CASE 6520: BELCO PETROLEUM CORPORATION FOR DOWNHOLE COMMINGLING, EDDY COUNTY, NEW MEXICO

CASE NO.

6520

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

May 1, 1979

Re: CASE NO. 6520
ORDER NO. R-5993

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Applicant:

Belco Petroleum Corporation

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6520
Order No. R-5993

APPLICATION OF BELCO PETROLEUM
CORPORATION FOR DOWNHOLE COMMINGLING,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on April 11, 1979, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 25th day of April, 1979, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Belco Petroleum Corporation, is the owner and operator of the Union Mead Com Well No. 1, located in Unit H of Section 8, Township 22 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(3) That the applicant seeks authority to commingle Strawn and Morrow production within the wellbore of the above-described well.

(4) That from the Strawn zone, the subject well is capable of marginal production only.

(5) That from the Morrow zone, the subject well is capable of marginal production only.

(6) That the liquids (both water and liquid hydrocarbons) produced from the above two formations in the subject well

render efficient production of the well difficult with the existing mechanical installation.

(7) That the proposed commingling will make possible a more efficient flow of each zone.

(8) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(9) That the reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(10) That to afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Artesia district office of the Division any time the subject well is shut-in for 7 consecutive days.

(11) That in order to allocate the commingled production to each of the commingled zones in the subject well, 34 percent of the commingled gas production and all of the liquid hydrocarbon should be allocated to the Strawn zone, and 66 percent of the commingled gas production to the Morrow zone.

IT IS THEREFORE ORDERED:

(1) That the applicant, Belco Petroleum Corporation, is hereby authorized to commingle Strawn and Morrow production within the wellbore of the Union Mead Com Well No. 1, located in Unit H of Section 8, Township 22 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(2) That 34 percent of the commingled gas production and all of the liquid hydrocarbon shall be allocated to the Strawn zone and 66 percent of the commingled gas production shall be allocated to the Morrow zone.

(3) That the operator of the subject well shall immediately notify the Division's Artesia district office any time the well has been shut-in for 7 consecutive days and shall concurrently present, to the Division, a plan for remedial action.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S E A L

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
11 April 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico. CASE 6520

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87503

For the Applicant: W. THOMAS KELLAHIN, ESQ.
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

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Santa Fe, New Mexico 87501

MR. NUTTER: We'll call next Case Number 6520.

MS. TESCHENDORF: Case 6520. Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness.

(Witness sworn.)

LEE G. NERING

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name, occupation?

A. My name is Lee Nering. I'm a geologist with Belco Petroleum Corporation, employed in an administrative capacity, Houston, Texas.

Q. Mr. Nering, have you made a study of and are you familiar with the facts surrounding this particular application?

A. I have.

MR. KELLAHIN: We tender Mr. Nering as an expert.

MR. NUTTER: Mr. Nering is qualified.

Q. (Mr. Kellahin continuing.) Would you please refer to Exhibit Number One, identify it, and explain what Belco is seeking to accomplish?

A. Exhibit Number One is a base map of the area of interest which is in Eddy County, New Mexico, specifically Township 22 South and Range 27 East.

The subject well is the Belco No. 1 Union Mead Com, located in Unit H, Section 8 of the specified township.

We seek commingling of a dually completed well. This dually completed well was originally authorized by a hearing of January 31st, 1973, Order Number R-4474, dated 3-6-73. The field has been placed in the Carlsbad-Strawn Gas Pool and the South Carlsbad-Morrow Pool under Order R-5162, dated 2-13-1976.

The well was subsequently reworked and the arrangement of the dual completion was revised by a cross-over assembly. It was approved by the New Mexico Oil Conservation Division under administrative order MC-2256, dated June 10th of 1976.

The original dual arrangement had been one

of a more normal completion with the lower horizon being the tubing completion, this being the Morrow, and the upper horizon being the Strawn as a casing completion.

This arrangement was re-arranged with the crossover assembly in which the present assembly in the well by the crossover is that the Strawn is producing into the tubing and the Morrow into the casing.

The well for the purposes of this hearing indicates that we are experiencing considerable difficulty lifting the water from the Morrow formation up through the larger aperture of the annulus in the casing and as a result, we wish to commingle the zones into the tubing in order to achieve the greater enhanced lifting capability using the Strawn capability presently in the tubing because of the difference in the apertures of the two producing methods.

Q. What's the spacing and proration unit assigned to both the Morrow and the Strawn formations in this well?

A. The spacing unit is the east half of Section 8 communitized for both Strawn and for Morrow, having duplicate ownership.

Q. The ownership is in commong with the Strawn and the Morrow?

A. It is.

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Q. Are either of these pools prorated?

A. The Carlsbad-Strawn Pool is not prorated. The South Carlsbad-Morrow Pool is prorated.

Q. Turn to Exhibit Number Two and identify that for us.

A. Exhibit Number Two is a geological structure map of the area. It was drawn as a marker on top of the lower Morrow formation and the purpose of the exhibit is to illustrate that the subject well has no particular geological advantage to any of the nearby wells, the offsetting operators, which are Cities Service Company, Union, and the present owner Reserve, Reserve or Delta, Delta in this instance, and the wells are marked by the legend as which are Morrow completions and which are Strawn completions, and in three instances, there are dual completions.

Q. Please refer to Exhibit Number Three and identify it.

A. Exhibit Number Three is a schematic of the assembly in the well, including the casing assembly.

Q. Is this the way the well is currently completed?

A. This is the present completion assembly for purposes of simplicity and keeping in mind that this is a schematic and it doesn't attempt to portray the rather

sophisticated arrangement of the crossover assembly, but it does illustrate that the -- by use of color that the gas from the Morrow is coming into the tubing and then through the crossover going up into the annulus in the casing, and that the Strawn production comes into the casing, into the crossover assembly, and then on up through the tubing.

Q. If the Division approves the downhole commingling of the Strawn and Morrow, how will you recomplete the well?

A. The recompletion is based on a very simple two-step wireline completion of the tubing, the crossover assembly, and on a second run packing off the port which permits the present entry of the Morrow gas from the -- as shown on the exhibit, Exhibit Number Three, the crossover into the casing, putting -- packing that off, in which case then all gas, utilizing the anticipated advantageous gas lifting effect of the Strawn, all fluids and gas will then be transmitted to the surface through the tubing.

Q. What if any objections, Mr. Nering, would you have to simply returning this well to a standard dual completion?

A. Returning to a standard dual completion, in which the Morrow would be produced into the tubing and the Strawn into the casing, involves a rather expensive

procedure, and the reason for this is that noted on Exhibit Three is that the dual string is made up in two assemblies, a 2-7/8ths and a 2-3/8ths inch tubing, and that it's, in our opinion, in order to achieve proper gas lifting capability, perhaps using a plunger lift system, we would have to retrieve the tubing and lower a greater diameter tubing to a greater depth than the position that it is presently, in which case we are talking in terms of a minimum of $50,000, and today's terms, probably much more than that, and we highly recommend that the two stage wireline operation to permit both zones to produce up the tubing is far more advantageous in terms of deliverability of fluids and gas from both formations.

Q. So in addition to the -- what you believe to be a prohibitive cost factor, there is the additional advantage of having both gas zones produce up the tubing to obtain the benefit of the gas lift.

A. That is correct.

Q. Let's look at Exhibit Number Four now, and have you explain to us water problems encountered in the Morrow.

A. Exhibit Number Four is a tabulation of the fourteen months of production from the two zones up to March 1st, 1979, beginning with January, 1978, and for purposes of clarity, it reads from bottom to top, the

youngest production being the ones at the top.

Significantly, it should be noted that the Morrow production, beginning with December of 1978, began to show the affects of the increased water production from the Morrow formation. This increased water production has seriously affected our field operations to the point to where we have to periodically blow the gas to atmosphere and divert the fluid production into a separator, and in that way hope to control the well and prevent it from the point of depletion. And I might point out that if this well suffers extreme depletion, it's very likely that a workover in the Morrow, it being a notoriously sensitive operation, there is a distinct possibility in Belco's opinion that Morrow production might not be recovered.

Q. Exhibit Number Four indicates that for the Morrow both the gas and the water production has experienced a recent rather dramatic decline. To what do you attribute that, Mr. Nering?

A. The Morrow production?

Q. Yes.

A. Well, as I explained, the most dramatic change has been in the previous three months, being December, 1978, through February, 1979, and this is strictly due to the encroachment of the water, and the difficulty in bringing the water and disposing of the water through the

system we've designed. It's a dampening effect.

Q. Let's look at Exhibit Number Five, then, and have you tell us what that is.

A. Exhibit Number Five is a comparison of the most recent pressure data derived from the two zones and it so happens that the flowing tubing pressures taken during March and as recently as the 1st of April of this year, indicate that the pressures are very similar. And the reason for this is that both zones are bucking the line pressure and they essentially ride the line pressure, and they -- of course, they are being flowed at what is almost an open arrangement, being a 3/4-inch choke.

The shut-in conditions that we have available to us, the most recent being September of 1977, and it's shown by the exhibit what these pressures are, and prior to that July of 1976, an exception was granted for the shut-in conditions in 1978, granted by the Commission on the basis of increased water production in the Morrow, due to the anticipated danger in loss of the Morrow zone. These are the latest of our shut-in pressure conditions.

Q. How do you dispose of the produced water?

A. The disposed water is disposed by trucking through commercial services to a -- to my own knowledge, a presently unknown location, but I'm sure it's in conformity with whatever the Commission requires.

Q. Would you look at Exhibit Six and identify that, Mr. Nering, for us?

A. Exhibit Six, we ran, within the past few days some water analyses, and the purpose of this was to determine whether or not there had been any communication between the packer arrangement between the two zones, and I think the tabulation shows very clearly that there is a decided difference in the chlorides in particular between the two zones, and I think that referring back to the tabulation of production, one can see rather clearly that the present packer arrangement is -- is substantial and definitely separates the two zones.

There is presently no communication in our opinion, based upon these two pieces of evidence.

Q. The water analysis also shows that neither zone produces particularly corrosive water, does it?

A. That is correct. No, it's -- the Morrow -- the salt condition of neither zone is corrosive such as you might expect with sulfides.

Q. In your opinion will the type of water being produced in the Strawn and Morrow formations cause you any kind of difficulty with producing both zones up the tubing?

A. Not at all.

Q. Do you have a recommendation to the Examiner

with regards to the allocation percentage of production between the Morrow and the Strawn?

A. Yes. I looked at our production report and analyzed it on the basis of three conditions. These are based on production per day since the days of production vary from month to month, and I first looked at it from the point of our exhibit illustrating the fourteen months production.

The fourteen months of production show that the relationship between Morrow and Strawn was that the Strawn was producing 73 percent of the production and that the Strawn was producing 27 percent of the production.

I then looked at it on the basis of eliminating the three months, being the latest three months, being December, 1978, January '79, and February of '79, and utilizing those figures, the -- it indicates that the Morrow production was on the order of 75 percent and that the Strawn was 25 percent and --

Q. I'm sorry, the second way is by taking the last --

A. I'm sorry, I have --

Q. Let me ask you a question.

A. Yes, sir, we need to back up here.

Q. Yes, sir. The first, for the second choice you've taken fourteen months of production and subtracted

the last three months?

A. That is the second choice.

Q. All right, and for that second choice then you give 75 percent to the Morrow and 25 to the Strawn?

A. Right; right. Yes.

Q. And the first choice, then, shows a total of the last fourteen months production.

A. Uh-huh.

Q. And with that choice you've got 73 percent to the Morrow and 27 percent to the Strawn.

A. That is correct. It incorporates the reduced Morrow production of the previous three months.

Q. I understand. What was your third choice?

A. Well, I hesitate to say choice.

The reason being is that the last three months indicate that the Morrow production is 62 percent of the gas production and that the Strawn is 38 percent, and as far as choice is concerned, I prefer, and I think it's Belco's recommendation, that this last selection, being the last three months, since we are experiencing decreasing gas production and increasing water production, we're recommending that the allocation be based on a 60 percent Morrow production and a 40 percent Strawn production.

Q. Mr. Nering, were Exhibits One through Six compiled by you directly or compiled under your direction

and supervision?

A. They were.

Q. And in your opinion, will the approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, I do, particularly in the area of waste.

Q. All right.

MR. KELLAHIN: We move the introduction of Exhibits One through Six.

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

MR. KELLAHIN: That concludes our testimony.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Nering, the original dual completion was for the production of the Strawn up the annulus and the Morrow through tubing.

A. That is correct.

Q. And I presume it was changed because the liquids in the Strawn at that time were presenting a problem with annular flow.

A. That was one of the conclusions, yes.

That the -- it was the primary consideration, yes, plus it seemed a more logical way to approach the problem in terms of a further potential workover. That was why the installation of the crossover assembly.

Q. The Strawn always has made quite a large amount of liquids, including considerable liquid hydrocarbon.

A. That is correct. Our production tabulation shows that, yes.

Q. And orginally the Morrow was a relatively dry --

A. Yes, sir.

Q. -- producer.

A. Yes.

Q. And now has commenced making water.

A. Right.

Q. Was this water production that you show here commencing in April, 1978, the first time that the well started making water in the Morrow?

A. As I indicated, this is a -- we're talking about Exhibit Number Four.

Q. Yes.

A. And we -- the indications of our records and these are duplicates of those filed with the State, indicate that the Morrow water commenced in April of 1978.

I think you'll find that if you review the records prior to this point, that you may find that there are reports of production from the Morrow. Upon re-examination, and as I stated during some of the early testimony, it was the opinion of Belco that there was some communication between the two zones and that to some -- and I can't answer this because of the change of personnel -- there was some thinking that the water was coming from the Morrow.

I think our evidence to date very clearly indicates that the water is coming from the Morrow, but that some of the records may indicate some earlier waters, but I went back far enough to where I thought I had a reasonable tabulation of production of fluids after we determined that the packers were holding.

Q. Well now, did you think that the packer was communication between the two zones?

A. I think previously before the installation of the crossover, yes.

Q. Okay, that was prior to the installation of the crossover.

A. That is correct.

Q. But there hasn't been any indication of communication since the installation --

A. None whatsoever.

Q. -- of the crossover?

A. No. Since the installation of the cross-over there have been two packer leakage tests as approved by the State, both indicating there is no indication of communication.

Q. I see.

A. The --

Q. Okay, now in your three choices here, if they're choices, the first choice is based on January of '78 through February of '79. That's all the data that's shown on Exhibit Four, is that correct?

A. I'm sorry, your question again, please?

Q. The first choice, what Mr. Kellahin called the first choice, that's the 27 percent Strawn, 73 percent Morrow, that's based on the full production from January of '78 through February of '79.

A. That would not be Belco's choice. I think --

Q. No, that's Tom's choice.

A. Yeah.

MR. KELLAHIN: That's all the information indicated on Exhibit Four, isn't it?

The answer is yes.

Q. And then the second choice is for the eleven months eliminating the last three months, is that correct?

A. That's correct.

Q. And then we have the 25 percent, 75 percent.

A. Correct.

Q. Now, what was that third choice, the 38 percent Strawn, 62 percent Morrow based on?

A. That's based upon the last three months of production, these being December of '78, January of '79, and February of '79.

Q. All right, now those are not representative of what's going to happen if you commingle these zones, is it?

A. It's my opinion that's -- that's a difficult question to project. It's our opinion that the water percentage will increase. This has been our experience with other wells in the area. And that we're trying to arrive at a reasonable figure and one of our recommendations is that we would very much like to have our allocation reviewed after one year's time to see whether or not our allocation formula is one that is acceptable to both the State and to Belco Petroleum.

Q. Is there a difference in the price that you receive for the gas from these two zones?

A. No.

Q. Is there any material difference as far as Belco is concerned as to the amount that's allocated to one zone as compared --

A. No, the --

Q. -- to another formula?

A. No, the ownership is the same for both instances.

Q. Well, if we reviewed it, what would the review be based on, because you wouldn't have any separate zone production to compare it to, except past history, possibly?

A. I think, and this is just a guess, I think, on my part. I think you would have to assume that water production we would allocate to the Morrow, and then assume that the Strawn, and we would look at the Strawn production in the offsetting well, in the Cities Paisley Well, to see whether or not they had -- if there was an increase in water production or any water production from Cities Paisley Well, immediately offsetting us to the west, then I might venture to say we would try to work in some type of an allocation based upon how much, but it's our opinion right now that based upon tests still being run, with the water pressure, fluids increasing, and as of yesterday, very slightly, it's our feeling that the 60/40 arrangement is more realistic, although we do want it reviewed.

Q. Well now, looking at the cumulative production from both zones to date --

A. Yes.

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CERTIFIED SHORTHAND REPORTER
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Santa Fe, New Mexico 87501

Q. -- it's just about a 66/33 percent comparison, it looks like. In other words, the Morrow has made almost exactly double what the Strawn has made.

A. Yes, sir.

Q. So about 1/3 of the total production has come from the Strawn and about 2/3rds has come from the --

A. That is correct.

Q. -- Morrow. What about remaining reserves? Have you had any estimate on what the remaining reserves are for each zone?

A. That we know.

Q. I see.

MR. KELLAHIN: Mr. Nering, does it make any difference that the Morrow is prorated and the Strawn is non-prorated with regards to the percentage allocated to either zone?

A. That's a little difficult question for me to answer, since after a good number of years trying to discover -- understand New Mexico's prorationing system, I'd say I really don't know.

I feel I understand how the prorationing works, particularly with South Carlsbad-Morrow Pool, but at the same time, I don't know how to make a really justifiable examination of what advantage it would be one way or another to Belco or to the State.

Q. Well, it looks like the average production for the well for more than a year now, has just been a little more than a million a day, not counting these --

A. That's correct, yes.

Q. Not counting these last three months.

A. Yes.

Q. And that would probably result in the well being classified as a marginal well anyway, isn't it?

A. Yes. Yes, the -- I have figures, not part of the exhibits, but I can give you figures for each of these months in terms of per day production.

Q. Do you know how long the well has -- is the well classified marginal?

A. I can't answer that right now.

Q. So you can't tell me how long it has been, then.

A. No.

Q. Okay.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 6520?

Take the case under advisement.

(Hearing concluded.)

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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd
Sally W. Boyd, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6520 heard by me on 4/11 19 79.

_____, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
11 April 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico. CASE 6520

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Lynn Teschendorf, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87503

For the Applicant: W. THOMAS KELLAHIN, ESQ.
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I N D E X

E X H I B I T S

MR. NUTTER: We'll call next Case Number 6520.

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(Witness sworn.)

LEE G. NERING

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you please state your name, occupation?

A My name is Lee Nering. I'm a geologist with Belco Petroleum Corporation, employed in an administrative capacity, Houston, Texas.

Q Mr. Nering, have you made a study of and are you familiar with the facts surrounding this particular application?

A. I have.

MR. KELLAHIN: We tender Mr. Nering as an expert.

MR. NUTTER: Mr. Nering is qualified.

Q. (Mr. Kellahin continuing.) Would you please refer to Exhibit Number One, identify it, and explain what Belco is seeking to accomplish?

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of a more normal completion with the lower horizon being the tubing completion, this being the Morrow, and the upper horizon being the Strawn as a casing completion.

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Q. Is this the way the well is currently completed?

A. This is the present completion assembly for purposes of simplicity and keeping in mind that this is a schematic and it doesn't attempt to portray the rather

sophisticated arrangement of the crossover assembly, but it does illustrate that the -- by use of color that the gas from the Morrow is coming into the tubing and then through the crossover going up into the annulus in the casing, and that the Strawn production comes into the casing, into the crossover assembly, and then on up through the tubing.

Q. If the Division approves the downhole commingling of the Strawn and Morrow, how will you recomplete the well?

A. The recompletion is based on a very simple two-step wireline completion of the tubing, the crossover assembly, and on a second run packing off the port which permits the present entry of the Morrow gas from the -- as shown on the exhibit, Exhibit Number Three, the crossover into the casing, putting -- packing that off, in which case then all gas, utilizing the anticipated advantageous gas lifting effect of the Strawn, all fluids and gas will then be transmitted to the surface through the tubing.

Q. What if any objections, Mr. Nering, would you have to simply returning this well to a standard dual completion?

A. Returning to a standard dual completion, in which the Morrow would be produced into the tubing and the Strawn into the casing, involves a rather expensive

procedure, and the reason for this is that noted on Exhibit Three is that the dual string is made up in two assemblies, a 2-7/8ths and a 2-3/8ths inch tubing, and that it's, in our opinion, in order to achieve proper gas lifting capability, perhaps using a plunger lift system, we would have to retrieve the tubing and lower a greater diameter tubing to a greater depth than the position that it is presently, in which case we are talking in terms of a minimum of $50,000, and today's terms, probably much more than that, and we highly recommend that the two stage wireline operation to permit both zones to produce up the tubing is far more advantageous in terms of deliverability of fluids and gas from both formations.

Q. So in addition to the -- what you believe to be a prohibitive cost factor, there is the additional advantage of having both gas zones produce up the tubing to obtain the benefit of the gas lift.

A. That is correct.

Q. Let's look at Exhibit Number Four now, and have you explain to us water problems encountered in the Morrow.

A. Exhibit Number Four is a tabulation of the fourteen months of production from the two zones up to March 1st, 1979, beginning with January, 1978, and for purposes of clarity, it reads from bottom to top, the

youngest production being the ones at the top.

Significantly, it should be noted that the Morrow production, beginning with December of 1978, began to show the affects of the increased water production from the Morrow formation. This increased water production has seriously affected our field operations to the point to where we have to periodically blow the gas to atmosphere and divert the fluid production into a separator, and in that way hope to control the well and prevent it from the point of depletion. And I might point out that if this well suffers extreme depletion, it's very likely that a workover in the Morrow, it being a notoriously sensitive operation, there is a distinct possibility in Belco's opinion that Morrow production might not be recovered.

Q Exhibit Number Four indicates that for the Morrow both the gas and the water production has experienced a recent rather dramatic decline. To what do you attribute that, Mr. Nering?

A The Morrow production?

Q Yes.

A Well, as I explained, the most dramatic change has been in the previous three months, being December, 1978, through February, 1979, and this is strictly due to the encroachment of the water, and the difficulty in bringing the water and disposing of the water through the

system we've designed. It's a dampening effect.

Q Let's look at Exhibit Number Five, then, and have you tell us what that is.

A. Exhibit Number Five is a comparison of the most recent pressure data derived from the two zones and it so happens that the flowing tubing pressures taken during March and as recently as the 1st of April of this year, indicate that the pressures are very similar. And the reason for this is that both zones are bucking the line pressure and they essentially ride the line pressure, and they -- of course, they are being flowed at what is almost an open arrangement, being a 3/4-inch choke.

The shut-in conditions that we have available to us, the most recent being September of 1977, and it's shown by the exhibit what these pressures are, and prior to that July of 1976, an exception was granted for the shut-in conditions in 1978, granted by the Commission on the basis of increased water production in the Morrow, due to the anticipated danger in loss of the Morrow zone. These are the latest of our shut-in pressure conditions.

Q How do you dispose of the produced water?

A. The disposed water is disposed by trucking through commercial services to a -- to my own knowledge, a presently unknown location, but I'm sure it's in conformity with whatever the Commission requires.

Q. Would you look at Exhibit Six and identify that, Mr. Nering, for us?

A. Exhibit Six, we ran, within the past few days some water analyses, and the purpose of this was to determine whether or not there had been any communication between the packer arrangement between the two zones, and I think the tabulation shows very clearly that there is a decided difference in the chlorides in particular between the two zones, and I think that referring back to the tabulation of production, one can see rather clearly that the present packer arrangement is -- is substantial and definitely separates the two zones.

There is presently no communication in our opinion, based upon these two pieces of evidence.

Q. The water analysis also shows that neither zone produces particularly corrosive water, does it?

A. That is correct. No, it's -- the Morrow -- the salt condition of neither zone is corrosive such as you might expect with sulfides.

Q. In your opinion will the type of water being produced in the Strawn and Morrow formations cause you any kind of difficulty with producing both zones up the tubing?

A. Not at all.

Q. Do you have a recommendation to the Examiner

with regards to the allocation percentage of production between the Morrow and the Strawn?

A. Yes. I looked at our production report and analyzed it on the basis of three conditions. These are based on production per day since the days of production vary from month to month, and I first looked at it from the point of our exhibit illustrating the fourteen months production.

The fourteen months of production show that the relationship between Morrow and Strawn was that the Strawn was producing 73 percent of the production and that the Strawn was producing 27 percent of the production.

I then looked at it on the basis of eliminating the three months, being the latest three months, being December, 1978, January '79, and February of '79, and utilizing those figures, the -- it indicates that the Morrow production was on the order of 75 percent and that the Strawn was 25 percent and --

Q. I'm sorry, the second way is by taking the last --

A. I'm sorry, I have --

Q. Let me ask you a question.

A. Yes, sir, we need to back up here.

Q. Yes, sir. The first, for the second choice you've taken fourteen months of production and subtracted

the last three months?

A. That is the second choice.

Q. All right, and for that second choice then you give 75 percent to the Morrow and 25 to the Strawn?

A. Right; right. Yes.

Q. And the first choice, then, shows a total of the last fourteen months production.

A. Uh-huh.

Q. And with that choice you've got 73 percent to the Morrow and 27 percent to the Strawn.

A. That is correct. It incorporates the reduced Morrow production of the previous three months.

Q. I understand. What was your third choice?

A. Well, I hesitate to say choice.

The reason being is that the last three months indicate that the Morrow production is 62 percent of the gas production and that the Strawn is 38 percent, and as far as choice is concerned, I prefer, and I think it's Belco's recommendation, that this last selection, being the last three months, since we are experiencing decreasing gas production and increasing water production, we're recommending that the allocation be based on a 60 percent Morrow production and a 40 percent Strawn production.

Q. Mr. Nering, were Exhibits One through Six compiled by you directly or compiled under your direction

and supervision?

A. They were.

Q. And in your opinion, will the approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, I do, particularly in the area of waste.

Q. All right.

MR. KELLAHIN: We move the introduction of Exhibits One through Six.

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

MR. KELLAHIN: That concludes our testimony.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Nering, the original dual completion was for the production of the Strawn up the annulus and the Morrow through tubing.

A. That is correct.

Q. And I presume it was changed because the liquids in the Strawn at that time were presenting a problem with annular flow.

A. That was one of the conclusions, yes.

That the -- it was the primary consideration, yes, plus it seemed a more logical way to approach the problem in terms of a further potential workover. That was why the installation of the crossover assembly.

Q. The Strawn always has made quite a large amount of liquids, including considerable liquid hydrocarbon.

A. That is correct. Our production tabulation shows that, yes.

Q. And orginally the Morrow was a relatively dry --

A. Yes, sir.

Q. -- producer.

A. Yes.

Q. And now has commenced making water.

A. Right.

Q. Was this water production that you show here commencing in April, 1978, the first time that the well started making water in the Morrow?

A. As I indicated, this is a -- we're talking about Exhibit Number Four.

Q. Yes.

A. And we -- the indications of our records and these are duplicates of those filed with the State, indicate that the Morrow water commenced in April of 1978.

I think you'll find that if you review the records prior to this point, that you may find that there are reports of production from the Morrow. Upon re-examination, and as I stated during some of the early testimony, it was the opinion of Belco that there was some communication between the two zones and that to some --- and I can't answer this because of the change of personnel --- there was some thinking that the water was coming from the Morrow.

I think our evidence to date very clearly indicates that the water is coming from the Morrow, but that some of the records may indicate some earlier waters, but I went back far enough to where I thought I had a reasonable tabulation of production of fluids after we determined that the packers were holding.

Q. Well now, did you think that the packer was communication between the two zones?

A. I think previously before the installation of the crossover, yes.

Q. Okay, that was prior to the installation of the crossover.

A. That is correct.

Q. But there hasn't been any indication of communication since the installation --

A. None whatsoever.

Q. -- of the crossover?

A. No. Since the installation of the cross-over there have been two packer leakage tests as approved by the State, both indicating there is no indication of communication.

Q. I see.

A. The --

Q. Okay, now in your three choices here, if they're choices, the first choice is based on January of '78 through February of '79. That's all the data that's shown on Exhibit Four, is that correct?

A. I'm sorry, your question again, please?

Q. The first choice, what Mr. Kellahin called the first choice, that's the 27 percent Strawn, 73 percent Morrow, that's based on the full production from January of '78 through February of '79.

A. That would not be Belco's choice. I think --

Q. No, that's Tom's choice.

A. Yeah.

MR. KELLAHIN: That's all the information indicated on Exhibit Four, isn't it?

The answer is yes.

Q. And then the second choice is for the eleven months eliminating the last three months, is that correct?

A. That's correct.

Q And then we have the 25 percent, 75 percent.

A. Correct.

Q Now, what was that third choice, the 38 percent Strawn, 62 percent Morrow based on?

A. That's based upon the last three months of production, these being December of '78, January of '79, and February of '79.

Q All right, now those are not representative of what's going to happen if you commingle these zones, is it?

A. It's my opinion that's -- that's a difficult question to project. It's our opinion that the water percentage will increase. This has been our experience with other wells in the area. And that we're trying to arrive at a reasonable figure and one of our recommendations is that we would very much like to have our allocation reviewed after one year's time to see whether or not our allocation formula is one that is acceptable to both the State and to Belco Petroleum.

Q Is there a difference in the price that you receive for the gas from these two zones?

A. No.

Q Is there any material difference as far as Belco is concerned as to the amount that's allocated to one zone as compared --

A. No, the ---

Q. --- to another formula?

A. No, the ownership is the same for both instances.

Q. Well, if we reviewed it, what would the review be based on, because you wouldn't have any separate zone production to compare it to, except past history, possibly?

A. I think, and this is just a guess, I think, on my part. I think you would have to assume that water production we would allocate to the Morrow, and then assume that the Strawn, and we would look at the Strawn production in the offsetting well, in the Cities Paisley Well, to see whether or not they had --- if there was an increase in water production or any water production from Cities Paisley Well, immediately offsetting us to the west, then I might venture to say we would try to work in some type of an allocation based upon how much, but it's our opinion right now that based upon tests still being run, with the water pressure, fluids increasing, and as of yesterday, very slightly, it's our feeling that the 60/40 arrangement is more realistic, although we do want it reviewed.

Q. Well now, looking at the cumulative production from both zones to date --

A. Yes.

Q. -- it's just about a 66/33 percent comparison, it looks like. In other words, the Morrow has made almost exactly double what the Strawn has made.

A. Yes, sir.

Q. So about 1/3 of the total production has come from the Strawn and about 2/3rds has come from the --

A. That is correct.

Q. -- Morrow. What about remaining reserves? Have you had any estimate on what the remaining reserves are for each zone?

A. That we know.

Q. I see.

MR. KELLAHIN: Mr. Nering, does it make any difference that the Morrow is prorated and the Strawn is non-prorated with regards to the percentage allocated to either zone?

A. That's a little difficult question for me to answer, since after a good number of years trying to discover -- understand New Mexico's prorationing system, I'd say I really don't know.

I feel I understand how the prorationing works, particularly with South Carlsbad-Morrow Pool, but at the same time, I don't know how to make a really justifiable examination of what advantage it would be one way or another to Belco or to the State.

Q. Well, it looks like the average production for the well for more than a year now, has just been a little more than a million a day, not counting these --

A. That's correct, yes.

Q. Not counting these last three months.

A. Yes.

Q. And that would probably result in the well being classified as a marginal well anyway, isn't it?

A. Yes. Yes, the -- I have figures, not part of the exhibits, but I can give you figures for each of these months in terms of per day production.

Q. Do you know how long the well has -- is the well classified marginal?

A. I can't answer that right now.

Q. So you can't tell me how long it has been, then.

A. No.

Q. Okay.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 6520?

Take the case under advisement.

(Hearing concluded.)

REPORTER'S CERTIFICATE

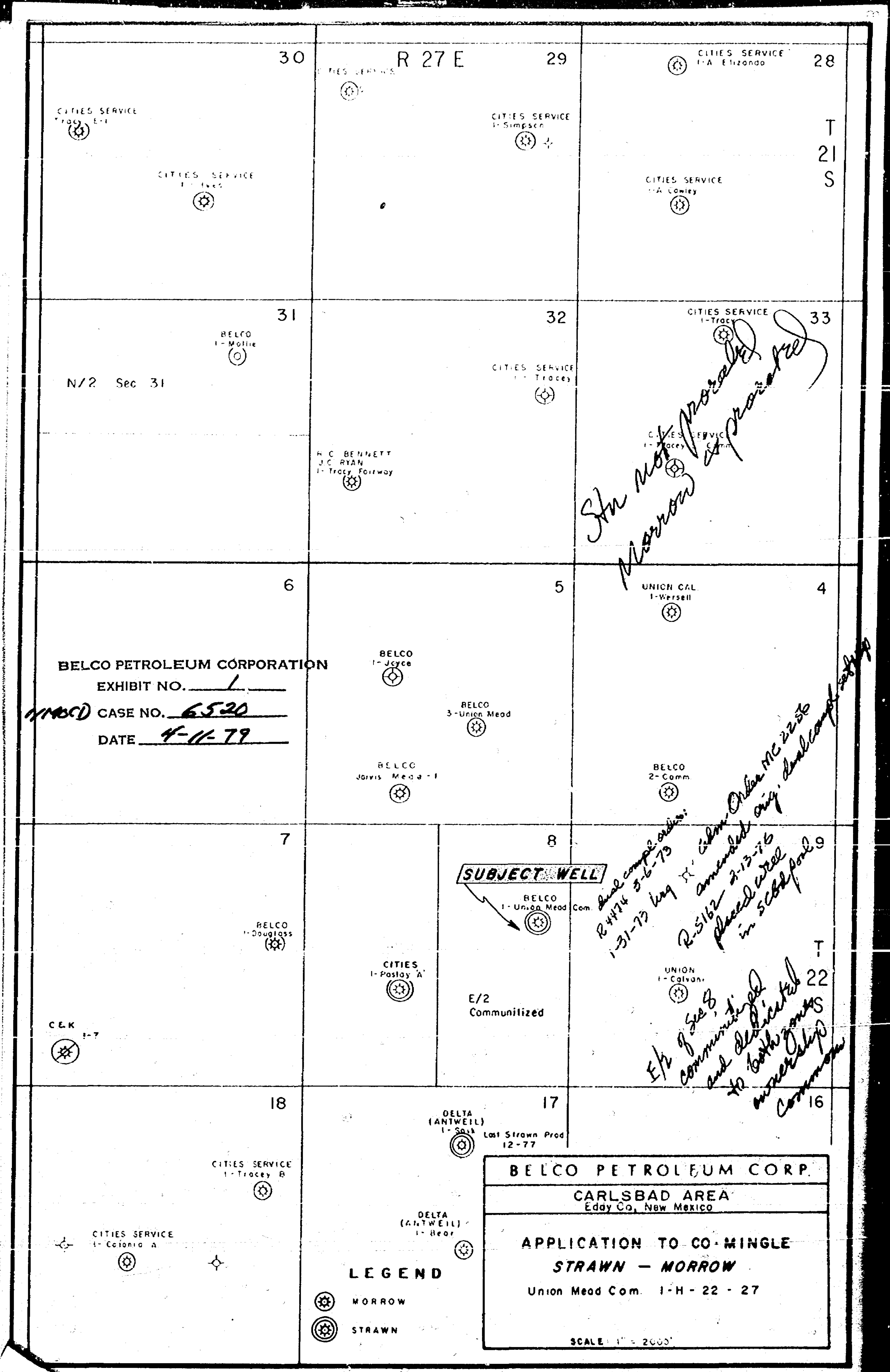
I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd, C.S.R.

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
3020 Plaza Blanca (505) 471-2462
Santa Fe, New Mexico 87501

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6520 heard by me on 4/11 19 79.

Examiner
Oil Conservation Division


R 27 E
T 21 S
T 22 S
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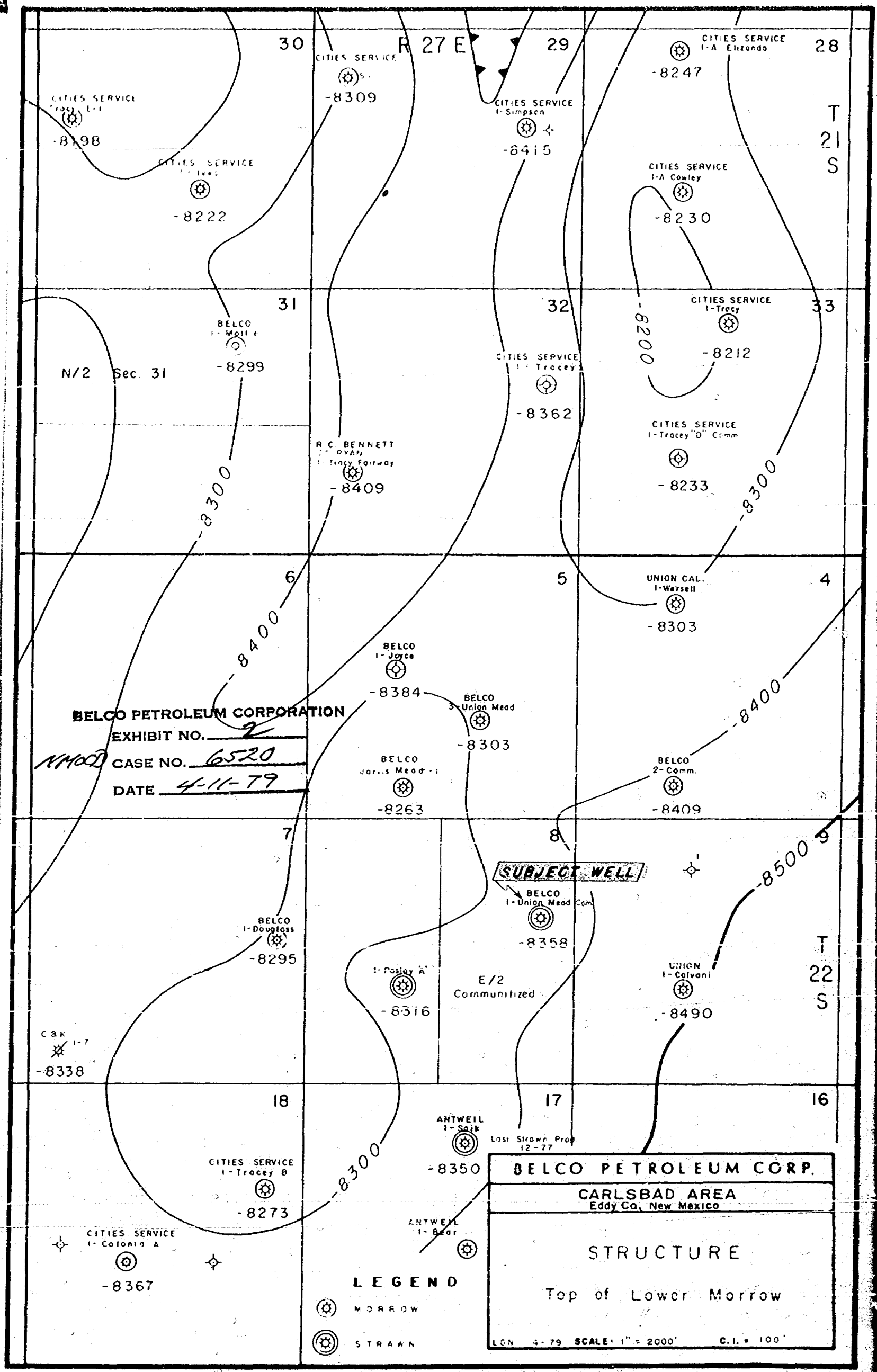
17
16
CITIES SERVICE 1-A Elizondo
CITIES SERVICE 1-Simpson
CITIES SERVICE 1-A Cowley
CITIES SERVICE
BELCO 1-Mollie
N/2 Sec 31
CITIES SERVICE 1-Tracey
R. C. BENNETT J. C. RYAN 1-Tracy Fairway
UNION CAL. 1-Wersell
BELCO PETROLEUM CORPORATION
EXHIBIT NO. 1
NMOCD CASE NO. 6520
DATE 4-11-79
BELCO 1-Joyce
BELCO 3-Union Mead
BELCO Jarvis Meda-1
BELCO 2-Comm.
SUBJECT WELL
BELCO 1-Union Mead Com.
BELCO 1-Douglass
CITIES 1-Pastay 'A'
E/2 Communitized
UNION 1-Calvani
C&K 1-7
DELTA (ANTWEIL) 1-Sash
Last Strawn Prod 12-77
CITIES SERVICE 1-Tracey B
DELTA (ANTWEIL) 1-Bear
CITIES SERVICE 1-Colonia A
LEGEND
MORROW
STRAWN
BELCO PETROLEUM CORP.
CARLSBAD AREA
Eddy Co., New Mexico
APPLICATION TO CO-MINGLE
STRAWN — MORROW
Union Mead Com. 1-H-22-27
SCALE: 1" = 2000'

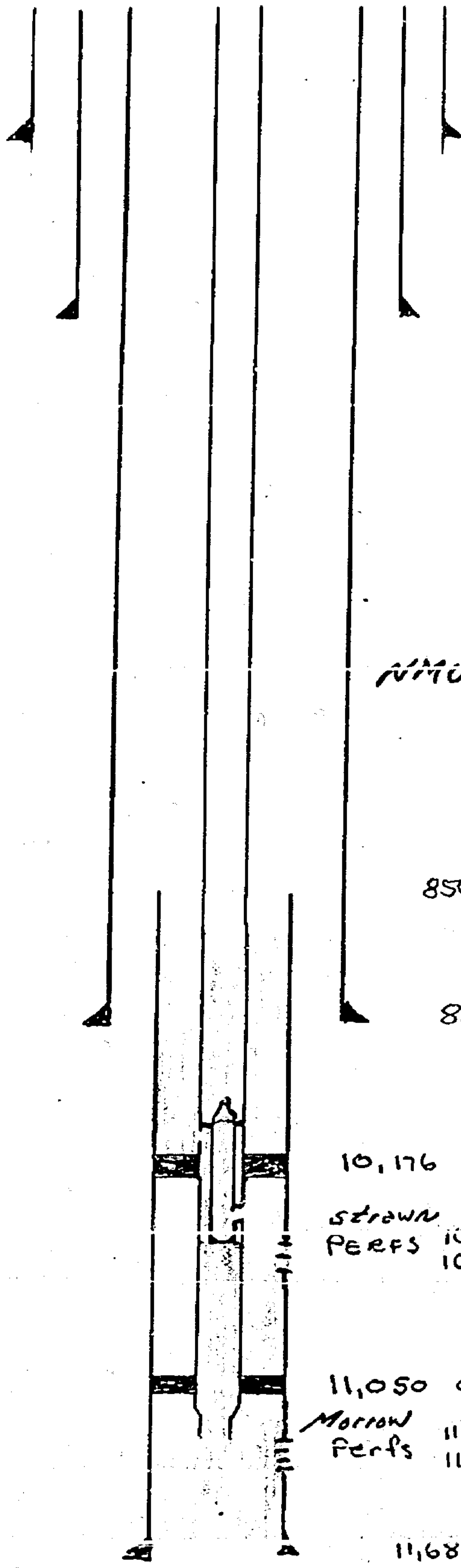


BELCO PETROLEUM CORPORATION
EXHIBIT NO. 2
NMOCD CASE NO. 6520
DATE 4-11-79

BELCO

UNION MEAD No. 1 T & C

EDDY Co., NEW MEXICO



316' Set 13 3/8" csg. W/ 350 sxs. cmt.

1875' SET 10 3/4" csg W/ 500 SX CMT.

BELCO PETROLEUM CORPORATION

NMOCD EXHIBIT NO. 3

CASE NO. 6520

DATE 4-11-79

8507' TOP of LINER

8884' SET 7 5/8" csg W/ 250 SACKS CMT.

10,176 OTIS MH 2 PKR.

Strawn PERFS 10 296 - 299, 10 312 - 317

11,050 OTIS WB PKR

Morrow Perfs 11 167 - 184, 11 311 - 315

11,685' SET 5 1/2" LINER

Morrow flows thru x over into annulus
Stn comes up tbg ;
wtr from Morrow getting probs w/ annular flow
Stn

Tubing Detail:	Length	Depth to Top.
Datum to RKB	18.00	–
2 7/8" EUE TBG.	10156.05	10,174.05
X Over 2 7/8 x 2 3/8	.45	10,174.50
Otis S nipple	1.48	10,175.98
Otis ported coupling	.47	10,176.45
Otis polish nipple	.21	10,176.66
Otis MH2 Packer	5.49	10,182.15
Otis Sep. nipple	.85	10,183.00
Tubing & Blast jts	152.91	10,335.91
2 3/8 tubing	713.67	11,049.58
Other Otis eq.	29.01	11078.59

Note: 1. Otis X'over nipple can be modified to allow both zones to produce up tubing instead of upper zone up tubing & lower zone up annulus. Wireline eq. is req'd.

60% Morrow
40% Strawn

BELCO

UNION MEAD COM

1-H-8-22-27

Eddy Co., N.M.

Production 1/1/78 to 3/1/79

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 4
NMOCD CASE NO. 6520
DATE 4-11-79

	STRAWN Production/Month				MORROW Production/Month				
	Days Prod	Oil	Gas	Wtr.	Days Prod	Oil	Gas	Wtr.	Water Bbls/Day
February, 1979	24	115	9082	24	28	0	11747	176	6
January, 1979	24	109	8475	24	19	0	7749	132	7
December, 1978	30	153	9686	30	30	0	23737	271	9
November, 1978	30	116	10138	30	30	0	31630	300	10
October, 1978	31	116	11515	31	31	0	31162	312	10
September, 1978	30	119	10535	30	30	0	31771	306	10
August, 1978	31	139	12011	31	31	0	34574	270	9
July, 1978	30	180	11664	30	31	0	34055	310	10
June, 1978	30	133	10015	?	30	0	31900	300	10
May, 1978	31	140	10769	31	31	0	31094	300	9
April, 1978	30	176	11536	30	30	0	33679	258	8
March, 1978	31	178	12559	31	31	0	35660	0	0
February, 1978	28	208	11095	28	28	0	35168	0	0
January, 1978	29	177	13159	0	31	0	40996	0	0

67000/1

100,000/1

25% Stw 2nd choice (prod Jan 78 thru Nov 78) 75% Morr

Strawn Oil Production Cum. to 3/1/79: 24,212 BO
Strawn Gas Production Cum. to 3/1/79: 1,993,815 MCF

Morrow Oil Production Cum. to 3/1/79: 1403 BO
Morrow Gas Production Cum. to 3/1/79: 3,887,648 MCF

100,000 67000
300 31630000 176 11747000
1056
1188
1132

27% Stw 1st choice (based on Jan 78 thru Feb 79) 73% Morr
38% Stw 3rd choice (based on last 3 months only) 62%

BELCO

Union Mead Com.

1-H-8-22-27

Eddy Co., NM

Pressure Comparisons

T Strawn - Tubing Zone
C Morrow - Casing Zone

A. Recent Flowing Conditions-3/4" Choke

Date	Strawn FTP	Strawn LP	Morrow FTP	Morrow LP
3/1/79	500	500	500	500
3/8/79	510	510	510	510
3/15/79	550	550	550	550
3/22/79	560	560	560	560
3/29/79	500	500	500	500
4/4/79	530	530	530	530

both flow thru 3/4 chk

B. Shut-in Conditions

Date	S.I. Hours	Strawn	Morrow
9/21/77	24	900	925
7/11/76	24	2250	2000

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 5
NMOCD CASE NO. 6520
DATE 4-11-79

PRODUCED WATER COMPARISONS

Belco Mead Com 1
H-8-22-27
Eddy County, New Mexico

	1-T (Strawn)	1-C (Morrow)
Sp G	1.008	1.022
Ph	7.0	6.5
Cl	9584	22010
Ca	2004	1630
BiCarb	305	427
Mg	0	2065
Na	4024	8672

Analyses by Dowell - Carlsbad, New Mexico
Described as: "Typical Strawn Water"
"Typical Morrow Water"

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 6
(NMOCD) CASE NO. 6520
DATE 4-16-79

R 27 E

T 21 S

T 22 S

30
CITIES SERVICE Tracy E-1
CITIES SERVICE 1-[illegible]

29
CITIES SERVICE
CITIES SERVICE 1-Simpson

28
CITIES SERVICE 1-A Elizondo
CITIES SERVICE 1-A Conley

31
BELCO 1-Mollie
N/2 Sec. 31

32
CITIES SERVICE 1-Tracey
R C BENNETT, J C RYAN 1-Tracy Fairway

33
CITIES SERVICE 1-Tracy
CITIES SERVICE 1-Tracey 'C' Comm

6
BELCO PETROLEUM CORPORATION
EXHIBIT NO. 1
CASE NO. 6520
DATE 4-11-79
NMOCD

5
BELCO 1-Joyce
BELCO 3-Union Mead
BELCO Jarvis Mead-1

4
UNION CAL. 1-Wersell
BELCO 2-Comm

7
BELCO Douglass
C&K 1-7

8
SUBJECT WELL
BELCO 1-Union Mead Com.
CITIES 1-Paslay 'A'
E/2 Communitized

9
UNION 1-Colvani

18
CITIES SERVICE 1-Tracey B
CITIES SERVICE 1-Colonia A

17
DELTA (ANTWEIL) 1-Sale
Last Strawn Prod 12-77
DELTA (ANTWEIL) 1-Bear

16

LEGEND
MORROW
STRAWN

BELCO PETROLEUM CORP.
CARLSBAD AREA
Eddy Co, New Mexico
APPLICATION TO CO-MINGLE
STRAWN — MORROW
Union Mead Com. 1-H - 22 - 27
SCALE: 1" = 2000'

R 27 E

T 21 S

T 22 S

30 | 29 | 28

31 | 32 | 33

6 | 5 | 4

7 | 8 | 9

18 | 17 | 16

CITIES SERVICE
-8309

CITIES SERVICE
Tracy E-1
-8198

CITIES SERVICE
-8222

CITIES SERVICE
1-Simpson
-8415

CITIES SERVICE
1-A Etzondo
-8247

CITIES SERVICE
1-A Cowley
-8230

BELCO
1-Moore
-8299

N/2 Sec 31

CITIES SERVICE
1-Tracy
-8212

-8200

CITIES SERVICE
1-Tracey
-8362

R C BENNETT
1-Ryan
1-Tracy Fairway
-8409

CITIES SERVICE
1-Tracey "O" Comm
-8233

-8300

-8300

UNION CAL.
1-Wersell
-8303

BELCO
1-Joyce
-8384

BELCO
3-Union Mead
-8303

BELCO
Jarvis Mead-1
-8263

BELCO
2-Comm.
-8409

-8400

-8400

SUBJECT WELL

BELCO
1-Union Mead Com
-8358

BELCO
1-Douglass
-8295

1-Paslay 'A'
-8316

E/2
Communitized

UNION
1-Calvani
-8490

-8500

C&K
1-7
-8338

ANTWELL
1-Saik
-8350

Lost Straw Prod
12-77

CITIES SERVICE
1-Tracey B
-6273

-8300

CITIES SERVICE
1-Cotton A
-8367

ANTWELL
1-Bear

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 2
NMOCD CASE NO. 6520
DATE 4-11-79

LEGEND
MORROW
STRAWN

BELCO PETROLEUM CORP.

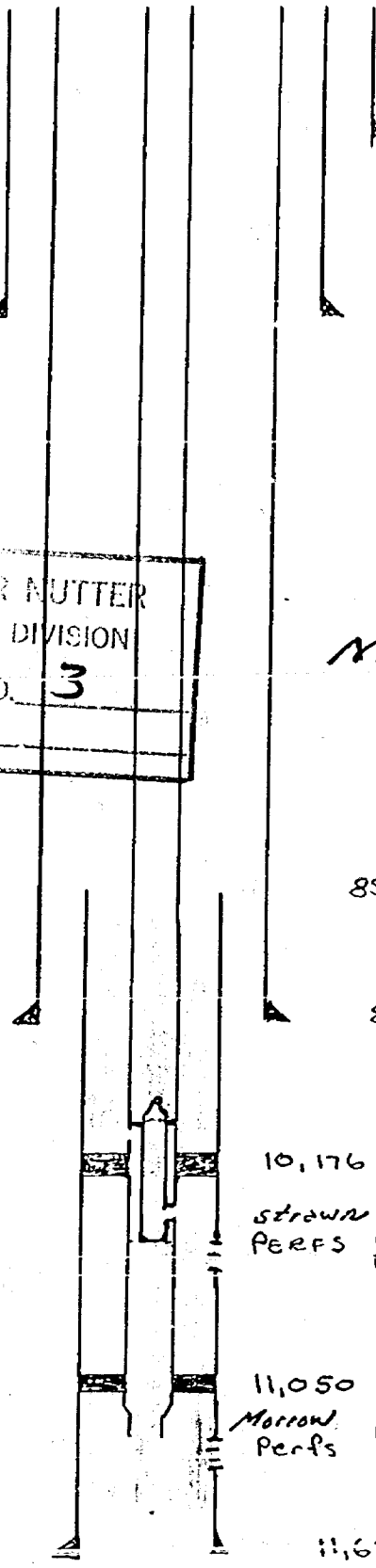
CARLSBAD AREA
Eddy Co, New Mexico

STRUCTURE

Top of Lower Morrow

CON. 4-79 SCALE: 1" = 2000' C.I. = 100

BELCO
UNION MEAD No. 1 T&C
EDDY Co., NEW MEXICO



BELCO PETROLEUM CORPORATION
EXHIBIT NO. _____
NMOCD CASE NO. 6520
DATE 4-11-79

Tubing Detail:	Length	Depth to Top.
Datum to RKB	18.00	—
2 7/8" EUE TBG.	10,156.05	10,174.05
X Over 2 7/8 x 2 3/8	.45	10,174.50
Otis S nipple	1.48	10,175.98
Otis ported coupling	.47	10,176.45
Otis polish nipple	.21	10,176.66
otis MH 2 Packer	5.49	10,182.15
Otis Sep. nipple	.85	10,183.00
Tubing & Blast jts	152.91	10,335.91
2 3/8 tubing	713.67	11,049.58
Other Otis eq.	29.01	11078.59

Note: 1. Otis x'over nipple can be modified to allow both zones to produce up tubing instead of upper zone up tubing & lower zone up Annulus. Wireline eq. is req'd.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Belco EXHIBIT NO. 4
CASE NO. 6520

BELCO

UNION MEAD COM

1-11-8-22-27

Eddy Co., N.M.

Production 1/1/78 to 3/1/79

BELCO PETROLEUM CORPORATION
EXHIBIT NO. _____
NMOCD CASE NO. 6520
DATE 4-11-79

STRAWN
Production/Month

	Days Prod	Oil	Gas	Wtr.
February, 1979	24	115	9082	24
January, 1979	24	109	8475	24
December, 1978	30	153	9686	30
November, 1978	30	116	10138	30
October, 1978	31	116	11515	31
September, 1978	30	119	10535	30
August, 1978	31	139	12011	31
July, 1978	30	180	11664	30
June, 1978	30	133	10015	?
May, 1978	31	140	10769	31
April, 1978	30	176	11536	30
March, 1978	31	178	12559	31
February, 1978	28	208	11095	28
January, 1978	29	177	13159	0

Strawn Oil Production Cum. to 3/1/79: 24,212 BO
Strawn Gas Production Cum. to 3/1/79: 1,993,815 MCF

MORROW
Production/Month

	Days Prod	Oil	Gas	Wtr.	Water Bbls/Day
February, 1979	28	0	11747	176	6
January, 1979	19	0	7749	132	7
December, 1978	30	0	23737	271	9
November, 1978	30	0	31630	300	10
October, 1978	31	0	31162	312	10
September, 1978	30	0	31771	306	10
August, 1978	31	0	34574	270	9
July, 1978	31	0	34055	310	10
June, 1978	30	0	31900	300	10
May, 1978	31	0	31094	300	9
April, 1978	30	0	33679	258	8
March, 1978	31	0	35660	0	0
February, 1978	28	0	35168	0	0
January, 1978	31	0	40996	0	0

Morrow Oil Production Cum. to 3/1/79: 1403 BO
Morrow Gas Production Cum. to 3/1/79: 3,887,648 MC

BELCO

Union Mead Com.

1-H-8-22-27

Eddy Co., NM

Pressure Comparisons

T Strawn - Tubing Zone
C Morrow - Casing Zone

A. Recent Flowing Conditions-3/4" Choke

Date	Strawn FTP	Strawn LP	Morrow FTP	Morrow LP
3/1/79	500	500	500	500
3/8/79	510	510	510	510
3/15/79	550	550	550	550
3/22/79	560	560	560	560
3/29/79	500	500	500	500
4/4/79	530	530	530	530

B. Shut-in Conditions

Date	S.I. Hours	Strawn	Morrow
9/21/77	24	900	925
7/11/76	24	2250	2000

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Belco EXHIBIT NO. 5
CASE NO. 6520

PRODUCED WATER COMPARISONS

Belco Mead Com 1
H-8-22-27
Eddy County, New Mexico

	1-T (Strawn)	1-C (Morrow)
Sp G	1.008	1.022
Ph	7.0	6.5
Cl	9584	22010
Ca	2004	1630
BiCarb	305	427
Mg	0	2065
Na	4024	8672

Analyses by Dowell - Carlsbad, New Mexico
Described as: "Typical Strawn Water"
"Typical Morrow Water"

R 27 E

T 21 S

T 22 S

30 | 29 | 28

CITIES SERVICE
Tracy E-1

CITIES SERVICE
1-Ives

CITIES SERVICE
1-S

CITIES SERVICE
1-Simpson

CITIES SERVICE
1-A Elizondo

CITIES SERVICE
1-A Cowley

31 | 32 | 33

BELCO
1-Mollie

N/2 Sec 31

CITIES SERVICE
1-Tracy

CITIES SERVICE
1-Tracey

R C BENNETT
J C RYAN
1-Tracy Fairway

CITIES SERVICE
1-Tracey 'E' Comm

6 | 5 | 4

BELCO
1-Joyce

BELCO
3-Union Mead

BELCO
Jarvis Mead-1

UNION CAL.
1-Wersell

BELCO
2-Comm.

7 | 8 | 9

SUBJECT WELL

BELCO
1-Union Mead Com.

BELCO
Douglass

CITIES
1-Paslay 'A'

E/2
Communitized

UNION
1-Colvard

C & K
1-7

18 | 17 | 16

DELTA
(ANTWEIL)
1-Salk

Last Strawn Prod
12-77

CITIES SERVICE
1-Tracey B

CITIES SERVICE
1-Colonia A

DELTA
(ANTWEIL)
1-Bear

LEGEND

MORROW

STRAWN

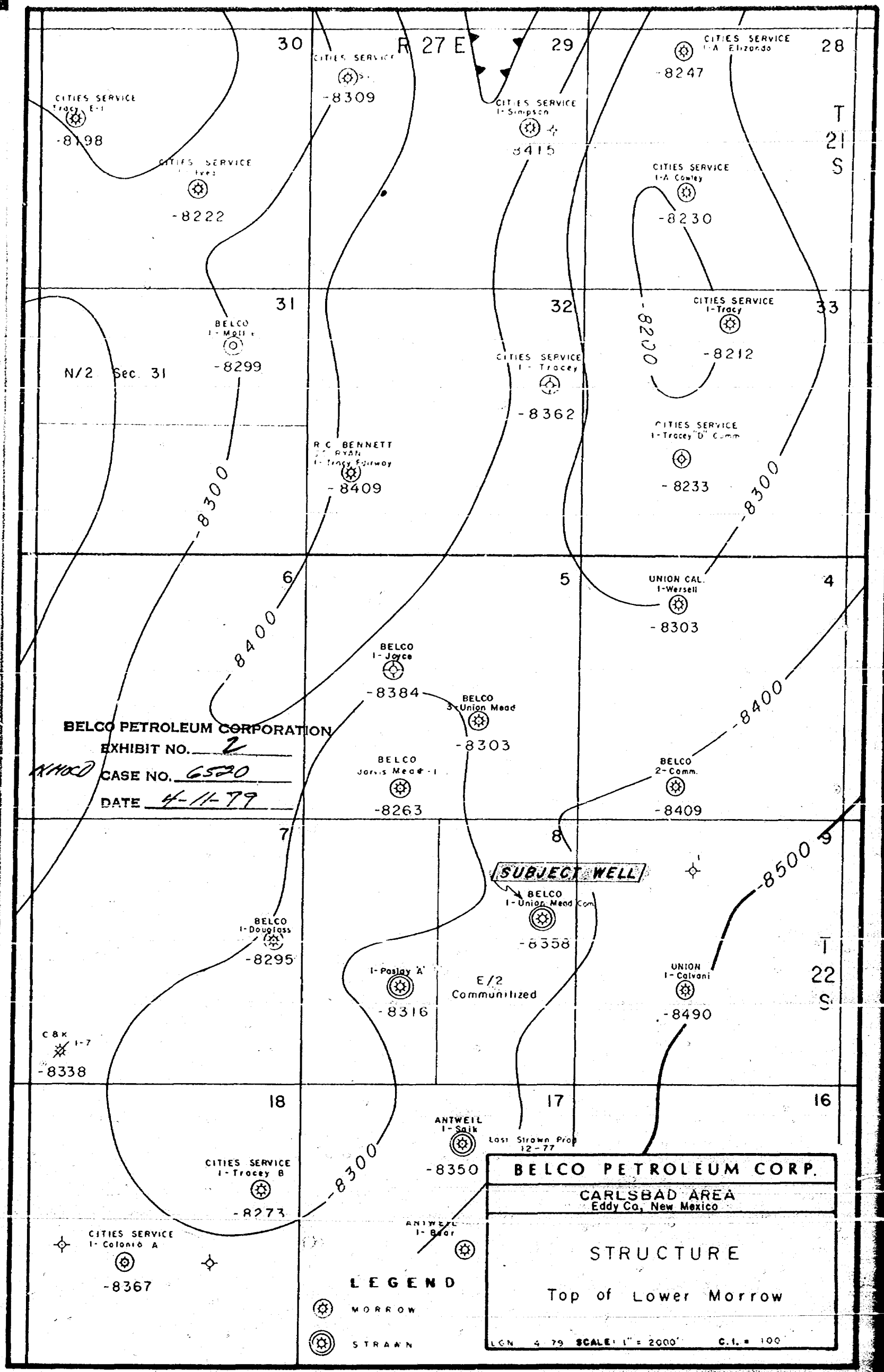
BELCO PETROLEUM CORPORATION
EXHIBIT NO. 1
NMOCD CASE NO. 6520
DATE 4-11-79

BELCO PETROLEUM CORP.

CARLSBAD AREA
Eddy Co, New Mexico

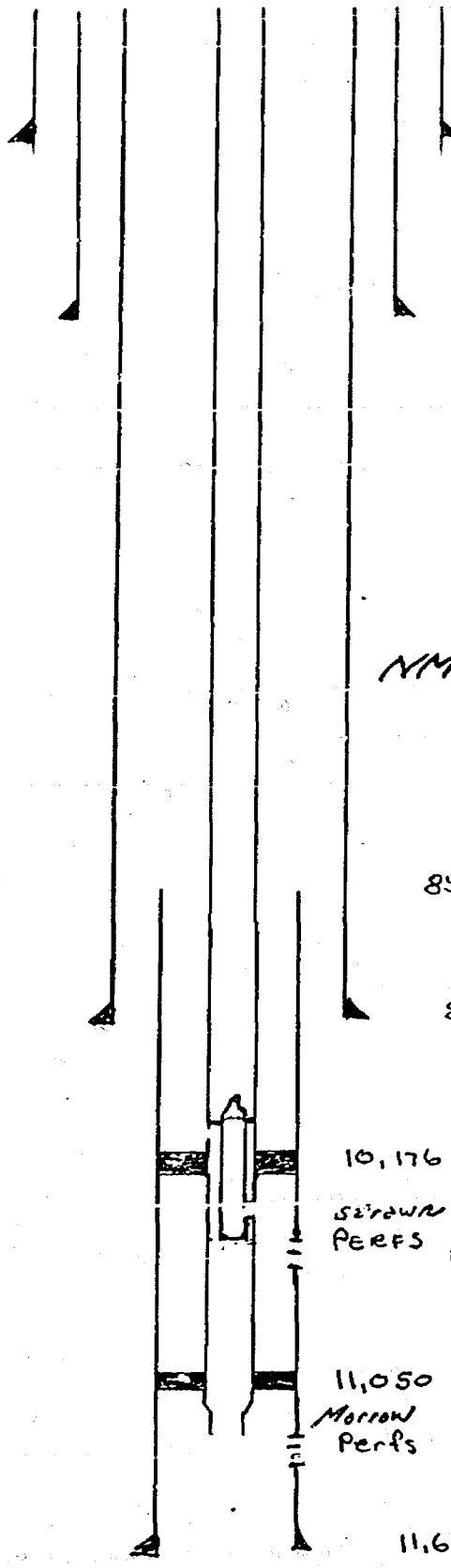
APPLICATION TO CO-MINGLE
STRAWN — MORROW
Union Mead Com. 1-H - 22 - 27

SCALE: 1" = 2000'



BELCO PETROLEUM CORPORATION
EXHIBIT NO. 2
CASE NO. 6520
DATE 4-11-79

BELCO
UNION MEAD No. 1 T&C
EDDY Co., NEW MEXICO



BELCO PETROLEUM CORPORATION
EXHIBIT NO. 3
NMOCD CASE NO. 6520
DATE 4-11-79

Tubing DETAIL:	Length	DEPTH to TOP.
Datum to RKB	18.00	—
2 7/8" EUE T&C.	10156.05	10,174.05
X Over 2 7/8 x 2 3/8	.45	10,174.50
Otis S nipple	1.48	10,175.98
Otis ported coupling	.47	10,176.45
Otis polish nipple	.21	10,176.66
otis MH 2 Packer	5.49	10,182.15
Otis Sep. nipple	.85	10,183.00
Tubing & Blast jts	152.91	10,335.91
2 3/8 tubing	713.67	11,049.58
Other Otis eq.	29.01	11078.59

Note: 1. Otis x'over nipple can be modified to allow both zones to produce up tubing instead of upper zone up tubing & lower zone up Annulus. Wireline eq. is req'd.

BELCO

UNION MEAD COM

1-H-8-22-27

Eddy Co., N.M.

Production 1/1/78 to 3/1/79

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 4
NMOCD CASE NO. 6520
DATE 4-11-79

	STRAWN Production/Month				MORROW Production/Month				
	Days Prod	Oil	Gas	Wtr.	Days Prod	Oil	Gas	Wtr.	Water Bbls/Day
February, 1979	24	115	9082	24	28	0	11747	176	6
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September, 1978	30	119	10535	30	30	0	31771	306	10
August, 1978	31	139	12011	31	31	0	34574	270	9
July, 1978	30	180	11664	30	31	0	34055	310	10
June, 1978	30	133	10015	?	30	0	31900	300	10
May, 1978	31	140	10769	31	31	0	31094	300	9
April, 1978	30	176	11536	30	30	0	33679	258	8
March, 1978	31	178	12559	31	31	0	35660	0	0
February, 1978	28	208	11095	28	28	0	35168	0	0
January, 1978	29	177	13159	0	31	0	40996	0	0

Strawn Oil Production Cum. to 3/1/79: 24,212 BO
Strawn Gas Production Cum. to 3/1/79: 1,993,815 MCF

Morrow Oil Production Cum. to 3/1/79: 1403 BO
Morrow Gas Production Cum. to 3/1/79: 3,887,648 MCF

BELCO

Union Mead Com.

1-H-8-22-27

Eddy Co., NM

Pressure Comparisons

T Strawn - Tubing Zone
C Morrow - Casing Zone

A. Recent Flowing Conditions-3/4" Choke

Date	Strawn FTP	Strawn LP	Morrow FTP	Morrow LP
3/1/79	500	500	500	500
3/8/79	510	510	510	510
3/15/79	550	550	550	550
3/22/79	560	560	560	560
3/29/79	500	500	500	500
4/4/79	530	530	530	530

B. Shut-in Conditions

Date	S.I. Hours	Strawn	Morrow
9/21/77	24	900	925
7/11/76	24	2250	2000

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 5
NMOCD
CASE NO. 6520
DATE 4-11-79

PRODUCED WATER COMPARISONS

Belco Mead Com 1
H-8-22-27
Eddy County, New Mexico

	1-T (Strawn)	1-C (Morrow)
Sp G	1.008	1.022
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Cl	9584	22010
Ca	2004	1630
BiCarb	305	427
Mg	0	2065
Na	4024	8672

Analyses by Dowell - Carlsbad, New Mexico
Described as: "Typical Strawn Water"
"Typical Morrow Water"

BELCO PETROLEUM CORPORATION
EXHIBIT NO. 6
NMOCD CASE NO. 6520
DATE 4-11-79

Dockets Nos. 16-79 and 17-79 are tentatively set for hearing on April 25 and May 9, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 11, 1979

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

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

CASE 6517: Application of Hanagan Petroleum Corporation for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Avalon-Wolfcamp Gas Pool, Eddy County, New Mexico, to provide for 320-acre spacing rather than 160 acres. In the absence of objection, this pool will be placed on the standard 320-acre spacing for Wolfcamp gas pools rather than the present 160-acre spacing.

CASE 6518: Application of McClellan Oil Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Federal Well No. 2, located 2310 feet from the North and East lines of Section 11, Township 14 South, Range 28 East, Sams Ranch-Grayburg Gas Pool, Chaves County, New Mexico, the NE/4 of said Section 11 to be dedicated to the well.

CASE 6519: Application of Inexco Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for its Bison Wallow Unit Area, comprising 7,040 acres, more or less, of Federal and State lands in Townships 25 and 26 South, Range 29 East, Eddy County, New Mexico.

CASE 6520: Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Strawn and Morrow production in the wellbore of its Union Mead Com Well No. 1 located in Unit H of Section 8, Township 22 South, Range 27 East, Carlsbad Field, Eddy County, New Mexico.

CASE 6521: Application of Adobe Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for its East Tatum State Unit Area, comprising 2,560 acres, more or less, of State lands in Township 12 South, Range 36 East, Lea County, New Mexico.

CASE 6522: Application of Petroleum Corporation of Texas for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Fruitland and Pictured Cliffs production in the wellbore of its Hanley Well No. 2-A located in Unit F of Section 18, Township 29 North, Range 10 West, San Juan County, New Mexico.

CASE 6523: Application of Lonnie J. Buck for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Yates formation underlying each of the following 40-acre tracts in Section 25, Township 25 South, Range 36 East, Lea County, New Mexico: NW/4 SW/4 to be dedicated to the Brown Well No. 6 located in Unit L and SW/4 SW/4 to be dedicated to the Brown Well No. 7 located in Unit M. Also to be considered will be the cost of recompleting said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the wells and a charge for risk involved in recompleting said wells.

CASE 6502: (Continued from March 28, 1979, Examiner Hearing)

Application of Stevens Oil Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the SW/4 SW/4 of Section 30, Township 8 South, Range 29 East, Chaves County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6524: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, abolishing, and extending the vertical and horizontal limits of certain pools in Eddy and Lea Counties, New Mexico:

(a) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Seven Rivers production and designated as the Cave-Seven Rivers Pool. The discovery well is Kincaid and Watson Drilling Company Humble 8 Well No. 7 located in Unit D of Section 8, Township 17 South, Range 29 East, NMPM. Said pool would comprise:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 8: NW/4

JASON W. KELLAHIN
W. THOMAS KELLAHIN
KAREN AUBREY

KELLAHIN and KELLAHIN
ATTORNEYS AT LAW
500 DON GASPAR AVENUE
P. O. BOX 1769
SANTA FE, NEW MEXICO 87501

TELEPHONE 982-4285
AREA CODE 505

March 21, 1979

Mr. Joe Ramey
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Downhole commingling
Belco Union Mead Com No. 1

Dear Joe:

Please set this application for hearing on April 11, 1979.

Very truly yours,

W. T. Kellahin (KM)

W. Thomas Kellahin

CC: Mr. Lee Nering

WTK:kfm

Enclosure

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

Case 6520

IN THE MATTER OF THE APPLICATION OF BELCO PETROLEUM CORPORATION FOR DOWNHOLE COMMINGLING, EDDY COUNTY, NEW MEXICO

A P P L I C A T I O N

Comes now Belco Petroleum Corporation and applies to the Oil Conservation Division for approval to downhole commingle production from the Strawn and Morrow formation in its Union Mead Com Well No. 1, Unit H, Section 8, T22S, R27E, NMPM, Eddy County, New Mexico and in support thereof would show:

1. Applicant is the operator of the Union Mead Com No. 1 well located in Unit H, Section 8, T22S, R27E, Eddy County, New Mexico.

2. Applicant seeks permission to downhole commingle production from Strawn (Carlsbad Strawn Pool) and Morrow (Carlsbad South Morrow Pool) formations in the wellbore of said well.

3. Approval of this application will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

4. Approval of this application will result in the recovery of additional hydrocarbons that would not otherwise be recovered and be a more effective and efficient method to produce both formations.

WHEREFORE Applicant prays that its application be set for hearing before the Division's duly appointed Examiner and that after notice and hearing as provided by law, the Division enter its order approving the commingling as requested.

Respectfully submitted,
KELLAHIN & KELLAHIN

By Jason W. Kellahin
Jason W. Kellahin
P. O. Box 1769
Santa Fe, New Mexico 87501
ATTORNEYS FOR APPLICANT

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

Case 6520

IN THE MATTER OF THE APPLICATION OF BELCO PETROLEUM CORPORATION FOR DOWNHOLE COMMINGLING, EDDY COUNTY, NEW MEXICO

APPLICATION

Comes now Belco Petroleum Corporation and applies to the Oil Conservation Division for approval to downhole commingle production from the Strawn and Morrow formation in its Union Mead Com Well No. 1, Unit H, Section 8, T22S, R27E, NMPM, Eddy County, New Mexico and in support thereof would show:

1. Applicant is the operator of the Union Mead Com No. 1 well located in Unit H, Section 8, T22S, R27E, Eddy County, New Mexico.

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Respectfully submitted,
KELLAHIN & KELLAHIN

By Jason W. Kellahin
Jason W. Kellahin
P. O. Box 1769
Santa Fe, New Mexico 87501
ATTORNEYS FOR APPLICANT

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY AND MINERALS

OIL CONSERVATION DIVISION

Case 6520

RECEIVED
MAR 26 1979
OIL CONSERVATION DIVISION
SANTA FE

IN THE MATTER OF THE APPLICATION OF BELCO PETROLEUM CORPORATION FOR DOWNHOLE COMMINGLING, EDDY COUNTY, NEW MEXICO

A P P L I C A T I O N

Comes now Belco Petroleum Corporation and applies to the Oil Conservation Division for approval to downhole commingle production from the Strawn and Morrow formation in its Union Mead Com Well No. 1, Unit H, Section 8, T22S, R27E, NMPM, Eddy County, New Mexico and in support thereof would show:

1. Applicant is the operator of the Union Mead Com No. 1 well located in Unit H, Section 8, T22S, R27E, Eddy County, New Mexico.

2. Applicant seeks permission to downhole commingle production from Strawn (Carlsbad Strawn Pool) and Morrow (Carlsbad South Morrow Pool) formations in the wellbore of said well.

3. Approval of this application will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

4. Approval of this application will result in the recovery of additional hydrocarbons that would not otherwise be recovered and be a more effective and efficient method to produce both formations.

WHEREFORE Applicant prays that its application be set for hearing before the Division's duly appointed Examiner and that after notice and hearing as provided by law, the Division enter its order approving the commingling as requested.

Respectfully submitted,
KELLAHIN & KELLAHIN

By Jason W. Kellahin
Jason W. Kellahin
P. O. Box 1769
Santa Fe, New Mexico 87501
ATTORNEYS FOR APPLICANT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6520

Order No. R-5993

APPLICATION OF BELCO PETROLEUM CORPORATION

FOR DOWNHOLE COMMINGLING, EDDY

COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on April 11, 19 79, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of April, 1979, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Belco Petroleum Corporation, is the owner and operator of the Union Mead Com Well No. 1, located in Unit H of Section 8, Township 22 South, Range 27 East, NMPM, South Carlsbad Field, Eddy County, New Mexico.

(3) That the applicant seeks authority to commingle Strawn and Morrow production within the wellbore of the above-described well.

(4) That from the Strawn zone, the subject well is capable of ~~low~~ marginal production only.

(5) That from the Morrow zone, the subject well is capable of ~~low~~ marginal production only.

(8) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(9) That the reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(10) That to afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the Artesia district office of the Division any time the subject well is shut-in for 7 consecutive days.

(11) That in order to allocate the commingled production to each of the commingled zones in the subject well, 34 and all of the liquid hydrocarbon percent of the commingled gas production should be allocated to the Strawn zone, and 66 percent of the commingled gas production to the Morrow zone.

(ALTERNATE)

(9) That in order to allocate the commingled production to each of the commingled zones in the wells, applicant should consult with the supervisor of the Artesia district office of the Division and determine an allocation formula for each of the production zones.

(6) That the liquids (both water and liquid hydrocarbons) produced from the above two formations in the subject well render efficient production of the well difficult with the existing mechanical installation.

(7) That the proposed commingling will make possible a more efficient flow of each zone.

IT IS THEREFORE ORDERED:

(1) That the applicant, Belco Petroleum Corporation, is hereby authorized to commingle Strawn and Morrow production within the wellbore of the Union Mead Com Well No. 1, located in Unit H of Section 8, Township 22 South, Range 27 East, South Carlsbad Field, NMPM, Eddy County, New Mexico.

(2) That the applicant shall consult with the Supervisor of the Artesia district office of the Division and determine an allocation formula for the allocation of production to each zone in each of the subject wells.

(ALTERNATE)

(2) That 34 percent of the commingled gas and all of the liquid hydrocarbon production, shall be allocated to the Strawn zone and 66 percent of the commingled gas production shall be allocated to the Morrow zone.

(3) That the operator of the subject well shall immediately notify the Division's Artesia district office any time the well has been shut-in for 7 consecutive days and shall concurrently present, to the Division, a plan for remedial action.

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

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