

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

9 October 1985

EXAMINER HEARING

IN THE MATTER OF:

| | |
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| Application of Corinne Grace | CASE |
| for hardship gas well classifi- | 6717 |
| cation, Eddy County, New Mexico. | |

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

| | |
|-------------------|-------------------------------|
| For the Division: | Jeff Taylor |
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| | Legal Counsel to the Division |
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| | |
|--------------------|----------------------------|
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MR. QUINTANA: We'll call next
Case 8717.

MR. TAYLOR: The application of
Corinne Grace for hardship gas well classification, Eddy
County, New Mexico.

MR. PADILLA: Mr. Examiner,
Ernest L. Padilla, Santa Fe, New Mexico, for the applicant.

I have two witnesses who need
to be sworn.

MR. QUINTANA: Are there other
appearances in Case 8717?

If not, would you please remain
standing to be sworn in at this time.

(Witnesses sworn.)

MR. PADILLA: Mr. Miller, would
you take the stand?

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Miller, for the record would you please state your name and where you reside?

A Billy Miller, Carlsbad, New Mexico.

Q What is your connection with the applicant in this case?

A Production superintendent.

Q Are you familiar with the City of Carlsbad Well No. 1 located in Unit O of Section 25, Township 25 South, Range 26 East?

A Yes, sir.

Q Mr. Miller, have you prepared certain exhibits for introduction at this hearing?

A Yes, sir.

Q And what do those consist of?

A Historical well data.

Q Let me hand you what we have marked as Exhibit Number One and have you tell us what that is.

A That is the history of the well.

MR. QUINTANA: Excuse me, Mr. Padilla, if I may ask a question.

Has the witness testified in this hearing before and had his qualifications accepted by the Division?

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MR. PADILLA: I don't propose to offer him as an expert witness, Mr. Quintana, but I can. I can ask him what his qualifications are.

MR. TAYLOR: What's he going to testify to?

MR. PADILLA: History of the well; what's been done to the well.

MR. QUINTANA: Historical data. Fine. You may proceed.

Q Referring to Exhibit Number One, can you tell us what that is and what it contains?

A Yes, sir, it's pretty self-explanatory there. It's from the time I perforated the well to the -- through the month of September. It's the flow data, well-head pressure, flowing tubing pressure, the volume of production by the month.

Q Starting at the top of the page, first page, would you basically go through that and explain in particular the flowing pressure, what the pressures were at that time?

A At -- we perforated the well January 26th; had a flowing tubing pressure of 3900 psia, and we continued to flow it, flow to the pipeline at 3900 psia through February the 11th when we got our first pipeline shut-in demand.

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Q What pipeline is --

A TransWestern Pipeline.

Q When was the well shut in?

A February 11th, 10:00 a.m., flowing tubing pressure 3900 psia.

Q Does this exhibit contain the effective flowing tubing pressure as a result of the shut-ins?

A Yes, it does. It -- as time goes by it's indicative of production reports, the way they are. Curtailment continues to decrease the -- the flowing tubing pressure and increase the amount of fluid the well makes.

Q What efforts have been made to curtail the production on this well and at the same time continue or meet the pipeline requirements?

A Well, we run a minimum flow test three times.

Q When did you make those tests?

A April we had a minimum flow test; July; September.

Q Does this Exhibit Number One indicate what the results were?

A Yes, it does.

Q Where?

A In April we ran a minimum flow test and at the start of the month we had a flowing tubing pressure

1
2 of 3250 psia. End of the month it was 2950. And we --
3 average production, 505 Mcfd, and we lost -- we lost 300
4 pounds of flowing tubing pressure in an attempt to get a
5 minimum flow rate on the well.

6 Q Okay.

7 A In the month of July we ran another mini-
8 mum flow test and we started out in the months of May and
9 June and flowed the well at a sustained rate without -- a
10 stable rate without any shut-in, and in the month of July we
11 had 3550 psia, and we started cutting the well back and we
12 got down to 410 Mcfd and the flowing tubing pressure was
13 2450 psi, and we saw that we wasn't doing any good there, so
14 we opened the well up. It made 54 barrels of water and
15 flowing tubing pressure increased to 2800 pounds, and then
16 we got another demand to shut in.

17 And then at September, when these nomina-
18 tions came out for the amount of gas we could produce --

19 Q What nominations? When you're talking
20 about nominations, is that what TransWestern told you you
21 could produce?

22 A Yes, that's right.

23 Q Okay, go on.

24 A They gave us a request on this well and
25 in conjunction with TransWestern we changed the orifice
plate on this well in an attempt to flow the thing at a sus-

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tained minimum flow rate.

We had been using -- had a 1-3/8ths plate. We changed it to a 5/8ths plate and ran a minimum flow test at 150 and 250 Mcfd and the well died at both of those, and on the 10th, that was for four days, on the 10th of the month, of September, they agreed to change the plate back to a 1-3/8ths plate and we changed the plate back and opened the well up and we didn't have to use artificial means to kick it off; it did come on by itself.

And it seems to flow at a pretty sustained rate of about 750 Mcfd without any problem.

Q Let me show you what we have marked as Applicant's Exhibit Number Two and tell us what that is.

A That is TransWestern Pipeline's October request for production from this well at 47 Mcfd, a total of 1463 Mcf for the month.

Q 47 Mcf per day?

A 47 per day.

Q Will the well produce or try to produce 47 Mcf per day?

A Oh, it would not at a sustained rate, no. It will not.

Q Well, at 250 Mcf a day it watered out.

A That's right. That's right. The well died at 250 Mcfd.

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2 Q Did you try to go higher than 250 Mcf
3 trying to get a minimum flow rate?

4 A We've been all the way from 150 Mcfd all
5 the way up to a million and a half.

6 One month there we had it down to 410, in
7 July had it at 410, and we've gone from 150 all the way to
8 920 Mcf a day.

9 Q All right. Do you have anything further
10 to add to your testimony, Mr. Miller?

11 A No, sir.

12 MR. PADILLA: Pass the witness,
13 Mr. Examiner.

14 CROSS EXAMINATION

15 BY MR. QUINTANA:

16 Q On the first page of this exhibit, the
17 bottom paragraph, it says 15,138 Mmcf, is that 15,000 or is
18 that 15.138?

19 A That's 15 cubic feet for the month.

20 MR. QUINTANA: I have no
21 questions of the witness.

22 MR. PADILLA: Mr. McCoy.

23 WILLIAM G. MCCOY,
24 being called as a witness and being duly sworn upon his
25 oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. McCoy, would you please state your name and where you reside?

A William G. McCoy, Santa Fe, New Mexico.

Q What is your connection with the applicant in this case?

A I am a consulting engineer and geologist, retained by Mrs. Grace to present certain data on this case.

Q Have you previously testified before the Oil Conservation Division and had your credentials accepted as a matter of record?

A I have.

Q Are you -- have you familiarized yourself with and made a study of the City of Carlsbad Grace No. 1 well?

A I have.

Q Have you prepared certain exhibits for introduction here today?

A I have.

Q Let me hand you what we have marked as Exhibit Number One and have you tell the Examiner what that is and what it contains.

A Exhibit Number Three is a land plat show-

ing the location of the Corinne Grace No. 1 City of Carlsbad, the proration unit for the well outlined in red. The offsetting proration units are outlined in blue. The wells with the red symbol are Morrow producers. The two green symbols are Strawn producers, formerly Morrow, now producing from the Strawn.

Q Let me hand you what we have marked as Exhibit Number Four and tell us what that is.

A Exhibit Number Four is a wellbore schematic showing the condition of the hole. At the bottom in red are the current perforations being produced. The original perforations are now sealed off with a bridge plug at 11,500 feet.

Q Okay, let's go on to Exhibit Number Five and tell us what that is.

A Exhibit Number Five is a copy of the acoustic log on the well showing the, first of all, divisions in the Morrow that are present in the well. The current perforations outlined in red are in the basal Upper Morrow and in the A Sand.

The former perforations which are now abandoned are in the B Sand, which is the principal producing zone within the Carlsbad Morrow Field.

The significance of that is we're in a salvage proposition. The A Sand and stringers in the Upper

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2 Morrow are to be considered salvage zones within the Morrow
3 in the Carlsbad Field. They're not known as prolific pro-
4 ducers. We find that they tend to be tight and high water
5 saturations.

6 Q Okay. Let's go on to Exhibit Number Six
7 and tell us what that is.

8 A Exhibit Number Six is an estimate of the
9 reserve potential original gas in place. The factors were
10 determined, the porosity and water saturation, effective pay
11 were determined from logs and the initial bottom hole pres-
12 sure was estimated from the 3900 pound bottom hole shut-in
tubing pressure reflected on Exhibit One, I believe.

13 The balance of the calculations are stan-
14 dard calculations. I have calculated the reserves in Zone 1
15 and Zone 2, the two perforated zones shown in Exhibit Five.

16 It is my opinion that the estimated ori-
17 ginal gas in place is 2,295 MMCF.

18 MR. TAYLOR: Excuse me, maybe
19 you can explain for me, I'm confused between on Exhibit One,

--

20 A Exhibit One.

21 Q -- in the March thing it says there were
22 16.224 MMCF. In April there was 15,138 MMCF. Are those
23 consistent?

24 A Let's see, where's my -- this is -- let
25

1
2 we see the next exhibit.

3 In my Exhibit Seven, which will be the
4 next one, I have duplicated Mr. Miller's production figures,
5 days production MCF. That might clarify.

6 MR. TAYLOR: Okay, so that
7 should -- in March on his Exhibit One, that should not be
8 16,224 --

9 A Yes.

10 MR. TAYLOR: -- but it should
11 be 16,000 --

12 A Yes, 16,224, and that probably is a bet-
13 ter summary right here, it would probably get you to the
14 figures.

15 MR. QUINTANA: That also should
16 be 15,138 MCF instead of MMCF.

17 A Uh-huh.

18 MR. TAYLOR: Should all of
19 these just be MCF instead of MMCF throughout this Exhibit
20 One?

21 MR. PADILLA: Right, they
22 should.

23 MR. TAYLOR: I wondered.

24 MR. PADILLA: I got confused
25 just now.

Q So I think probably Exhibit Seven would

be a better reflection of those figures.

Q Okay, go ahead now and explain Exhibit Number Seven, since you have that.

A Exhibit Seven is a brief compilation of figures that Mr. Miller presented. I have put down the month, the production for the month, the days of actual production for the month, the calculated MCF per day rate, and the average flowing tubing pressure and the water production.

I think one, just looking at the figures here, we can start out and show we started out essentially with a 3900 psi flowing tubing pressure and we start and go down the list and we see that we drop to 3700 on, say, February; 3250 in March; 2950 in April.

Then we go on full month's production of 31 days in May and 30 days in June and see the pressure comes back up to 3500.

Then in July we start under curtailment. The pressure drops back down to 2800. August curtailment we drop down to 2600. I believe in the month of September the pressure went back up to 3050 after we eliminated a shut-down.

Second, trying to project the worst possible scenario, you see that from initial completion to September's last reported 3050 psi tubing pressure, we've lost

1 about 850 psi in our tubing pressure.

2 Our average daily rate was 3736 MCF per
3 day. Pressure loss per day, taking a pressure loss for the
4 February through September and dividing it by the producing
5 days of 188, we have 2800 psi, I mean a 4.52 psi loss per
6 day.

7 The abandonment pressure I just have as-
8 sumed from line pressure of 250 psi, which means we have at
9 the current rate 2800 psi remaining pressure.

10 Dividing the pressure loss per day into
11 that we come up with 619 days to abandonment, or 1.7 years.
12 Calculating the 619 days times 736 MCF per day, we have
13 455,584 MCF to be produced.

14 Adding that to the cumulative, we have
15 593,890 MCF possible recovery to abandonment.

16 If we take the previous estimated origi-
17 nal gas in place, we could project a potential loss of 1,701
18 MMCF.

19 MR. QUINTANA: Let me stop for
20 a quick question.

21 A Okay.

22 MR. QUINTANA: Are you assum-
23 ing a straight line pressure?

24 A Yes. I think the last exam, I just
25 graphically put it down, is saying that we should have in a

1 normal gas well a P/z plot, a straight line decline. This
2 is a lot of assumption because we actually don't have bottom
3 hole pressure data. We have only seven months production.
4 We really, we have to just make a lot of assumptions but
5 these are potentiails.

6 MR. QUINTANA: Thank you, I
7 wanted to clarify that.

8 Q Let me hand you your Exhibit Number Eight
9 and tell the Examiner what that is.

10 A Exhibit Number Eight is just a graphical
11 presentation of the previous data, starting at our initial
12 bottom hole pressure we calculated at 4896 psi, taking our
13 ultimate gas recovery, and drawing a straight line and say-
14 ing ideally, if we could do that, that's the line we should
15 follow.

16 Taking the present loss we have, or indi-
17 cative loss from the shut-in, and the ultimate recovery of
18 593 MMCF, shows the second line there, and so the differen-
19 tial between the two lines are the potential loss.

20 Q Mr. McCoy, what's the bottom line on this
21 -- in this thing if the well is not allowed to produce at or
22 about 731 MCF a day?

23 A Well, number one, I think we can fairly
24 well establish that we will have a loss. The degree of loss
25 I cannot state with any certainty, but the well being lo-

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2 cated on the west flank of the field, the main zone being
3 abandoned, being in the secondary zone without the reservoir
4 qualities of the main Morrow pay, any curtailment will tend
5 to increase water production.

6 The second zone on the analysis shows 45
7 percent water saturation. We would tend to produce more
8 water over a period of time. Curtailment, shutting in the
9 well, will cause the water to go back into the formation,
10 settle in it, and it's pretty well known that water damages
the Morrow formation.

11 Q In what way?

12 A In the swelling of the clays. It's crit-
13 ical in the Morrow formation that the clays be treated pro-
14 perly and that water not be placed into the formation in
15 treating or in subsequent production to remove that water as
soon as possible.

16 Q Could we go so far as to say that waste
17 would occur if this well is not allowed to produce at a --
18 well, 731 MCF?

19 A I would say that curtailment, shut-in,
20 would cause damage and create waste.

21 Q Do you have anything further to add to
22 your testimony?

23 A I do not.

24 MR. PADILLA: Mr. Examiner, we
25

pass the witness and move the introduction of Exhibits One through Eight.

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

CROSS EXAMINATION

BY MR. QUINTANA:

Q Mr. McCoy, is it your testimony that you are recommending the minimum flow rate of 731 MCF?

A We, with Mr. Miller we have concluded 750 in round figures would be the best minimal flow rate.

Q That is based on the minimum flow rate test that was run on the well --

A Yes, it was.

Q -- from April 1st through April 30th, 1985.

A Yes, sir.

Q Mr. McCoy, are you aware of any operations that Corinne Grace had done to try to increase the production of the well through changing of equipment, for example, and changing out the tubing to a larger size of tubing, or whatever other means that may be necessary to increase production and taking water -- I mean, not increase the size of tubing -- decrease the size of tubing or whatever means would be necessary to take that water out of the

1 well?

2 A Well, that has been looked at. In fact,
3 I have made some minimum flow calculations, but when you
4 start changing the size of the tubing, for instance, if you
5 use Turner's equation on 2-3/8ths tubing at the present
6 time, we're looking at 1.755 MCF -- well, 1,000,755 MCF per
7 day minimum flow rate to remove water.

8 we can reduce that to 485,000 by going to
9 one inch tubing but it is my opinion I would not want to run
10 one inch tubing down to 11,300 feet.

11 I have these calculations if you'd like a
12 copy.

13 Q Yes, I'd like you to enter those as an
14 exhibit.

15 MR. PADILLA: We'll mark it as
16 Exhibit Number Nine.

17 A Secondly, I had looked at the potential
18 of possibly putting a pumping unit on it, but there again,
19 if we do do that, we're talking about the rough figure of
20 \$75-to-\$90,000 additional cost to the well. With this type
21 reservoir, the characteristics we see in this reservoir,
22 being a salvage type operation, I don't think that cost
23 would be justified.

24 MR. QUINTANA: I might make a
25 statement for you.

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2 The reason I asked for these
3 exhibits and would like them tendered is because -- and this
4 goes for everybody else who's listening now -- any time that
5 we have a hardship gas well case, with the way the gas mar-
6 ket is at this time you are depriving somebody else of en-
7 tering into the gas pipeline and selling their gas, and you
8 are asking to put your gas well on line continually. So
9 it's very critical for me as an examiner, and for any other
10 examiner, that we back ourselves up in our justification of
allowing people to stay on line.

11 And that includes any type of
12 -- or anything that can be done to take this water out of
13 the well without having to keep it on continually.

14 A Uh-huh.

15 MR. QUINTANA: And in this
16 case, you know, economic considerations are taken into ac-
17 count, also, and that is the reason I asked these to be sub-
18 mitted and I made this statement so -- because there's a lot
19 of other people listening here and so they can know what we
look for in the future on some gas well cases.

20 A That's why I prepared it, in case you
21 asked me.

22 MR. QUINTANA: Mr. Catanach has
23 a question also.

24 A All right.
25

QUESTIONS BY MR. CATANACH:

Q Mr. McCoy, do you know where the water is coming from?

A I've assumed, based on the water analysis, to go back to, let's see, what exhibit is that?

Well, let's look at the log. The probable water is coming from the basal A Sand. The water saturation calculated 45 percent, so it would be anticipated that it would come from that zone.

The upper zone, the basal Morrow, calculated 20 percent, which is highly unusual to have a water saturation involved that low and the inference being that it's probably a tight formation. So the likelihood of the water coming from that zone would be less than the lower zone. So it would be coming from the lower set of perforations.

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

If not, you may be excused.

Is there anything further in Case 8718?

Case 8718 will be taken under advisement.

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Oh, excuse me, excuse me.
8717, excuse me. Case 8717 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

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 877,
heard by me on October 9, 1985.

David Cotnam, Examiner
Oil Conservation Division