusselman pump is opposite the perfs. Of course, with the packer there, we don't have any real means of knowing whether we have, except the pressure.

Q And you plan to set the pump in the commingled zone at 6960 which would be down in the perforations?

A In the lower perforations.

Q Are any secondary operations presently being conducted or any secondary operations being planned for either the Blinebry Zone or the Fusselman in this area?

A Not in this particular area. Pan American has been

involved in a fairly extensive study of unitization waterflood possibilities in New Mexico. The Blinebry and Fusselman opportunities are pretty poor in here right now. In the area, other operators are investigating this, we feel at some future date some zone may be unitized in here; it's way down the road, though.

Q What percent would you say the Blinebry has been depleted in this well?

A The Blinebry, looking at our decline curve on the Blinebry and the cumulative production, I would say that's probably, oh, 14% remaining which would give you what, 86%.

Q You have produced about 60,000 out of it and you estimate you have got 11,000 left?

A Yes.

Q So it would be 60,000 out of 71,000?

A Right.

Q Almost the same amount of reserves remain in the Fusselman, according to your Exhibit 4 which you have produced twice the amount you have produced from the Blinebry, so it's closer to depletion?

A Closer to abandonment, right.

Q Now, Mr. Wells, how would you determine the amount of production which is coming from each zone for statistical

purposes if you were to commingle this?

A Our recommendation on this is to attribute production based on the latest test of each zone. We feel that this would be relatively accurate, through the life of the project here.

Q Well, now, the Fusselman is actually producing twice the amount of oil the Blinebry is. Wasn't your latest test 24 barrels on the Fusselman?

A Yes, sir.

Q And 11 barrels in the Blinebry?

A In the Blinebry, yes, sir.

Q So you might say that two-thirds of the production, of the total production,is from the Fusselman and one-third from the Blinebry?

A Yes.

Q And you would attribute the production to each of the zones on that ratio?

A Yes, sir.

Q Mr. Wells, have you given any consideration to the use of downhole commingling equipment, that is the dual flow chokes and checks that are used in some cases?

A Yes, sir, we have looked at these. We feel that the cost not only for the initial installation, but for maintaining these installations and operating them in this case is

unwarranted. We have a relatively low production, a short field life in our higher producing rate zone here. I believe the downhole devices price-wise, range from $1,000.00 to about $3500.00, depending on the type you go to. We have looked at different devices that we have come up with for our use in other areas. It's fairly expensive to operate these things and as I said, we feel it is an unwarranted expense in this case.

Q Well, you're talking about eight and a half years of remaining life here, commingled, I wouldn't call that necessarily a short life, would you?

A Right, commingled, that's right. We have been nine years there. We can figure, I believe under these downhole chokes, the operation of them would require a pulling unit or in some cases a wire line unit to do any manipulation of the device. This is going to run us $500.00 to $1,000.00 every time we have to bring a pulling unit out on location. This conceivably could happen three, four, five times a year. We haven't thoroughly in field use, evaluated these things. In other words, we are not using either the Baker or Otis tools in field use right now to my knowledge,so we don't know how or what good luck we would have with them as far as efficiency and problems.

Q Mr. Wells, you may be aware that the Commission has heard several cases regarding the use, regarding downhole commingling in these dual completions, the first oil-oil dual completions were authorized by this Commission in 1956. These first wells are now getting to be about 12 years old, and we fully expect as they approach the marginal status, we will be receiving more applications for downhole commingling. We feel there are some installations where there are clear cut instances where this downhole commingling is probably O. K. We feel there are probably others where it is clearly not indicated that these zones should be thrown together. We also feel that there will be some twilight situations, that it's going to be difficult for the Commission to judge whether to permit the zones to be commingled in the well bore, such considerations as pressure differential with accompanying migration of fluids, the compatibility of fluids from one zone with the other zone and statistics as far as secondary recovery studies are concerned, all of these have to enter into the consideration when the Commission judges one of these. We feel that the operator should give thorough consideration to the use of dual flow equipment, utilizing chokes and checks which will keep the zones separate until the zones have entered the tubing. We don't feel there will

be any substantial increase in the cost of the installation. The packer is already there in the dual completion; there's two strings of tubing, one string of tubing can be salvaged and the salvage value of this applied to the purchase of the dual flow equipment. We therefore feel that the operator should give definite consideration to the use of these downhole flow assemblies.

Are there any other questions of Mr. Wells? He may be excused.

(Witness excused.)

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

MR. BUELL: I would like to make a very brief closing statement, Mr. Examiner.

I would like to say with regard to the statement that the Examiner just made, that I personally appreciate every point that he brought out, and would like to assure him that Pan American appreciates it. We, too,believe that commingling should be approached with caution. We sincerely feel here that commingling as we have proposed will prevent both economic and physical wastes. We have satisfied ourselves that if there should be any interchange of fluid that it will not result in either waste in any shape or form or the violation

of correlative rights. We have also, Mr. Examiner, investigated and I'll admit as Mr. Wells has testified, our experience, our actual experience from a personal company standpoint with these downhole commingling devices is rather limited. We have investigated that and we would prefer to install the commingling installation that we have recommended to the Commission here today, but I want the Examiner to know that we are not in any way, by any inference saying that if this application is denied, we're going to abandon this well and leave it. We are not going to do that. We're going to produce it to it's absolute economic limit in both zones and get as much oil for the State of New Mexico and Pan American as we can get.

MR. NUTTER: Thank you. Does anyone have anything they wish to offer in Case 3932?

MR. KELLY: Booker Kelly, of White, Gilbert, Koch and Kelly, appearing on behalf of Tenneco oil Company. Tenneco Company supports Pan American's application in this case.

MR. NUTTER: Thank you, Mr. Kelly. Anyone else? We will take the case under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, 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, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my hand this 25th day of November, 1968.

Ada Dearnley
ADA DEARNLEY

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3932, heard by me on 11/12, 1968.

, Examiner
New Mexico Oil Conservation Commission

Docket No. 33-68

DOCKET: EXAMINER HEARING - TUESDAY - NOVEMBER 12, 1968

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

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

CASE 3927: Application of Gulf Oil Corporation for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a producing oil well at an unorthodox location 5 feet from the North line and 1,315 feet from the West line of Section 33, Township 19 South, Range 35 East, as an infill well in the West Pearl Queen Unit Waterflood Project, Pearl-Queen Pool, Lea County, New Mexico.

CASE 3928: Application of Jake L. Hamon for the creation of a new oil pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Devonian oil pool for its State "K-33" Well No. 1 located 1980 feet from the South and West lines of Section 30, Township 16 South, Range 36 East, Lea County, New Mexico, and for the promulgation of special rules therefor including a provision for 80-acre proration units.

CASE 3929: Application of Leonard Latch for three waterflood projects, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute three waterflood projects by the injection of water into the Yates formation through five wells on his Saunders A, B, and Travis leases located in Sections 12 and 13 of Township 17 South, Range 27 East, Empire (Yates-Seven Rivers) Pool, Eddy County, New Mexico.

CASE 3930: Application of Pan American Petroleum Corporation for a dual completion and water injection, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Meyers "B" Federal Well No. 4 located in Unit E of Section 21, Township 24 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the perforated interval 2950 feet to 3090 feet, Jalmat Gas Pool, and the injection of water for secondary recovery purposes into the Seven Rivers-Queen formations, Langlie-Mattix Pool, in the open-hole interval from 3295 feet to 3650 feet through parallel strings of tubing.

CASE 3931: Application of Pan American Petroleum Corporation for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the interval from 4239 feet to 4389 feet in its Farrell Federal Well No. 10 located in Unit F of Section 28, Township 7 South, Range 33 East, and in

(Case 3931 continued)

the interval from 4402 to 4422 feet in its State "DF" Well No. 1 located in Unit I of Section 25, Township 7 South, Range 33 East, Chaveroo-San Andres Pool, Roosevelt County, New Mexico.

CASE 3932: Application of Pan American Petroleum Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Justis-Blinebry and Justis-Fusselman Pools in the wellbore of its State "AJ" Well No. 6 located in Unit M of Section 30, Township 25 South, Range 38 East, Lea County, New Mexico, with the provision that no more than one single allowable will be produced from said well.

CASE 3933: Application of Texaco, Inc., for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Drinkard formation through its C. H. Lockhart Federal NCT Well No. 9 located in Unit P of Section 18, Township 22 South, Range 38 East, Drinkard Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of a well response.

CASE 3934: Application of Texaco Inc., for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Drinkard formation through the Drinkard string of its multiple completed (tubingless) V. M. Henderson Well No. 8 located in Unit E of Section 30, Township 21 South, Range 37 East, Drinkard Pool, Lea County, New Mexico.

CASE 3935: Application of Sinclair Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by injection of water into the Yates and Seven Rivers formations through its B Davis Well No. 1 located 330 feet from the South and West lines of Section 34, Township 23 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3936: Application of Tenneco Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates and Seven Rivers formations in the perforated interval from approximately 2920 feet to 3134 feet in its E. J. Wells Well No. 2 located in Unit G of Section 12, Township 25 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3937: Application of Anadarko Production Company for an amendment to Order No. R-2977, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-2977, as corrected by Order No. R-2977-A, which authorized a cooperative waterflood project in the Square Lake Pool, Eddy County, New Mexico, to delete the water injection well previously authorized to be drilled 2630 feet from the South line and 2650 feet from the East line of Section 31, Township 16 South, Range 31 East, and to authorize for water injection its Grier Federal Well No. 6 located 1980 feet from the South and East lines of said Section 31.

CASE 3938: Application of Aztec Oil & Gas Company for compulsory pooling and a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying Lots 6, 7, NE/4 SW/4, and SE/4 SW/4 of Section 6, Township 29 North, Range 10 West, Aztec-Pictured Cliffs Gas Pool, San Juan County, New Mexico. Said non-standard unit to be dedicated to a well to be drilled 1830 feet from the South line and 1530 feet from the West line of said Section 6. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 3939: Application of Aztec Oil & Gas Company for four unorthodox gas well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of unorthodox Blanco-Mesaverde Gas Pool locations for four wells located as follows:

SAN JUAN COUNTY, NEW MEXICO
Township 30 North, Range 11 West

Hampton Well No. 4 - 1,140 feet from the West line
and 970 feet from the North line
of Section 13

(Case 3939 continued)

Township 31 North, Range 12 West

Richardson Well No. 7 - 1,584 feet from the East line and 1,621 feet from the South line of Section 15

East Well No. 10 — 1,770 feet from the North line and 790 feet from the West line of Section 26

East Well No. 8 — 790 feet from the South and East lines of Section 26.

CASE 3940: Application of Shell Oil Company for an amendment to Order No. R-2808, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-2808 to permit the dedication of a non-standard proration unit authorized therein to its Livingston Wells Nos. 7 and 2 located in Units V and W, respectively, of Section 3, Township 21 South, Range 37 East, Tubb Gas Pool, Lea County, New Mexico. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

CASE 3941: Application of Agua, Inc., for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, proposes to dispose of produced salt water into the San Andres formation in the open-hole interval between the casing shoe set at 2050 feet and a cement plug at 5400 feet after cleaning out and acidizing the well between 2050 feet and 3600 feet in its Empire-Abo SWD Well No. 01, formerly the Humble Federal Empire-Abo Well No. 3, located in Unit O of Section 1, Township 18 South, Range 27 East, Empire-Abo Field, Eddy County, New Mexico.

CASE 3942: Application of Cities Service Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates and Seven Rivers formations in the perforated interval from approximately 3790 feet to 3834 feet in its Closson "B" Well No. 18 located in Unit M of Section 19, Township 22 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3943: Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Lynn A-28 Well No. 5, located in Unit A of Section 28, Township 23 South, Range 36 East, Lea County, New Mexico, in such a manner as to produce gas from the Yates formation of the Jalmat Gas Pool through the casing-tubing annulus and to dispose of produced salt water through tubing into the Seven Rivers formation of said pool in the interval from 3340 to 3374 feet.

CASE 3944: Application of Sun Oil Company for a pressure maintenance project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its James McFarland Lease by the injection of water into the San Andres formation through its James McFarland Well No. 4 located in the NW/4 SW/4 of Section 20, Township 7 South, Range 33 East, Chaveroo-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks the promulgation of special rules to govern operation of said pressure maintenance project.

CASE 3945: Application of Mobil Oil Corporation for lease commingling, Lea County, New Mexico. Applicant,in the above-styled cause, seeks authority to commingle Vacuum Grayburg-San Andres production from its State "G" lease comprising the W/2 NE/4 and SE/4 NE/4 of Section 24, Township 17 South, Range 34 East, Lea County, New Mexico, with Vacuum Grayburg-San Andres production from that portion of its Bridges State lease comprising the W/2 of said Section 24, allocating the production to each lease on the basis of monthly well tests.

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

December 31, 1968

Mr. Guy Buell
Pan American Petroleum Corporation
Post Office Box 1410
Fort Worth, Texas 76101

Re: Case No. 3932
Order No. R-3656
Applicant:
Pan American Petroleum Corp.

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
Other

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. 3932
Order No. R-3656

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR DOWNHOLE COMMINGLING,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on November 12, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 31st day of December, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Pan American Petroleum Corporation, is the owner and operator of the State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico.

(3) That the subject well is presently dually completed for the production of oil from the Justis-Blinebry and Justis-Fusselman Pools through parallel strings of tubing.

(4) That the subject well is presently producing approximately 11 barrels of oil per day from the Justis-Blinebry Pool and approximately 24 barrels of oil per day from the Justis-Fusselman Pool.

(5) That the applicant proposes to remove the packer and one string of tubing from said well and to produce the marginal production from the subject zones through a single string of tubing.

(6) That the subject well as presently dually completed has a remaining economic life of approximately 7 years as to the Blinebry zone and approximately 3 years as to the Fusselman zone.

(7) That the Blinebry pressure at the Blinebry datum is 435 psi; that the Fusselman pressure at the Fusselman datum is 1158 psi; that whereas the Blinebry pressure extrapolated down to the Fusselman datum would be 1119 psi compared to the Fusselman pressure of 1158 psi, the Fusselman pressure extrapolated back to the Blinebry datum is 556 psi compared to the Blinebry pressure of 435 psi.

(8) That said pressure differential of 556 psi compared to 435 psi could result in the migration of fluids from the Fusselman formation into the Blinebry formation; that said migration of fluids could result in damage to the reservoirs and the waste of oil which has so migrated but is not subsequently recovered; or to further waste as the result of inefficient reservoir operation because of erroneous reservoir statistics and evaluation.

(9) That the Blinebry and Fusselman zones in the subject well should remain separated by a packer.

(10) That the applicant's request to remove the packer in the subject well and to commingle the production from the Blinebry and Fusselman zones in the well-bore should be denied.

(11) That the applicant has experienced mechanical and economic difficulties in producing the Fusselman zone in the subject well as the well is presently completed.

(12) That the installation of a dual-flow downhole choke assembly in the subject well should enable the applicant to avoid much of the mechanical and economic difficulties encountered in producing the Fusselman zone in the well.

(13) That installation of a dual-flow downhole choke assembly may substantially extend the productive lives of each of the subject zones in the subject well.

(14) That the applicant should be authorized to produce and to commingle in a single string of tubing the marginal oil production from the aforesaid pools in the subject well by means of a dual-flow downhole choke assembly without first measuring the production from each zone.

(15) That production tests of either the Blinebry or Fusselman zones in the subject well should be conducted annually and the productivity of each zone established; provided, however, that the Secretary-Director of the Commission may authorize biennial production tests if he determines, on the basis of previous tests, that a stabilized rate of decline and production has been achieved in each zone, and that annual tests are no longer necessary to accurately determine and allocate production from each zone.

IT IS THEREFORE ORDERED:

(1) That the request of Pan American Petroleum Corporation to remove the packer and one string of tubing from its State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico, and to commingle in the well-bore of the subject well the production from the Justis-Blinebry and Justis-Fusselman Pools should be denied.

(2) That the applicant, Pan American Petroleum Corporation, is hereby authorized to complete its State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico, in such a manner as to produce oil from the Justis-Blinebry Pool through perforations from 5172 feet to 5330 feet and from the Justis-Fusselman Pool through perforations from 6862 feet to 6954 feet, commingling the production from each of said zones in a single string of tubing by means of a dual-flow downhole choke assembly, with said zones separated by a packer;

PROVIDED HOWEVER, that said commingling shall continue only so long as the commingled producing capacity does not exceed the top unit allowable for either of the zones in the subject well.

(3) That Rule 112-A of the Commission Rules and Regulations shall apply insofar as said rule is not inconsistent with this order.

(4) That allocation of production to the Blinebry and Fusselman zones shall be by the subtraction method based upon

production tests of the commingled Blinebry-Fusselman and either the Blinebry or Fusselman zones at stabilized production rates.

(5) That communication tests shall be conducted upon installation of the dual-flow downhole choke assembly.

(6) That production tests of the combined zones and of either the Blinebry or Fusselman zone shall be conducted annually and the productivity of each zone thus established.

(7) That a communication test shall be conducted annually.

(8) That the operator of the well shall notify the District Supervisor, Oil Conservation Commission, Hobbs, New Mexico, of the date and time production tests are to be conducted and shall furnish a complete report of such tests to the Commission's Hobbs District Office.

(9) That the Secretary-Director may authorize biennial production tests if he determines, on the basis of previous tests, that a stabilized rate of decline and production has been achieved in each zone, and that annual tests are no longer necessary to accurately determine and allocate production from each zone.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

S E A L

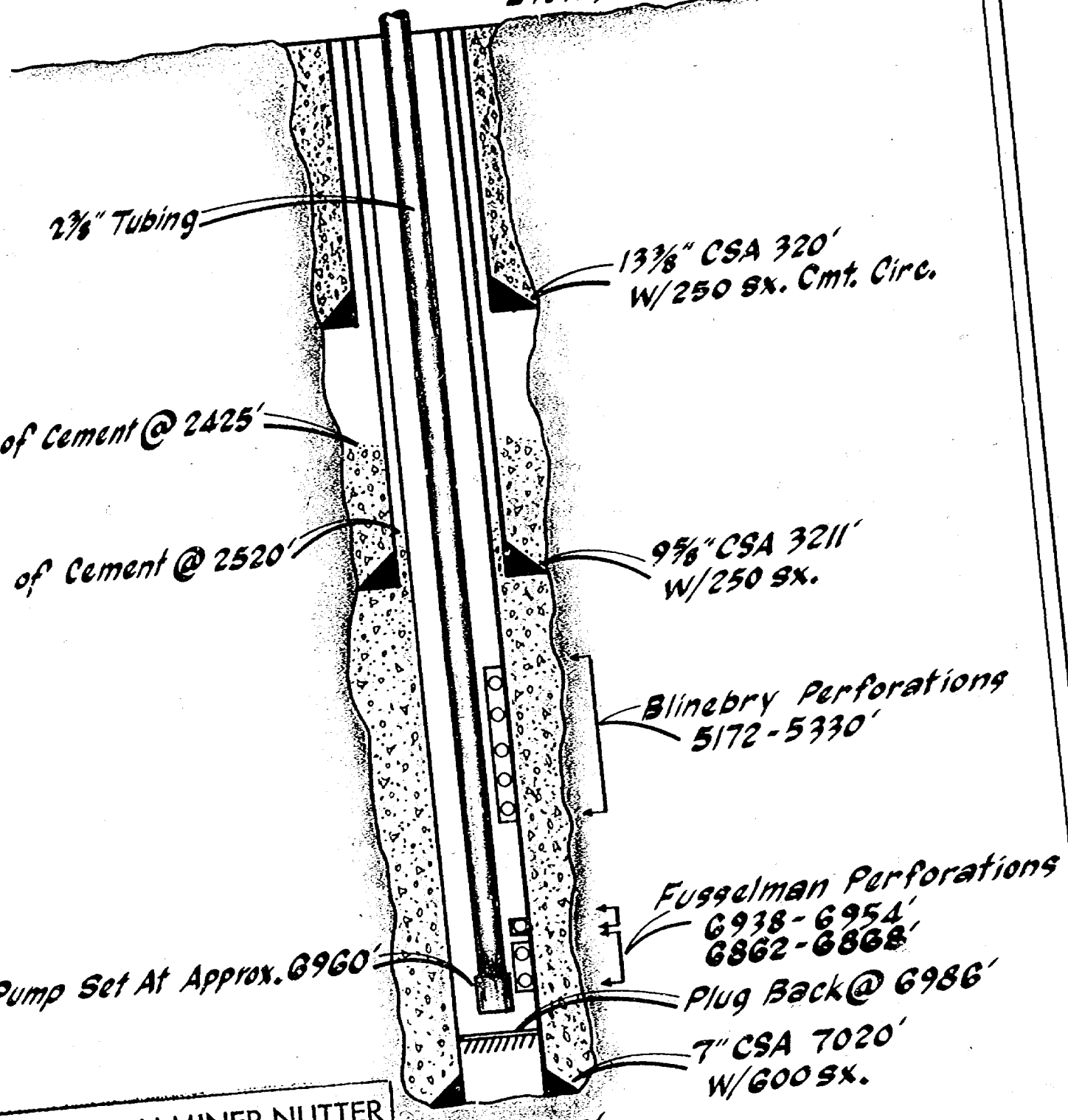
A. L. PORTER, Jr., Member & Secretary

esr/

PAN AMERICAN PETROLEUM CORPORATION

STATE "AJ" NO. 6
JUSTIS BLINEBRY & JUSTIS FUSSELMAN POOLS
LEA Co, N.M.

Elev. 3069' RDB



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Pan Am EXHIBIT NO. 3
CASE NO. 3932

PERTINNENT DATA SHEET
JUSTICE BLINEBRY & FUSSELMAN POOLS
PAN AMERICAN PETROLEUM CORP. STATE "A.J." WELL NO. 6
LEA COUNTY, NEW MEXICO

	Blinebry	Fusselman
Cumulative Production (9-1-68)	59,941 BO	146,515 BO
Latest Test	P 11 BO - 12 BWPD GOR = 2308 (8-3-68)	P 24 BO - 4 BWPD GOR - 1411 (8-6-68)
Crude Gravity	35.6	37.8
Crude Value	$2.90/bbl (sour)	$3.08/bbl. (sweet)
Producing Mechanism	Solution Gas	Solution Gas
Current BHP @ -2300' Blinebry Datum	435 psi	556 psi
Current BHP @ -3900' Fusselman Datum	1119 psi	1158 psi
Current Operating Expense	$175/Mo.	$485/Mo.
Current Economic Limit	2.5 BOPD (74 BOPM)	6.5 BOPD (193 BOPM)
Remaining Reserves (Under Current Operations)	10,800 BO	11,900 BO
Net Value of Remaining Reserves (Under Current Operations)	$25,500	$29,900

any secondary [illegible] or planned

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Pan Am's EXHIBIT NO. 4
CASE NO. 3932

4

PAN AM... PETROLEUM CORPORATION

ENGINEERING CHART

FILE

APPN.

DATE

BY

SUBJECT

Conservation And Economic Benefits Due To Commingled Operations

Recoverable Reserves from Sept. 1, 1968 to Economic Limit (Sept., 1977) (Economic Limit = 93 BOPM = 3 BOPD)	=	34,000 BO
Incremental Reserves Over and Above Those Recoverable Under Current Dual Operations.	=	11,300 B.O.
Value of Incremental Reserves (Net to Pan American)	=	$26,650
Reduction in Operating Expenses	=	$6,900
Reduction in Crude Value	=	$2,140
Net Economic Gain to Pan American by Producing Blinebry and Fusselman Zones Commingled.	=	$31,410

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
PAN AM'S EXHIBIT NO. 8
CASE NO. 3932

a-66

PAN AMERICAN PETROLEUM CORPORATION

OIL AND GAS BUILDING P. O. BOX 1410
FORT WORTH, TEXAS—76101

D. L. RAY
DIVISION ENGINEER

October 15, 1968

Case 3932

File: GHF-539-986.510.1

Subject: Downhole Commingling
Pan American State "AJ" Well No. 6
Justis-Blinebry and Fusselman Pools
Lea County, New Mexico

New Mexico Oil Conservation Commission (3)
Post Office Box 871
Santa Fe, New Mexico 87501

Gentlemen:

Pan American Petroleum Corporation respectfully requests that a hearing be docketed to consider our request to downhole commingle production from the Blinebry and Fusselman Pools in our State "AJ" Well No. 6, Justis-Blinebry and Fusselman Pools, Lea County, New Mexico, with the provision that no more than a single allowable for the Fusselman interval will be produced from this well. Well No. 6 is located in Unit M, Section 30, T-25-S, R-38-E, Lea County, New Mexico.

Yours very truly,

D. L. Ray

WCW:jn

'68 Oct 16 AM 8

DOCKET MAILED
Date 11-1-68

DRAFT

GMH/esr
12-30-68

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. 3932

Order No. R-3656

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR DOWNHOLE COMMINGLING,
LEA COUNTY, NEW MEXICO.

12-30-68

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on November 12, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this_____day of December, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Pan American Petroleum Corporation, is the owner and operator of the State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico.

(3) That the subject well is presently dually completed for the production of oil from the Justis-Blinebry and Justis-Fusselman Pools through parallel strings of tubing.

(4) That the subject well is presently producing approximately 11 barrels of oil per day from the Justis-Blinebry Pool and approximately 24 barrels of oil per day from the Justis-Fusselman Pool.

(5) That the applicant proposes to remove the packer and one string of tubing from said well and to produce the marginal production from the subject zones through a single string of tubing.

(6) That the subject well as presently dually completed has a remaining economic life of approximately 7 years as to the Blinebry zone and approximately 3 years as to the Fusselman zone.

7. That the Blinebry pressure at the Blinebry datum is 435 psi; that the Fusselman pressure at the Fusselman datum is 1158 psi; that ~~the Blinebry~~ whereas the Blinebry pressure ~~[illegible]~~ extrapolated down to the Fusselman datum would be 1119 psi compared to ~~a natural datum~~ the Fusselman pressure of 1158 psi, the Fusselman pressure ~~[illegible]~~ extrapolated back to the Blinebry datum is ~~its~~ 556 psi compared to ~~a natural~~ the Blinebry pressure of 435 psi.

8 That said pressure differential of 556 psi compared to 435 psi could result in the migration of fluids from the Fusselman formation into the Blinebry formation; that said migration of fluids could result in damage to the reservoir ~~or to~~ and the waste of oil which has so migrated but is [illegible] ~~That~~ or so

(14) ~~(13)~~ That the applicant should be authorized to produce and to commingle in a single string of tubing the marginal oil production from the aforesaid pools in the subject well by means of a dual-flow downhole choke assembly without first measuring the production from each zone.

(15) ~~(14)~~ That production tests of either the Blinebry or Fusselman zones in the subject well should be conducted annually and the productivity of each zone established, provided however, that the Secretary-Director of the Commission may authorize biennial production tests if he determines, on the basis of previous tests, that a stabilized rate of decline and production has been achieved in each zone, and that annual tests are no longer necessary to accurately determine and allocate production from each zone.

IT IS THEREFORE ORDERED:

(1) That the request of Pan American Petroleum Corporation to remove the packer and one string of tubing from its State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico, and to commingle in the well-bore of the subject well the production from the Justis-Blinebry and Justis-Fusselman Pools should be denied.

(2) That the applicant, Pan American Petroleum Corporation, is hereby authorized to complete its State "AJ" Well No. 6, located in Unit M of Section 30, Township 25 South, Range 38 East, NMPM, Lea County, New Mexico, in such a manner as to produce oil from the Justis-Blinebry Pool through perforations from 5172 feet to 5330 feet and from the Justis-Fusselman Pool through perforations from 6862 feet to 6954 feet, commingling the production from each of said zones in a single string of tubing by means of a dual-flow downhole choke assembly, with said zones separated by a packer.

Provided However, that said commingling shall

(3) That Rule 112-A of the Commission Rules and Regulations shall apply insofar as said rule is not inconsistent with this order.

(4) That allocation of production to the Blinebry and Fusselman zones shall be by the subtraction method based upon production tests of the commingled Blinebry-Fusselman and either the Blinebry or Fusselman zones at stabilized production rates.

(5) That communication tests shall be conducted upon installation of the dual-flow downhole choke assembly.

(6) That production tests of the combined zones and of either the Blinebry or Fusselman zone shall be conducted annually and the productivity of each zone thus established.

(7) That a communication test shall be conducted annually.

(8) That the operator of the well shall notify the District Supervisor, Oil Conservation Commission, Hobbs, New Mexico, of the date and time production tests are to be conducted and shall furnish a complete report of such tests to the Commission's Hobbs District Office.

(9) That the Secretary-Director may authorize biennial production tests if he determines, on the basis of previous tests, that a stabilized rate of decline and production has been achieved in each zone, and that annual tests are no longer necessary to accurately determine and allocate production from each zone.

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

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