

Examiner Hearing March 8, 1967

CASE 3536: Application of Tenneco Oil Company for two unorthodox gas well locations, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Blanco-Mesaverde Gas Pool location of its Dawson Federal Well No. 1, located 835 feet from the North line and 1150 feet from the West line of Section 26, Township 27 North, Range 8 West, San Juan County, and its Jicarilla "C" Well No. 8, located 1850 feet from the North line and 790 feet from the West line of Section 13, Township 26 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 3206 (Reopened)

In the matter of Case No. 3206 being reopened pursuant to the provisions of Order No. R-2874-A which continued the special rules and regulations for the High Plains-Pennsylvanian Pool, Lea County, New Mexico, for an additional year. All interested parties may appear and show cause why the pool should not be developed on 80-acre or 40-acre spacing units.

CASE 3537: Application of Texaco Inc. for a waterflood project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Bisti Lower-Gallup Oil Pool by the injection of water into the Lower Gallup formation through its Northeast Bisti Unit Well No. 3 located in Unit O of Section 15, Township 25 North, Range 11 West, San Juan County, New Mexico.

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DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 8, 1967

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

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

- CASE 3533: Application of Union Oil Company of California for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Devonian formation in its Continental Nix Well No. 24-1, located 330 feet from the North line and 660 feet from the West line of Section 24, Township 18 South, Range 35 East, Reeves-Devonian Pool, Lea County, New Mexico.
- CASE 3534: Application of Newmont Oil Company for a waterflood expansion and unorthodox well locations, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its West Grayburg No. 4 Sand Waterflood Project, Loco Hills Pool, by drilling a water injection well at an unorthodox location 175 feet from the South line and 1500 feet from the East line of Section 10, and further, to drill two production wells at unorthodox locations 2600 feet from the North line and 1200 feet from the West line of Section 10, and 1190 feet from the North line and 150 feet from the East line of Section 11, all in Township 18 South, Range 29 East, Eddy County, New Mexico.
- CASE 3531 (Readvertised) Application of Texas Pacific Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the South Eunice Pool by the injection of water into the Seven Rivers-Queen formations through six wells in Sections 5, 8 and 9, Township 22 South, Range 36 East, Lea County, New Mexico.
- CASE 3535: Application of Pennzoil Company for the creation of a new pool and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production for its Gallagher State Well No. 1, located in Unit A of Section 3, Township 17 South, Range 34 East, Lea County, New Mexico, and for the promulgation of special pool rules therefor, including a provision for 80-acre spacing.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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EXAMINER HEARING

IN THE MATTER OF:

Case No. 3206 being reopened pursuant to)
the provisions of Order No. R-2874-A)
which continued the special rules and) Case No. 3206
regulations for the High Plains-)
Pennsylvanian Pool, Lea County, New)
Mexico.)

BEFORE: DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 3206.

MR. HATCH: In the matter of Case Number 3206 being reopened pursuant to the provisions of Order No. R-2874-A which continued the special rules and regulations for the High Plains-Pennsylvanian Pool, Lea County, New Mexico.

(Whereupon, Applicant's Exhibit
1 marked for identification.)

MR. HINKLE: Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell, representing Apache Corporation. We have three witnesses and five exhibits, and would like to have all the witnesses sworn at one time.

(Witnesses sworn.)

F R E D E R I C K M. J U L I A N, called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, by whom you are employed, and where you reside.

A My name is Frederick M. Julian. I am employed by Apache Corporation as a geologist, and I reside in Midland, Texas.

Q Have you previously testified in this case?

A Yes, I have.

Q At the previous hearing a year ago?

A Yes.

Q Did you give geological testimony at the hearing?

A Yes.

Q Refer to Apache's Exhibit Number 1 and explain to the Commission what this is and what it shows.

A This is a plat from the High Plains Pool located in Township 14 South, Range 34 East, Lea County, New Mexico. It is contour, it is a structural contour map, contoured on the top of the Saunders Lime, which in this case, is the top of the pay. The contour interval is 50 feet and the plat is similar -- it is the same plat as we used in the last testimony and has merely been brought up to date.

Q Have there been any additional wells drilled since last year when you testified in regard to this case?

A Yes, there have been four additional wells drilled in order of completion by date. The first well was the Sunset International Number 1 Union State, located in the southeast quarter of Section 22. This well was completed in April of 1966 as a dry hole.

Q That well was just in the process of being started at the time of the last hearing, was it not?

A Yes, it was. This particular well, the pipe was set on it and they attempted a completion from the High Plains zone.

And on swab test, swabbed about ten barrels of oil and an undetermined amount of water in 24 hours. It's my understanding that the water-oil ratio was very high and they felt they did not have a commercial well at this point.

The next well drilled --

Q While you are on this well, have you examined the log of that well?

A Yes, I have.

Q Did they core the well?

A They did not core it. They tested the well. They drillstem tested and completion tested.

Q And you have examined the logs?

A Yes. The second well drilled was the Huber Number 1 Mobile State in the southwest quarter of Section 16. This well was also completed as a dry hole in May of 1966, and does not directly enter into our High Plains Unit. It's associated with a different pool, the East Saunders Pool.

The third well drilled was the Standard of Texas Well in Section 34, which was completed in June of 1966 as a dry hole, and on drill stem test of the High Plains zone, recovered drilling mud.

The fourth well is in Section 24, the Warren American and Ralph Lowe Number 1 Texaco State. This well was completed in August of 1966 as a dry hole and drill stem test of the

High Plains Zone recovered 475 feet of sulphur water cut mud.

Q Have you examined the log of that well, too?

A Yes, I have examined the logs of all these wells.

Q Did you gain any information with regard to the reservoir by the drilling of these two wells and examination of the electrical log?

A The Warren American Ralph Lowe Well indicates they are in a tight section, in a tight comparable section as our High Plains Number 1 Well, which shows them to be not associated with us directly. They were -- They didn't recover anything.

Q What about the Sunset Well, was the casing set so that it could be in the same formation?

A They did perforate and test the same zone that we're producing from.

Q Did your examining of the electrical log show any different characteristics of the reservoir than you already have testified to in the previous hearing?

A No.

Q Is there anything else concerning this exhibit that you would like to call to the attention of the Examiner?

A Not at this time. No.

MR. HINKLE: That's all of this witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q Now, the High Plains Number 2 Well in the southeast of Section 15 had been drilled at the time of the last hearing, had it not?

A That is correct, and it had no porosity in this zone.

Q Is it your opinion that the Texaco Sinclair State Number 1 in the southwest quarter of 23 is producing from the same pool as the High Plains Number 1?

A This is rather hard to determine. You see, the Sunset Well which was drilled up dip recovered water. You would suspect if they were interconnected exactly it should have been productive. It is the same zone.

Q On the logs?

A On the logs. However, it looks like there is separation of some kind.

MR. NUTTER: Are there any other questions of Mr. Julian?

REDIRECT EXAMINATION

BY MR. HINKLE:

Q Could that separation be a matter of porosity and permeability?

A Yes, evidently it is a matter of porosity and permeability.

MR. HINKLE: That's all. I would like to offer in evidence Apache Exhibit Number 1.

MR. NUTTER: Apache Exhibit Number 1 will be admitted in evidence.

(Whereupon, Applicant's Exhibit 1 offered and admitted in evidence.)

A L A N B. E R W I N, called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, where you reside, and by whom you are employed.

A My name is Alan B. Erwin. I reside in Tulsa, Oklahoma and I am employed by Apache Oil Corporation as Chief Reservoir Engineer.

Q Have you previously given testimony before the Oil Conservation Commission?

A Yes, I have.

Q And qualified as a Reservoir Engineer?

A Yes.

Q Have you made a study of the production from the High Plains-Pennsylvanian Pool?

A Yes, I have.

Q And you have been familiar with it from the outset?

A Yes.

Q Have you prepared, or has there been prepared under your direction, any exhibits reflecting on the production?

A Yes. We have Exhibit Number 2, which is a plot of the daily average gross production versus time each month for the High Plains Unit Number 1 since completion, and also we show the monthly average gas-oil ratio.

(Whereupon, Applicant's Exhibits
2 and 3 marked for
identification.)

Q (By Mr. Hinkle) Any particular other comments in regard to Exhibit Number 2?

A No. I think the exhibit is self-explanatory.

MR. NUTTER: Mr. Erwin, this is for the one well, the High Plains Number 1?

A Yes, sir, that is correct.

Q (By Mr. Hinkel) Refer to Apache Exhibit Number 3 and explain what that shows.

A This is a plot of the static reservoir pressure versus cumulative oil production and it's an extension of the same exhibit which was shown at the previous hearing. It also is extrapolated to assume the abandonment static reservoir pressure of 500 psi and yields an ultimate production of 237,000 barrels.

Q Where was the curve at the time of the last hearing,



approximately?

A It was at the next to the last point there, at a cumulative of 114,000 barrels and a pressure of 1896, it's pressure on 11-3-66 was 1047 with a cumulative of 177,000 barrels.

Q Had the curve been projected or extrapolated on a straight line at that time, it would have indicated a higher, that is, a greater possible recovery, would it not?

A A slightly higher ultimate recovery.

Q So there has been a decline since the time it was previously prepared and presented at the last hearing?

A Yes, that is correct. The field is producing under depletion drive mechanism.

Q What does this show to be the projected ultimate recovery, primary recovery?

A 237,000 barrels.

Q Is there anything else you would like to state, any other comments in regard to this exhibit?

A I have no further comments.

MR. HINKEL: That's all from this witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q In your opinion as a Reservoir Engineer, do you think that the Texas Crude Well Number 1 in the southwest of 21 is



producing from the same reservoir?

A No, I do not believe it is producing from the same reservoir because the production characteristics have been considerably different. It is producing at a low rate and low cumulative, and the presence of the water in between would tend to lead me to believe it was a separate reservoir.

Q How about pressures between the two?

A I have no information on pressures of the other well, so I couldn't say.

Q Do you feel that you have got any locations in the High Plains Unit that you would recommend be drilled to further deplete this pool?

A Not to this reservoir, no, sir. Now, there may be locations that we could drill to a separate lens or separate reservoir, but not to this same reservoir. I feel that we are essentially draining this entire reservoir with this one existing well.

Q It's a rather small reservoir?

A Approximately 160 acres in size.

MR. HINKLE: The next witness will go into that.

MR. NUTTER: I see. Are there any further questions of Mr. Erwin?

MR. HINKLE: We would like to offer Exhibits 2 and 3.

MR. NUTTER: Applicant's Exhibits 2 and 3 will be

admitted into evidence.

(Whereupon, Applicant's Exhibits
2 and 3 offered and admitted
in evidence.)

MR. NUTTER: Mr. Erwin is excused.

(Witness excused.)

MR. NUTTER: Call your next witness, please.

L A R R Y C. S H A N N O N, called as a witness herein,
having been first duly sworn, was examined and testified as
follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, by whom you are employed, and your
address.

A I am Larry C. Shannon, employed by Apache Corporation,
Midland, Texas, as a Division Engineer.

Q You previously testified in this case a year ago,
did you not?

A Yes, sir, I did.

Q And qualified as a Reservoir Engineer?

A Yes, sir.

Q Have you made a continuous study of the High Plains -
Pennsylvanian Pool since the last hearing?

A Yes, sir, I have, and we have updated and revised
some additional exhibits.

(Whereupon, Applicant's Exhibit 4 marked for identification.)

Q (By Mr. Hinkle) Refer to Exhibit Number 4 and explain to the Examiner what that shows.

A Mr. Examiner, this is a revision of the exhibit that we turned in last year. Essentially, there are two changes, number one; our ultimate recovery last year, we thought, was a little higher than it is this year. We revised this figure. Also, Apache was a little optimistic, we used a recovery factor of some 27 per cent of the oil in place. We estimated our ultimate to be this. We took this figure from the East Saunders-Pennsylvanian Pool through material balance and all which indicated they would expect this high recovery.

Since we found this to be a limited reservoir, we think that the more realistic recovery factor would be in the neighborhood of 20 per cent. It is still an assumed factor and something that we cannot very closely estimate.

Q You think that is more realistic than the 27 per cent on account of the pressure decline there is apt to be less production?

A Yes, sir, that's right. So, we have gone through then, backwards through a volumetric calculation, we know very easily what our ultimate recovery will be. We have gone backwards through the formula and come up with an estimated

drainage that we think this well is currently draining, and it comes out to be 148 acres. Of course, this could fluctuate, two per cent difference in recovery could make a difference in the area.

Q If you used 18 or 19 per cent, approximately how many acres would you be draining?

A We would be draining in excess of 160 acres.

Q In excess?

A Yes. Since it is an assumed value, we kept it even 20 per cent.

Q And the 237 barrels is the same figure that Mr. Erwin has testified to?

A Yes, sir, that's how we arrived at this figure, from our pressure cumulative.

Q And you have used the same porosity, water saturation, net effective pay and formation volume factor that you have used previously?

A Yes. The only thing that has changed is the two items that I referred to.

(Whereupon, Applicant's Exhibit
5 marked for identification.)

Q (By Mr. Hinkle) Refer to Apache Exhibit 5 and explain what that shows.

A This also is a revision from an exhibit we submitted

last year. We, to begin with, the value of our oil has increased from three-o-one to three-o-six. Our crude purchaser has changed because of an acquisition and the estimation of artificial lift equipment was raised \$5,000.00, since we're right in the process of purchasing this equipment, so our total investment cost for the well are \$165,000 rather than \$160,000 as of last year. Our recoverable oil and gas have been changed to reflect our changes from 27 per cent to 20 per cent recoveries and it has changed the economic picture. I would like to point out that we have already recovered over what we estimate to be recoverable on a normal 80-acre spacing.

Of course, we realize we might not be over 280-spacings within this reservoir. Significantly, this is the only two --

Q If it were drilled on 180-acre spacing, you would about break even?

A It's about a break even point. We would have a profit of \$139,400.00.

Q The only way you can make anything out of it is to continue it on a 160-acre spacing pattern?

A Yes.

Q In your opinion, will this one well drain all that can be recovered by primary production from this pool?

A Yes, sir. We think that very definitely. As Mr.

Erwin stated, there is no need for another well that we can see.

Q Your company does not anticipate drilling any more wells at the present time?

A No, sir, but I would like to bring out one fact. We have a large unit, it's strictly an operator's unit, it's not a State approved.

Q That unit, incidentally, is shown on Exhibit Number 1?

A Yes, sir. It's outlined on Exhibit Number 1. We are negotiating for a farm out, to have someone else drill for a new lens within our unit. We know we don't want another well within this particular lens. If they'll step out, we think there's a possibility of another lens which will be more of an exploration project.

Q You anticipate --

A We have had several companies that are currently interested in this right now, and are investigating this very closely.

Q So you do anticipate there is a possibility of another well being drilled within the next few months, or started?

A Yes, sir, this is correct.

Q In your opinion, will correlative rights be protected by continuing the pool rules that are in effect at the present

time?

A Yes, I think they will.

Q Do you have any recommendation to make to the Commission with respect to the present rules?

A Yes, sir. We would like to see a continuation of the rules and regulations adopted for the High Plains-Pennsylvanian Pool to remain in effect until a further order of the Commission.

Q Or be made permanent?

A Or be made permanent, yes, sir.

MR. HINKLE: That's all of our testimony.

CROSS EXAMINATION

BY MR. NUTTER:

Q As regards this one well in this pool, Mr. Shannon, actually, since it is a unit and no one is going to come in there and off set you on the next 40 or anything like that, there's really no necessity for the existence of 160-acre rules, is there?

A Basically, we probably would not be hurt, I suppose, if we lost it. However, there are two factors that we would like to consider. First, on a technical basis, we think that we're draining close to 160 acres and we see no reason to change our spacing. Two, if we're to find a partner to come in and drill, the advantage of this large spacing is of much higher

incentive for further development.

Q That would be another lens so it would be another pool?

A Yes, and it would have to be another field rule.

Q I see. You might have incentive to offer on a farm out to have 160 acre rules in effect?

A Yes.

MR. HINKLE: If this goes back to 80 there would be less incentive for somebody to drill a wildcat well on another lens there?

A Yes.

MR. HINKLE: No, the Saunders --

A The East Saunders has 160.

MR. HINKLE: And it has 160?

A Yes.

Q (By Mr. Nutter) Ultimate recoveries have been more impressive over in the East Saunders than they evidently will be in this one well?

A Yes, they are. Evidently it is a much larger reservoir, Mr. Nutter.

MR. NUTTER: Are there any other questions of Mr. Shannon?

MR. HINKLE: We would like to offer Exhibits 4 and 5.

MR. NUTTER: Exhibits 4 and 5 will be admitted in

evidence.

(Whereupon, Applicant's Exhibits
4 and 5 offered and admitted
in evidence.)

MR. HINKLE: That's all we have.

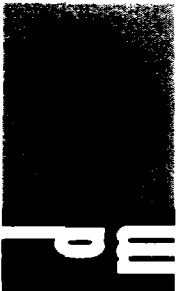
MR. NUTTER: Mr. Shannon will be excused.

(Witness excused)

MR. NUTTER: Does anyone have anything to offer in
Case 3206 Reopened?

MR. RUSSELL: John F. Russell, on behalf of Union
Oil Company of California, would like to make a statement for
the record in this case. Union Oil Company of Californis is
the owner of a 15.217 working interest in this unit, and well,
and would like to state that they support the application of
the Apache Corporation to continue the existing rules in this
pool.

MR. NUTTER: Thank you, Mr. Russell. If there's
nothing further in Case 3206, we will take that case under
advisement.



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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 10th day of March, 1964.


NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I hereby certify that the foregoing is a true and correct record of the proceedings before the Oil Conservation Commission as reported by me. 3/8 3206 67



Notary Public, State of New Mexico