BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 28, 1959

EXAMINER HEARING

IN THE MATTER OF:

Case 1726

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| IN THE MATTER OF: | |
| Application of Amerada Petroleum Corporation for an oil-oil dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Ka Da Pa Well No. 1, located in the SW/4 SW/4 of Section 4, Township 25 North, Range 12 West, San Juan County, New Mexico, in such a manner as to permit the production of oil from the Bisti-Lower Gallup Oil Pool and the production of oil from an interval designated by the applicant as the Lower Mancos sand through parallel strings of tubing. | Case 1726 |

BEFORE:

Mr. Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The next case will be Case 1726.

MR. PAYNE: Case 1726. "Application of Amerada Petroleum Corporation for an oil-oil dual completion."

MR. KELLAHIN: Jason Kellahin, Kellahin & Fox, Santa Fe, New Mexico, representing the applicant. We will have two witnesses, Mr. McBryde and Mr. Kisley Roth.

(Witness sworn.)

MR. PAYNE: Let the record show that Mr. McBryde was previously sworn.

MR. KELLAHIN: Call as our first witness, Mr. McBryde.

O. C. Mc BRYDE, Jr.

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A I am O. C. McBryde, Jr.

Q Are you the same Mr. McBryde who testified in Case 1725 and was sworn and qualified?

A Yes, sir.

Q Now, Mr. McBryde, are you familiar with the application in Case 1726?

A Yes, sir.

Q Would you discuss briefly what is proposed in this application?

A We are seeking permission to dually complete the Amerada Ka Da Pa No. 1 in the Bisti Field between the Lower Gallup formation and the Lower Mancos formation.

Q Now, referring to what has been marked as Exhibit No. 1, will you discuss that exhibit, please?

MR. UTZ: How many exhibits do you have, Mr. McBryde?

A Four.

~~MR. UTZ: Why don't we just mark them now?~~

A All right, sir.

(Thereupon the documents above referred to were marked Amerada's Exhibits Nos. 1 through 4, for identification.)

Q Referring to Exhibit 1, will you discuss that exhibit, please, Mr. McBryde?

A Exhibit No. 1 is a plat of the portion of the Bisti Pool in San Juan County, New Mexico. On it is shown the subject lease which has been outlined in red and the subject well which has the red arrow pointing to it. The ownership of all the leases is shown. I might say that the Amerada leases are not marked as such, but we have the lease number there. For instance, this Ka Da Pa is NM-1499, where you see a number such as that it is Amerada.

Q The leases owned by other parties than Amerada, does that appear on the exhibit?

A Yes, sir, that's shown. I might point out that the map was drafted some years ago and Pan American is shown as Stanolind, but I think we all know who owns the lease.

Q Can you give the location of the subject well?

A The well is located in the Southwest Quarter of the Southwest Quarter of Section 4, Township 25 North, Range 12 West.

Q Now, are you familiar with the history of this well, Mr. McBryde?

A Yes, sir, the Ka Da Pa No. 1 was completed September the 15th, 1956. We drilled through the Lower Gallup formation and on down to what we call the Lower Mancos formation where we encountered some porosity which looked promising. So we perforated only the Lower Mancos in this well and completed the well in that formation.

Since date of completion and up to April the 1st of this year, we have produced a total of 46,380 barrels of oil from this well, and all of this has come from the Lower Mancos formation.

Earlier this year the Central Bisti-Lower Gallup sand unit was created, and in the creation of this unit the operators chose not to include this Lower Mancos formation in the unit.

The interval that was unitized comprises only what is called the Lower Gallup sand. Therefore, we were confronted with the problem of recovering the remaining oil reserve that is left in this Lower Mancos formation. We were required, before this well could be included in the unit, to complete the well in the Lower Gallup formation, which we have done, and we have actually set a permanent type packer between the Lower Gallup and Lower Mancos and have two strings of tubing as we will point out later. The Lower Mancos zone in this well tested 78 barrels of oil with no water with a low gas-oil ratio of 466. Right before we performed the work on the well to get it ready to go into the

unit the well was pumping and flowing at that time.

The Lower Gallup formation, immediately after we opened it for the first time, prior to including this Lower Gallup completion in the unit, tested 148 barrels of oil, which is some 60 or 70 barrels more than the Lower Mancos tested at that time, and it had a much higher gas-oil ratio, the gas-oil ratio was 1303. The gravity of the two oils, however, is the same, 37.3 corrected.

Q You refer to the test on the Mancos formation, when was that test made?

A It was made some time prior to -- when the dual completion was effected, in the early part of this year. I would say in February or March, although I do not have an exact date.

Q Do you have any information on the tests when it was first completed?

A Yes, sir, on initial potential, this well tested 197 barrels of oil for 592 barrels of oil.

Q How does that compare with the initial test on the Gallup formation?

A The initial test in the Gallup formation was 148 barrels of oil as I mentioned earlier.

Q Taking into consideration the initial test on the Mancos and the subsequent test just prior to completion in the Gallup, together with the information on the Gallup formation, does

that indicate to you that there is any communication between the two zones?

A It certainly indicates that they are not in connection, at least over the period of time with which we have been involved here.

Q Would you call that an absence of any effective communication?

A Yes, I think so.

Q Referring to what has been marked as Exhibit No. 2, will you discuss that exhibit, please?

A Exhibit No. 2 is an electrical log of the subject well. We have shown on this exhibit the top of the Lower Gallup formation, and then the base of the Lower Gallup formation which also is the top of the Lower Mancos, and we have colored the Lower Gallup in green to correspond to the color scheme that we will have in our cross section, which will be presented later, the perforations are shown as the solid black marks in the Lower Gallup.

We have four intervals perforated there from 4764 to 4782, from 4792 to 96, from 4828 to 38, and from 4843 to 57, and then in the Lower Mancos zone we have an interval from 4928 to 4936 perforated.

We have also shown the initial flowing potential of both the Lower Mancos and the Lower Gallup, which I mentioned earlier.

We also show the location of the permanent type production packer at 4897.

Q Now, do you have a diagrammatic sketch of the dual completion?

A The diagrammatic sketch shows the casing program in the well, and the perforations in the Lower Gallup and Lower Mancos zones, and the tubing and packers that we use to effect this dual completion. Notice that we have two parallel strings of two and one sixteenth inch O. D. Hydril tubing, we have a parallel and corresponding set between these two strings of tubing at 4761, a Baker Model D production packer at 4897.

Q Is this the type of completion which has heretofore been approved by this Commission?

A Yes, sir, this is routine dual completion. We can do any sort of testing work on the well that would be required.

Q Is it a type of completion which will achieve effective separation of the two producing horizons?

A Yes, sir.

Q Now, Mr. McBryde, in your opinion does this involve two separate reservoirs?

A Yes, sir, we have been, have had this problem brought on us by circumstances. This Lower Mancos zone is not extensive at all, it only occurs in two or three wells right in this immediate area, and for that reason the operators of the Bisti Unit

saw fit not to include this in the unit. So we are confronted with the problem of having some 35, 30 to 40,000 barrels of recoverable oil left in this Lower Mancos formation which we would not otherwise be able to recover. Unless we could do it through this method, it would cost some $85,000 to drill a separate well to the Lower Mancos, and with a recoverable oil of 30 to 40,000 barrels that would hardly be enough to make it a justifiable economic venture. So we have been forced into this by other circumstances, and we believe that this is a good, sound business way to recover this oil and can se no other way to recover it.

Q In your opinion is the approval of this application in the interest of the prevention of waste and protection of correlative rights?

A I think it certainly is, it certainly would prevent a abandonment of this zone with this amount of oil still unrecovered.

Q Were Exhibits 1 through 3 prepared by you or under your direction and supervision?

A Yes, sir.

MR. KELLAHIN: At this time we would like to offer in evidence Exhibits 1 through 3.

(The documents heretofore marked Amerada's Exhibits Nos. 1 through 3 were offered by counsel for the applicant, in evidence.)

MR. UTZ: Without objection they will be accepted.

MR. KELLAHIN: That's all the questions I have.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. McBryde, do you have any pressures for these two zones?

A No, sir, we have had pumping unit on the Lower Mancos zone for quite some time and we have not run a pressure in that well, and we installed a pumping unit on the other well right after completion, so we do not have pressures available.

Q What did you say the gas-oil ratio was for the Lower Mancos?

A 466, and 1303 for the Lower Gallup.

Q Gravity 37 in both?

A 37.3 in both, yes, sir.

Q Will you have a geologist testify, is that your other witness?

A Yes, sir.

Q I believe you said this well was completed 9-15-56?

A Yes, sir.

Q And how much oil did it produce?

A A total of 46,380 barrels of oil, up to 4-1-59, all of that coming from the Lower Mancos.

Q And you had not produced any oil from the Lower Gallup?

A No, sir.

Q Is it producing from the Lower Gallup now?

A It is now completed in the Lower Gallup; when the well went into the unit we had to do that.

Q And, when did it start producing from the Lower Gallup?

A We recovered all of our load oil on May the 13th, '59. The actual work was done in April, but the load oil was not recovered until May 13.

Q It has been on the pump ever since?

A That's my understanding, that it has a pumping unit on it, it pumps and flows. We have a paraffin problem out there and we can produce our wells more efficiently with a pumping unit on them.

Q I believe you said that this was referring to the local condition of the Bisti Pool?

A Yes, sir. Of course we do have a geological witness that will come later, but it is my understanding that this Lower Mancos appears in only two other wells and in both of these wells it was non-commercial, this being the only commercial well in this zone.

Q Were you a member of this, what was the name of this unit?

A Bisti, Central Bisti-Lower Gallup Sand Unit.

Q Were you a member of this Engineering Committee?

A No, sir, I was not.

Q It was this Committee that decided that this particular section should not be unitized?

A I couldn't answer that.

Q Do you know who the members of that Committee were?

A No, sir, I sure don't. Amerada had a representative on the Committee, I'm certain, but I do not know the names of any of the members.

Q Do you know the companies?

A I don't know all of them.

Q Some of them?

A Sunray, Amerada, that would be all that I would be sure of.

Q How about Skelly?

A I would assume that Skelly and Phillips and Pan American would also be on the Committee, but I have no actual knowledge of that. This work was handled in another office in our company from the one that I work in.

Q In your Tulsa office? A Yes, sir.

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

MR. PAYNE: Yes, sir.

BY MR. PAYNE:

Q Mr. McBryde, could you go into the characteristics of the crude produced from these two zones in more detail other than the gravities? Does either zone make water, for instance?

A No, sir, both are water free.

Q Are they both sweet crudes?

A I don't know, I would say that the crudes are very similar. They probably have a common origin. However, I'm not qualified as an expert geological witness.

Q Now, I believe you testified it wouldn't be profitable to drill a separate well to have a single completion in the Mancos. Would it be profitable to have a single completion with the perforations in what you designated the Mancos and Gallup?

A I don't understand your question, I am sorry.

Q This well was already dually completed, is that right?

A It is now, yes, sir.

Q Now, assuming that it were a single completion with perforations both in the Gallup and what you designate as the Mancos, would it be a profitable, would it be a commercial well?

A Yes, sir.

Q Do you know of any designated Mancos Pool in New Mexico?

A No, sir, I have no personal knowledge of any.

Q Do you know if the Commission has defined the vertical limits of the Bisti-Lower Gallup Oil Pool?

A I tried to find that and I could find no indication of any definition, they just call it the Bisti-Lower Gallup.

MR. PAYNE: I believe that's all. Thank you.

MR. UTZ: Any other questions?

RE-DIRECT EXAMINATION

BY MR. KELLAHIN:

Q In line with the question asked by Mr. Payne, Mr. McBryde, if the Mancos were opened along with the Gallup, would that result in your contributing oil which was not unitized in the operation of the unit?

A Yes, sir, it sure would. It is not unit oil in the Mancos, this belongs to Amerada a hundred percent, whereas the others belongs to the Lower Central Bisti Unit.

RE-CROSS EXAMINATION

BY MR. UTZ:

Q What is the vertical limits of the unit?

A The limits as defined in the Unit Agreement extend from a point in the Amerada Joanne White No. 1 on the Schlumberger electric log.

Q Would you read that again?

A Amerada Joanne White No. 1.

BY MR. PAYNE:

Q Where is that well located, Mr. McBryde, with reference to the subject well?

A I think it is in the Southeast of the Southwest of Section 9, which is the section immediately South of the subject well. They took the Schlumberger log on this well and picked a point at 4739 which corresponds to the top of the Gallup, Lower Gallup, and another point at 4872, which corresponds to the

base of the Lower Gallup and designated that interval as the interval to be unitized.

Now it correlates with the top and bottom of the Lower Gallup as we have indicated on our log here, the section in green is the exact area that has been unitized.

BY MR. UTZ:

Q Do you know what their reason was for not wanting to unitize this zone?

A I would -- I don't know exactly, but I would say because of its very limited extent, horizontal extent, it also appears in this well and a couple of others, and it has no value as such to the unit as these other sands have by virtue of their wider aerial extent.

BY MR. PAYNE:

Q Do you think, Mr. McBryde, that the Commission could define the Lower Mancos Pool, the horizontal limit of it?

A The horizontal, yes, sir, I feel that you could.

Q Do you also feel that you could define the vertical limits?

A Yes, sir.

Q That would be as indicated on your Exhibit No. 2?

A I would say that you could define it to include from, well, the top of the Lower Mancos down to some depth below this producing interval. I could give you a couple of depths that I

would recommend if you would like.

Q Please do.

A Let's see, 4883 --

Q That's the top?

A Yes, sir, in this well, that would be the top of the Lower Mancos zone in this Ka Da Pa No. 1. Then I would recommend that it extend down to a depth 4950, in the same well. As to the horizontal limits, well, do you want a recommendation for the horizontal limits?

A Yes, sir.

MR. UTZ: Possibly your geological witness --

A I hesitate to get into that right now.

MR. PAYNE: All right.

MR. UTZ: Any other questions of the witness? If not, you may be excused.

(Witness excused.)

MR. KELLAHIN: I would like to call as our next witness, Mr. Roth.

K. W. ROTH

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please?

A My name is K. W. Roth.

Q By whom are you employed and in what position?

A I am a petroleum geologist for Amerada Petroleum Corporation in Durango, Colorado.

Q Have you ever testified before this Commission before, Mr. Roth?

A I have not.

Q Will you state briefly for the Commission your education and experience as a professional geologist?

A Well, I'm a graduate with a B. A. Degree in Geology from Carlton College in Northfield, Minnesota. I hold a Master's Degree in Petroleum Geology from the University of Wyoming, I have approximately nine years of practical experience with the Amerada Petroleum Corporation in various areas of the Rockies.

Q Was that experience with Amerada in the field of petroleum geology?

A Yes, sir, it was.

Q How long have you been at Durango?

A I have been at Durango approximately a year and a half now.

Q Have you made a study of the area involved in this application?

A Yes, sir, I have.

MR. KELLAHIN: Are the witness' qualifications

acceptable?

MR. UTZ: Yes, sir, they are.

Q Mr. Roth, have you prepared a cross section of the area involved in this application?

A Yes, sir, I have.

Q Do the wells included in the cross section appear on any of the plats which have been submitted as exhibits already?

A Yes, they appear on all of the plats. They have not been designated on the pool plat, however, but they are designated on the index map down in the corner here, which includes a portion of the pool plat.

Q Now, you are referring to Exhibit No. 4?

A Yes, sir.

Q Now, referring to Exhibit No. 4, would you explain that exhibit, please?

A Well, actually this is partially repetition, this is essentially a random cross section from approximately Northwest to Southeast, through the subject well, which is Well No. 3 on the cross section. It was selected, as I say, essentially at random, with the object of showing the Lower Gallup interval as defined in the unitization hearing, colored in green again, and also it is designed to show that the correlations of the Lower Gallup are quite well defined in the subject area, I mean the sand developments are roughly similar and correlate quite well

through the area in question. Also we have in our well here the Lower Mancos interval.

Q Which well is that now?

A This is the Ka Da Pa No. 1, the middle well, the subject well of this hearing. The Lower Mancos producing interval indicated below the Lower Gallup, which is as we interpret the section, in the area.

Q Now, does the exhibit reflect that the Gallup formation is continuous throughout the area?

A Yes, that is what I mentioned, that the correlations of Lower Gallup sand are quite uniform through the subject area. In other words, the sand bodies are quite uniform and the correlations are very straightforward.

Q Now, what did you find in regard to the Mancos?

A The Mancos section, however, is, correlations are considerably more hazardous and the section varies considerably. In the Ka Da Pa No. 1, the Lower Mancos is primarily a shale section with thin shaley sand stringers, and we feel that in this well we have a little better sand development, which is rather unusual for that interval, which accounts for the production, and as Mr. McBryde mentioned previously, it appears to be rather limited condition in the area of this well.

The Lower Gallup, however, consists of several fairly good sand benches which are obvious in their development from looking

at the electrical logs which comprise this cross section.

Q Now, would you give us a general discussion of the lithology of the subject well?

A Well, I have a brief, few brief notes here. The Lower Gallup in the Ka Da Pa No. 1 and vicinity, from cores, is a, primarily a sandstone, gray, very fine grain, defined grain, calcarous, slightly carbonaceous, poor porosity, with scattered to fair stain and fluorescence and with interbeds of shaley sandstones.

The Lower Mancos in the area is predominently a shale, black, carbonaceous, sandy, with thin stringers and interbeds of sandstone, very fine grain, and shaley.

Q Now, what do you find in the way of separation in the subject well between the Lower Gallup formation and the Mancos?

A Well, the interval commencing in here is predominantly a shale section. Your Lower Gallup sand developments occur above this point, above this point, and you have good sand development.

Q Will you say what point you are pointing to, please, so that the record will show it?

A Yes, the Lower Gallup sand development occurs at the base of this green line above the base and essentially in this green interval. Below that point the section is predominantly shale, as I mentioned previously, and there are some thin interbeds of sand, and we feel that in this area that the sand

development is just a little bit better, and accounts for the production and oil accumulation in this well.

Q Now, in your opinion does that comprise an effective separation between the two zones?

A Yes, sir, I feel that it does. The lithology between the Lower Mancos and the Lower Gallup is not favorable to oil migration between the two intervals.

Q Is this an isolated accumulation of oil, in your opinion?

A Yes, sir, we feel that it is. I might mention that in drilling the Ka Da Pa 1 we more or less stumbled upon this Lower Mancos, we found upon logging the well that there was some good microlog porosity indicated in this interval, and on that basis the interval had not been tested previously and we perforated it and completed it and it made an excellent well.

Subsequent to this well there have been two other wells that had attempted completions in there. One was our Ka Da Pa No. 2 and this well did not have a favorable section and declined rapidly, and as a result, non-commercial in this interval.

There is one other well in the area that also tested Lower Mancos, and that was together with the Lower Gallup, so we are not sure just how much oil it contributed to the production of the oil.

Q What is the status of the Ka Da Pa No. 2 at the present

time in regard to the Mancos formation?

A As I understand, we have to plug off the Lower Mancos to agree with the participation in the unit.

Q Would that same factor apply to Pan American's In Na Da Pah No. 1?

A Yes, sir, I believe it would.

Q Now, in your opinion, Mr. Roth, there is a separate and distinct reservoir for practical purposes, in the Mancos formation, as compared to the Gallup formation in the subject well?

A I feel, Mr. Kellahin, that there is, and certainly there is no way that we can see where we can adequately or in any fashion drain the oil from the Lower Mancos through production of the Lower Gallup, and I think Mr. McBryde dwelled on these previously, yes, I do feel that there is definite separation between the two formations.

Q Now, do you have any recommendation as to the horizontal limits of a pool for the Mancos formation?

A Well, it's unfortunate this section has not been tested very much in the area. Actually there are only two wells, our Ka Da Pa 1 and 2 and the Pan Am No. 1 In Na Da Pah, which made any attempt at completion down there.

Q Where is that latter well located?

A It is this one in the Southwest of the Southeast of 4,

that well there, and in a number of wells in the area it has not even been penetrated by the bit, but we do feel that this is a rather localized situation and on that basis I feel that we would be very hesitant to outline an areaover say a section in extent, and I would be rather hesitant to do so without considerable detailed studies of the section which would have to be made in that area.

Q As a producing zone, would you be able to recommend to the Commission that an area of forty acres for the present be defined as the pool?

A I think that would be adequate, yes, sir.

Q Insofar as you know, there is no other production from the Mancos in this area?

A There is no other existing production from the Mancos in this area, and it is not now producing in the Ka Da Pa No. 1, being shut off with that production packer.

Q Was Exhibit No. 4 prepared by you or under your direction and supervision?

A Yes, sir, it was.

MR. KELLAHIN: I would like to offer in evidence Exhibit No. 4.

(The document heretofore marked Amerada's Exhibit No. 4 was offered in evidence by counsel for Amerada.)

MR. UTZ: Without objection it will be accepted.

MR. KELLAHIN: That's all the questions I have.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Roth, in the lower, you have what you termed four benches?

A Well, we don't have them divided in benches, we feel that it's the Lower Gallup. Some people refer to it by benches, I believe, we have not done so. We recognize the presence of two well-defined sand units in the Lower Gallup which are the normal intervals perforated in the area.

Q The interval between your lower sand interval, or let's refer to your Ka Da Pa No. 1.

A Yes, sir.

Q Log. A All right.

Q The interval between 4857 and 4928, how would you describe that?

A As you know, the Gallup is not the best looking sand in the world. However, the interval that you have mentioned is predominantly a shale section. There are a few thin lamina of shaley sand in that section, but the abandonment and the predominant sand development is above 4857. In other words, we are dealing primarily below 4857 with a shale sequence which is the normal development in the Lower Mancos, it is predominantly a

shale sequence. As you can see, there is no indication of a good sand development on the Ka Da Pa 1, on the SP curve, on the log.

Q Yes, sir. Now, the interval from 4796 to 4828, how would you describe that?

A Well, that interval is predominantly a sand section, and the description there is sandstone, gray, very fine grain, defined grain, it is calcerous, and slightly carbonaceous with poor porosity, and it normally has scattered to fair stain and fluorescence, and there are thin interbeds of shaley sandstone and shale, but it is essentially a good sand section with thin stringers of shale.

Q In your opinion, is there communication between, through that zone vertically?

A There is enough variation in these benches, although the correlations are quite good, there is enough variation between these, the sand developments in the two main benches of the Lower Gallup, that I feel that there is definite evidence that you have a common source there, common reservoir. In other words, the interval in green is the normal interval of sand development which is attributed to the Lower Gallup, and there is some variation in the sand development which is not too well illustrated on the cross section here where the correlations are rather straightforward.

Q What would you say about the kicks on your log, aren't they of about the same magnitude, the two of them?

A In the lower, the two intervals in the Lower Gallup?

Q The last two intervals we were just speaking of.

A This one and this one here.

Q One at 4792 or 4796, I am sorry --

A Oh, pardon me.

Q 4829.

A Well, that section there, I'm a little confused, I am sorry. That section there is predominantly a shale and thin-bedded shaley sand section, yes, there is some, that's predominantly a shaley interval between these two sand benches.

Q Would you say this interval is more shaley than it is in the other wells in the area?

A No, I think that's more or less a normal appearing section. It is rather characteristic of the interval in the area.

Q I don't know whether I want to talk about this well or not, I don't like the name.

A Gle-Na-Nup-Pah.

Q Can you pick the Lower Mancos on that log?

A Roughly, yes, sir. We can. Of course we feel that this is the top of the Lower Mancos, you can see, however, correlation on this point and this point, and this interval here is roughly this interval here, but --

Q If you give me the vertical limits, would you pick the Lower Mancos beds?

A Well, Mr. McBryde defined the Lower Mancos as extending from here down to here in this well, as I mentioned.

Q I am speaking of this particular zone.

A Yes, I feel on the basis of the microlog on the Ka Da Pa 1, that the productive interval in that well, or potential pay, shall we say, is from 4928 to 4946, where some good porosity is indicated. That is on this well here, sir, and then the equivalent interval here, 4622 in this well and the equivalent interval would be approximately here on this well.

Q How about the Gle Na Nup Pah?

A This well here apparently did not penetrate the complete section, but this then correlates and we would feel that the, roughly this interval in here to TD would be the equivalent interval.

Q Do you know whether either of these well tested --

A None of those wells have tested that interval, no, sir. This well cannot penetrate, and this one, essentially the same interval here on this well. It is this little, yes, that unit there.

Q Have you studied very many logs in the Bisti Pool?

A Yes, sir, most of the studies however have been primarily in this area where we hold acreage. Our main acreage holdings are in this area of the Bisti Pool.

Q Have you noted this development at any other location in the pool?

A It is not readily apparent from the logs, and I don't believe a log study is necessarily the key to whether that porosity and permeability interval in the Lower Mancos is going to be present. As you are probably aware, in some of those sections it is rather difficult, particularly the shaley sand sections or sandy shale sections, to get good log evaluation of the presence or absence of permeability from the logs.

Q Then this is a sand development rather than a fractured shale?

A Unfortunately, that well was not cored in that interval and we feel actually it is more of a little better sand development in that shale section, but fractures certainly cannot be ruled out, however.

Q Perhaps I should have asked this question of Mr. McBryde, but maybe you can answer it. Have you calculated your reserve in this zone under your forty acre tract?

A Well, I believe Mr. McBryde stated previously that we feel there are approximately 30 to 40,000 barrels of oil yet to be recovered from this well.

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

BY MR. NUTTER:

Q Mr. Roth, what is the general section in which this

Lower Gallup sand is located, is that Mancos shale?

A Yes, the Lower Gallup is actually sand development in the Mancos shale, that is correct.

Q How about the Upper Gallup --

A It is the same thing, yes.

Q So we have one broad section called the Mancos shale and we have the Lower Gallup and we have the Upper Gallup and I suppose the Middle Gallup too?

A Yes, sir. Actually the terminology on the Gallup kind of varies from company to company, and I'm sure that both an upper, middle and lower Gallup are recognized by most operators, although some do not designate it as such.

Q Well, now, this section that we are talking about today, it is in the Mancos shale too, isn't it?

A Yes, it is the Lower Gallup sand section in the Mancos.

Q So you think that this could, I mean just nomenclature-wise, be termed a low, Lower Gallup?

A Yes, I think it could.

Q In other words, we have all this sand development in the Mancos shale and it might all be called Gallup?

A That's right, yes.

Q How many wells have actually been tested or perforated in this particular section here, Mr. Roth?

A We made a study, of course we didn't make a study of

the Gallup and Mancos interval basinwide. Our study was in the area of the Central Bisti-Lower Gallup sand unit, which of course is as Mr. McBryde mentioned previously, what occasioned this application, and there have only been two other wells, our Ka Da Pa 2, which was drilled subsequent to the Ka Da Pa 2. In that well we drilled for the Lower Mancos development with the intention of evaluating it further, and we did perforate it and put it on production, and the initial potential was right around 56 barrels of oil per day on pump from the Lower Mancos.

Q Well, now, was it perforated in the Lower Gallup at the same time?

A No, it was perforated initially in the Lower Mancos interval and put on pump, but declined very rapidly, at which time we moved up and perforated the two benches of the Lower Gallup. And now, the well is producing, or was producing at last report, from both the Lower Mancos and the Lower Gallup and was not able to make its allowable from both the Lower Mancos and the Lower Gallup together.

The other well that tested in this area is the Pan American No. 1 In Na Da Pah, which is actually an east offset to our Southwest Quarter there of Section 4, and they perforated the Lower Mancos and the two benches of the Lower Gallup and put them on production together, so that no possible evaluation could have been made of how much production is coming from the Lower Mancos in

that well. And it is our understanding that our Ka Da Pa 2 and the Pan American well will be or have been plugged back in the Lower Mancos because that interval is not to be opened in the Unit Agreement, you see.

Q In other words, it would be apparent, wouldn't it, from the, from your production history on the Ka Da Pa No. 2 and Pan American's production history on its well, that until the time the Unit Agreement was established and the unit area was set up, that it was regarded as one reservoir?

A I think it would be safe to say that, yes.

Q Now, there is a necessity for two reservoirs predicated on this Unit Agreement that had been made?

A Yes, sir, because we feel that the oil in the Lower Mancos cannot be recovered through the operation of the unit, and it will be oil lost to Amerada because it had been effectively eliminated from participation in the unit.

Q Then these are the only three wells in the unit that you know of that have tested this section?

A We have made a search of the cards and logs of all the wells in the unit and have only been able to find these three, yes, sir.

Q And what do you propose to do, separate this and produce it through separate strings of tubing?

A That is correct. Dual completion.

Q What is that well capable of making right now, the so-called Lower Mancos section?

A I think Mr. McBryde quoted those figures earlier. We might review them again, Mac, if you would.

MR. KELLAHIN: If the Commission please, that is already in the record.

MR. UTZ: Yes, sir, it is in the record.

MR. NUTTER: I will withdraw the question, I withdraw the question.

MR. KELLAHIN: Mr. Nutter was not present at the time.

BY MR. UTZ:

Q Mr. Roth, is your No. 2 dually completed?

A No, sir, it isn't.

Q Are you still producing out of the Lower Mancos?

A I do not know, I believe it is to be plugged off, but I don't know whether it has been as of this date or not.

Q You do know that they intend to plug it off?

A Yes, sir, that is to agree with the operation of the unit.

Q Well, how much oil is in the Mancos under that well yet, do you think?

A I do not know, it was pumped for approximately three days from the Lower Mancos and it initially pumped 56 barrels of oil per day as I remember, and declined in the space of three days

to less than fifty, and at that point we moved up and perforated the two benches of the Lower Gallup, and as I say, the well now with the Lower Gallup and the Lower Mancos opened is not capable of making its allowable.

Q What do you know about the Pan American, the east offset to your Ka Da Pa No. 1?

A We do not have any detailed information, but as I say, essentially the same intervals are opened in the Pan American well as in our Ka Da Pa 2, and it is my understanding that they also are, will be required to plug off the Lower Mancos interval.

Q You do not know whether they plan to dually complete?

A No, sir, I do not.

MR. UTZ: Are there any other questions of the witness? If not, the witness may be excused. Do you have anything further?

(Witness excused.)

MR. KELLAHIN: No, sir.

MR. UTZ: Any other statements to be made in this case? If there are not, the case will be taken under advisement and take a ten minute recess.

(Recess.)

STATE OF NEW MEXICO )
:
COUNTY OF BERNALILLO )

I, Joseph A. Trujillo, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 26th day of August, 1959.

Joseph A. Trujillo
Notary Public - Court Reporter

My Commission Expires:
Oct. 5, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1726, heard by me on Aug. 5, 1959.

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