Case No.

942

Application, Transcript,
Small Exhibits, Etc.

CASE 942: OCC application for exception to Rule 111.

~~Order not written~~

CONTINENTAL OIL COMPANY
Fair Building
Fort Worth 2, Texas

COPY

September 1, 1955

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention of Mr. W. B. Macey

Re: Case No. 942

Gentlemen:

At the conclusion of the taking of evidence in case 942 on August 17th our company requested a continuance to the September hearing in order to study the matter further. At that time a member of the Commission staff asked that operators mail to the Commission during the interim their suggestions as to how best to approach this problem, which we agreed to do.

Our reason for hesitating to endorse the proposed rule changes at that time was that the technique of drilling high angle drain holes is relatively new and therefore some additional study was thought to be in order before we expressed our views to the Commission. We wish to thank the Commission for granting our request for a continuance.

The evidence at the hearing indicated that the transition from vertical to horizontal drilling may be achieved in a relatively small amount of distance drilled, approximately 22 feet. It also indicated that the direction can be at least approximately controlled by the orientation of the drill pipe when the whipstock is run into the well. The evidence further indicated that at the present time distances drilled from the point of setting the whipstock do not ordinarily exceed 100' but have been as great as 170'. It would not be illogical to assume that with additional experience this distance will be exceeded. It is possible, however, that additional experience will prove greater lengths of drain holes to be impractical. Therefore, we suggest that the rules be left flexible enough that either eventuality will be covered.

We do not subscribe to the theory that an operator may intentionally deviate his well to his lease line and not suffer a penalty so long as the well is barely within the confines of his lease. On the other hand we recognize that a bore hole will deviate from the vertical; and so long as the direction is not controlled, and in the absence of evidence indicating the well has deviated beyond the limits of the lease, there is no valid reason to require the operator to

locate the bottom of the hole with relation to the lease lines. We also see no particular objection to the use of high angle drain holes, but we feel that certain restrictions should be imposed on the use of this technique.

We would suggest the following changes in the proposed amendments to rule 111 distributed at the hearing.

1. In paragraphs 1 and 6 under sub-section (c) the word "sworn" be substituted for the word "validated", and in paragraph 5, the words "sworn statement listing", in lieu of "validated mailing list of".

2. In lieu of paragraph 2 the following language be substituted:

   "2. The footage drilled from the point of setting the whipstock shall not exceed (a) the distance that the surface location of said well from the nearest lease boundary exceeds the minimum distance allowed by the applicable rules; or, (b) one-half the horizontal distance from the location of the point of setting the whipstock, as determined by directional survey, to the nearest lease boundary.

3. Paragraph 3 be changed slightly as follows:

   "The taking of a direction survey is impractical with equipment and technology existing at that time."

We will have a representative at the hearing in September who may have additional suggestions to offer at that time.

Yours very truly,

/s/ H. L. Johnston

RULE 108. DEFECTIVE CASING OR CEMENTING

In any well that appears to have a defective casing program, faulty cemented or corroded casing which will permit or may create underground waste, the operator shall proceed with diligence to use the appropriate method and means to eliminate such hazard of underground waste. If such hazard of waste cannot be eliminated, the well shall be properly plugged and abandoned.

RULE 109. BLOW-OUT PREVENTION

In drilling in areas where high pressures are likely to exist, all proper and usual precautions shall be taken for keeping the well under control, including the use of blow-out preventers and high pressure fittings attached to properly cemented casing strings.

RULE 110. PULLING OUTSIDE STRINGS OF CASING

In pulling outside strings of casing from any oil or gas well, the space outside the casing left in the hole shall be kept and left full of mud-laden fluid or cement of adequate specific gravity to seal off all fresh and salt water strata and any strata bearing oil or gas not producing.

RULE 111. DEVIATION TESTS

(a) When any well is drilled or deepened with rotary tools, tests to determine the deviation from the vertical shall be taken. When the deviation from the vertical in any 500 foot interval averages more than 5 degrees, a directional survey shall be filed with the Commission before any oil or gas from the well is sold so as to determine that the bottom of the hole is on the lease where the well is drilled.

(b) A deviational and directional survey shall be made and filed with the Commission on any well utilizing a whipstock or any method of deviating the well bore in a predetermined direction except to sidetrack junk in the hole, straighten a crooked hole or to control a blow-out. Special permits may be obtained to directionally drill in a predetermined direction as limited above, only after a hearing before the Commission.

RULE 112. MULTIPLE ZONE COMPLETIONS

(a) The multiple zone completion of any well, including a bradenhead gas well, may be permitted only by order of the Commission upon hearing.

(b) The application for such hearing shall be accompanied by an exhibit showing the location of all wells on applicant's lease and all offset wells on offset leases, and shall set forth all material facts on the common sources of supply involved, and the manner and method of completion proposed.

appropriate method and means for rectifying such damage. If shooting or chemical treating results in irreparable injury to the well the Commission may require the operator to properly plug and abandon the well.

RULE 114. SAFETY REGULATION

(a) All oil wells shall be cleaned into a pit or tank, not less than 40 feet from the derrick floor and 150 feet from any fire hazard. All flowing oil wells must be produced through an oil and gas separator of ample capacity and in good working order. No boiler or portable electric lighting generator shall be placed or remain nearer than 150 feet to any producing well or oil tank. Any rubbish or debris that might constitute a fire hazard shall be removed to a distance of at least 150 feet from the vicinity of wells and tanks. All waste shall be burned or disposed of in such manner as to avoid creating a fire hazard.

(b) When coming out of the hole with drill pipe, drilling fluid shall be circulated until equalized and subsequently drilling fluid level shall be maintained at a height sufficient to control subsurface pressures. During course of drilling, blow-out preventers shall be tested at least once each 24 hour period.

RULE 115. WELL AND LEASE EQUIPMENT.

Christmas tree fittings or wellhead connections with a working pressure equivalent to at least 150% of the calculated or known pressure in the reservoir from which production is expected shall be installed and maintained in first class condition so that on flowing wells, gas-oil ratio, static bottom hole or other pressure tests may be easily made. Valves shall be installed and maintained in good working order to permit pressures to be obtained on both casing and tubing. Each flowing well shall be equipped to control properly the flowing of each well, and in case of an oil well, shall be produced into an oil and gas separator of a type generally used in the industry.

RULE 116. NOTIFICATION OF FIRE, BREAKS, LEAKS OR BLOW-OUTS

All persons controlling or operating any oil or gas well or pipe line, or receiving tank, storage tank, or receiving and storage receptacle into which crude oil is produced, received or stored, or through which oil is piped or transported, shall immediately notify the Commission by letter giving full details concerning all fires which occur at such oil or gas well or tank or receptacle on their property, and all such persons shall immediately report all tanks or receptacles struck by lightning and any other fire which destroys oil or gas, and shall immediately report any breaks or leaks in or from tanks or receptacles and pipe lines from which oil or gas is escaping or has escaped. In all such reports of fires, breaks, leaks or escapes, or other accidents of this nature, the location of the well, tank, receptacle, or line break shall be given by Section, Township, Range and property, so that the exact location thereof can be readily located on the ground. Such report shall likewise specify what steps have been taken or are in progress to remedy the situation

CASE 942

RECOMMENDATION OF SHELL OIL COMPANY FOR AMENDMENT OF RULE 111 OF THE COMMISSION'S STATEWIDE RULES AND REGULATIONS

Rule 111. Deviation tests.

(c) The Commission may grant administratively a special permit for the drilling of high-angle drain holes upon request by an operator provided, however, that prior to the sale of any oil or gas from the well the operator shall make and file with the Commission and each offset operator a copy of a deviational and directional survey showing the position of the take-off point with respect to all lease boundaries accompanied by sworn statements executed by the service company drilling the drain holes providing all data as to length and direction of each drain hole so that the Commission may determine that the take-off point and all drain holes are on the lease where the well is drilled.

The Commission shall grant an allowable for a well in which drain holes have been drilled if the above requirements are met and no objection from an offset operator has been received ten days after receipt of the deviational and directional survey and sworn statements concerning the drain holes and the dates of filings of copies of the surveys with offset operators. If the Commission is not convinced from the data presented that the take-off point and all drain holes are on the lease where the well is drilled, or if an offset operator has objected within ten days after receipt of the deviational and directional survey and sworn statements concerning the drain holes; the Commission shall grant an allowable for such well only upon a favorable finding after a hearing. If considered necessary to establish that any particular drain hole lies completely on the lease where the well is drilled, the operator of such well may be required at his expense to make a deviational and directional survey of the drain hole and to file with the Commission and each offset operator a copy of such survey.

The granting, with or without hearing, of an allowable to a well in which drain holes are drilled, shall not prevent the Commission or any operator from thereafter reopening the matter for just and equitable reason.

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. BOX 871
Santa Fe, New Mexico

Proposed Amendment to Rule 111 of the Statewide Rules and Regulations

Rule 111

(a) Unchanged

(b) Unchanged

(c) The Secretary-Director of the Commission shall have the authority to grant an exception to the provisions of paragraph (b) above without Notice and Hearing where application has been filed in due form and the following facts exist and the following provisions are complied with:

1. A complete, validated statement of the proposed work to be performed and the purpose thereof must be submitted with a plat of the lease showing the location of the well and offset ownership.

2. The well on which the sidetrack is to be performed must not be closer than 600 feet to any outer boundary of the lease on which it is located.

3. The taking of a directional survey is impractical, if not impossible with present equipment and technology.

4. The applicant presents written consent in the form of waivers from all operators owning interests within 1500 feet of the subject well.

5. In lieu of paragraph 4 of this rule, the applicant may furnish proof of the fact that the owners of interests within 1500 feet were notified by registered mail of the proposed sidetrack or sidetracks by submitting a validated mailing list of the operators notified, with the application. The Secretary-Director of the Commission may approve the application if, after a period of 10 days following the mailing of said notice, no operator has made an objection to the proposed work.

6. Immediately following the completion of the work, a complete validated report of the work performed shall be submitted to the Commission in DUPLICATE.

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. BOX 871
Santa Fe, New Mexico

Proposed Amendment to Rule 111 of the Statewide Rules and Regulations

Rule 111

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 1
CASE 942

(a) Unchanged

(b) Unchanged

(c) The Secretary-Director of the Commission shall have the authority to grant an exception to the provisions of paragraph (b) above without Notice and Hearing where application has been filed in due form and the following facts exist and the following provisions are complied with:

1. A complete, validated statement of the proposed work to be performed and the purpose thereof must be submitted with a plat of the lease showing the location of the well and offset ownership.

2. The well on which the sidetrack is to be performed must not be closer than 600 feet to any outer boundary of the lease on which it is located.

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NEW MEXICO OIL CONSERVATION COMMISSION
P. O. BOX 871
Santa Fe, New Mexico

Proposed Amendment to Rule 111 of the Statewide Rules and Regulations

Rule 111

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2. The well on which the sidetrack is to be performed must not be closer than 600 feet to any outer boundary of the lease on which it is located.

3. The taking of a directional survey is impractical, if not impossible with present equipment and technology.

4. The applicant presents written consent in the form of waivers from all operators owning interests within 1500 feet of the subject well.

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6. Immediately following the completion of the work, a complete validated report of the work performed shall be submitted to the Commission in DUPLICATE.

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. 942
Order No. R-1916

APPLICATION OF THE OIL CONSERVATION COMMISSION UPON ITS OWN MOTION FOR AN ORDER ESTABLISHING RULES AND PROCEDURE IN EXCEPTIONS TO RULE 111 OF THE COMMISSION'S STATEWIDE RULES AND REGULATIONS TO PERMIT THE DRILLING OF HIGH ANGLE DRAIN HOLES WITHOUT REQUIRING A DEVIATIONAL AND DIRECTIONAL SURVEY.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 15, 1955, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 22nd day of March, 1961, 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 the subject application, pending for an undue period of time, should be dismissed.

IT IS THEREFORE ORDERED:

That Case No. 942 be and the same is hereby dismissed.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

E. S. WALKER, Member

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

esr/

BEFORE THE

Oil Conservation Commission

SANTA FE, NEW MEXICO

September 15, 1955

IN THE MATTER OF:

CASE NO. 942

TRANSCRIPT OF PROCEEDINGS

ADA DEARNLEY AND ASSOCIATES
COURT REPORTERS
605 SIMMS BUILDING
TELEPHONE 3-6691
ALBUQUERQUE, NEW MEXICO

Before the
Oil Conservation Commission
Santa Fe, New Mexico
September 15, 1959

IN THE MATTER OF:

Application of the Commission upon its own motion for an order establishing rules and procedure in exception to Rule 111 of the Commission's Statewide Rules and Regulations to permit the drilling of high angle drain holes without requiring a deviational and directional survey.

Case No. 942

BEFORE:

Honorable John F. Simms
Mr. E. S. (Johnny) Walker
Mr. William B. Macey

TRANSCRIPT OF HEARING

MR. MACEY: The next case on the docket is Case 942.

C H A R L E S M. R I E D E R ,

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. KITTS:

Q State your name and position, please.

A Charles M. Rieder, Engineer with the Oil Conservation Commission.

Q Mr. Rieder, in your [illegible] you wish to make in connection with Case 942?

A Yes, Sir. We do. [illegible] proposed rule which we wish to offer for alternative relief, and in proce-

ing exceptions to Rule 111 of the Statewide Rules and Regulations. At the time, it was anticipated that certain suggestions would be submitted to the Commission for consideration. The Commission has received a suggestion in addition to the Shell suggestion which was presented at the hearing last month. If I may I would like to read the suggested revisions that were submitted to the Commission by the Continental Oil Company.

Q Were they submitted to you in Hobbs?

A No, they were submitted to the Santa Fe Office. The first change that they would propose -- I will read this in so that everyone will be acquainted with it. They suggest that the word "validated" be removed in all paragraphs, and the word "sworn" be inserted in its stead. Their second suggestion dealt with Paragraph 2. The intention of Paragraph 2 was to limit administrative relief to wells which were located a distance greater than 600 feet from the lease boundaries. The language that they would suggest inserted is as follows:

"The footage drilled from the point offsetting the whipstock shall not exceed: (a) The distance that the surface location of said well from the nearest lease boundary exceeds the minimum distance allowed by the applicable rules; or (b) One half the horizontal distance from the location of the point offsetting the whipstock, as determined by directional survey, to the nearest lease boundary.

Their third suggestion which they propose here was for Paragraph 3. Paragraph 3 was just a further limitation on administrative approval in which they would say: "The taking of a directional survey is impracticable with equipment and technology existing at that time."

That is the extent of the suggestions which they made. I would at this time like to incorporate a few suggestions which I felt might combine, possibly, all three proposals, or the better part of all three, I hope. The proposed revision of Rule 111 would read as follows:

Section A would remain unchanged. Section B would remain unchanged. Section C would read: "The Secretary-Director of the Commission shall have the authority to grant an exception to the provisions of Paragraph (b), above, without notice and hearing, where application has been filed in due form and the following facts exist, and the following provisions are complied with."

I would like to make no change in the first Number 1 Paragraph under there which reads as follows: "A complete --" and here I would leave it up to legal counsel whether validated or sworn should be used. "A complete sworn statement of the proposed work to be performed and the purpose thereof must be submitted with a plat of the lease, showing the location of the well and offset ownership." That portion I would leave unchanged.

Number 2, I would insert the following: "A directional survey giving the exact location of the point offsetting the whipstock shall be required on all wells which are located 660 feet, or closer, to any outer boundary of the lease on which it is located.

3. The taking of a directional survey is impractical with the equipment and technology existing at this time.

Four. - These are the same, both 4 and 5, as were presented at the last hearing, dealing with the notification of offset operators with the 1,500 foot radius as a distance of the operators to be notified. The purpose of this, as I see it, it is conceivable that

some offset operators would object to the drilling of the drain-holes, irregardless of where the well was located, or how the bottom of the hole looked, and it would seem to me that it would eliminate the expense of going ahead and commencing operations on a well when the offset operator would object in any event. I would like to retain those portions. I would also retain Paragraph 6 which would require that the Commission be furnished a complete sworn report of the work performed on the well, giving to the best of the knowledge of the operator and the service company, with the technician and equipment available, indicating the direction that the whipstocks were set in.

I would suggest a further provision, that in the event that the work is to be performed on a well which is located on any interior portion of a lease, such as a large lease owned by one single operator where the well would be 1,980 feet, or more, from any outer boundary, that there could be no conceivable objection by any operator, and that the taking of the bottom-hole survey at the point of kick-off, could be an unnecessary and expensive project to undertake when it certainly wouldn't be needed.

I think that there should be a Paragraph 7 inserted, which would give to the operator of any lease located 1,500 feet within its own boundaries, the option of performing the work without any survey and without setting the whipstock with any degree of accuracy. This shouldn't be included in the rule, however, it is going to be necessary in the taking of these wells, or the taking of the surveys of these wells, even though your offset operator has a given approval. I think that after the survey of the bottom-hole location has been taken, that it would only be prudent to contact the nearest operator

that might be affected, to assure yourself of being able to perform your work without any difficulty and without any hold-up in your allowable. That is all I have.

Q Are your suggestions incorporated in an exhibit you have there?

A More or less.

Q Anything you care to offer as an exhibit?

A I think we had better take it from the record.

MR. MACEY: Does anyone have a question of the witness? If no question of the witness, the witness may be excused.

(Witness excused.)

MR. MACEY: Does anyone have anything further in this case? If nothing further we will take the case under advisement.

STATE OF NEW MEXICO)
: SS.
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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 30th day of September, 1955.

Ada Dearnley
Notary Public, Court Reporter

My Commission Expires:
June 19, 1959

DRAFT

RSM/esr
August 24

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. 942
Order No. R- 1716

APPLICATION OF THE OIL CONSERVATION
COMMISSION UPON ITS OWN MOTION FOR
AN ORDER ESTABLISHING RULES AND
PROCEDURE IN EXCEPTIONS TO RULE 111
OF THE COMMISSION'S STATEWIDE RULES
AND REGULATIONS TO PERMIT THE DRILL-
ING OF HIGH ANGLE DRAIN HOLES WITHOUT
REQUIRING A DEVIATIONAL AND DIRECTIONAL
SURVEY.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 15, 1955, ~~xxxxx~~ at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this _____ day of March, 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 the subject application, pending for an undue period of time, should be dismissed.

IT IS THEREFORE ORDERED:

That Case No. 942 be and the same is hereby dismissed.

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

Upon

PETROLEUM DRAINHOLES DRILLING CORPORATION

1404 CITY NATIONAL BANK BLDG.

HOUSTON 2, TEXAS

July 15, 1955

Mr. W. B. Marcey
Secretary & Director
New Mexico Oil Conservation Commission
125 Mabry Hall
Capitol Building
Santa Fe, New Mexico

Dear Sir:

Petroleum Drainholes Drilling Corporation, a recently formed concern, contemplates servicing a well located in New Mexico.

Prior to undertaking this work, we deem it advisable to consult your office to ascertain your attitude in connection with our service, this service being the drilling of multiple, radial drainage holes to improve and increase ultimate recovery from producing horizons.

In order to facilitate prompt action, we will have our representative in Santa Fe this coming week. At that time he will take the liberty of contacting you for an appointment to discuss the details of our service and secure your recommendations concerning same.

Very truly yours,

PETROLEUM DRAINHOLES DRILLING CORP.

By: William E. Leece
William E. Leece
Vice President

WEL/hb

BEFORE THE

Oil Conservation Commission

SANTA FE, NEW MEXICO

August 17, 1955

IN THE MATTER OF:

CASE NO. 942

TRANSCRIPT OF PROCEEDINGS

ADA DEARNLEY AND ASSOCIATES
COURT REPORTERS
605 SIMMS BUILDING
TELEPHONE 3-6691
ALBUQUERQUE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 17, 1955

IN THE MATTER OF:

Application of the Commission upon its own motion for an order establishing rules and procedure in exception to Rule 111 of the Commission's Statewide Rules and Regulations to permit the drilling of high angle drain holes without requiring a deviational and directional survey.

Case No. 942.

BEFORE:

Honorable John F. Simms
Mr. E. S. (Johnny) Walker
Mr. William B. Macey

TRANSCRIPT OF HEARING

MR. MACEY: The next case on the docket is Case 942.

C A R E Y B. O' C O N N O R,

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. GURLEY:

Q Would you state your name and position, please?

A Carey B. O'Connor, vice-president of Petroleum Drainholes Drilling Corporation, Houston, Texas.

Q Have you appeared before this Commission before?

A I have not.

Q Would you state your educational and experience background?

A A. B. Dartmount. Petroleum Engineer, Oklahoma University.

For the previous two years I have been engaged in the development and perfection of the technique of high angle drainhole drilling; for five years previous to that I was techincal advisor to the National Petroleum Council of Brazil, in Rio De Janerio.

MR. GURLEY: Are the witness's qualifications acceptable?

MR. MACEY: They are.

Q In your official capacity have you had an opportunity to study the subject technique?

A Yes, I have.

Q Do you have recommendations as a result of that study?

A I have.

Q Would you state your recommendations and your reasoning behind them to the Commission?

A Well, briefly to go into a little clarification of our technique, our tools allow a high angle hole be drilled from a very high angle whipstock, a whipstock more than three or four times a deflection of whipstocks previously used in drilling, or completing oil or gas wells. We have been pursuing this technique for the past four years. The reason for drilling these holes is generally to increase the drainage radius of a well in tight formations, or in formations where the gas pressure is depleted and no active water drive exists in fracaured limestone or in dirty laminated formations. The main object behind this whole thing being to increase production.

The results we have observed have been on the order offrom two to five times in cases where strictly drainage is involved.

My reason for appearing here is to point out the impracticability or impossibility of obtaining a directional survey in an extremely high angle hole. Tools have not been developed. We have been actively

working on them. So far we have been unable to develop a tool which will give an accurate directional survey in a high angle hole. Therefore, in drilling high angle holes in the State of New Mexico we are unable to comply with the existing Oil and Gas Commission Regulations, requiring directional survey in a deviated hole.

Q Do you have any further recommendations to make at this time?

A I have not.

MR. MACEY: Does anyone have any questions of the witness?

A I will be glad to answer any questions pertaining to the subject of this hearing at the moment, any other questions I would be more than happy to answer after the hearing.

MR. MACEY: Mr. Lyon?

CROSS EXAMINATIONS

By MR. LYON:

Q Could you tell us how far you can drill from your whipstock at your takeoff point with the equipment that you have?

A The longest hole drilled to date is one hundred twenty linear feet, that is total hole. The longest displacement we have measured from the main bore by means of inclination survey, and we have no indication as to its accuracy because of lack of directional indication, has been 77 feet.

Q Well, is your company the company that has published the little brochures that the Commission has?

A Yes.

Q In that brochure, as I recall, there were plots of wells which had been deviated. Could you tell me how you measured the deviation in those?

A Those were either measured with an Eastman deviational survey

tool, the accuracy of those is questionable, is extremely questionable since we are unable to get the tool far enough away from magnetic influence to give a true reading. I believe that the brochures that the Oil and Gas Commission have show only inclination. As far as I know, none of our attempts at deviational surveys have been published.

Q How nearly horizontal are your drainage holes?

A We generally attain horizontal within 15 feet of our kick-off point.

Q That is total distance drilled?

A No, that is vertical distance, that will generally be a total distance of 22 feet. We have run horizontal out to 70 feet. That has been actually surveyed by means of an inclinational survey.

Q Just for my own information, and out of my own curiosity, how far do you normally drill a well in your drain holes from the kick-off point in order to achieve your greater drainage radius?

A The average of all our work is slightly over 50 feet. If youwill start from inception, lately most of the holes we have been required, and this distance has been set by the operators themselves, has been 75 feet. However, the overall average to date is 50 feet, slightly in excess of 50 feet.

Q How many high hole drain holes do you drill in one wellbore, ordinarily?

A That depends on the operator. We have drilled, to my knowledge the maximum in one wellbore was 11.

MR. MACEY: Anyone else have a question of the witness?

MR. NESTOR: A. W. Nestor, for Shell.

By MR. NESTOR:

Q Mr. O'Connor, in deviating your holes, you do position a whipstock in a hole, is that correct?

A That is correct. The whipstock is position of bottom hole by means of tailpipe.

Q Do you locate that thing with respect to direction?

A We can if it is required. That is done by means of the Eastman-Stockenberry method of orientation.

Q Having done that, do you suppose that with the tests that you have made, that you might reasonably establish the direction of the holes, and the possible point under the lease where a drain hole has been completed?

A I would certainly give you a possible point, but I would hate to state whether or not we were anywhere near that possible point, since each hole that we have surveyed has a complete void behaviour.

Q They don't normally go straight?

A They don't normally go straight. They have a tendency, because of the right-hand rotation, to walk to the right. How much the degree they walk off is an individual in each case.

Q What sort of range have you observed so far?

A Anywhere from five to 45 degrees.

MR. MACEY: Anyone else have a question of the witness? If not the witness may be excused.

(Witness excused.)

C H A R L E S M. R I E D E R ,

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. GURLEY:

Q State your name, please.

A Charles M. Rieder.

Q What is your position?

A Engineer with the Oil Conservation Commission.

Q Have you, in your official capacity made a study of the subject technique?

A Yes, sir.

Q Do you have recommendations as a result of that study?

A I have.

Q Would you please state your recommendations and the reason behind them, please?

A As was pointed out by Mr. O'Connor, to permit the use of this technique would be in conflict with Statewide Rule R-111. I propose an amendment to Rule 111 to permit the use of this technique on wells in the State of New Mexico, by securing an administrative approval of such a proposed operation. I will read the change to R-111 for those who do not have a copy.

Paragraph (a) will remain unchanged. Paragraph (b) will remain unchanged.

Paragraph (c) will read briefly as follows:

" (c) The Secretary-Director of the Commission shall have the authority to grant an exception to the provisions of paragraph (b) above without Notice and Hearing where application has been filed in due form and the following facts exist and the following provisions are complied with:

1. A complete, validated statement of the proposed work to be performed and the purpose thereof must be submitted with a plat of the lease showing the location of the well and offset ownership.

2. The well on which the sidetrack is to be performed must not be closer than 600 feet to any outer boundary of the lease on which it is located.

3. The taking of a directional survey is impractical, if not impossible with present equipment and technology.

4. The applicant presents written consent in the form of waivers from all operators owning interests within 1500 feet of the subject well.

5. In lieu of paragraph 4 of this rule, the applicant may furnish proof of the fact that the owners of interests within 1500 feet were notified by registered mail of the proposed sidetrack or sidetracks by submitting a validated mailing list of operators notified, with the application. The Secretary-Director of the Commission may approve the application, if, after a period of 10 days following the mailing of said notice, no operator has made an objection to the proposed work.

6. Immediately following the completion of the work, a complete validated report of the work performed shall be submitted to the Commission in DUPLICATE."

If I may, I will briefly go over these. The purpose of the notice to allow the offset operators that might object might not be effected by such high angle drain holes, to have the opportunity to consent or object to the proposed work. We have felt that having the well 600 feet from any outer boundary with the present technique

of the company using this, would give adequate protection in most cases. I would like to point out, this, in no way takes care of the 330 location which under the proposed rule amendment would require a hearing if you had 333 on a location on which you would like to use the technique.

4 and 5 allow the operators of the offset an opportunity to object or at least have notice of the operation being performed.

Number 6 is for the purpose of the Commission, as well as the offset operators, inasmuch as the Commission will want on file a complete report of what has been done to the well, and that makes available to the operators and to the industry as well as to the Commission, an opportunity to investigate what has been done.

I would like to add further, that the Commission, in no way, is supporting the company with this procedure, but we do think that it has some possibility and some merit, and is worthy of some experincutation, and for that reason I recommend the adoption of this amendment.

MR. MACEY: Any questions of Mr. Rieder?

MR. SMITH: J. K. Smith, Stanolind Oil and Gas Company.

CROSS EXAMINATION

By MR. SMITH:

Q Mr. Rieder, don't you think it might be advisable to define high angle drilling technique so that there will be no misunderstanding as to the nature of the work that is going to be done?

A You would suggest that in paragraph (c) we limit it to this high angle technique. I think that would be perfectly all right. The only reason I left it out is that it is possible if a competitor were to come into the business he might call it something else. Then we would have the whole thing to do over again. I think

however, to limit to high angle drilling would be all right.

Q Whether you call it by the trade name or describe the process, someone might sort of sidetrack and go quite a ways up the hole unless you had some dort of restriction in the order so that you can check and see where the possibilities of this might be, it might be hard to police.

A I think that is an excellent suggestion.

MR. MACEY: I might say, that in the event someone came in on an ordinary sidetrack job, way up the hole, I don't think the Commission would approve it administratively. We would confine it to the type of work done here. I think we could me more explicit on what this pertains to.

A I doubt seriously if you would, with offsetting, you would give them any approval.

Q That contemplates that he is going to set out, where he is going to start and everything else.

A I think we would require that. Without a complete intention stated, you would have no way of knowing what was going to be done.

MR. MACEY: Anyone else? Mr. Foster?

MR. FOSTER: What fact would you be able to develop, where the well was within 330 feet of the lease line, to justify the use of this device that you wouldn't be able to develop where it was within 660?

A Well, I would think that there would be a possibility of a 330 location in which the operator intended to control the point he leaves his hole. In other words, control the point, he sets the whip-stock where he might be figuring both holes, as many holes as he had toward the center of the lease in which case I don't believe it would

be proper for administrative relief, but a proper matter for hearing because he would be coming in and asking for permission to do it. If he had the proposed sidetrack pointed toward the center of the lease, it would be a matter for hearing, and the matter of the offset operators objecting or agreeing to such a plan. It would be difficult for the Commission to control such an operation, by administrative procedure. I would think there would be a place for it, particularly in water flood, where, I understand from Mr. O'Connor, they are using this procedure to try and parallel the lease lines and give a better pattern for their flood operations. Those things are all a matter for hearing, but not a matter for administrative relief.

Q (By MR. FOSTER): The point I am confused on is why would you want a hearing in one instance and you wouldn't want it in another?

A With the well located in the center of the quarter quarter section and what with a maximum of 100 linear feet, I would think that if these procedures were followed there could be very little damage to correlative rights, however, with a well located 330, there is a possibility for objection from one of the offset operators. I think it would be a little better procedure.

MR. MACEY: I might say, in answer to your question, that the reason that the 600 foot provision was put in there, we felt that if they got closer than 600 feet the offset operator would, in all probability, object to the proposal, administratively, and we would want it put up for hearing. You will notice it pertains to the lease line, it doesn't mean that you can't drill a 330 location within the confines of your lease, within the center portion of your lease.

MR. FOSTER: Since I didn't have any information about this, anyway as to what direction it is going to take, I didn't see where the distance from the lease line would have very much effect. You might as well grant it administratively where it is 330 feet and 660 feet.from the lease line.

A If it please the Commission, I would appreciate any other operators comment on that. At the time we couldn't, if the operators were willing and felt it was desirable, I think the administrative relief could be given to wells located 330, 330. Our only purpose in limiting to the 600 foot location is to eliminate as much discussion on this as possible, or argument, but I would suggest if the other operators have anything to say this would be an excellent time.

MR. MACEY: Mr. Nestor?

By MR. NESTOR:

Q I might ask Mr. Rieder if it isn't about as likely you would run into a correlative rights problem, say, twelve or fourteen thousand foot well drilled 600 feet, as you will with a 5,000 foot hole drilled 330?

A Yes, because with the limitations, deviations that we have approved, it would be quite easy to get quite close to the line at the bottom of the hole.

MR. MACEY: Anyone else have a question of Mr. Rieder? If not the witness may be excused.

(Witness excused.)

MR. MACEY: Does anyone have anything further in this case? Any statements?

MR. SETH: Shell would like to make a statement through Mr.

Nestor.

MR. NESTOR: Shell is, of course, quite interested in this problem presented by the drilling of high angle drain holes, and we are somewhat concerned with the possibility of affecting correlative rights, so that we have prepared a recommendation which I will go through and then be happy to answer questions as to our reasons for these several recommendations.

We propose the addition of a sub-paragraph (c) to Rule 111 to read as follows:

The Commission may grant administratively a special permit for the drilling of high-angle drain holes upon request by an operator provided, however, that prior to the sale of any oil or gas from the well the operator shall make and file with the Commission and each offset operator a copy of a deviational and directional survey showing the position of the take-off point with respect to all lease boundaries accompanied by sworn statements executed by the service company drilling the drain holes providing all data as to length and direction of each drain hole so that the Commission may determine that the take-off point and all drain holes are on the lease where the well is drilled.

The Commission shall grant an allowable for a well in which drain holes have been drilled if the above requirements are met and no objection from an offset operator has been received ten days after receipt of the deviational and directional survey and sworn statements concerning the drain holes and the dates of filings of copies of the surveys with offset operators. If the Commission is not convinced from the data presented that the take-off point and all drain holes are on the lease where the well is drilled, or if an

offset operator has objected within ten days after receipt of the deviational and directional survey and sworn statements concerning the drain holes; the Commission shall grant an allowable for such well only upon a favorable finding after a hearing. If considered necessary to establish that any particular drain hole lies completely on the lease where the well is drilled, the operator of such well may be required at his expense to make a deviational and directional survey of the drain hole and to file with the Commission and each offset operator a copy of such survey.

The granting, with or without a hearing, of an allowable to a well in which drain holes are drilled, shall not prevent the Commission or any operator from thereafter reopening the matter for just and equitable reason."

I think our statement makes clear that we are primarily concerned that any of the drilling of these drain holes and all of that drilling is done on the operators lease, with consideration for the greater depths at which we drill these days. It seems important to us to enter possibly a few figures into the record. These are the regular Sperry-Sun figures, giving drift per hundred feet of measure depth and they simply point out the need for establishing the position of the take-off point on the lease.

We might point out that if an average angle of four degrees is sustained in a given direction and therefore would not require, under the present rules any directional deviational survey, that such a hole would wander at its bottom, 698 feet in 10,000 feet of depth. That makes it clear that it is possible for such a well to be bottomed off its lease and then in addition to that, someone will go in and drill drain holes, and he may continue drilling these drain holes on

someone else's lease.

We feel that the present rules are adequate, not requiring surveys in wells drilled, but that wherever any intentional directional deviation of a hole takes place that an operator is no longer resorting to chance. He is trying to improve his well, which is fine, by deliberate means. We think that the primary necessity would be for him to establish, by means of a survey through the take-off point, that at least at that point the well is on his lease. Then, the filing of statements by the service company as to the direction and length of the drain holes should in most cases permit the Commission to find that no violation of any correlative rights is involved.

We would, therefore, favor the administrative approval by and large in most cases. You can see from this that possibly in some respects our suggested amendment to the rule is more flexible than that offered by the Commission in that we don't limit the surface location of the well to 600 feet for an administrative approval, but rather than that, we are more concerned where the bottom of the hole is than the top. We feel that if a survey is run and these other reports are filed, that in the great majority of cases no further action would be indicated, and the Commission would be in a position to grant administratively, an allowable after the ten-day period.

Our statements in here, possibly we were a bit mislead by the brochure of which we obtained a copy, as to the practicable ability and availability for obtaining tools for the running of directional and deviational surveys for drain holes. If it is impossible to do such work, it might then become necessary to limit the length of the

longest drain hole to a distance which would be certain that all the drain holes are on the lease where the well is being drilled. That isn't completely desirable. We even vision a case where an operator might bottom its hole, say, 50 feet from a lease line, which I believe is completely legal under the present rule, which simply requires that he bottoms the hole on the lease where the well is drilled. He may wish to drill holes up to a maximum up to 170 feet in length. Well, if it were possible to determine in which direction exactly those holes were going we wouldn't care if he drilled away from the lease lines. We see nothing wrong with that. If we were an offset operator, we would be quite upset if he set off in a direction of our lease line, and drilled 170 feet We think it is very important in the protection of our correlative rights that this particular angle be considered in the framing of any amendment to the rule.

MR. MACEY: Anyone have any questions?

MR. RIEDER: Then you would withold Commission approval until all the work had been performed?

MR. NESTOR: Only as to an allowable. Actually our idea is to permit the work to go ahead with the operators understanding what the rules are, that they have to stay on their lease which is the very least that should be required of operators that are drilling.

MR, RIEDER: In other words the approval of the 103 giving notice of the intention to perform the work that would give them the authority to go ahead?

MR. NESTOR: Yes. We could handle it with a special permit, or simply by granting of the authority to proceed on Rule 103. The idea being not to delay the doing of the work, but where there is any question to delay the granting of an allowable, because as we see it, the legal aspects of the problem would be such that if an allowable were granted and extended hearing resulted, that it would be

probably very difficult to recover damages for any oil produced during that time.

We could probably go to Civil Court after the hearing and possibly receive a judgment which would terminate operation of such a well, but any oil produced prior to the outcome of such a case, the Commission would have no jurisdiction to revoke the allowable, well the oil has been already produced and sold. We wonder where the damages might be recovered.

MR. RIEDER: Your recommendation would be that there would be no footage limitation to the surface, only the sub-surface?

MR. NESTOR: Yes. And then that the man stay only on his own lease.

MR. RIEDER: So far as no footage limitation, that he stay only on his own lease?

MR. NESTOR: Yes.

MR. RIEDER: It will be necessary for such work to be approved before the work is commenced, it probably would be on the 103, would you say that the operators within, such as a 1,500 foot radius be furnished copies?

MR. NESTOR: Yes, that would be fine. We send all offset operators. Then the only thing that would qualify, that they would receive the copy of the log to the take-off point, and the statement to length and direction of the holes.

MR. MACEY: Anyone else?

MR. MALONE: Ross Malone, for Gulf. We feel that there is a great deal to be said for the provisions of both these proposed rules. Actually they compliment each other rather well. The Commission's approach to it is before any drilling is undertaken its

procedure is going to be followed. The Shell's approach is that on completion of the well, and prior to assignment of the allowable, this procedure is going to have to be followed. Perhaps, a combination of the two of them would accomplish what we had in mind.

It would seem desirable that adjoining operators at least have notice of the intention of the operator who is going to whipstock his well at the outset. If there is going to be a protest at that stage of the game, the operator perhaps would like to know that he is facing a possible protest. At the same time, until the well has been completed there will not be available adequate information as suggested by Mr. Nestor, for adjoining operators to know whether they are really going to be hurt or not. It occurs to Gulf that the combination of the two may be a solution to the problem. We favor the retention of the 600 foot limit on administrative approval.

MR. MACEY: Anyone else?

MR. GRENIER: I was about to try and bring out the same point that Mr. Malone did, only I was going to ask Mr. Nestor if he thought that would be all right.

MR. NESTOR: I think, yes, that we could join the two rules except where they might tend to conflict. Our reason for not requiring the offset operators to be notified at first was that we felt very little would be served, in that if the rules are written the technique will be an approved one, and there really can't be anything to argue about until you get some facts. We figured that the Commission could go ahead and grant, under a certain set of rules, the permission to go ahead and do work with the understanding you had to keep within certain boundaries. Then the offset operators would come in when the facts became available, and have ten days

from the date of such surveys and statements, to make an appearance and either waive their rights, or make an objection and demand hearing.

MR. MACEY: Anyone else?

MR. LYON: V. T. Lyon, with Continental Oil Company. There are several aspects of this technique, and also two sets of rules which have been submitted today. We would like to give it additional study. We would like to recommend that the Commission continue the matter until the September hearing.

MR. MACEY: Is there objection to the continuance of the case until the September hearing?

MR. RIEDER: If it please the Commission, would it be possible for the various operators to submit what they might suggest as a rule or amendment, so we might print up another proposed amendment to this rule and submit it prior to hearing, so that we could kind of get this thing hashed out next hearing?

MR. LYON: We would be glad to do that.

MR. MACEY: If there is no objection we will continue Case 942 to the September hearing. We will recess until after lunch. You are warned that this room is occupied during the noon hour. I suggest you take the brief cases into our office.

STATE OF NEW MEXICO)
: SS.
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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 WHEREAS I have affixed my hand and notarial seal this 23rd day of August, 1955.

My Commission Expires:
June 19, 1959

Ada Dearnley
Notary Public, Court Reporter

STATE OF NEW MEXICO)
: ss.
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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 19th day of August, 1955.

Ada Dearnley
Notary Public, Court Reporter

My Commission Expires:

June 19, 1959

The LIVINGSTON-SHRADER Co.
• SIDETRACKING
• STRAIGHTENING
• DIRECTIONAL DRILLING
LIBERTY, TEXAS

DIRECTIONAL DRILLING RECORD

SUN OIL COMPANY
HARPER NO. 1
JAL, LEA COUNTY, NEW MEXICO

THE LIVINGSTON-SHRADER CO.

Liberty, Texas

1318 Highway 90 Phone 650 P.O. Box 375

Directional Drilling Record

SUN OIL COMPANY
HARPER NO. 1
JAL, LEA COUNTY, NEW MEXICO

THE LIVINGSTON-SHRADER CO.

LIBERTY, TEXAS

THE LIVINGSTON-SHRADER CO.

DIRECTIONAL DRILLING RECORD

WELL SUN OIL COMPANY HARPER NO. 1 FIELD JAL, LEA COUNTY, NEW MEXICO DATE September 3, 1953

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
				FROM SPERRY-SUN SURVEY		102 12		141 74		CSG. W.S.
1.	10,400 00	1° 45'	10,394 80		N 40° 00' E	103 64		143 01		SET @ 10,465'
2.	10,465 00	1° 45'	10,459 77		N 66° 00' E	104 43		144 77		K.G.# 1 SET
3.	10,576 00	1° 00'	10,570 75		S 62° 00' E	103 10		147 26		@ 10,576'
4.	10,630 00	3° 00'	10,624 67		S 73° 00' E	102 49		149 27		
5.	10,667 00	3° 15'	10,661 61							
6.	10,725 00	5° 00'	10,719 39		S 58° 00' E	99 81		153 56		
7.	10,753 00	6° 00'	10,747 22		S 63° 00' E	98 48		156 17		
8.	10,790 00	7° 45'	10,783 88		S 69° 00' E	96 69		160 83		
9.	10,815 00	8° 45'	10,808 59		S 77° 00' E	95 83		164 54		
10.	10,851 00	10° 00'	10,844 04		S 82° 00' E	94 96		170 73		
11.	10,954 00	12° 45'	10,944 50		N 86° 00' E	96 54		193 41		
12.	10,984 00	14° 00'	10,973 61		N 79° 00' E	97 93		200 54		
13.	11,060 00	16° 45'	11,046 39		N 76° 00' E	103 23		221 80		
14.	11,100 00	17° 00'	11,084 64		N 74° 00' E	106 45		233 04		
15.	11,131 00	16° 30'	11,114 36		N 72° 00' E	109 17		241 41		
16.	11,165 00	15° 00'	11,147 20		N 71° 00' E	112 04		249 73		
17.	11,202 00	14° 00'	11,183 10		N 67° 00' E	115 54		257 97		
18.	11,232 00	14° 15'	11,212 18		N 69° 00' E	118 19		264 87		
19.	11,262 00	14° 30'	11,241 22		N 66° 00' E	121 25		271 73		
20.	11,292 00	15° 00'	11,270 20		N 66° 00' E	124 41		278 82		
21.	11,326 00	15° 00'	11,303 04		N 66° 00' E	127 99		286 86		
22.	11,342 00	14° 30'	11,318 53		N 62° 00' E	129 87		290 40		
23.	11,365 00	14° 30'	11,340 80		N 61° 00' E	132 66		295 44		
24.	11,420 00	15° 30'	11,393 80		N 59° 00' E	140 23		308 04		
25.	11,443 00	15° 15'	11,415 99		N 59° 00' E	143 34		313 23		

ALL DIRECTIONS ARE FROM TRUE NORTH

THE LIVINGSTON-SHRADER CO.

DIRECTIONAL DRILLING RECORD

WELL SUN OIL COMPANY HARPER NO. 1 FIELD JAL, LEA COUNTY, NEW MEXICO DATE September 3, 1953

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
26.	11,470 00	14° 45'	11,442 10		N 60° 00' E	146 78		319 18		
27.	11,499 00	14° 45'	11,470 14		N 62° 00' E	150 25		325 70		
28.	11,531 00	14° 15'	11,501 15		N 64° 00' E	153 70		332 78		
29.	11,565 00	15° 30'	11,533 91		N 66° 00' E	157 40		341 08		
30.	11,588 00	15° 30'	11,556 07		N 69° 00' E	159 60		346 82		
31.	11,610 00	14° 30'	11,577 37		N 67° 00' E	161 75		351 89		
32.	11,637 00	14° 15'	11,603 54		N 68° 00' E	164 24		358 05		
33.	11,665 00	14° 45'	11,630 62		N 69° 00' E	166 79		364 71		
		CLOSURE:		401.04'	N 65° 25' E					
		LOSS IN DEPTH:		34.38'						

ALL DIRECTIONS ARE FROM TRUE NORTH

DEVIATION SURVEY AFFIDAVIT

STATE OF TEXAS, |

COUNTY OF LIBERTY. |

BEFORE ME, the undersigned authority, a Notary Public in and for Liberty County, Texas, on this day personally appeared H. L. Sapp, who, being first duly sworn, stated as follows:

1.

My name is Hl L. Sapp. I am a directional drilling engineer for The Livingston-Shrader Company of Liberty, Texas, a firm engaged in directional drilling of oil wells and in surveying such deviated wells. As engineer for the above firm, I supervised the surveys made of directionally drilled well designated as SUN OIL COMPANY'S, HARPER WELL NO. 1, JAL, LEA COUNTY, NEW MEXICO, completed on September 2, 1953.

2.

The surveys of such well were made over a period of time, the first survey being run July 25, 1953 at a depth of 10,465 feet, measured, and the last being made on September 2, 1953 at a depth of 11,665 feet, measured.

3.

A detailed description of the nature of the surveys is shown on attached copies of The Livingston-Shrader Company's Directional Drilling Record for the above mentioned well, pages 1 through 2, and are likewise shown on the attached horizontal plat, data for said plat being obtained from Directional Drilling Records. Said surveys were obtained through the use of the single shot method, records being made at various depths in the hole while drilling said well. The facts represented in said surveys and said data sheets are true and correct and afford a true and correct representation of the nature and conditions of the well insofar as direction, deviation, and bottom-hole location are concerned at the time the surveys were made.

H. L. Sapp
Affiant

Subscribed and sworn to before me, the undersigned Notary Public, at Liberty, Texas, this the 8th day of September, 1953.

Donald E. Tims
Notary Public in and for Liberty County, Texas.

SEAL

Donald E. Tims,
Notary Public

SUBSURFACE SURVEY

COMPANY ATLANTIC REFINING CO. WELL NO. ATLANTIC STATE "T" #2

LOCATION [illegible]

HOMCO

HOUSTON OIL FIELD MATERIAL COMPANY, Inc.

HOUSTON, TEXAS

P. O. Box 2589 Phone WO. 1731

OIL INDUSTRY'S MOST *Complete* SERVICE

SUBSURFACE SURVEY

DATE 13 DECEMBER 1951

COMPANY ATLANTIC REFINING COMPANY
WELL ATLANTIC ST. "T" ~~TRACT~~ #2
FIELD DENTON FIELD
LOCATION

COUNTY
STATE NEW MEXICO
MAGNETIC DECLINATION 12° EAST

HOMCO
REG. U. S. PAT. OFF.

State of Texas
County of Harris

I, Robert G. Chadderdon an employee of the HOUSTON OIL FIELD MATERIAL COMPANY, INC., acting as an Observer, have this the 13th day of December, 1951, conducted or supervised the taking of a Subsurface Directional Survey, the nature of which is as follows:

Directional Survey from 10,580' to 12,726'

This survey was conducted at the request of the Atlantic Refining Company for their Atlantic St. ~~Tract~~ "T" Well No. 2, in the Survey of the Denton Field of County, Lovington, New Mexico

Signed: Robert G. Chadderdon

Before me the undersigned authority, on this day personally appeared Robert G. Chadderdon known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has the knowledge of all facts stated above and that the same is a true and correct statement of the facts therein recited.

Subscribed and sworn to before this the 18th day of December, 1951

Dorothy Singleton
DOROTHY SINGLETON
Notary Public in and for
HARRIS County, Texas

HOUSTON OIL FIELD MATERIAL COMPANY, INC.

SUBSURFACE SURVEY

COMPANY: ATLANTIC REFINING COMPANY
WELL NO.: ATLANTIC ST. "T" ~~TRACT~~ #2 LOCATION: DENTON FIELD, NEW MEXICO

DATE: 13 DECEMBER 1951
PAGE: 1 OF 2

DISC NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DIRECTION OF DEVIATION	TOTAL COORDINATES			
							NORTH	SOUTH	EAST	WEST
1	10,580		-			Vert.	-			
4	10,600	20	-			Vert.	-			
8	10,650	50	-			Vert.	-			
11	10,700	50	15		.22	N 14 E	.21		.05	
15	10,750	50	15	10,750.00	.22	N 14 E	.42		.10	
18	10,800	50	30		.44	N 15 E	.85		.21	
26	10,850	50	45		.65	N 20 E	1.46		.43	
31	10,900	50	1 00		.87	N 11 E	2.31		.60	
34	10,950	50	45		.65	N 14 E	2.94		.76	
38	11,000	50	45	10,999.99	.65	N 17 E	3.56		.95	
42	11,050	50	1 00		.87	N 20 E	4.38		1.25	
45	11,100	50	45		.65	N 25 E	4.97		1.53	
49	11,150	50	1 00		.87	N 33 E	5.70		2.00	
53	11,200	50	1 00		.87	N 29 E	6.46		2.42	
61	11,250	50	1 15	11,249.95	1.09	N 29 E	7.41		2.95	
65	11,300	50	1 30		1.31	N 32 E	8.52		3.64	
69	11,350	50	1 45		1.53	N 27 E	9.88		4.34	
72	11,400	50	1 45		1.53	N 29 E	11.22		5.08	
77	11,450	50	1 45		1.53	N 28 E	12.57		5.80	
82	11,500	50	1 45	11,499.85	1.53	N 32 E	13.87		6.61	
89	11,550	50	1 45		1.53	N 34 E	15.14		7.47	
92	11,600	50	2 00		1.74	N 35 E	16.57		8.47	
95	11,650	50	2 00		1.74	N 34 E	18.01		9.44	
99	11,700	50	2 00		1.74	N 36 E	19.42		10.46	
102	11,750	50	2 00	11,749.71	1.74	N 41 E	20.73		11.60	

HOUSTON OIL FIELD MATERIAL COMPANY, INC.

SUBSURFACE SURVEY

COMPANY: ATLANTIC REFINING COMPANY

WELL NO.: ATLANTIC ST. "T" ~~TRACT~~ #2 LOCATION: DENTON FIELD, NEW MEXICO

DATE: 13 DECEMBER 1951

PAGE: 2 OF 2

DISC NO.	MEASURED DEPTH	COURSE LENGTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DIRECTION OF DEVIATION	TOTAL COORDINATES			
							NORTH	SOUTH	EAST	WEST
107	11,800	50	2 15		1.96	N 42 E	22.19		12.91	
111	11,850	50	2 15		1.96	N 42 E	23.65		14.22	
119	11,900	50	2 15		1.96	N 49 E	24.94		15.70	
122	11,950	50	2 45		2.40	N 51 E	26.45		17.57	
127	12,000	50	3 15	11,999.45	2.83	N 58 E	27.95		19.97	
131	12,050	50	3 45		3.27	N 62 E	29.49		22.86	
135	12,100	50	4 00		3.49	N 65 E	30.97		26.02	
139	12,150	50	4 30		3.92	N 70 E	32.31		29.70	
142	12,200	50	5 00		4.36	N 72 E	33.66		33.85	
145	12,250	50	5 15	12,248.67	4.58	N 74 E	34.92		38.25	
149	12,300	50	5 30		4.79	N 74 E	36.24		42.85	
161	12,350	50	5 45		5.01	N 75 E	37.54		47.69	
165	12,400	50	6 00		5.23	N 76 E	38.81		52.77	
168	12,450	50	6 45		5.88	N 79 E	39.93		58.54	
172	12,500	50	7 45	12,497.11	6.74	N 83 E	40.75		65.23	
176	12,550	50	8 15		7.17	N 82 E	41.74		72.33	
180	12,600	50	8 45		7.61	N 80 E	43.07		79.82	
184	12,650	50	9 00		7.82	N 80 E	44.43		87.52	
190	12,726	76	9 00	12,720.45	11.89	N 80 E	46.49		99.23	

CLOSURE: N 64° 54' E
DRIFT: 109.58 Ft.

HOMCO OBSERVER: Bob Chadderdon

Subsurface Directional Survey ran on wire line from HOMCO "Back-off" truck and using HOMCO "Go-Devil" Surveying Instrument

DIRECTIONAL DRILLING

Eastman

OIL WELL SURVEYS

SURVEY REPORT

OIL CONSERVATION COMMISSION
MAR 2 1954

EASTMAN SURVEY REPORT

WELL NO.

EASTMAN OIL WELL SURVEY COMPANY

DENVER • LONG BEACH • HOUSTON

Longview • Odessa • Oklahoma City • Lafayette • Casper • Bakersfield • Ventura • Calgary

THIS IS A RECORD OF A SUB-SURFACE SURVEY OF YOUR WELL

It includes:

1. A title page giving the name of company, name and number of well, and the well location.
2. A horizontal plan (as well would appear, if viewed from above), showing each point on the survey in relation to the surface location. The bearing and distance from surface to bottom of the well is given.
3. A number of record of survey sheets, giving the true vertical depth, angle and direction of drift, and rectangular coordinates of each point on the survey. From these, geological correlations, sub-surface lease maps, etc., may be made. This information is especially valuable when straightening or redrilling work is contemplated.
4. If requested, vertical sections will be made showing the course of the well in two planes. The well will appear as if it were viewed from the side.

NOTE

This is a strictly confidential report, and can be secured by no one except with a written order from you. The photographic film on which this survey was made has been destroyed. We have an office copy of the survey. These records are kept locked and are held in the strictest confidence. Should you desire, you may have the office record also. The only reason we deem it advisable to preserve the office copy is for your convenience in case of loss of this report. All records of the survey are your property.

This report is made on tracing cloth and paper with India ink, in order that copies can be rapidly and cheaply made. This booklet can be forwarded to any blueprint company, where copies will be made for a nominal sum. Each sheet of this survey bears a job number, but only the title sheet carries the name. To insure secrecy the title page may be sent to one company and the balance to another.

SUGGESTIONS

If desired, the depths may be stated as true elevations from sea level, instead of depths below the derrick floor. If this is requested, please submit the elevation of the derrick floor, when ordering the survey.

In requesting vertical sections, the operator will find it much to his advantage to have them made with some respect to the formation. He should ascertain from his geologist on which particular plane the vertical section should be projected.

Should the operator care to have his lease lines or nearby property lines shown on the plan, he should submit the necessary data when ordering the survey.

When surveying a number of wells on one lease, it is always desirable to correlate the surveys in the form of a sub-surface lease map. Submit your survey records and surface lease dimensions, and we will be glad to make you such a map.

REPORT
and
PLAN
of
SUB-SURFACE
ORIENTED
SURVEY

ARGO OIL CO.
TOMLINSON NO. 1
LEA COUNTY, N. M.

JOB NO. WT 25254 DATE 10 Feb, 1954

EASTMAN OIL WELL SURVEY COMPANY

DENVER, COLORADO LONG BEACH, CALIFORNIA HOUSTON, TEXAS

SURVEY BY CLARK OFFICE ODESSA

FORM D-308

RECORD OF SURVEY

The field data for this survey from readings Surface thru 12,786.23 was obtained by V. C. Clark, field engineer for Eastman Oil Survey Co., and is supported by signed field records. The computation and drafting of this report was done under my supervision and is true and correct to the best of my knowledge.

V. C. Clark
EASTMAN OFFICE ENGINEER

JOB NO. WT 25254 DATE 2-10-54

	MEASURED DEPTH		DRIFT ANGLE		TRUE VERTICAL DEPTH		COURSE DEVIATION		DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH		SOUTH		EAST		WEST		REMARKS
1	481	50	0°	40'	481	45	5	59	N 70° E	1	91			5	25			
2	936	18	0°	10'	936	13	1	32	WEST	1	91			3	93			
3	1391	04	0°	20'	1390	99	2	14	N 20° E	4	39			4	83			
4	1852	16	0°	30'	1852	11	4	01	N 18° W	8	20			3	59			
5	2317	56	1°	00'	2317	41	8	14	S 09° E		16			4	86			
6	2772	97	1°	05'	2722	73	8	61	S 27° E			7	51	8	77			
7	3230	16	1°	40'	3229	74	13	30	S 53° E			15	51	19	39			
8	3686	94	2°	00'	3686	25	15	94	EAST			15	51	35	33			
9	4140	41	2°	00'	4139	45	15	83	S 65° E			22	20	49	68			
10	4599	26	1°	20'	4598	16	10	69	S 05° E			32	85	50	61			
11	5002	14	2°	00'	5000	78	14	06	S 45° E			42	79	60	55			
12	5432	58	2°	10'	5430	93	16	27	S 53° E			52	58	73	54			
13	5862	39	2°	15'	5860	40	16	89	S 79° E			55	80	90	12			
14	6298	23	2°	10'	6295	93	16	47	FAST			55	80	106	59			
15	6730	43	2°	10'	6727	58	16	33	N 85° E			54	38	122	86			
16	7163	65	1°	05'	7160	96	8	19	S 46° E			60	07	128	75			
17	7596	51	1°	15'	7593	73	9	44	S 34° E			67	90	134	03			
18	8027	05	1°	50'	8024	05	13	78	S 45° E			77	65	143	78			
19	8458	35	1°	35'	8455	18	11	90	S 68° E			82	11	154	81			
20	8892	06	1°	45'	8888	67	13	23	S 84° E			83	49	167	97			
21	9325	28	1°	50'	9321	67	13	86	S 71° E			88	00	181	07			
22	9669	63	2°	00'	9665	81	12	02	S 68° E			92	50	192	21			
23	10098	89	2°	10'	10094	77	16	22	S 61° E			100	36	206	40			
24	10184	03	2°	15'	10179	84	3	35	S 61° E			101	98	209	33			
25	10270	20	2°	10'	10265	95	3	26	S 59° E			103	66	212	99			

FORM D-303 COLO. PHOTO-LITHO

RECORD OF SURVEY

The field data for this survey from readings Surface thru 12956.22 was obtained by V. C. Clark, field engineer for Eastman Oil Survey Co., and is supported by signed field records. The computation and drafting of this report was done under my supervision and is true and correct to the best of my knowledge.

V. C. Clark
EASTMAN OFFICE ENGINEER

JOB NO. WT 25254 DATE 2-10-54

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT. DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
26	10357 80	2° 10'	10352 59	3 28	S 63° E		105 15	215 91		
27	10444 44	2° 15'	10439 20	3 41	S 51° E		107 30	218 56		
28	10530 53	2° 15'	10525 18	3 38	S 56° E		109 19	221 36		
29	10616 58	2° 10'	10611 17	3 25	S 64° E		110 61	224 28		
30	10703 73	2° 30'	10697 24	3 80	S 69° E		111 97	227 83		
31	10789 36	2° 20'	10782 80	3 49	S 75° E		112 87	231 20		
32	10876 97	2° 30'	10870 32	3 82	S 83° E		113 34	234 99		
33	10963 27	2° 45'	10956 52	4 14	S 88° E		113 48	239 13		
34	11050 45	3° 20'	11043 55	5 07	N 84° E		112 95	244 17		
35	11136 75	4° 35'	11129 57	6 90	N 74° E		111 05	250 80		
36	11222 09	4° 20'	11214 66	6 45	N 71° E		108 95	256 90		
37	11307 89	4° 40'	11300 18	6 98	N 62° E		105 67	263 06		
38	11395 55	5° 00'	11387 51	7 64	N 62° E		102 08	269 81		
39	11480 85	4° 50'	11472 50	7 19	N 64° E		98 93	276 27		
40	11566 49	4° 50'	11557 83	7 22	N 62° E		95 54	282 64		
41	11653 79	4° 50'	11645 13	7 36	N 50° E		90 81	288 28		
42	11739 88	5° 00'	11730 89	7 51	N 54° E		86 40	294 36		
43	11824 99	4° 55'	11815 69	7 29	N 66° E		83 44	301 02		
44	11910 65	4° 00'	11901 14	5 98	N 69° E		81 30	306 60		
45	11997 08	4° 00'	11987 36	6 03	N 54° E		77 76	311 48		
46	12082 80	3° 40'	12072 91	5 49	N 53° E		74 46	315 86		
47	12169 25	4° 30'	12159 09	6 79	N 62° E		71 27	321 85		
48	12225 30	6° 15'	12244 63	9 37	N 64° E		67 16	330 27		
49	12342 32	7° 55'	12330 82	11 98	N 59° E		60 99	340 54		
50	12427 92	8° 25'	12415 50	12 53	N 61° E		54 92	351 50		

FORM D-303 COLO. PHOTO-LITHO

RECORD OF SURVEY

The field data for this survey from readings 12856.23' thru _____ was obtained by V.C. Clark _____, field engineer for Eastman Oil Survey Co., and is supported by signed field records. The computation and drafting of this report was done under my supervision and is true and correct to the best of my knowledge.

V. C. Clark
EASTMAN OFFICE ENGINEER

JOB NO. WT 25254 DATE 2-10-54

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
51	12512 18	7° 55'	12498 96	11 60	N 72° E		51 34	362 53		
52	12597 98	7° 05'	12584 11	10 58	N 70° E		47 72	372 47		
53	12683 98	6° 15'	12669 60	9 37	N 65° E		43 76	380 96		
54	12770 08	7° 00'	12755 05	10 50	N 54° E		37 59	389 45		
55	12856 23	7° 40'	12840 43	11 49	N 63° E		32 37	399 69		
			CLOSURE	400.73'	S 85° 18' E					

FORM D-303 COLD. PHOTO-LITHO

EASTMAN OIL WELL SURVEY COMPANY

OIL WELL SURVEYING • DIRECTIONAL DRILLING • ELECTRONIC SURVEYS

109 W. 9TH ST. • PHONE 6-3973
BOX 1324
ODESSA, TEXAS

STATE OF TEXAS
COUNTY OF ECTOR

V.C. CLARK, being duly sworn, deposes and says that: He is employed by the Eastman Oil Well Survey Company as an engineer in charge of well bore surveying.

And, that under his direction an oriented survey was made on February 10, 1954, by V.C. Clark, engineer, Eastman Oil Well Survey Company in a well from surface to 12,856.23'

Said well more particularly described by the operator as follows:
ARGO OIL COMPANY
W. R. TOMLINSON NO. 1
LEA COUNTY, NEW MEXICO.

That the attached documents, namely, title sheet, one plan, three computation sheets, showing at depth of 12,856.23', the well to be 400.73 feet in a direction of South 85° 18' East from the center of the rotary table are a full, tru, and correct representation of the said survey to the best of his knowledge.

V.C. Clark
V.C. Clark

SUBSCRIBED AND SWORN TO BEFORE ME THIS 17th DAY OF Feb. 19 54

NOTARY OF STATE OF TEXAS
COUNTY OF ECTOR
My term expires June 1, 1955

Palma Clampitt
Palma Clampitt