

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
January 5, 1966

EXAMINER                      HEARING

----- )  
 IN THE MATTER OF: )  
 Application of International Oil and Gas )  
 Corporation for the creation of two new oil )  
 pools and for special pool rules, Lea County, )  
 New Mexico. Applicant, in the above-styled )  
 cause, seeks the creation of a new oil pool )  
 for Bone Spring production and a new oil pool )  
 for Wolfcamp production in Section 21, )  
 Township 18 South, Range 32 East, Lea County, )  
 New Mexico, and for the establishment of )  
 special rules for each of said pools )  
 including provision for 80-acre proration )  
 units. )  
 ----- )

Case No. 3350

BEFORE:  
 Daniel S. Nutter, Chief Engineer  
 J. D. Ramey, Supervisor and Oil and Gas Inspector

TRANSCRIPT OF HEARING

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MR. NUTTER: The hearing will come to order, please. The first case this afternoon will be Case 3350 continued and readvertised.

MR. DURRETT: Application of International Oil and Gas Corporation for the creation of two new oil pools and for special pool rules, Lea County, New Mexico.

MR. LOSEE: Mr. Examiner, A. J. Losee of Losee and Stewart, appearing on behalf of the applicant, and I would like to move that the testimony in the December Hearing on this Case, 3350, be incorporated herein.

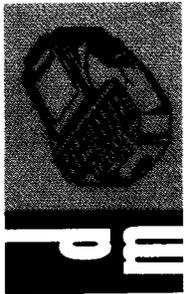
MR. NUTTER: Mr. Losee, as I understand it, the Case, Number 3350, which was heard in December had been advertised for the creation of one pool?

MR. LOSEE: Yes, that was the Wolfcamp.

MR. NUTTER: But testimony was offered to support the spacing case on Bone Spring and Wolfcamp, both, so now, we readvertised it and we're opening it as far as the Bone Spring is concerned.

MR. LOSEE: Yes, sir.

MR. NUTTER: Are there any appearances in Case 3350 so far as the Bone Spring and Wolfcamp are concerned for the creation of two new oil pools and promulgation of rules? The case is taken under advisement and we'll call Case 3362.





BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
December 14, 1965

EXAMINER HEARING

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IN THE MATTER OF: )

Application of International Oil & Gas )  
Corporation for the creation of a new oil )  
pool and for special pool rules, Lea County, )  
New Mexico. Applicant, in the above-styled )  
cause, seeks the creation of a new oil )  
pool for Wolfcamp production in Section 21, )  
Township 18 South, Range 32 East, Lea )  
County, New Mexico, and the establishment )  
of special rules therefor, including a )  
provision for 80-acre proration units. )  
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Case No. 3350

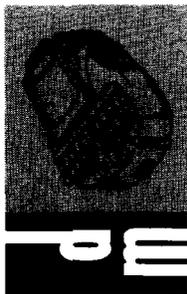
BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

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MR. UTZ: The Hearing will come to order.

Case 3350 in the matter of the application of International Oil Corporation for the creation of a new pool and special rules.

MR. LOSEE: A. J. Losee of Losee and Stewart, Artesia, New Mexico. I have one witness: Mr. Conrad Appledorn.

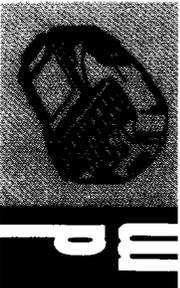
MR. PORTER: Let the record show that the witness was sworn in the previous case and is still under oath.

MR. UTZ: Are there any other appearances in this case? You may proceed.

MR. LOSEE: Mr. Examiner, the notice of hearing was limited to the establishment of the oil pool for Wolfcamp production with a request for special rules for the pool with 80-acre spacing. The counsel for the company didn't obtain the correct information and the application actually as submitted to the Commission covers both the separate Wolfcamp Pool and a separate Bone Springs Pool with the request for 80-acre spacing in each pool.

We realize that the notice will have to cover the Bone Springs portion of the application. We understood from your counsel that this could be accomplished in your January Examiner Hearing.

MR. UTZ: Mr. Losee, we can hear the case now as to what you have to offer or we can readvertise properly and call



the case at the January 5th, 1966 Hearing. You stated in your letter that this might save you an additional trip. You don't plan to be here January 5th I take it?

MR. LOSEE: Well, we'll make arrangements to be here if there are any appearances to the contrary on January 5th.

MR. UTZ: If there are any appearances then I would think it would be essential that you would be here.

MR. LOSEE: Yes, sir, we appreciate that.

MR. UTZ: You may proceed on that basis.

(Whereupon, Applicant's Exhibits  
1, 2, 3, 4, and 5 marked for  
identification.)

C O N R A D R. A P P L E D O R N, a witness, having been previously sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q You are the same Conrad Appledorn who testified in the previous case?

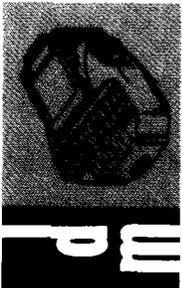
A Yes.

Q And your qualifications were accepted in that case?

A Yes.

Q Will you briefly explain the nature of this application?

A We are requesting establishment of 80-acre spacing and establishment of new pools for Wolfcamp and Bone Springs production for discoveries in our Linam Federal Number 1,



Section 21, Township 18 South, Range 32 East in Lea County, New Mexico.

Q Please refer to what has been marked as Exhibit Number 1 and explain what is shown by this exhibit?

A Exhibit 1 is a plat showing the Linam Federal lease in the east half and east half of the southwest quarter of Section 21, 18 South, 32 East, and also the neighboring pools, offsetting leases, lease owners and wells.

Q I believe you previously testified that this Linam Number 1 Well was completed in November of this year?

A Yes, November 13th in the Wolfcamp formation. Completion in the Bone Springs formation is depending Commission approval of our obligation for dual completion.

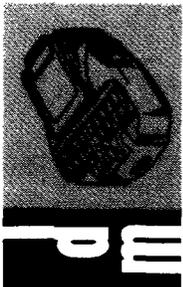
Q And I believe you also testified that you anticipate that both Bone Springs and Wolfcamp will flow?

A Yes, both completions will be flowing when completed.

Q Please refer to what has been marked as Exhibit 2 and explain what is shown by this structure map?

A Exhibit Number 2 is a structure map and it's based on five points or five wells which have penetrated the Wolfcamp formation. It's contoured on top of the Wolfcamp with contouring of 100 feet. Because of the scattered nature of the points, it is of necessity very generalized.

Q Would you, to the extent possible, correlate the other



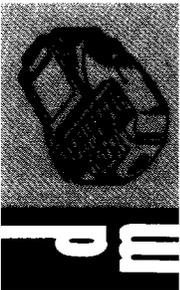
wells that have penetrated both the Bone Springs and the Wolfcamp sections that are shown on this structure map?

A I have indicated by a color code here. The wells circled in red are those which have penetrated the Wolfcamp formation. Those having green circles are those that are completed in the Bone Springs interval or formation. And those circled in blue have perforations in the Wolfcamp formation.

Now, as we will show later, not all of these zones are correlative. The Linam Federal Number 1 is completed in the Bone Springs interval which is below the first Bone Springs in the Querecho Plains Unit Number 2 in Section 31. It's about a mile and a half east of the Linam Federal. It's completed also in the Bone Springs but their completion is in the upper part of the first Bone Springs sand and on a correlative basis is about 300 feet higher than the completion in the Linam Federal. The Wolfcamp completion in the John Trigg's McCurdy Number 1 which is in Section 29 is about a mile and a half southwest of the Linam Federal well. It is completed in a zone that is correlative to a zone that is dolomite 100 feet above the lower completion in the Linam Federal. The two then in those zones are not correlative.

MR. UTZ: One hundred feet higher?

THE WITNESS: One hundred feet higher, yes, than the lower interval.



The John Trigg well, Federal Number 1, which is one mile north and slightly east of the Linam Federal is completed in the identical Wolfcamp interval as the Linam Federal.

Q (By Mr. Losee) When was the last mentioned John Trigg well completed?

A They are testing now. They were completed and they will be testing Saturday morning.

Q Now, let me stop you if I may. You said the Querecho Plains, I believe, was in Section 31 and isn't it actually in Section 27?

A Twenty-seven, yes.

Q In the same township and range?

A Yes.

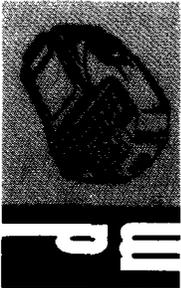
Q Did you mention in your testimony the two Bone Springs completions?

A Yes.

Q Please refer to what has been marked Exhibit 3, the reservoir characteristics and explain what is shown by this exhibit?

A This Exhibit Number 3 details the characteristics as we know them now in the two producing intervals.

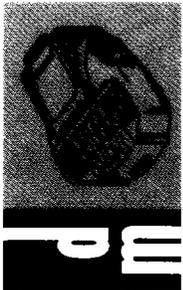
In the Linam Federal Number 1, the Bone Springs reservoir is a dolomite, quite clean, its medium to coarsely crystalline, vuggy and intracrystalline porosity and is also



probably somewhat fractured. We have a gross pay showing there of approximately 10 feet. A porosity of 9.6 per cent. We're estimating water saturation at 20 per cent. Reservoir volume factor at 1.54 from the Standard Correlations and a recovery factor estimated for solution gas drive of 15 per cent. That well has been tested and the gas/oil ratio on a test of about 200 barrels of oil per day was 1,222 cubic feet per barrel. Productivity Index was measured at .618 barrels of oil per day per psi drawdown and the bottom hole pressure taken in the last week of November was 2,570 psi.

The Wolfcamp reservoir is a limestone a fairly clean limestone again. It has shale or shaly fusions. Its finely crystalline to chalky. The matrix is quite tight. It has both fracture and vugular porosity. The gamma ray sonic log porosity shows about 5.9 per cent porosity and we are estimating the water saturation again at 20 per cent. The reservoir volume factor at 1.53 and a recovery factor of 15 per cent. The gas/oil ratio is measured at 1,074 cubic feet per barrel and the productivity index is measured at .396 barrels of oil per day per psi drawdown and a bottom hole pressure, static, at 4,999 psi.

The ultimate recoveries are shown here that we are estimating based on these data. The oil recovery from Bone Springs is estimated at 580 barrels per acre and from the



Wolfcamp at 1,508 barrels per acre and the comparable solution gas: 709 MCF per acre from the Bone Springs and 1,620 MCF per acre from the Wolfcamp.

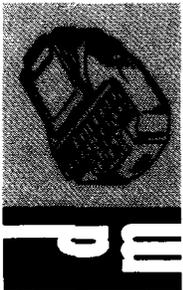
Q Please refer to what has been marked as Exhibit 4 which is the electrolog of this Linam well and explain what is portrayed by that log?

A I've marked on this log all of the mechanical features of the dual completion also the tops of the formations, the perforated intervals are shown here and also is the treatment that was accorded each interval and the total number of shots and also the setting depths of the tubing.

Q Please refer to Exhibit 5 and explain what is shown by this economic analysis portrayal?

A In this economic analysis we have try to show the ethical spacing assuming that the well will drain the spacing as indicated.

For an 80-acre spacing, using the data given in Exhibit Number 3, we have a recoverable oil from the Bone Springs of 46,400 barrels and from the Wolfcamp 120,600 barrels, a total gas recovery based upon solution gas/oil ratio of 186,200 MCF making a total net income for the working interests of approximately \$404,500. Total investment and total operating costs will be \$227,700, leaving a net profit to the working interests of \$176,800. This is, of course, before income taxes,



depletion, and so forth. The total investment, \$203,900, includes the cost of the well, which I have estimated at \$167,500 and the cost of the pumping unit and installation at a later date which will be or at this time we are anticipating installing a subsurface hydraulic pump in each zone.

For 40-acre provision the oils are cut in half as is the gas and the net income to working interest is, of course, also cut in half. The operating cost is reduced because of the reduced life of the well. Total investment remains the same and the net profit to working interest becomes a net loss of \$11,200.

Q Now, this analysis, of course, is based on the assumption that there will be a dual completion of the well?

A Yes, that's right. Single zones will not carry the well by themselves.

Q In summary: On 80-acre spacing with a dual completion, the return would be about 1-7/8 times the investment?

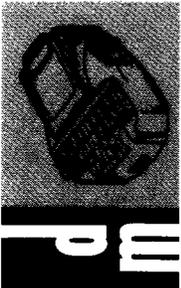
A Yes, sir.

Q And on 40-acre spacing, it would not return the investment?

A No, it would not return the investment.

Q Will this well produce an 80-acre allowable in the Bone Springs at this time?

A Yes. The well, of course, has not been potentialled;



however, we have tested the well and our indicated gross potential on that well is about 450 barrels of oil per day. Now, our maximum test on that well has been 200 barrels of oil in 21 hours on a 12/64" choke.

Q Is that in the Bone Springs?

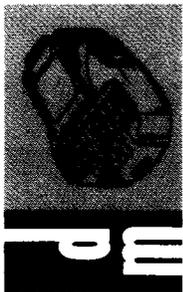
A Yes, that's from the Bone Springs.

Q Do you have an opinion on whether the Wolfcamp will make an 80-acre allowable?

A Very definitely. The Wolfcamp has a gross potential of 750 barrels of oil per day indicated and tested at that rate on a 1" choke and every evidence now of holding at that rate for quite a period of time. We're producing that regularly: the top allowable now for 40-acre spacing and we have produced it on a daily basis for as high as 230 barrels of oil a day.

Q Do you have an opinion as to whether this well in the Bone Springs will drain 80 acres?

A I feel that both of these intervals, both of these zones, both the Wolfcamp and the Bone Springs will drain 80 acres. Now, we have no direct information such as interference tests or anything to base this on. It's based more or less on an opinion, indicated productive indices, the fracturing, the comparison with comparable zones both in New Mexico and in bordering area of Texas where we have Wolfcamp and Bone Springs production. Also, on our productive index tests our bottom hole



pressure index test, we had permeabilities indicated as high as 750 milidarcies based upon Van Everding's method of pressure buildup and this type of permeability, of course, I believe would carry an 80-acre allowable with no difficulty.

MR. UTZ: This was in which zone?

THE WITNESS: In the Wolfcamp. Now, the Bone Springs is very close to that.

Q (By Mr. Losee) Do you feel that the establishment of separate pools for the Bone Springs and the Wolfcamp with 80-acre spacing will protect correlative rights.

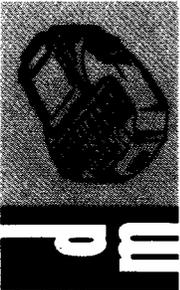
A Yes.

Q Do you feel that such rules will prevent waste and permit the recovery of oil that would not otherwise be recovered?

A Yes.

Q Now, attached to your application were a proposed set of rules for each of these pools with 80-acre spacing. Would you generally state to the Examiner what is desirable and why with respect to these rules?

A The main intent here is to make a regular spacing pattern. We are starting it naturally with our well which is in the northeast of the southeast quarter. This will permit regular development. We're asking that the wells be limited to the northeast or the southwest quarters, quarter-quarter section.



That spacing will be such that the wells will be approximately in the center of those quarter-quarter sections.

Q Mr. Appledorn, you mean the northeast and the southwest?

A Yes, northeast and southwest quarter.

Q Now, that is not actually set up in the rules submitted to the Examiner but I understand that is the desire of International in connection with the application?

A Yes.

Q And the location of your wells in the proposed rules would be 467 feet from the quarter-quarter section line?

A Yes, and as I say, the intent there is to get a well approximately in the center of each quarter-quarter making room for adjustment if there is a second well and so forth.

MR. UTZ: By "approximately" would you say, "within 200 feet"?

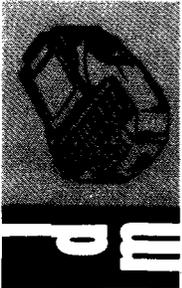
THE WITNESS: Yes. This particular rule has 193 feet. I believe the Kemnitz rules have 150 feet set out.

MR. UTZ: Some others have 200.

THE WITNESS: Yes, and some others have 200.

Q (By Mr. Losee) Although not shown on the application, it's my understanding that the request is for temporary rules probably 18 months in duration?

A Yes. It would be our intention that with additional



development in the pool that interference tests, additional data, would be gained so that we could come back and get permanent rules established and actually show with direct evidence that 80-acre drainage is feasible.

Q Now, you propose to have an 80-acre allowable for each of these pools?

A Yes.

Q So that the depth at which the Bone Springs is located it would four times Southeast New Mexico allowable?

A Yes.

Q And as to the Wolfcamp?

A 5.67 times normal unit allowable.

Q Were Exhibits 1 through 5 prepared by you or under your direction?

A Yes.

MR. LOSEE: We offer at this time Applicant's Exhibits 1 through 5.

MR. UTZ: Without objection, Exhibits 1 through 5 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 5 were offered and admitted into evidence.)

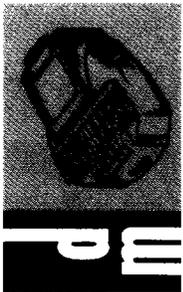
MR. LOSEE: That's all I have.

CROSS EXAMINATION

BY MR. UTZ:

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Q I suddenly realize that I don't know which one of these pools is the new pool. Is it the Bone Springs?

A They will both be new. Now, we have potentialled the Wolfcamp on November 13th.

Q So they are both new pools?

A Yes, sir. The potential on the Bone Springs, of course, will have to await Commission approval on our dual completion application.

Q Is it your request that it be called the "Young-Bone Springs"?

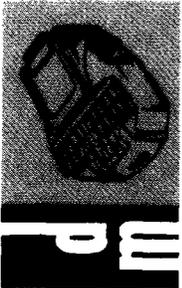
A Yes. The Young pool is a shallow pool. However, it is within a half a mile of our well. This would keep the nomenclature separate.

Q Did you have any recommendations as to horizontal limits?

A At the time application was made, we had just the east half of Section 21. However, with the testing now going on in John Trigg's well which is in the west half of the southwest quarter of Section 15, it would appear that that will also be within the limits of the pool.

Q What was the information regarding the wells circled in red in Section 22?

A That well is a Strong completion, Shell Oil, Querecho Plains Number 1. They did not have any indication of



oil in the Bone Springs and I believe they drill stem tested the Wolfcamp. However, I don't think the zone was exactly correlative to the zone that we are now producing from.

Q Well then, it wouldn't seem that you should include that well in the horizontal limits of the pool?

A No, sir. I believe the eastern limit, the pool will probably turn northeast and south, southwest. That's our indication at this time.

Q As a matter of record then, would you say that reasonable horizontal limits would be east half of 31 and the southeast quarter of 6 and the southwest quarter of 5.

A I believe the southwest quarter probably is Section 15. The southeast quarter of Section 16. The east half of Section 21 and the northeast quarter of Section 28.

Q The 5 and 6 I referred to are actually 15 and 16?

A Yes, sir.

Q You are coming down south of your well now, aren't you?

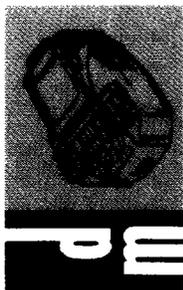
A Yes, sir.

Q I thought that your information was that the well in Section 27 was not in the same zone, Bone Springs?

A No, sir. The well in Section 27 is not.

Q Well then, why would you want to go south?

A Well, we're looking at the possibility of the Wolfcamp



and the Bone Springs does not appear or probably will not have the same aerial extent that the Wolfcamp zone does. I believe that the northeast quarter of Section 28 will probably be productive in the Wolfcamp.

Q There's no particular reason why we can't wait and see?

A No, sir.

Q Now, referring to your Exhibit Number 5, what did you say your well cost was under your total investment figure?

A In this case for this economic analysis I have used a well cost for a well that would go to the Wolfcamp only and be dually completed. I mean in the Bone Springs and the Wolfcamp and I used \$167,500. The Linam Federal Number 1 was drilled to the Strong and with extensive testing and some calling they had somewhat greater costs.

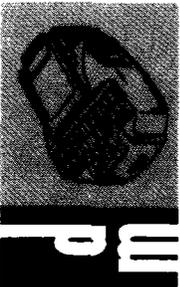
Q Your well cost \$23,800 would give you what? What was the added cost?

A The pumping cost or proposed pumping installation which would be subsurface hydraulic and that is \$36,400.

Q That was not included in the completion costs of the well?

A No, sir.

MR. LOSEE: I think the operating cost is pulled out separate, really.



Q Now note, this is not unusual. I might say that you have used twice the reserves on 80-acres as 40-acres. Do you really think that this is a practical assumption?

A With the information that we have now and using the assumption that I have, that's what it came out.

Q Have you studied any other 80-acre pool rules that would be close to or exactly like you recommend here?

A The Kemnitz Pool rules were the ones that I looked at because it had a Wolfcamp formation involved and they involved spacing very similar to this one and I don't recall, I believe they have the northeast-southwest limitation. I'm not too sure about that. The rules for Kemnitz specify within 150 feet of the center of the quarter-quarter section.

Q You wouldn't object to 200?

A No, sir.

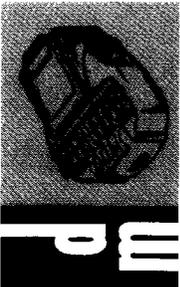
MR. UTZ: Are there any other questions of the witness?

Q (By Mr. Utz) Is it your intention to perform some interference tests during the interim period or temporary period?

A Well, we will have to have another well within 80-acre spacing in order to do it. Now, we will probably take interference tests after the drilling of another well, yes.

Q Do you have any plans to drill another well?

A Right at this time, I can't say. We're just waiting on this well and watching it.



Q In the absence of interference tests, what would you propose to bring in to show 80-acre drainage a year from now?

A If we drill another well, of course, the zones would be cored. Also, we can take additional bottom hole pressure tests to show how the pressure is holding up and correlate that with accumulative or the ultimate recovery that we're now forecasting and by these means I believe that we can arrive at some reasonable idea as to how much acreage is being drained.

MR. UTZ: Any other questions?

The witness may be excused.

(Witness excused.)

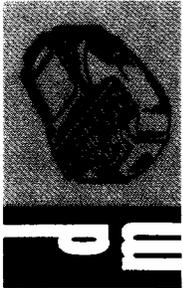
Are there any other statements in this case? If there are no further statements, the case will be taken under advisement.

(Whereupon, Case Number 3350 was continued.)

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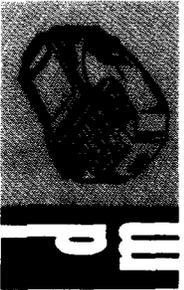


I N D E X

WITNESS	PAGE
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Cross Examination by Mr. Utz	14

E X H I B I T S

<u>Exhibit</u>	<u>Marked for Identification</u>	<u>Offered</u>	<u>Admitted</u>
App's. 1	3	13	13
App's. 2	3	13	13
App's. 3	3	13	13
App's. 4	3	13	13







MR. NUTTER: Case 3350.

MR. HATCH: Case 3350 re-opened. In the matter of Case Number 3350 being re-opened pursuant to the provisions of Orders Numbers R-3021 and R-3021A, which orders established 80 acre spacing units for the Young-Wolfcamp pool and the Young-Bone Spring pool, Lea County, New Mexico, respectively for a period of one year.

MR. NUTTER: Let the record in Case 3350 show that a representative of Depco, called the Examiner the other day, and advised that they would not make an appearance in this case and did not object if the pools reverted to the forty-acre spacing. Therefore, we will take Case 3350 under advisement and, in the absence of testimony to the contrary, the special orders will be rescinded. The pools will revert to the state-wide rules.

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