

BEFORE THE  
OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico

November 29, 1961

EXAMINER HEARING

FARMINGTON, N. M.  
PHONE 325-1182

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.  
PHONE 243-6691

IN THE MATTER OF:

Application of Southwest Production Company  
for an order extending the Flora Vista-  
Mesaverde Pool, San Juan County, New Mexico,  
and establishing special rules and regula-  
tions in said pool. Applicant, in the above-  
styled cause, seeks an order extending the  
Flora Vista-Mesaverde Pool to include Sec-  
tions 22, 23, 26 and 27, all in Township  
30 North, Range 12 West, San Juan County,  
New Mexico, and establishing special rules  
and regulations including a provision for  
320-acre spacing units in said pool.

CASE NO. 2445

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

EXAMINER NUTTER: The Hearing will come to order, please.

We will call Case No. 2445.

MR. WHITFIELD: Application of Southwest Production  
Company for an order extending the Flora Vista-Mesaverde Pool,  
San Juan County, New Mexico, and establishing special rules and  
regulations in said pool.

MR. VERITY: George L. Verity, Verity, Burr and Cooley,  
Farmington, representing the Applicant. We have one witness,  
Mr. Leon Wiederkehr.



(Witness sworn.)

MR. VERITY: This is an application for spacing on the Flora Vista-Mesaverde formation. We are requesting 320-acre spacing with regard to the proration unit.

LEON WIEDERKEHR,

called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. VERITY:

Q Will you please state your name?

A Leon Wiederkehr.

Q Mr. Wiederkehr, have you testified before this Commission heretofore as an expert oil and gas proration reservoir engineer?

A Yes, sir, I have.

Q I believe you have a degree in physics?

A That's right.

Q And you are familiar with the reservoir and oil-gas characteristics of the Flora Vista-Mesaverde oil-gas pool in San Juan County, New Mexico?

A Yes, sir.

Q Have you studied the logs and the geological information in Section 22, 23, 26 and 27 of Township 30 North, Range 12 West?

A Yes, sir, I have.

Q Have you familiarized yourself with the Mesa Verde

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formation underlying those four sections?

A Yes, sir.

Q Do you have an opinion as to whether or not the Mesa-verde formation does underlie those entire four sections?

A I believe it does.

Q Do you think that it will be productive underlying the entire four sections?

A Yes, sir, I do.

(Applicant's Exhibits 1, 2,  
and 3 marked.)

Q (by Mr. Verity) Mr. Wiederkehr, I hand you what the reporter has marked Exhibit 1. Will you tell us what it is, please.

A This is a plat, showing the four sections concerned in this application, Sections 22, 23, 26 and 27, Township 30 North, Range 12 West. It shows the Mesaverde wells in this pool and also the Dakota wells. Also, it indicates on the bottom, the one dual Mesaverde well.

Q Which is the dualled well?

A The well in Section 27, the Pan American **Stedje # 1**

Q I notice you have circle marks drawn on here. What was the purpose of those marks upon Exhibit 1?

A The circles drawn around the **G. J. Glen Turner No. 1**, the Turner-Osborne well in the pool, using a radius through the Pan American **Stedje** well, which is approximately --

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Q Without going into them in detail at this time, were they drawn on the exhibit for the purpose of showing drainage areas?

A Yes.

Q Do you have information which will be presented that demonstrates why you have this much drainage?

A Yes. We have pressure information that I will present.

Q I hand you now what the reporter has marked as Exhibit 2. Will you please tell us what it is?

A This is a graph plotting our pressure decline, pressure against time, using initial shut-in pressures from drillstem tests on the wells shown on this plat in the Flora Vista-Mesa-verde pool. The dotted line suggests pressure decline with time. The key at the bottom of the map identifies each of these wells and gives the initial shut-in pressure as recorded on drillstem tests on each of these wells.

Q Is there anything peculiar about this pool with regard to how many of the wells are producing in it?

A There is only one well producing in it.

Q Although there have been how many wells completed?

A There have been seven wells completed in these four sections. Only six of them are shown. The seventh one was a recompletion from a Dakota well and the information is not available. The bottomhole pressure information was not available to me.



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Q You have only one well completed in the pool?

A That is correct, up to the end of September. We may have had some completed since September, but I don't have any information on that.

Q I notice on the lefthand side of your graph you have numbers. What do these represent?

A Those are pressures.

Q On the bottom of your graph running toward the right, you have months to designate time of completion.

A Time of drillstem test pressure which we used in this graph.

Q Do you have any comments to make with regard to the pressure taken in the No. 1 Glen Turner well?

A When it was drilled, it blew out and was out of control for some two days, topping up and around in an abandoned well, blowing through a seven-inch line. It was two days before it was controlled. Then this drillstem test was run and recorded a bottomhole pressure of 1535 pounds. We think it's a safe assumption that if the virgin pressure had been recovered before this blowout, this pressure would have been higher.

Q Although you couldn't predict it, you think it probably would have been above the decline you have drawn on Exhibit 2?

A It would have been, yes. Well No. 2 was tested some three or four months later about a mile and a half away and recorded a higher bottomhole pressure than this discovery well which



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blew out. Consequently, we had a chance to lower the bottomhole pressure at the bore hole. I think it did reduce then that initial shut-in pressure on drillstem test.

Q I notice that the wells you have designated as 3, 4, 5 and 6 are all considerably lower in initial pressure than the first two wells.

A That is correct.

Q What is the amount of decline in the initial pressure in the later wells than you found in the original well, the J. Glen Turner?

A We recorded 1535 from this drillstem test. These subsequent wells were drillstem tested in September and October and show a drop in bottomhole pressure of, well, in the neighborhood of 50 pounds.

Q With only one well in the pool producing, that being the J. Glen Turner well, how do you account for the lower production in the other four wells when it's in the same common source of supply?

A You use the word "production". I believe that the Glen Turner is the only one that has been on production. Would you re-state your question please?

Q How do you account for the fact that wells that were brought in September and October have a lower bottomhole pressure than the J. Glen Turner and the Southwest Production Company Well No. 1, the Smith well?



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A The Smith well was tested before the Turner well. In May the Glen Turner well went on production and has produced quite prolifically. I feel that production from the Glen Turner well has reduced the reservoir pressure throughout the field and that accounts for these lower bottomhole pressures, shut-in pressures on these succeeding wells which were tested after the Glen Turner well had been on production from the first of May.

Q Would you anticipate if the virgin reservoir pressure were tested on each of these six wells that it would be the same or very close to the same if there had been no production from the pool?

A I should think it would have been the same. I think we have been able to establish continuity across, between these wells. They have all been set up as a Flora Vista-Mesaverde pool by previous order of the Commission.

Q I hand you now what the reporter has marked Exhibit 3. Will you tell us what it is, please?

A This is the bottomhole pressure survey run on our Hewlett Smith just two days ago, on the 27th of November.

Q Now, is this the well that you have on Exhibit 2 as Well No. 2 that you completed in the month of April?

A Yes.

Q Will you tell us, please, what the bottomhole pressure of this well was and relate it to the initial bottomhole pressure of the well?



A Let's go back to April when this Hewlett Smith well was drillstem tested. We recorded a bottomhole pressure of 1570 pounds. The well was then tested and cleaned but never produced. It then had been shut-in from April, has been shut-in since April. Some seven months later, this bottomhole pressure, which is Exhibit 3, was taken and we recorded a bottomhole pressure of 1540 pounds, showing a decline over that seven-month period of 30 pounds, though the well had never gone into production. It had only been tested.

Q Do you have an opinion as to whether or not that demonstrates that the J. Glen Turner No. 1, the Osborne well is draining gas from under the Southwest Production Smith Well No. 1?

A I feel it is reducing the pressure on over in the Hewlett. I think that's the only explanation for the 30-pound decline in pressure, since the Hewlett Smith has never been produced.

Q What is the distance from the J. Glen Turner to Southwest Production's Hewlett Smith?

A 7700 feet.

Q What is the distance between the J. Glen Turner well and the well stake?

A Approximately 2600 feet.

Q What do these declining pressures and drainage radii show you with regard to the area that one well in this pool will





effectively drain?

A The completed circle drawn around the Osborne, the at the radius, shows some 40 pounds lower bottomhole pressure in the **Stedje** as compared to the Glen Turner-Osborne.

Q And what is the area encompassed within a circle with that radius with the J. Glen Turner well?

A Approximately 500 acres.

Q What area would be drained with the radii between the Turner well and Southwest Production Company's No. 1 Smith?

A It would be more than four square miles. The circle is in the neighborhood of six square miles, as a matter of fact.

Q Would you say, then, that one well to each 320 would definitely drain the gas from under this pool?

A I would say it would adequately drain the gas from there.

Q Mr. Wiederkehr, do you know the approximate cost of drilling and completing a well to the Mesaverde formation in this pool?

A We experienced some \$60,000 on the Hewlett Smith No. 1.

Q Have you made any study with regard to reservoir recoveries that might be expected in the average well in this pool?

A The sand thickness varies between wells. I have come up with a return of three-to-one with wells drilled on 320 acres.

Q What return would this give you if only 160-acre spacing were used in accord with general orders?

A Well, that would cut the return down to one and a half,

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which, extended over a period, would look somewhat uneconomical.

Q Do you think it is economic to develop on 320-acre spacing?

A Yes.

Q But not on 160?

A That's correct.

Q Do you have any recommendations to make to the Commission with regard to how sections be divided if they enter a 320-acre spacing order?

A In view of the wells that are already drilled, I think it would be wise to leave it to the operators' choice to dedicate either the east unit or west unit or north unit or south unit.

Q In other words, to allow the operators in each section to determine whether they divide it with a line running north-south through the center section or line running east-west?

A Yes. I think it should be left to the operators' choice.

Q Do you have any recommendation to make to the Commission with regard to a spacing pattern if they okay a 320-acre spacing?

A I think the rules applicable to other wells of the Mesaverde or Dakota spacing from the lease line should follow the space-wide pattern.

Q Do I understand that to mean that you feel the well operator should be allowed to drill any place in these 320-acre spaces so long as they comply with general Commission orders re-



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garding spacing from lease lines?

A That is correct.

MR. VERITY: We offer Exhibit 1, 2, and 3 in evidence.

EXAMINER NUTTER: Southwest Production Company Exhibits 1, 2, and 3 will be admitted in evidence.

MR. VERITY: I believe that's all.

EXAMINER NUTTER: Are there any questions of Mr. Wiederkehr?

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Wiederkehr, I realize that the Commission has established Flora Vista-Mesaverde as a separate pool. Do you feel the possibility exists that it could eventually become joined with the Blanco-Mesaverde?

A No, sir. I do not feel that at all.

Q Then, you see no danger in establishing special rules and regulations for this pool that would be different from those of the Blanco-Mesaverde?

A If you are speaking in terms of drilling in the North-east and Southwest quarters -- is that it?

Q That's part of it, yes, sir.

A The wells already drilled would conflict with such a pattern as that.

Q Some of them would require exceptions, anyway?

A Yes, sir.



MR. VERITY: We feel this spacing would promote the greatest ultimate recovery if it was permitted.

Q (by Mr. Morris) You state it to be your opinion that you believe that the 320-acre proration units in this pool would be sufficient to efficiently and economically drain, be drained and developed by one well on each proration unit of that size?

A Yes, sir. I think we have established that the Glen Turner-Osborne well has decreased pressures at a distance sufficient to show communication over the interval that would encompass more than 320 acres.

Q Do you believe that shows communication and is enough to show that you can get efficient and economic drainage? I agree with you that it shows communication. Do you think it shows efficient drainage?

A I think it would efficiently drain the 320 acres. Most of these wells are normal completions so we think the wells will drain a considerable area in contrast to most Blanco-Mesaverde wells which require hydraulic fracturing.

#### CROSS EXAMINATION

#### BY EXAMINER NUTTER:

Q What are the potentials on these six wells completed in here? How about the Turner well?

A IP was 5,988 MCF.

Q How about the Smith?

A 4246.



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Q And the Brown?

A 1741.

Q And the Palmer No. 1?

A 3739.

Q And the Hudson No. 1?

A 1845.

Q And the **Stedje**?

A I don't know whether the potential has been filed with the Commission or not. We received reports from Pan American on the well as it progressed. The last report I had on it, it was 8155.

Q It may be bigger than the previously-completed well?

A Yes, sir, it would suggest that.

Q How much has that Turner well produced through August of this year, do you know?

A Through September 31st, it produced 524,697 MCF.

Q Do you know if any pressure has been taken on that well since the drillstem test pressure was taken shortly after the well blew out?

A No, sir, I do not know that. That was the only well being produced during this time.

Q This was a drillstem test of pressure?

A Yes, sir. All the pressures shown on the graph are initial shut-in pressures recorded on drillstem tests.

Q This is the only bottomhole pressure that has been



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made of any well?

A That's the only one that I know of. We ran one on another well by mistake. That bottomhole pressure was taken so soon after the completion of the well that it would not be of any interest in this case.

Q Was it the Flora Vista-Mesaverde?

A Yes, sir, on the Brown well.

Q What did that pressure record?

A I don't recall what it was. We had the pressure run by mistake on that well. I wanted it on the Hewlett Smith because we had some production from the Glen Turner well and there was very little time for production between our initial pressure and the one that we would have gotten. The other day I was looking for pressure on a well after the Glen Turner well had produced so that if there was any decline we could see the decline.

Q Did the pressure which was taken accidentally on the Brown show a decline in pressure?

A It was something less than our drillstem test pressure. It was not many pounds less. They had not time for much production from the Glen Turner well, so I did not consider that useful in this case.

Q Has it been your experience, Mr. Wiederkehr, that pressure surveys were run at a number of depths in grade are more reliable than drillstem pressures?

A I couldn't say one way or the other. The people who



ran this test -- their pressure recording device had .2 of 1 per-cent or less error.

Q Normally, you would expect that a normal pressure survey would be more reliable than a shut-in pressure taken on a drillstem test, wouldn't you?

A I should think so. There are variables in a drillstem test. I think the bottomhole pressure is run with the well shut-in, such as in Exhibit 3, is more reliable than a drillstem test.

Q Is the Turner the only well still connected, or is it still the only well disconnected?

A It is the only well that has produced to the end of September. The Monsanto Chemical well may or may not be on production. It wasn't on production at the end of September.

Q Are any of Southwest Production Company wells on production?

A No, sir. They are complete but have not been produced.

EXAMINER NUTTER: Are there any further questions of Mr. Wiederkehr?

REDIRECT EXAMINATION

BY MR. VERITY:

Q Mr. Wiederkehr, any possible error in those drillstem tests would not be sufficient to distort the general proof regarding drainage across the areas demonstrated in Exhibits 1 and 2, would they?

A I think not. However, let me suggest an error of one



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percent or less in there about the bottoms. One percent in 1500 pounds is not too much.

MR. VERITY: That's all.

EXAMINER NUTTER: Are there any other questions of Mr. Wiederkehr?

MR. VERITY: Mr. Guy Buell, who is trying to confer with his office in Ft. Worth, asked me to announce to the Commission if he didn't get back in time, that his company, Pan American, supported this application and requested the Commission to grant it.

EXAMINER NUTTER: Thank you.

MR. VERITY: We have nothing further in this case.

EXAMINER NUTTER: The witness may be excused.

(Witness excused.)

EXAMINER NUTTER: Does anyone have anything they wish to offer in Case No. 2445?

The case will be taken under advisement.

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STATE OF NEW MEXICO )  
 ) ss.  
 COUNTY OF SAN JUAN )

I, THOMAS F. HORNE, NOTARY PUBLIC in and for the County of San Juan, State of New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

*Thomas F. Horne*  
 NOTARY PUBLIC

My Commission Expires:

October 2, 1965

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2445, heard by me on 11/29, 1961.

*[Signature]*, Examiner  
 New Mexico Oil Conservation Commission

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Scale 1" = 2000'

$\frac{1}{2}$  lb 1 return on 320 acres

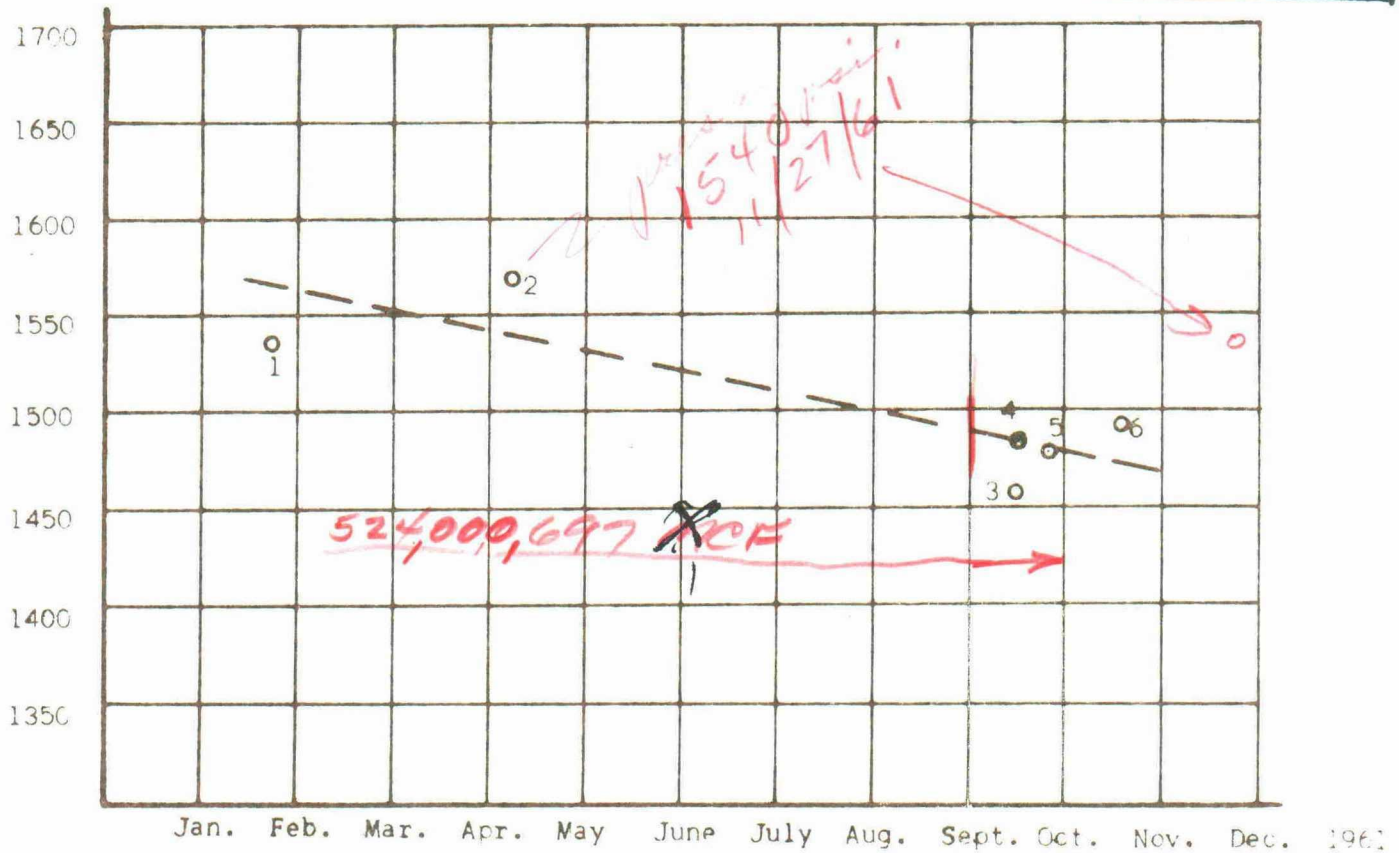
$1\frac{1}{2}$  lb 1 return on 160 acres (extended over period of time, might not be economic)

SOUTHWEST PRODUCTION COMPANY

*Ex 2*

PRESSURE, PSIG, INITIAL SHUT-IN  
FROM DRILL STEM TESTS VS TIME.

**BEFORE EXAMINER NUTTER**  
**OIL CONSERVATION COMMISSION**  
 EXHIBIT NO. 2  
 CASE NO. 2445



*5988 MCF*  
*4246*  
*1741*  
*3739*  
*1845*  
*8155*

- |                                  |                   |       |
|----------------------------------|-------------------|-------|
| 1. J. Glen Turner, Osborn #1-22  | Sec. 22, 1-23-61  | 1535# |
| 2. Southwest Prod. Co. Smith #1  | Sec. 23, 4-7-61   | 1570# |
| 3. Southwest Prod. Co. Brown #1  | Sec. 22, 9-16-61  | 1459# |
| 4. Southwest Prod. Co. Palmer #1 | Sec. 26, 9-17-61  | 1485# |
| 5. Southwest Prod. Co. Hudson #1 | Sec. 26, 9-25-61  | 1482# |
| 6. Pan American, Stedje #1       | Sec. 27, 10-19-61 | 1495# |

*This well was out of control for approx 2 days prior to taking this pressure*

**ILLEGIBLE**

TEMPERATURE ★

B&amp;R.SERVICE, INC.

★ SURVEYS ★ ★

BOX 1048 - FARMINGTON, NEW MEXICO

## Pressure Survey

COMPANY SOUTH WEST PRODUCTION

LEASE HUGHESS SMITH

WELL # 1

FIELD

LOCATION

COUNTY SAN JUAN

STATE NEW MEXICO

DATE 11-27-61

SHUT-IN 4-24-61

ELEVATION 5523 K.B.

DATUM

ZERO POINT G.L. + 11.5'

TBG. PRESSURE

CASING PRESSURE

TGB. DEPTH 2" @ 3395'

CASING SET 4½ @ 3392

P.B.T.D.

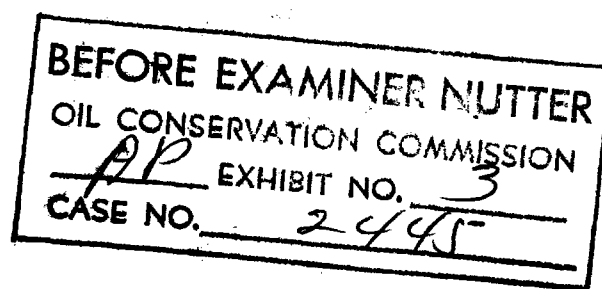
PACKER SET

CASING TIE

MAX TEMP 123° F

FLUID LEVEL NONE

DEPTH	PSIG	GRADIENT
Lube	1357	---
500	1383	.05
1000	1410	.05
2000	1470	.05
3000	1520	.05
3200	1530	.05
3392	1540	.05



ILLEGIBLE