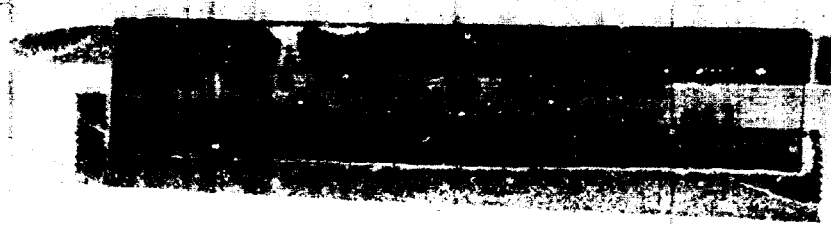

Copies of Order R-1756
in Case 2050 sent to:
Ed Nestor
Chas. White
Ferrell Couch
and [redacted]
Aug 29, 1960

Case No.

2050

Application, Transcript,
small Exhibits, Etc.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
August 18, 1960

IN THE MATTER OF:

The hearing called by the Oil Conservation Commission on its own motion to consider amending Rule 505 (b) of the Commission Rules and Regulations to establish proportional (depth) factors for oil wells in excess of 14,000 feet.

CASE NO. 2050

BEFORE:

Honorable John Burroughs
Mr. A. L. Porter
Mr. Murray Morgan

TRANSCRIPT OF HEARING

MR. PORTER: Next case to be considered is Case 2050.

MR. PAYNE: This involves a hearing held by the Oil Conservation Commission on its own motion to consider establishing proportional depth factors for wells.

(Witness sworn.)

DANIEL S. NUTTER

a witness, called by and on behalf of the Oil Conservation Commission, having been duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. PAYNE:

Q Will the witness please state his name?

A Daniel S. Nutter.

Q What is your capacity with the Oil Conservation Commission?

A Chief Engineer with the O.C.C.

Q Mr. Nutter, you are familiar with the application in Case 2050?

A Yes, sir.

Q And you are aware it was called to consider the establishment of depth factors for oil wells in excess of 14,000 feet only?

A That is correct.

Q And have you made a study in this regard?

A Yes.

Q Would you give a brief, brief historical resume as to the depth factor contained in Rule 505B?

A In 1945 Gulf Oil Corporation had drilled four wells to the Drinkard Pool. These were regarded as deep wells, and cost from $100,000 to $150,000 apiece. These were the days of OPA and oil was selling for $1.15 a barrel. The payouts were regarded as extremely long. Gulf Oil decided depth factors for these deep 7,000 foot wells should be adopted to permit a faster pay off. As a result, Application No. 62, advertised: "In the matter of the petition of Gulf Oil Corporation for revision of statewide Order No. 505 (b) to provide for increasing the oil allowable progressively for pools producing below 5,000 feet. The case was called and was heard on May 14, 1945.

As a result of the hearing the Commission appointed an industry

committee to study the prospective well factors for deep wells. The committee was charged with advising the Commission upon the following question: "What should be the allowables for deep pools?" The committee met on September 28, 1945, and recommended to the Commission later that the Commission adopt the depth factors which Gulf had proposed.

Now, when Gulf filed their application they submitted a proposed order for the Commission, and attached to the proposed order was a summary of the manner in which the depth factors were determined by Gulf. The summary of the manner in which those depth factors were derived is reproduced from Gulf's original application and is entered here as Exhibit No. 1. There were two minor changes, three minor changes, that were finally adopted by the Commission. The depth factors for the depths 10,000 to 11,000, 11,000 to 12,000 and 12,000 to 13,000 feet contained very minor errors, and those numbers were rounded off a little bit in order to come out to the nearest even barrel.

After studying this Exhibit, or this calculation which was attached to Gulf's application, I derived the formula which Gulf used in establishing these depth factors. We have used this same identical formula and extended the factors on beyond the point where they are currently carried in the Rules and Regulations.

I shall go back a little bit and say that after the committee made its recommendation that the Commission adopted the factors; the

Commission, by its Order No. 637 dated February 7, 1946, did adopt Gulf's deep well factors. However, the factors were carried only down to a depth of 12,000 feet, although Gulf had recommended depths to 15,000 feet. The Commission did provide, however, in Order No. 637, that the Commission could, in executive session, provide an equitable proportional factor in Section 2C in any pool discovered at any depth range below 12,000 feet.

Q What, then, is the necessity for this hearing?

A No. 637 was superseded by Order No. 505, if not superseded before. Therefore, there is no executive session provided by any of the Rules and Regulations for the establishment of depth factors if deeper producing horizons are discovered.

Q Would you refer to Exhibit 1 and explain it to the Commission?

A At the time that these calculations were made by Gulf the normal unit allowable for southeast New Mexico was 45 barrels a day. Gulf, in making the computation here, assigned to a well that has a depth range of from 0 to 5,000 feet, 45 barrels. They then said, "Well, if a well is drilled from 5 to 6,000 feet deep, an additional 15 barrels of oil should be assigned there, by making the allowable for the well 5 to 6,000, 60 barrels; drilled to a range of 6 to 7,000 feet we should give it an additional 15 barrels of oil above and beyond what the well from 5 to 6,000 feet has, and then an additional 5 barrels on top of that." So, if you will note

in the right-hand column of this exhibit, you will see the allowable increase above the preceding 1,000 foot bracket increases at a constant rate from 15 to 20 to 30, to 35, and so on down to 60 at a 15,000 foot depth. We applied the same formulas used in determining the existing factors down to 18,000 feet, and from that we have established what the allowables would be. Then we worked backwards into it, and determined what the depth factors were, and have plotted the depth factors on Exhibit No. 2 here.

Q Explain that.

A The line which goes from 0 to 5,000 feet, over to 13,000 to 14,000 feet shows the existing depth factors which are in use today. By using the formula we haven't found it necessary to extrapolate this curve; instead, we can actually calculate the points for the depths in excess of 14,000 feet. We used this formula and went ahead and computed depth factors to 18,000 feet. The depth factor in existence, 13 to 14,000 feet, is 8; next range, 14 to 15,000 feet, our computed factor is 9.33. The next range from 15 to 16,000 feet, and the computed factor is 10.78; from 16 to 17,000 feet, computed factor 12.33; and from 17 to 18,000 feet the factor is 14.00.

Q These are all 40-acre proportional factors?

A Yes.

Q To get the 80-acre you add one?

A Add one normal unit allowable.

Q If I understand you correctly you say you calculated these additional factors using exactly the same method originally used in calculating the factors now in existence?

A That is correct.

Q So that it necessarily follows that if the methods used then are correct, this is correct?

A Yes, sir.

Q And the relative status of everyone remains the same?

A It should remain the same.

Q Do you have anything further, Mr. Nutter?

A No, sir.

MR. PAYNE: That concludes the direct examination of this witness.

MR. PORTER: Is it your recommendation that the Commission adopt these factors?

A I'd recommend these factors be adopted for wells to 18,000 feet that would be spaced on 40 acres; yes, sir, and that the 80-acre proportional factors would be increased by one.

MR. PORTER: Are there any questions of Mr. Nutter concerning his recommendations?

MR. COUCH: Mr. Couch, Ohio Oil Company; Mr. Nutter, based upon your experience and knowledge in connection with the system of oil allocation of allowables among the fields and the wells in the State of New Mexico, and your knowledge of petroleum

engineering, is it your opinion that this extension of the existing system will be fair and reasonable and protect the correlative rights of the parties involved?

A Yes, sir.

MR. COUCH: I believe that will be all. Thank you, sir.

MR. PORTER: Any further questions?

MR. PAYNE: We move for the introduction of Commission's Exhibits 1 and 2.

MR. PORTER: Without objection the exhibits will be admitted. Witness may be excused.

MR. COUCH: I have a statement. Lea Unit Well No. 1 was recently completed in the Devonian formation with the top of the perforation at 14,347 feet. The Ohio Oil Company is operator of the Lea Unit, and owns in excess of 40 percent of the working interest. We are convinced that the Lea Unit Well No. 1 can efficiently and economically produce, without waste, at a rate in excess of what the well's allowable would be under the amendment to Rule 505 proposed by Mr. Nutter as applied to any normal unit allowable which is likely to be adopted in the foreseeable future.

Therefore, under the applicable statutes and the system which has been followed so consistently in allocating the oil allowables among the oil pools of this State, it is Ohio's position that Rule 505 should be amended as proposed by Mr. Nutter.

MR. WHITE: Charles White, Gilbert, White & Gilbert,

appearing on behalf of Texaco, Inc. Texaco feels that the proposed depth factors proposed by the Commission to provide a reasonable allowable whereby wells of 14,000 feet or deeper will be accorded a reasonable payout are desirable, and we sincerely urge the Commission to adopt this proposal.

MR. NESTOR: A. W. Nestor, Shell Oil Company; I don't know that Shell would go along with the statement made by counsel and agreed to by the witn ess that something that was done in 1945 could be extrapolated directly into today's terms. On the other hand, we have made a review of what would seem to be proper in the deeper ranges to 18,000 feet, and I think we are satisfied that these factors, so chosen, do seem reasonable.

The Commission may remember that a number of years ago in case No. 608 we had a fairly lengthy discussion of this matter, and Shell reviewed the information from that hearing, and together with some supplied by the Commission prior to this hearing, and we believe and do support the factors recommended by Mr. Nutter.

MR. PORTER: Any further statements?

MR. PAYNE: I'd like to point out to the Commission that that is not actually an extrapolation. These factors were calculated in exactly the same manner as the existing factors, and, admittedly, well costs, drilling costs, have changed through the years, but it seems reasonable to assume they have changed in direct proportion, so that the relative status of any operator

with a well at any depth should remain the same.

MR. PORTER: Does anyone else have anything to offer in this case? Case will be taken under advisement.

STATE OF NEW MEXICO )
) ss
COUNTY OF BERNALILLO )

I, JUNE PAIGE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 6th day of September, 1960.

June Paige
Notary Public - Court Reporter

My commission expires:

May 11, 1964.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 2050
Order No. R-1754

APPLICATION OF THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER REVISING RULE 505(b) OF
THE COMMISSION RULES AND REGULATIONS
TO ESTABLISH PROPORTIONAL (DEPTH)
FACTORS FOR OIL WELLS IN EXCESS OF
14,000 FEET.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 17, 1960, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 23rd day of August, 1960, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That Rule 505(b) of the Commission Rules and Regulations sets forth proportional (depth) factors for allowable purposes for oil wells drilled to a maximum of 14,000 feet.

(3) That subsequent to adoption of Rule 505(b), there has been drilling activity in New Mexico at depths considerably in excess of 14,000 feet.

(4) That said Rule 505(b) should be revised to provide for proportional (depth) factors for wells as deep as 18,000 feet.

(5) That the proposed proportional (depth) factors for wells in excess of 14,000 feet were calculated utilizing exactly the same method that was used in arriving at the factors presently contained in Rule 505(b).

(6) That, therefore, the proposed revision of said Rule 505(b) will not impair correlative rights.

IT IS THEREFORE ORDERED:

That Rule 505(b) of the Commission Rules and Regulations be and the same is hereby revised to read in its entirety as follows:

(b)

| POOL DEPTH RANGE | 40-Acre Proportional Factor | 80-Acre Proportional Factor |
|---|---|---|
| 0 to 5,000 feet | 1.00 | |
| 5,000 to 6,000 feet | 1.33 | 2.33 |
| 6,000 to 7,000 feet | 1.77 | 2.77 |
| 7,000 to 8,000 feet | 2.33 | 3.33 |
| 8,000 to 9,000 feet | 3.00 | 4.00 |
| 9,000 to 10,000 feet | 3.77 | 4.77 |
| 10,000 to 11,000 feet | 4.67 | 5.67 |
| 11,000 to 12,000 feet | 5.67 | 6.67 |
| 12,000 to 13,000 feet | 6.75 | 7.75 |
| 13,000 to 14,000 feet | 8.00 | 9.00 |
| 14,000 to 15,000 feet | 9.33 | 10.33 |
| 15,000 to 16,000 feet | 10.78 | 11.78 |
| 16,000 to 17,000 feet | 12.33 | 13.33 |
| 17,000 to 18,000 feet | 14.00 | 15.00 |

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

esr/

Case 505-0

# Wilson Oil Company

INCORPORATED UNDER THE LAWS OF NEW MEXICO

MAIN OFFICE OCC

1960 JUL 10 PM 6:33

P. O. BOX 627
SANTA FE, NEW MEXICO
TELEPHONE 3-7141

P. O. Box 1436
Artesia, New Mexico

July 8, 1960

Mr. A. L. Porter, Director
Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

In reply to your telephone request this date pertaining to extension of the deep well allowable factors, I have referred to the original minutes of the 1945 Commission Advisory Committee. The 1945 Committee did not consider the development of production as deep as 14,000 feet, thus did not submit factors in their report to the Commission. The 1945 cost figures, depth factors, and pay-out curves have been extended to include depths you requested this morning. The results are tabulated as follows:

| POOL DEPTH RANGE | 40 ACRE PROPORTIONAL FACTOR | ESTIMATED COST |
|---|---|---|
| *13,000 to 14,000' | 8.00 | $435,000 |
| 14,000 to 15,000 | 9.40 | 529,000 |
| 15,000 to 16,000 | 11.00 | 619,000 |
| 16,000 to 17,000 | 13.00 | 732,000 |
| 17,000 to 18,000 | 15.33 | 863,000 |

*Present depth factor under Commission rule.

The average cost in the above tabulation is based on a well at mid-depth of the range in which a proportional allowable factor is established. For example the range from 14,000 to 15,000 feet, the well cost is based on a depth of 14,500 feet.

One other factor which was established during the original 1945 Committee was that for every $56,000 expended, the operator was entitled to one unit allowable. This figure divided into the average cost of a field development well should establish a proportional allowable depth factor.

Yours truly,

WILSON OIL COMPANY

Raymond Lamb

Raymond Lamb
Vice President

Rocky Mtn. Area 1960

RL:jj

Assuming a normal unit allowable of 45 barrels per day, the following table shows the top unit allowables and increases of allowable for each depth interval.

| Depth Interval | Depth Factor | Top Unit Allowable Bbl. | Allowable Increase Above 0 - 5000' Interval Bbl. | Allowable Increase Above Preceding 1000' Bracket Bbl. |
|---|---|---|---|---|
| To - 5,000' | 1.00 | 45 80 | 0 | 0 |
| 5,000 - 6,000' | 1.33 | 60 95 | 15 15 | 15 15 |
| 6,000 - 7,000' | 1.77 | 80 | 35 | 20 |
| 7,000 - 8,000' | 2.33 | 105 | 60 | 25 |
| 8,000 - 9,000' | 3.00 | 135 | 90 | 30 |
| 9,000 - 10,000' | 3.77 | 170 | 125 | 35 |
| 10,000 - 11,000' | 4.66 | 210 | 165 | 40 |
| 11,000 - 12,000' | 5.66 | 255 | 210 | 45 |
| 12,000 - 13,000' | 6.77 | 305 | 260 | 50 |
| 13,000 - 14,000' | 8.00 | 360 | 315 | 55 |
| 14,000 - 15,000' | 9.33 | 420 | 375 | 60 |
| 15,000 - 16,000 | 10.78 | 485 | | 65 |
| 16,000 - 17,000 | 12.33 | 555 | | 70 |
| 17,000 - 18,000 | 14.00 | 630 | | 75 |

Reproduction of attachment to Shell's application for the final depth factors Cl 62, May 14, 1945

Formula for computing depth factors is:

$$DF = \frac{45 + 15n + 5[(n-1)+(n-2)+\ldots\ldots(n-n)]}{45}$$

Boiled down, this becomes:

$$DF = 1 + \frac{(n^2+5n)}{18}$$

Where $n$ = the number of 1000' increments below 5000 to the lower limit of the depth bracket.

Example: Detn DF for 17-18000'.

$n = 18-5 = 13$ 1000' increments to lower limit

$$DF = 1 + \frac{(13^2+5\cdot13)}{18} = 1 + \frac{(169+65)}{18} = 1+\frac{234}{18}$$

$DF = 1 + 13,00 = 14,00$

Jan Tuttle

(This formula was worked out from the existing factors after the hearing of Aug 17, 1966 — factors introduced at hearing were obtained by extrapolation of the known change in allowance from one bracket to the next)