

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

December 18, 1968

REGULAR HEARING

IN THE MATTER OF:)
)
)

Application of Reading &)
Bates Offshore Drilling)
Company for an exception)
to Order No. R-3221, as)
amended, Chaves County,)
New Mexico.)

Case No. 3997

BEFORE: A. L. Porter, Jr., Secretary Director
Guyton Hays, Land Commissioner
Governor David F. Cargo, Chairman
George Hatch, Counsel

TRANSCRIPT OF HEARING

MR. PORTER: We will take up Case 3997.

MR. HATCH: Case 3997, application of Reading & Bates Offshore Drilling Company for an exception to Order No. R-3221, as amended, Chaves County, New Mexico.

MR. KELLAHIN: Jason Kellahin, of Kellahin & Fox, Santa Fe, appearing for the applicant. I have one witness I would like to have sworn.

(Witness sworn.)

(Whereupon, Applicant's Exhibits
Numbers 1 through 6, inclusive,
were marked for identification.)

LAWRENCE G. HILL

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q State your name, please.

A Lawrence G. Hill.

Q By whom are you employed, and in what position,
Mr. Hill?

A I am employed by Reading & Bates Offshore Drilling Company, in the position of Petroleum Engineer.

Q Have you ever testified before the Oil Conservation Commission?

A No, I have not.

Q For the benefit of the Commission, Mr. Hill, would you briefly outline your education and experience as a petroleum engineer?

A I received my Bachelor of Science in Petroleum Engineering from the University of Oklahoma in 1961, began my experience in the oil and gas industry in 1963, and have been engaged in various phases of engineering in the oil and gas business since 1963 to the present, in southeast New Mexico, west Texas, and Oklahoma.

Q In connection with your work in southeastern New Mexico, how long have you worked in this area?

A Approximately three years.

Q In representing Reading & Bates, do you have anything to do with the area involved in the application in Case 3997?

A Yes, sir. As the petroleum engineer for Reading & Bates Offshore Drilling Company, I am responsible for all of the engineering projects and problems that arise in southeast New Mexico area.

Q Including the area involved here?

A Including the area involved here, yes.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. PORTER: Yes, they are.

Q Are you familiar with the application of Reading & Bates in Case 3997?

A Yes, I am.

Q What is proposed by the applicant in this case, Mr. Hill?

A Reading & Bates is asking for an exception to the order concerning the disposal of salt water in unlined pits. We feel that the continued disposal of salt water from our White Ranch No. 1 Well in an unlined pit would not be harmful under the definition given in the order.

Q Now, referring to what has been marked as Exhibit Number 1, would you identify that exhibit?

A Exhibit Number 1 is a plat of the area in question. Circled in red is the Reading & Bates White Ranch No. 1 in the West White Ranch Field, that being the only producing well in this field.

Q Now what is the location of that well?

A The location is in Unit A of Section 1, in 11 South, 28 East. Let me correct that. That is in Township 12 South, 28 East, in Chaves County.

Q What oil pool is that producing from?

A It is producing from the West White Ranch Devonian

Pool.

Q It is a Devonian producer, then?

A That is correct.

Q Generally, what is the producing mechanism in the Devonian Pool, in the pool involved here?

A Well, we feel in this particular instance that this is a partial water drive Devonian producer, with the production being trapped by a fault.

Q What is the producing interval?

A Producing interval in this well is an open-hole section from 8,128 to 8,140, in the Devonian Formation.

Q What is the present production from the well?

A Present production from the well is approximately 50 barrels of oil per day, and 300 to 350 barrels of water per day.

Q That is 300 to 350 barrels of water per day?

A Yes, sir.

Q And 50 barrels of oil?

A Yes, sir.

Q What disposition is being made of the water at this time?

A At this time the produced water is being disposed of into an unlined surface pit at the well site.

Q Is there any disposal system in operation or contemplated within the area of this particular well?

A No, sir. Due to the very remote location and the fact that this is a one-well field, there are no systems, to my knowledge, being contemplated in this area.

Q Have you made an examination to determine if there is any water being produced within the vicinity of this well?

A Yes, sir, we --

Q Referring to what has been marked as Exhibit Number 2, would you identify that exhibit, please?

A Exhibit Number 2 is a plat made at my request by John West Engineering in Hobbs. I asked him to locate any water wells in the area of the producing well. And this plat does show the distance and direction of producing water wells from the well location.

Q Now, what is the closest well to your well site and to your surface pits?

A The closest well is to the southwest of the well location, 8,675 feet, approximately 1.6 miles.

Q Is that well being used for irrigation, or stock water, or for what purpose?

A It is my understanding that this well is being used for stock purposes. There is no agricultural production in this

area, to my knowledge.

Q Generally, what is the nature of the topography of this area? Is it rough or level?

A There is very little slope to the land, itself. However, the land is what I would call rough country.

Q Is it suitable for agricultural use in any sense of the word?

A No, sir, not in my opinion.

Q Is the present use of the land been for livestock raising, and nothing else?

A As far as I know, yes.

Q You have been there, have you not?

A No, sir, I have not been to this location.

Q You have not been. Referring to what has been marked as Exhibit Number 3, would you identify that exhibit, please?

A Exhibit Number 3 is a portion of a county map which was also furnished to me by West Engineering in Hobbs. This map is used by surveyors so that they can find locations. This map does indicate generally any surface features such as creeks, and --

Q I believe you have the wrong map, Mr. Hill. No, you are correct, I am sorry. Go ahead.

It indicates the roads and other surface features, does it not?

A Yes, sir.

Q Approximately how far from the Pecos River would your well location be?

A It appears from this plat that the Pecos, or an arm down at Hagerman, New Mexico, and that looks to be roughly 28 to 30 miles. I don't have an exact figure on that.

Q That would be generally in a southeasterly direction?

A Yes, sir.

Q Referring to what has been marked as Exhibit Number 4, would you identify that exhibit?

A Exhibit Number 4 is a more detailed plat of the area of the well site. It does set out the leases in the area, and does indicate dry holes that were drilled in this area.

Q Does it also show all the lease ownership, to the best of your knowledge?

A Yes, it does.

Q Do you know who the surface owner is in this area?

A The surface owner of the Reading & Bates Lease?

Q Yes.

A The surface owner of the Reading & Bates Lease is Avalanche Journal Publishing Company in Lubbock, Texas.

Q Have you heard anything from Avalanche Journal in connection with this application?

A No, sir, I have not.

Q Referring to what has been marked as Exhibit Number 5, would you please identify that exhibit?

A Exhibit Number 5 is a portion of a U.S.G.S. quadrangle map, showing the topography in this area on a ten-foot contour interval.

Q Generally, what is the surface drainage in this area?

A Surface drainage in this area, although there is very little relief here, is to the southeast.

Q In connection with preparation for this application, Mr. Hill, did you make any effort to locate any ground water surveys or published reports on ground water in Chaves County, and particularly in the area involved in this application?

A Yes, sir, we tried to find any published governmental reports that might cover any information on ground water in this area. We were unable to find any. We spoke to the hydrologist at the State Engineer's Office. He informed us that there had been no studies made by his office, or any to his knowledge in this area, either in this Township or in the surrounding Townships.

Q Did you inquire at the office of the State Engineer

for any information on water production in the Township in which this section is located, and the adjacent Townships?

A Yes, sir, I did. He had no information as to water production.

Q Did he have any information on what formation any of the wells located there are producing from?

A No, sir, he did not.

Q Did he give you any information on the water generally in southeastern New Mexico, in this area involved here?

A Yes, sir, he discussed the general situation as far as ground waters in southeast New Mexico were concerned.

Q Is there any production of water from the Ogallala Formation?

A No, sir. The Ogallala Formation is not present in this area.

Q What water formations did he indicate might be found here?

A He indicated that there would be or should be an alluvium or quaternary bed on top of the ground, and also he refers to as a triassic zone, an Artesia Group, and a San Andres Group. This would be in descending order from the surface, which may or may not contain ground waters in this area.

Q Did he have any information that it did, or did not?

A No, sir, he did not.

Q Did you ask him whether the occurrence of water in this area would be general or spotty, or what the situation might be here?

A Due to the lack of information, he couldn't tell us whether this would be generally productive in this area or not. It was my understanding from talking to him that production might not be at least continuous in this area.

Q Didn't he indicate that it probably would not be?

A Yes, sir.

Q Now, you testified in connection with Exhibit Number 5 that the general drainage pattern of the surface was to the southeast. Did you get any information as to the drainage or general direction of the slope of the subsurface formations?

A The general regional dip of the subsurface formation is to the southeast.

Q Southeast or -- to the southeast?

A To the southeast.

Q And the surface to the southwest?

A That's correct.

Q So any subsurface drainage then would be to the southeast, rather than toward the Pecos River to the southwest?

A Yes, sir.

Q Is that your understanding?

A Yes, that is my understanding.

Q Now, referring to what has been marked as Exhibit Number 6, would you identify that exhibit, please?

A Exhibit Number 6 is a water analysis report for the lease in question. It does give a common breakout or analysis of produced water from our well.

Q Mr. Hill, on October 17, 1968, this Commission approved an Administrative Order for a disposal well, did it not?

A Yes, it did.

Q Where is that well located?

A That well is located on the Reading & Bates Lease in Unit H, and is referred to as the White Ranch No. 2 Well, which is a plugged and abandoned well.

Q The present condition of it is a plugged and abandoned well?

A That is correct.

Q Is the casing still in the well?

A There was not any long string casing run in the well. The surface pipe is still in the well.

Q Now, for what reason do you want to now complete

this well for salt water disposal?

A When we made our original application for a disposal well, we were under the impression that under no circumstances were any exceptions to be granted to unlined pits. So, of course, to comply with the law, we had no recourse except to go ahead and try to work up a disposal system. We later, of course, found out that in instances where there would be no damage under the wording of the ruling, that some exceptions had been granted.

Of course, it's been our opinion that there will be no damage here. So we applied to the Commission for the exception in question here.

As another part of this, and certainly not entirely secondary, the expense involved on this one well lease would run at a minimum of \$25,000, assuming that we were able to complete this disposal well in the manner which we indicated to the Commission that we would try to do. We, of course, have no way of knowing if the formation which we intended to make a disposal zone will take water at all. If it will not, then we have to get a rotary rig and wash this hole down, and come back for an amended ruling from the Commission. Of course, the expense will go up from that point.

Q Now, for the benefit of the Commission, would you

briefly review the history of the No. 1 White Ranch Well?

A Yes, sir. White Ranch No. 1 was completed in December 1960. Since that time it has produced 53,500 barrels of oil, and, of course, there is no gas connection in this area. And we are estimating an ultimate recovery from the well of approximately 150,000 barrels, and a life in the neighborhood of ten years.

As far as well's mechanical condition, the total depth was 8,140. The well's initial potentials were 389 barrels of oil in 24 hours, 45.5 degrees API oil. It has seven and five-eighth-inch casing at 1,967 feet; five and a half-inch casing at 8,129 feet. As I stated earlier, the open-hole section is from 8,128 to 8,140.

The current production, again, is 50 barrels of oil per day, 300 to 350 barrels of water per day, with a GOR too small to measure.

Q Do you anticipate there will be any other wells drilled in the West White Ranch Pool?

A No, sir, I do not. This well is completely surrounded with dry holes, and we don't feel that there is any additional drilling to be done in this area.

Q Now, you stated that you estimate a remaining life of approximately ten years on this particular well. Have you

had some experience with the production of Devonian wells?

A Yes, sir, I have. This ten-year estimate is really based on the prior producing rate, and since we are dealing with a Devonian water drive reservoir, we, of course, don't really know if the water is going to catch the well next week or next year and go completely to water. However, the producing rate, current producing rate is -- there has been no change in that, appreciable change in that in quite a long time.

Q You mean both as to oil and water production?

A Yes, sir.

Q It is fairly well stabilized at this point?

A Yes, sir.

Q On the basis of your experience with the Devonian reservoirs, where you have an active water drive, the well could actually water out next week, could it not?

A Yes, sir, that is correct.

Q On the basis of your examination and the available information, the area surrounding this well, in your opinion, will the continued use of unlined surface pits cause any damage to any fresh water supply, either on the surface or underground?

A No, sir.

Q In your opinion, would the requirement that you complete a disposal well, and dispose the water underground,

constitute an unnecessary expenditure and, therefore, waste?

A Yes, sir.

Q Were Exhibits 1 through 6 prepared by you or under your supervision?

A Yes, they were.

MR. KELLAHIN: At this time, I would like to offer in evidence Exhibits 1 through 6.

MR. PORTER: If there is no objection, the exhibits will be admitted.

(Whereupon, Applicant's Exhibits
Numbers 1 through 6, inclusive,
were admitted in evidence.)

MR. KELLAHIN: That completes the direct examination, Mr. Porter.

CROSS EXAMINATION

BY MR. PORTER:

Q Mr. Hill, on your Exhibit 2, which is the survey plat by Mr. West, showing the location of fresh water wells within a radius of two miles, you have testified that the nearest water well, fresh water well was located 8,675 feet, I believe, from your disposal pit on your well.

A Yes, sir.

Q Which is a little more than a mile and a half. Do you know what the depth of that well is?

A No, sir, I don't know what the producing formation is on that well.

Q You don't know what it is -- you don't have any knowledge as to what depth the fresh water is encountered in that particular area?

A No, sir, I don't have that information.

MR. PORTER: Does anybody else have a question?
Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Hill, you mentioned that the subsurface drainage would, in all probability, be to the east or southeast. Now, this is assuming that the beds would be there, and there would be no cutting of the beds. However, you do have this Locc Draw running south -- running southwest-northwest, which would appear to present a low in the surface topography directly southeast of your well.

Now, any water that might seep into the shallow sand or alluviums or gravels, or whatever might be here, would have a tendency to flow southeasterly down toward that draw, would it not?

A I would say that would only be true if they stayed in the -- if the water stayed in the very shallow alluvial bed.

Q While it is in there, it would tend to flow toward the draw, and then if it went past the bed and on into some other formation not intercepted by the draw, then the flow might be in a normal easterly direction?

A Yes, sir.

Q But any water remaining in the beds as it is moving through those beds, would tend to go toward the draw.

Now, on your map you show a Loco tank at the head of the draw, approximately three-quarters of a mile east of the Reading & Bates White Ranch No. 1 Well. Are there any other tanks in this draw as it proceeds southwesterly?

A Not to my knowledge.

Q It would appear, however, if we take the water well, which Mr. West drew on his map, I don't recall the exhibit number but it would be the closest well. It is in Section 12 on the extreme west side of the section, right in the middle of the section as far as north-south is concerned. If we take that well and transfer it to your Exhibit Number 5, which is your topography map, we find that that well would be located right down almost in the base of the draw. So apparently that well would be supplied by water moving southwesterly down this draw, subsurface waters moving southwesterly toward the river, wouldn't that be correct?

A Yes, sir. Again, if you are assuming that water is going to stay in the shallow beds, and is going to flow in that direction.

Q Isn't this a very common occurrence that you see in windmills and wells located in the low places, as far as weather wells in southeast New Mexico are concerned? They take advantage of the water that moves into those draws and seeps into those shallow beds, and locate their wells in the low places?

A Well, I'm not experienced enough to give you an answer to that.

Q You have seen windmills located in draws, though?

A Yes, sir. I have seen them located on high ground, too.

Q You mentioned that you had looked for a report on Chaves County, and you weren't able to find one by the U.S.G.S. or the State Engineer's Office.

There is a ground water report on Eddy County. Are you acquainted with that report?

A I know there is such a report.

Q Mr. Hill, in that report they are talking about the water east of the Pecos River, and they state in that report that water of fair quality is obtained from wells in the Chalk

Bluff Formation which extend northward from Lake Avalon, to and beyond the county line, in a belt six to ten miles wide bordering the Pecos River on the east. They say this goes to and beyond the county line.

Are you acquainted with how far beyond the county line the Chalk Bluff Draw Formation would extend?

A No, sir.

Q Now, Plate Number IV of Ground Water Report No. 3 is a diagram showing the location of the Chalk Bluff Draw, and it appears not to stop at the county line. It goes someplace farther north, and in the first eight to ten miles directly east of the Pecos River, as you proceed from the river in an easterly direction, it is reported that stock and domestic supplies are available at depths less than 200 feet in the Chalk Bluff Formation or the White-Horse Group, and as you reach that point that is when you are coming up out of the river bed and getting into that high ground where the terrain starts dipping to the southeast again, or to the east, and then that is identified as Area 5-C on this map, which again does not stop at the county line, but goes on beyond the county line.

I am not suggesting that it goes clear up to this area that we have under consideration now, but it goes someplace

between that county line and a point to the north of there. But in this belt then which is east of the Chalk Bluff Draw Formation producing area, it is identified as Area 5-C on the map, and the report states that stock and domestic supplies are available at depths of less than 300 feet in the Triassic Red Beds, water quality generally fair but locally potable.

Do you know if you have the Triassic Red Beds?

A Yes, sir, they apparently underly this general area.

Q But you don't know if any of these wells that Mr. West located would be producing from the Triassic Red Beds or the Chalk Bluff Formation?

A No, sir.

MR. KELLAHIN: May I ask a question in regard to the Chalk Bluff Formation? Did I understand you to say that it lies about ten miles east of the Pecos?

MR. NUTTER: The area that they identified as producing from a Chalk Bluff Formation is a belt lying east of the river eight to ten miles wide, and then after you pass from that zone, going east you get into Area 5-C, as they depict it, Mr. Kellahin, and that area extends northward also beyond the county line to some point that I don't know.

MR. KELLAHIN: If the Commission please, I would observe that the testimony in connection with these statements

Mr. Nutter has read, the testimony showed this particular well was approximately 30 miles from the Pecos, so it would be out of this ten-mile area referred to in the report.

MR. NUTTER: Apparently it would be out of the area considered to be Area 5-A in the report, and would fall in Area 5-C, I would imagine, if 5-C extends that far north, which would be the area that ground water report states fresh water is produceable from the Triassic Red Beds.

MR. PORTER: I want to impose on you for a little more testimony.

Do you have anything there in those reports that shows the depth of the fresh water here in these wells, or can you identify them from the ground water report?

MR. NUTTER: No, sir, the ground water report doesn't go far enough north to give the depths of the water. It says this water is available up to and beyond the county line.

MR. PORTER: Does anyone have a question?

MR. KELLAHIN: Mr. Hill, in connection with the questions asked you by Mr. Porter and by Mr. Nutter, in regard to the fresh water wells shown on your Exhibit Number 2, did you inquire of the State Engineer's Office for any well records regarding those wells?

THE WITNESS: Yes, sir, I did.

MR. KELLAHIN: Did you inquire of their personal knowledge of any of these wells and the depths or formations from which they are producing?

THE WITNESS: Yes, sir, I did.

MR. KELLAHIN: Did you get any information on that?

THE WITNESS: No, sir, they had no information on this area.

MR. KELLAHIN: That is all.

MR. NUTTER: One more question. I would like to correct the record, if it is in error in this respect, that the Pecos River is approximately 16 and a half miles directly west of Section 1, Township 12, Range 37 East.

MR. PORTER: Does anyone else have a question? The witness may be excused. Does anyone have anything further to offer in this case? If not, the Commission will take the case under advisement.

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

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


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