STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

31 July 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of Mewbourne Oil Company for a nonstandard proration unit and an unorthodox gas well location, Eddy County, New Mexico. CASE 8665

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. QUINTANA: We'll call next Case 8665.

MR. TAYLOR: The application of Mewbourne Oil Company for a nonstandard proration unit and an unorthodox gas well location, Eddy County, New Mexico.

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

MR. QUINTANA: Any other appearances in Case 8665?

MR. PADILLA: Mr. Examiner, Ernest L. Padilla, Santa Fe, New Mexico, for Santa Fe Exploration Company.

MR. QUINTANA: And no witnesses?

MR. PADILLA: I don't believe so. We will decide whether we would put on testimony today based upon testimony presented by the applicant.

MR. QUINTANA: In that case, would you please remain standing, sir, and be sworn in at this time?

(Witness sworn.)

KENNETH M. CALVERT,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Calvert, for the record would you please state your name and occupation?

A My name is Kenneth M. Calvert and I'm Engineering Manager for Mewbourne Oil Company, Tyler, Texas.

Q Mr. Calvert, have you previously testified as an engineer before the Oil Conservation Division of New Mexico?

A I have not.

Q Would you describe for the Examiner what has been your professional educational experience and work experience as an engineer?

A Okay. I graduated from the University of Texas in 1964 with a Bachelor Business Administration in petroleum land management.

In the same year I received a BS degree in petroleum engineering, University of Texas.

I worked seventeen years for Tenneco Oil Company. I began work for Mewbourne Oil Company in 1981, at

which I've been in charge of engineering since that time, and including Oklahoma, Texas, and New Mexico.

I am a Registered Professional Engineer in the State of Texas, Register Number 80-- excuse me -- 30889.

Q As a petroleum engineer, Mr. Calvert, have you made a study of the facts surrounding this application by Mewbourne Oil Company?

A I have.

MR. KELLAHIN: We tender Mr. Calvert as an expert petroleum engineer.

MR. QUINTANA: He is considered an expert petroleum engineer.

You may proceed.

Q Mr. Calvert, I'd like to direct your attention to what we've marked as Exhibit Number One and have you spend a moment orienting the Examiner as to where these wells produce and the arrangement of wells in both the Rock Tank Morrow Pool, the upper pool and lower pool.

A Okay. This is a map, location map, of the Rock Tank Upper Morrow and Lower Morrow Pools.

If you'll note the legend, the Lower Morrow is indicated in the red. The Upper Morrow is indicated in blue. There are some wells that were dually completed to begin with and there are some that were originally completed

in the Lower Morrow and later completed in the Upper Morrow.

One well I would like to call your attention to is the Adobe Smith Federal Communitized No. 2, Section 11. This well was originally completed in the Lower Morrow. It was later recompleted in the Atoka zone; however, sometime, but I don't know the date, it was later placed in the -- I guess we'd call it the pool for the Upper Morrow, but I will show later that it is not in the -- completed in the Upper Morrow sands. It is completed in the Atoka even though it is shown in the Commission records as being in the Upper Morrow.

Q What is the spacing for a well pursuant to the existing Upper and Lower Rock Tank Morrow Gas Pool rules?

A The gas pool rules are 640 on the spacing and the field rules lare 1650 from the lease lines.

Q Are there any of the wells listed on Exhibit Number One that were drilled pursuant to those pool rules?

A I don't know the date that the pool rules were made effective, but if you will note, there appears to be possibly, oh, probably four out of the total of nine wells that do comply with the field rules.

Apparently those -- apparently the earlier wells were drilled and then the field rules were imple-

mented.

Q What is the status of the acreage in Section 13 which you propose to dedicate to your well?

A ARCO Oil and Gas had drilled a Smith Federal No. 1. It produced from the Lower Morrow. The well had been plugged and abandoned and we later leased the north half of the Section 13 where we propose to drill a well. That acreage is -- by our nomenclature is known as our Federal K Lease.

Q And what is the footage location that you propose to locate this well?

A Our proposed location is 660 from the north line and 1980 from the west line of Section 13.

Q All right, sir, let's now turn to the status sheet for the wells in the Rock Tank Upper Morrow. I believe it's marked Exhibit Number Two, and have you identify for us the status of wells in the Upper Rock Tank Morrow.

A Okay, as I mentioned, the Upper Morrow is indicated on the map, on the Exhibit One, in blue, so if you'll refer to both, between Exhibit Two and Exhibit One, you'll be able to see what I'm referring to.

First, on Exhibit Two, I indicate, as is indicated in Commission records, that the Adobe Smith Federal Communitized 2 in Section 11 does show Morrow production. It is one of two remaining producing completions in

the Upper Morrow.

The other producing completion is the Monsanto Rock Tank Unit No. 4 in Section 1.

The cumulative production from the Adobe Smith Federal 2-P is about 2.7 BCF. The Monsanto Rock Tank Unit 4 is about 2.2 BCF. Current production, or 1984 production, I should say, is 119-million from the Adobe Smith Federal 2 and 91-million from the Monsanto Rock Tank Unit 4, the first being an average of about 327-million per -- excuse me, MCF per day from the Adobe Smith Federal Communitized 2, and 250 MCF per day from the Monsanta Rock Tank Unit 4.

The other wells have either been -- well, I will identify them.

The Hamon Union Federal is Section 23 had been plugged and abandoned.

The Gulf Booth has been plugged and abandoned.

The Boatwright Smith Federal in Section 14 has been plugged and abandoned.

The Monsanto Rock Tank Unit 1 is now producing from the Lower Morrow.

Q All right, sir, would you now turn to Exhibit Number Three and give us a status report on the wells that are carried under the Rock Tank Lower Morrow Pool?

A Again, if we will refer between Exhibit One and Exhibit Three, we will find that there in the Lower Morrow there are only two remaining producers. These are the Monsanto Rock Tank Unit 1 in Section 7 -- it produced 72-million during the year of 1984; it's cumulative production is 12.7 BCF -- and the Monsanto Dark Canyon in Section 18. It produced 73-million for 1984 and it has a cumulative production of 3 -- about 3.3 BCF.

The ARCO W. G. Smith Federal in Section 13, and that's on the same section that we're addressing in our application, has been plugged and abandoned.

The Boatwright Smith Federal in Section 14, plugged and abandoned.

The Gulf Booth "BO" Federal in Section 12 has been plugged and abandoned.

The Monsanto Rock Tank Unit in Section 6 has been plugged and abandoned.

The Rock Tank Unit 4 is still producing from the Upper Morrow.

And I believe that identifies all of them that's shown there.

Q All right, sir, let me direct your attention now to the structure map which is marked as Exhibit Four. I would like you to, first of all, sir, to identify the structural information that's on Exhibit Number Four.

A Okay. This is a structure mapped on the top of the Lower Morrow sand and I will show -- identify the Lower Morrow in Exhibit Six.

This shows the -- a 50-foot Isopach -- structural interval and it also shows subsea depths of each of the wells.

Q Would you tell us something of the --

A May I make a correction?

Q Yes, sir.

A That is not a 50 -- that is 100-foot structural interval.

Q Would you give us some of the geologic background that will explain the unique character of this particular Morrow production as defined by this structure in relation to what we might see down in Eddy County in terms of the channel Morrow deposition of that formation?

A Okay. This is not what we would term a channel sand and it is -- it has quite a large areal extent. This is an anticlinal feature from a gross sand standpoint or viewpoint, gross sand interval.

The sand interval thickens from the south going toward the north along a strike of the structure.

The gross sand interval in the Hamon Union Federal in Section 23 is approximately 14 feet up to 48 feet in the Monsanto Rock Tank Unit 2 in Section 6.

Q Would you -- I'm not sure I heard you, did you describe for us the general thickness as we move from the southwest to the northeast in terms of footage?

A Yes. The sand thickens along strike from approximately Section 23 up through 48 feet in Section 6 and it thickens along the strike of the anticlinal feature.

Q All right, sir. How have you identified the permeability barrier that's indicated by the words in Section 24?

A Okay, the well that's shown as a dry hole in Section 24, and I don't recall the one that drilled that well, however, had a sand there. It was a limey sand. There was enough thickness to have been productive but upon testing the flow rate was something on the order of 100 MCF per day and it was termed uneconomical and plugged.

So there is definitely a difference in the -- in the sand facies in that area.

Q Mr. Calvert, let me direct your attention to the hatched line circles that surround each of the wells indicated on the structure map and have you explain to us what the significance is of those circles.

A Okay, that is shown is Exhibit -- what we have shown as --

Q Five. It would be Number Five.

A Five. Okay, Exhibit Five. This is en-

titled Rock Tank Lower Morrow Drainage Area. I have calculated the drainage area for each one of the wells in the Lower Morrow interval of the Rock Tank Reservoir.

The cross hatched area represents just a radius of drainage assuming equal drainage in each direction from the wellbore and thereby from a volumetric calculation thereby representing the area drained by each one of the wells that have been completed in the Rock Tank Lower Morrow.

Beginning with the Adobe Smith Federal, that well drained only about 51 acres.

The ARCO W. G. Smith Federal in Section 13 drained about 319 acres.

The Boatwright Smith Federal in Section 14, 182 acres.

The Gulf "BO" Federal, Section 12, 344 acres.

The Monsanto Rock Tank Unit 4, Section 1, 268 acres.

Rock Tank Unit 7, excuse me, Rock Tank Unit 1 in Section 7, 490 acres.

Rock Tank Unit 2, Section 6, 615 acres.

The Dark Canyon in Section 18, 244 acres.

Now, the reservoir parameters that I used in making this calculation are shown at the bottom of the

Exhibit Five, showing a porosity of 11 percent, salt water saturation, 36 percent, the original bottom hole pressure, 4310 psig, and that was taken from the drill stem test, and the original productive well, the Monsanto Rock Tank Unit No. 2. That well was completed in May of 1968, and I assumed a final bottom hole pressure of 500 psig and a bottom hole temperature of 200 degrees.

From a volumetric calculation these areas of drainage have been calculated. Let's see, it would be in the fourth column. It shows a drainage radius and the thing that we want to point out and the reason for application is the area of the reservoir appears to have a larger drainage area as you go to the -- from south to the northeast, as evidenced by the Rock Tank Unit; Monsanto Rock Tank Unit 2 in Section 6 having drained 615 acres and just below that the Rock Tank Unit 1 in Section 7 having drained 490 acres.

The five wells that are immediately adjacent to our proposed location, or in adjacent tracts, have averaged draining 228 acres. So this is the reason for our application in that we feel that there can be an economical producer drilled on this acreage.

Q In terms of the way you calculated the drainage patterns and applying those to Section 13, in your opinion is there a portion of Section 13 that remains undrained by existing wells?

A Yes, the west half of the -- excuse me, the northwest quarter of Section 13 is essentially undrained, as is the south half of that section.

Q In terms of locating a well within Section 13 to be at the optimum location from which to recover those additional unrecovered reserves from Section 13, where would you propose to locate that well?

A Our proposed location is 660 from the north line and 1980 from the west line of the section.

Q Would you describe for us what reasons you have for not wanting to drill at the closest standard location under the existing pool rules, the 1650 location?

A Okay. First, as evidenced by this map, as we go from the south to the northeast the Lower Morrow thickens, so by moving from 1650 to 660 from the north line, we would think we would be in a thicker portion of the Lower Morrow sand. It does thicken along the strike and that -- that location is along the strike.

Secondly, the Adobe Smith Federal, even though it shows it had approximately 40 feet of gross interval, it only had 12 feet of net effective interval above 8 percent porosity and we would like to stay away from that well, so that moves us a little east of -- a little further east of the Adobe Smith Federal.

Then, from the -- from the standpoint of

the Upper Morrow, it is also proven to be a better producer from the southeast -- excuse me, southwest in a northerly direction. So we, for the purposes of improving our location of both the Lower Morrow and Upper Morrow, we feel that the proposed location would provide a better place for an economic location than the -- a standard location within the field -- pool.

Q Do you attach any significance to the fact that the proposed lcoation is within the outer range of the drainage effect from the ARCO Smith Well in Section 13?

A Yes. We do feel that that location is partially drained; however, we feel that the partial draining has less significance than we would have if we moved to a normal location for the Rock Tank Lower Morrow. So we recognize that it's probably partially drained. The bottom hole pressure is going to be lower there than possibly in the -- a standard location, but we feel like the improvement of the sand quality outweighs the partially drained area.

Q The adjoining acreage to which we are moving closer than allowed under the general rules of the pool would be the north boundary of Section 13, is that --

A That's correct.

Q In your opinion, Mr. Calvert, do you see that Mewbourne is gaining any advantage over any of the operators or owners in Section 12 by moving closer to that

common line?

A No, I do not in that the Gulf Booth Federal have been -- was drilled and completed and has been depleted and, you know, if they have been problems within that section then the lease owners of Section 12 would certainly drill and protect their correlative rights.

As I mentioned previously, on the west side of Section 13, that would include Section 13, 12, 11, and 14, all of those wells have already been depleted in the Upper Morrow. So anybody further desires to develop it there would be nothing that would preclude them from doing so.

Q Let's turn to the cross section which is Exhibit Number Six, now, Mr. Calvert.

A Okay. I draw your attention to the righthand side of the Exhibit Six. This shows a general area of -- of the Rock Tank Field. This is section C-C'. The left of the cross section begins with a dry hole in Section 11, through the Adobe Smith Federal in the southeast corner of Section 11, through the ARCO now abandoned W. G. Smith Federal in Section 13, and finally to the dry hole that was previously mentioned in Section 24.

The intent of this cross section is to show the points that the Adobe Smith Federal is completed. If you will note, and that is the log that is the second

from your left, if you will note the perforations of the Adobe Smith Federal are, oh, this is a small scale but it appears to be about 9705 to maybe 9720.

As indicated, the Morrow Lime on that particular log occurs at about 9730. Morrow Clastics begin just above 9800. The Upper Morrow Sands that we're interested in are in the vicinity of 9900 feet through about 10,050 feet. And finally, the Lower Morrow is in the vicinity of 10,200 feet as identified on the Adobe Smith Federal.

Q Looking at the Adobe log, Mr. Calvert, what is the footage location for the Adobe well out of the corner of Section 11?

A That's 660 feet from the south line and 330 feet from the east line.

Q I believe the log section shows the perforations that Adobe made in the Lower Morrow?

A Yes. The Lower Morrow perforations were approximately 10,185 to 10,220, or thereabouts.

Q And the well information that you have used shows the volume of gas produced out of the Lower Morrow?

A Yes, it produced from a Lower Morrow a total of 457-million and then it was abandoned.

Q Was the Adobe well produced in what you have described as the Upper Morrow?

A We have no record of seeing any perforations ever made in the Upper Morrow Sands. I was originally perforated in Lower Morrow and the Atoka, and as I mentioned previously, the well, when it was completed in the Atoka, was filed as an Atoka producer and for some unknown reason to me, it is now in the Upper Morrow of the Rock Tank.

Q The proposed Upper Morrow section in your well would be that interval defined on the cross section and would not be comparable to the Atoka section in the Adobe well?

A No, that's correct. They're not -- they're not comparable -- correlative.

Q Correlative. In looking at the Adobe log do you see any potential for perforating and testing any of the section in the Upper Morrow for that well?

A No.

Q As we look at the cross section, how does the Upper Morrow correlate to the other wells on the cross section?

A Well, the intervals, the correlative intervals correlate and they can be identified and it just so happens that the Adobe there is not sufficient porosity developed in the Upper Morrow Sands to make an economic producer.

Q Would you now, sir, identify for us Exhi-

bits Seven and Eight, which I believe are the waiver letters?

A We have received waiver letters from two companies that offset Section 13 where we desire to drill an unorthodox location and a substandard unit.

The first one, identified as Exhibit Seven, is a mutual waiver between Mewbourne Oil Company and Monsanto, and I read a portion of the first paragraph.

Monsanto Oil Company has no objection to granting of a drilling permit at this location and does not object to the granting of a nonstandard unit as applied for.

Now, I might point out that Monsanto is the only company that has producing wells that are actually in the Upper and Lower Morrow. The other wells down there have been depleted. I would see no drainage and again there is no offset producers in the Upper and Lower Morrow other than Monsanto.

The second paragraph: In consideration of Monsanto Oil Company's waiver, Mewbourne Oil Company hereby waives objection to the granting of a drilling permit by Monsanto for approval of a nonstandard 320-acre spacing.

Now, this was intended for the east half of Section 12, so Monsanto, this was their request, that this waiver be set up in this manner to where we would not object to them. So they are apparently of the opinion that

there is a drillable location there and that that area is only draining approximately 320 acres, also.

Q With the exception of the waiver letters, Mr. Calvert, were the balance of the exhibits prepared by you or compiled under your direction and supervision?

A That is correct. I would like to -- we didn't discuss the waiver letter from Yates.

Q All right, sir, if you'll do that.

A Exhibit Eight is a waiver letter from Yates: Yates Petroleum Corporation has no objection to Mewbourne Oil Company's application for an unorthodox well location on the captioned acreage.

Yates has no production in the area and they offset us to the south.

Now, to answer your previous question, I either prepared the exhibits myself or had them prepared under my direction.

MR. KELLAHIN: We'd move the introduction of Mewbourne Exhibits One through Eight, Mr. Examiner.

MR. QUINTANA: Exhibits One through Eight will be entered as evidence.

Mr. Padilla, do you have questions of the witness?

MR. PADILLA: May I have a moment, Mr. Examiner?

MR. QUINTANA: You may.

CROSS EXAMINATION

BY MR. PADILLA:

Q Mr. Calvert, first let me refer to your Exhibit Number Seven, I believe, which is the mutual waiver between yourself -- your company and Monsanto Oil Company.

In that regard can you tell me whether Monsanto intends to drill the east half of Section 12 as a nonstandard proration unit?

A I have no idea.

Q Now, the east half of --

A Now your nonstandard, that would be 320 acres?

Q Correct.

A Okay. 320 acres is shown. I didn't mention it, but on -- on Exhibit Four, the heavily dashed lines that surround Sections 1, 6, 7, and 12 is known as the Monsanto Rock Tank Unit, and your question was were they intending to drill a substandard well in Section 12?

Q Nonstandard proration unit comprised of the east half of Section 12.

A That I do not know.

Q Did you obtain the consent of the co-owner of the west half of Section 12 or did you attempt to

obtain the waiver?

A I did not. I did not obtain a waiver. I cannot answer whether or not we attempted to or not. The waivers were handled by our land people and I can't answer that question.

Q Can you tell me what your primary objective is for the drilling of the well at your proposed location? Is that the Atoka?

A Our primary objective is the Lower Morrow.

Q But you'll test the Atoka and the Upper Morrow as well?

A Barely. Yeah, we'll be going through them. We'll have to test them.

Q What do you believe to be the drainage area of your well insofar as it may encroach upon the south half of Section 12?

A Well, I have drawn all of those as a radius of drainage and keeping the same scenario in mind, I have averaged the -- the five wells that's adjacent to Section 13. They average 228 acres and I haven't calculated an average area of drainage for 228 acres but it is going to go over onto the south half of Section 12; I don't know how much.

Q Well, would you anticipate your well to

be more like the Adobe Smith Federal No. 1 or the ARCO Smith No. 1 Well?

A Well, it would -- it would be more like the ARCO Smith Federal No. 1 in Section 13. Hopefully it would be. If it were no better than the Adobe, we wouldn't drill it.

Now, as I mentioned before, that is in a partially depleted area and I don't think it will produce as much as the ARCO Smith Federal but it should be an economic producer there.

Q Did you endeavor to form a 320-acre spacing unit of the west half of Section 13?

A The west half of Section 13. Well, again, I can't answer that question. Those things are handled by the land people and I can't answer that question.

Q Wouldn't a more logical location for your well be located at 660 from the west line and 1980 from the north line of Section 13?

A Would you repeat that now?

Q Wouldn't your proposed well location be more logical at 660 from the west line of Section 13 and 1980 from the north line of Section 13?

A Oh, no, I don't think it would be because, as I emphasized before, the Upper Morrow gets better the further you go to the northeast along the strike of the

-- of the same Upper -- Lower Morrow structure.

The Lower Morrow thickens in the northeasterly direction and for that reson we would want to move to the -- even though it looks like there's an open area down there that doesn't show any drainage -- we feel like the sand quality is better at the location than it is at 660 and 19 -- 660 from the west line and 1980 from the north line, as you suggested.

Q Well, let's just take the standard location, then, under the current pool rules of 1650 and 1650 from the west and north lines, where you'd really get approximately the same kind of circle as -- as the ARCO Smith Federal No. 1.

Wouldn't you get approximately the same -- same type of circle?

A Well, you possibly would but, as emphasized, our opinion is that the sand quality is going to be better the further north we go than it is at either the standard location or this location that you suggested.

Q Would you have any idea whether Mewbourne Oil Company would consent to a nonstandard proration unit of the west half of Section 12?

A Nonstandard location; I don't see that there's be any problem.

Like I say, that -- Gulf had the well

drilled in the west half of it. It is depleted and if the owners of the west half of Section 12 needed to protect their correlative rights I would see no problem there.

Q But the owner of the west half of Section 12 winds up sort of being squeezed out by virtue of the mutual consent between yourselves and Monsanto that you've given each other.

It appears that way. Don't you agree with that?

A Well, that still would not preclude the -- the owner of the west half to drill a well. We wouldn't object to it.

We feel like the drainage, as indicated, is less than 320 acres, and so if you have the west half, I have no objection to your draining -- drilling on the west half of Section 12.

Q Would you agree that possibly Monsanto would object to -- well, maybe -- strike that question.

Would your company have an objection to drilling a nonstandard proration unit comprising the west half of Section 12 with a nonstandard location 660 from the south line of the Section 12?

In other words, and offset to your proposed location, that 660 is from the south line of Section 12?

A No, I don't think we would. You're talking about somewhere along there 19 -- you're talking about 1980 and 660; 1980 from the west line?

Well, we would be 660 and so it would be 1320; however, that would put you closer to the Monsanto unit and they might have an objection to it.

That will put you at 330 feet from the west line of the Rock Tank Unit.

Q But in other words, you feel based upon what you've just now said, that I guess if you were 660 from the north line of Section 13 you couldn't really object to another well 660 from the south line of Section 12.

A No.

MR. PADILLA: We have no further questions, Mr. Examiner.

MR. QUINTANA: Are there any further questions of the witness?

Do I take it then, Mr. Padilla, that by you not having any more questions that you don't object to the location of the well?

MR. PADILLA: I didn't say that, Mr. Examiner.

MR. QUINTANA: Just checking. I have no further questions of the witness.

Is there anything further in

Case 8665?

If not, the witness may be excused.

Case 8665 will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

DOCKET MAILED

Date

I do hereby certify that the foregoing is a complete record of the proceedings in the examiner hearing of Case No. 8665 heard by me on July 31, 1985

Gilbert P. Quintana
Oil Conservation Division