

1  
2 STATE OF NEW MEXICO  
3 ENERGY AND MINERALS DEPT.  
4 OIL CONSERVATION DIVISION  
5 STATE LAND OFFICE BLDG.  
6 SANTA FE, NEW MEXICO  
7 8 June 1983

8 EXAMINER HEARING

9 IN THE MATTER OF:

10 Application of Jerome P. McHugh for down-  
11 hole commingling, Rio Arriba County, New  
12 Mexico.

CASE  
7896

13 BEFORE: Michael E. Stogner, Examiner

14 TRANSCRIPT OF HEARING

15 A P P E A R A N C E S

16 For the Division:

17 W. Perry Pearce, Esq.  
18 Legal Counsel to the  
19 Division  
20 State Land Office Bldg.  
Santa Fe, New Mexico

21 For the Applicant:

22 Tommy Roberts, Esq.  
23 Post Office Box 208  
24 Farmington, New Mexico  
25

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

2

I N D E X

JOHN D. ROE

Direct Examination by Mr. ROberts	3
Cross Examination by Mr. Stogner	17

E X H I B I T S

Applicant Exhibit One, Plat	5
Applicant Exhibit Two, Map	5
Applicant Exhibit Three, Log Section	7
Applicant Exhibit Four, Log Section	8
Applicant Exhibit Five, Daily Reports	9
Applicant Exhibit Six, Plots	13

1  
2 MR. STOGNER: The hearing will re-  
3 sume to order. We'll call next Case No. 7896.

4 MR. PEARCE: That case is in the  
5 matter of a hearing called on the application of Jerome P.  
6 McHugh for down hole comingling, Rio Arriba County, New  
7 Mexico.

8 MR. ROBERTS: Mr. Examiner, my  
9 name is Tommy Roberts. I'm general counsel for Dugan Pro-  
10 duction Corporation, appearing on behalf of the applicant,  
11 Jerome P. McHugh. My address is P. O. Box 208, Farmington,  
12 New Mexico 87499. I have one witness to be sworn.

13 MR. STOGNER: Are there other  
14 appearances in this matter?

15  
16 (Witness sworn.)

17  
18 JOHN D. ROE,  
19 being called as a witness and being duly sworn upon his oath  
20 testified as follows, to-wit:

21  
22 DIRECT EXAMINATION

23 BY MR. ROBERTS:

24 Q Would you state your name, your place of  
25 residence, and your occupation for the record, please?

1  
2 A. My name is John Roe. I'm a petroleum  
3 engineer. I work for Dugan Production in Farmington, New  
4 Mexico.

5 Q. What is your relationship to the applicant?

6 A. Dugan Production serves as operating agent  
7 for Jerome P. Mchugh.

8 Q. Have you previously testified before the  
9 New Mexico Oil Conservation Division?

10 A. Yes, I have.

11 Q. Are you familiar with the application of  
12 Jerome P. McHugh which is before the Commission today?

13 A. Yes.

14 MR. ROBERTS: Mr. Examiner, Are  
15 Mr. Roe's qualifications as an expert in the field of  
16 petroleum engineering a matter of record and acceptable?

17 MR. STOGNER: He is.

18 Q. Would you briefly state the purpose of this  
19 application, please?

20 A. Okay. We're making application to obtain  
21 permission to comingle production within the wellbore from  
22 the Gallup formation and the Dakota formation, within the  
23 wellbore of the Janet No. 2, operated by Jerome P. McHugh,  
24 which is located in Unit I of Section 21, Township 25 North,  
25 Range 2 West.

1  
2 Q. Mr. Roe, would you refer to what's been  
3 marked as Exhibit No. 1 and identify the exhibit and explain  
4 its significance to this application?

5 A. Exhibit No. 1 is a sketch of the subject  
6 well, which is located, as I mentioned earlier, in Unit I  
7 of Section 21, and it presents the lease position within  
8 Section 21, and of the acreage immediately adjacent to the  
9 subject well. We're basically asking permission to comingle  
10 the 40-acre proration unit, which is identified as the north-  
11 east of the southeast quarter of Section 21. It's undesignated  
12 Gallup and the Dakota proration unit, which comprises the  
13 the south half of Section 21.

14 Q. Is the well location a standard location?

15 A. Yes, it is.

16 Q. Okay, Mr. Roe, would you refer now to  
17 what's been marked as Exhibit No. 2 and identify that exhibit  
18 and explain its significance?

19 A. Okay. Exhibit No. 2 is a small scale map  
20 that is intended to show a large area around the subject well,  
21 the emphasis being to show where Dakota and Gallup production  
22 exists, where the Dakota and Gallup is currently authorized  
23 for down hole comingling, and also to indicate that the  
24 subject well is very remote with respect to established  
25 production. Indicated on Exhibit No. 2, outlined in orange,

1  
2 is the unit boundaries of the West Lindrith Gallup-Dakota  
3 Pool, where it is authorized to comingle Gallup and Dakota.  
4 Outlined in the purple is the unit boundaries of the Ojito  
5 Gallup-Dakota Pool which also authorizes down hole comingling.

6 In addition to these two pools, we've in-  
7 dicated in purple several wells that have been previously  
8 for down hole comingling of the Gallup and Dakota.

9 Indicated in green would be the wells that are c  
10 are currently producing from the Dakota formation. Indicated  
11 in blue are wells that are currently completed in the Gallup  
12 formation. There are several wells that are also dually  
13 completed Gallup-Dakota production.

14 I might call your attention to the fact  
15 that the well in Section 21, the Janet No. 2, is the closest  
16 production of any duration, would be 6-1/4 miles away. And  
17 that would be to the northeast in the West Puerto Chiquito  
18 Field. To the southeast, or southwest, we have the West  
19 Lindrith Field 8-1/4 miles away, and 6-3/4 miles basically  
20 west of the Ojito Gallup.

21 Q. Mr. Roe, what on this legend does the  
22 black dot indicate?

23 A. The black dot indicates wells that have  
24 been plugged, that were plugged as either--at the economic  
25 limit Gallup or Dakota, or as a dry hole Gallup or Dakota

1  
2 test.

3 Q Mr. Roe, would you refer to the same exhibit  
4 Exhibit No. 2, and direct your attention to the northeast  
5 quarter of Section 27, of 25 North 2 West, which identifies  
6 the well by name that is marked there.

7 A Okay. That is the Janet No. 1, which is  
8 located in the northeast quarter of the northeast quarter of  
9 Section 27. We've identified it with a purple dot, which  
10 is an indication that we have received permission to comingle  
11 the Gallup and Dakota formations within the wellbore. That  
12 was under Order No. R-7259. I might point out that the Janet  
13 No. 1 and the well immediately to the east of that, which  
14 would be a well operated by Northwest Exploration, the  
15 Gavilan No. 1, they are both Gallup-Dakota tests, but I  
16 basically--they are so new, the Janet No. 1 has no production  
17 history because we've just completed it, the Gavilan No. 1  
18 has roughly a year's worth of production history from the  
19 Gallup only. The Dakota is not produced in the Gavilan No. 1.

20 This is an area that is recently being de-  
21 veloped and the Janet No. 2 is the second well we've drilled  
22 in this area.

23 Q Okay, please refer to Exhibit No. 3 and  
24 identify that exhibit.

25 A Okay. Exhibit No. 3 is a log cross section

1  
2 of the open hole induction electric log through the Gallup  
3 interval. I've indicated the top of the Gallup at 6650.  
4 Our top perforation is at 6657. Our bottom perforation is  
5 at 7055, and throughout this 398 foot gross interval we have  
6 shot 27 perforations. We feel we've developed 53 feet of  
7 pay, with an average porosity of 10.1%, and average water  
8 saturation of 40%.

9 We use this exhibit to present the fact  
10 that we feel that we've made an effort to attempt--attempt  
11 to complete and stimulate all production potential that exists  
12 within the Gallup formation at this location.

13 Q. Refer to exhibit No. 4 and identify that  
14 exhibit.

15 A. Okay. This is the same open hole log  
16 cross--or section through the Dakota formation. It's the  
17 original induction electric log run in open hole. The top  
18 of the Dakota is located at 7736. Our top perforation is at  
19 7841. Our bottom perforation is at 7994. We've perforated  
20 the gross interval of 153 feet. There's six separate inter-  
21 val within this overall interval. We've shot thirteen holes  
22 and feel we've developed 18 feet of pay with an average por-  
23 osity of 10%, and water saturation of 40%.

24 We use this exhibit to indicate that we've  
25 developed what we feel to be all potential that exists

1  
2 within the Dakota formation. There is one little interval  
3 of curiosity there at 7950; however, the porosity logs suggest  
4 that that's a very low porous interval and the computation of  
5 saturation there would indicate that is 75% water. So even  
6 though the resistivity is very high it's--it's due to the  
7 low porosity.

8 Q Refer to Exhibit No. 5 and identify that  
9 exhibit and briefly summarize its contents.

10 A Okay. Exhibit No. 5 is a copy of the daily  
11 reports of operations on the Janet No. 2 from the day we  
12 spudded it on March 31, 1983. It carries it through the  
13 current status of the well. We reached TD on the Janet No. 2  
14 on April 22nd. We ran and cemented 4-1/2 inch casing at  
15 8057 in three stages. We perforated the Dakota on May 6th.  
16 This interval that we perforated was presented on Exhibit No.  
17 4 and we stimulated the Dakota with 36,000 pounds of 20-40  
18 sand and 19,000 gallons of jelled water. We then perforated  
19 the Gallup, as I've indicated on Exhibit No. 3, and fracture  
20 stimulated that with 81,000 pounds of 20-40 sand 59,260  
21 gallons of slick water. We commenced testing the well on  
22 May 10 and there is test data presented through June 3rd.  
23 We swabbed on the well a total of twelve days and at the end  
24 of that--the test that's presented on June 3rd, through that,  
25 we have recovered 138 barrels of oil, 1260 barrels of water.

1  
2 That 1260 barrels of water represents 51 percent of our load  
3 water that we used in stimulating the well.

4 The well is -- appeared -- we have been  
5 able to get it to flow intermittently. It is -- the pro-  
6 ductivity is not as good as the Janet No. 1, which during  
7 the same twelve day period, we were able to get it to flow  
8 with a sustained rate.

9 Using the data that's presented, and the  
10 data that we have from the Janet No. 1, even though we didn't  
11 actually test a daily rate on the well, we would predict that  
12 this well will have an initial potential of 87 barrels a day,  
13 and have a GOR of 2300. Again, a lot of this was drawing  
14 an analogy between this -- between how this well has performed  
15 during our -- our initial completion, and drawing an analogy  
16 to the Janet No. 1, which is a mile and a quarter away.

17 Q. What is the current status of the well?

18 A. The Janet No. 2 is currently shut-in pending  
19 the authorization to commingle the Gallup and Dakota.

20 Q. Have you measured bottom hole pressure  
21 from each of the zones in the well?

22 A. We haven't actually measured the bottom  
23 hole pressure directly with a pressure bomb. During our  
24 twelve days of swabbing we on several occasions were able to  
25 calculate what the bottom hole pressure would be utilizing

1  
2 a fluid level. We do, however, have some very good pressure  
3 data from the Gavilan No. 1, which is a reasonable -- is in  
4 the immediate area. Pressure build-up, 132-hour pressure  
5 build-up, taken in the Dakota formation at the Gavilan No. 1,  
6 indicated the bottom hole pressure of 2605 psi at mid-perf in  
7 our well of 7918.

8 The pressure in the Gallup from 169-hour  
9 pressure build-up was determined to be 1583 psi at mid-perf  
10 in our well of 6856.

11 Q. Mr. Roe, would it be reasonable to expect  
12 that the bottom hole pressures would be similar in the Janet  
13 No. 2 Well?

14 A. Yes, these -- both wells are located in an  
15 area of -- that there has been no production, so any pressure  
16 depletion by production is not a possibility. They are  
17 located similarly in depth and there are also logged sections  
18 from each well, which are very similar.

19 Q. And based upon your knowledge of the entire  
20 area, would these be typical bottom hole pressures?

21 A. Yes, these are typical and they're all  
22 right in line with what we would calculate from our testing  
23 in the Janet No. 2.

24 Q. In your opinion does the disparity in pres-  
25 sures of the zones to be commingled create any danger of

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

cross flow?

A. No, the indicated productivity -- well, the pressures are within what is permitted of the guidelines and, also, the indicated productivity of our data to date would suggest that permeability of either zone would also retard any cross flow if it was ever to be a possible problem.

Q. Do you expect the fluids that would be produced from each zone to be compatible with each other?

A. Yes. Both zones are productive of similar qualities of oil and gas.

Q. Mr. Roe, now refer to Exhibit Number Six and identify the exhibit and explain its significance to the application.

A. Okay. Exhibit Number Six is -- it consists of four pages, and what I've attempted to do here, because we're in an area where there is no production performance in the immediate vicinity, I've taken six wells from the general area trying to get as close as I can to the subject well.

These wells, these six wells, there's two in the Ojito Gallup-Dakota Pool and four in the West Lindrith Gallup-Dakota Pool. These six wells are indicated in the circle on Exhibit Number Two.

Utilizing these six wells on the second page and the lefthand portion of the first page, I've actually

1  
2 plotted the oil production and then gas/Oil ratio history of  
3 these wells, indicating up to eight years of history.

4 In the righthand portion of the first page  
5 of Exhibit Number One I've taken all six wells and normalized  
6 them from year one to get what would appear -- or my efforts  
7 were to establish, if you put six wells on a graph what would  
8 they look like, trying to decide what would be a typical  
9 Gallup-Dakota commingled well. This is presented, as I said,  
10 on the righthand portion of page number one and on that I've  
11 also indicated the -- our predicted future production for the  
12 Janet No. 2 in the heavy, solid line. We would anticipate  
13 that the initial rate would be 36-1/2 barrels of oil per day.  
14 This is a number that I arrived at using some data that's  
15 presented on the third page of Exhibit Number Six, which is  
16 a summary of the production characteristics of the six wells  
17 which we've referenced on Exhibit Number Two, and using these  
18 six wells, we find that we can estimate what the initial  
19 potential would be the first real months of production is  
20 approximately 42 percent of that IP. Using that is how we  
21 arrived at the 36-1/2 barrels a day.

22 Utilizing the six wells as a guideline we  
23 use a 40 percent annual decline rate for three and a half  
24 years, at which time the production would stabilize at nine  
25 percent.

1  
2 This production forecast would generate a  
3 reserve figure that is very close to what we'd calculate  
4 volumetrically, and it gives us a fairly good confidence in  
5 that reserve number.

6 Also presented on page one of the Exhibit  
7 Number Six in the dashed line would be the -- the heavy dashed  
8 line, is the production forecast that we had made previously  
9 for the Janet No. 1, and as you can see, we're anticipating  
10 the production from the Janet No. 2 will not be of the same  
11 magnitude.

12 Q Mr. Roe, have you arrived at an allocation  
13 formula and if so, what factors have you used to arrive at  
14 that formula?

15 A Okay. I utilized in reserves that we would  
16 calculate for each zone, we anticipate that the Gallup this  
17 wellbore will recover 35,600 barrels of oil and will represent  
18 75 percent of the ultimate recovery; the Dakota ultimate re-  
19 covery of oil will be 12,000 barrels and representing 25 per-  
20 cent of the total of 47,600 barrels of oil.

21 I want to call your attention to the fact  
22 that of the six wells that I've taken a look at, 47,000 bar-  
23 rels of oil is approximately what I would consider to be the  
24 average of the six wells.

25 For gas, the Gallup we would predict an

1  
2 ultimate recovery of 363.1 million, which would represent  
3 90 percent of the total recovery; the Dakota we would predict  
4 ultimate recovery of 42 million, which would represent 10 per-  
5 cent of the total 405.1 million cubic feet to be produced  
6 from this well.

7 Q Mr. Roe, let me summarize that, then, and  
8 tell me if I'm correct in the summary, that you would propose  
9 to allocate 75 percent of the oil production to the Gallup  
10 formation and 25 percent of the oil production to the Dakota  
11 formation, and 90 percent of the gas production to the Gallup  
12 formation and 10 percent of the gas to the Dakota formation.

13 A That's correct, yes.

14 Q Mr. Roe, is the ownership of these zones  
15 common?

16 A The ownership is not common from the stand-  
17 point that we've got a 40-acre unit in the Gallup and we've  
18 got a 320-acre unit in the Dakota, and the lease ownership  
19 within the 40-acre unit and 320-acre unit is not all inclusive.  
20 In other words, it's not all common.

21 Q In your opinion is the -- or does the pro-  
22 posed allocation adequately protect all owners of a revenue  
23 interest in this well?

24 A Yes, it does.

25 Q MR. Roe, I assume that the gist of your

1  
2 testimony is that there are economic considerations behind this  
3 application. Would you elaborate a little bit upon those  
4 considerations?

5 A. Yes. These wells being roughly 8000 feet  
6 in depth are approximately \$450,000 to drill. We do not  
7 feel that there is an adequate volume of reserves or especially  
8 the initial rate from either the Dakota or the Gallup singly  
9 to justify the expenditure to drill a well and an expenditure  
10 to operate the well, so we feel that the commingling of both  
11 zones within the wellbore would permit reasonable economics  
12 to justify the expenditure to drill and operate the well.

13 Q. Are we dealing with fluid sensitive sands  
14 in these formations which may be subject to damage from water  
15 or other produced liquids?

16 A. No, both zones were stimulated with water-  
17 based fluid.

18 Q. In your opinion will the commingling of  
19 production in the wellbore of this well result in the production  
20 of additional hydrocarbons and be in the interests of conser-  
21 vation, best interests of conservation, the prevention of  
22 waste, and the protection of correlative rights?

23 A. Yes.

24 Q. Were Exhibits One through Six either pre-  
25 pared by you or at your direction and under your supervision?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A. Yes, they were.

MR. ROBERTS: We'd move that Exhibits One through Six be admitted into the record.

MR. STOGNER: Exhibits One through Six will be admitted.

MR. ROBERTS: And I have no other questions.

CROSS EXAMINATION

BY MR. STOGNER:

Q. Mr. Roe, historically in the area for the Gallup, how long before a beam pump is put on these wells?

A. If the well will flow, I can't give you a time frame, but we would like it to flow as long as possible in order to just maximize the economic picture of the well, because they aren't what I would consider to be real prolific -- they're definitely not prolific producers. The economics are good. We would expect to have to install artificial lift equipment in the Janet No. 2 probably very shortly after we place it on production just based upon the results we've seen in our first two weeks of efforts to get the well to flow. It has not flowed under sustained conditions, and so we'll have to probably install artificial lift equipment fairly early in this well.



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

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 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. 7896, heard by me on June 8 1983.

Michael E. Stoenner, Examiner  
Oil Conservation Division

SALLY W. BOYD, C.S.R.  
Rt. 191-B  
Santa Fe, New Mexico 87501  
Phone (505) 453-7409