CASE 2091: Application of GULF to dual its Fed.-Mills #1, commingle from 2 pools and to install automatic custody transfer system.

Case No.

2091

Application, Transcript,

Small Exhibits, Etc.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

July 10, 1963

COPY

Gulf Oil Corporation
P. O. Box 2167
Hobbs, New Mexico

Attention: Mr. Fred C. Courtney

Administrative Order PC-151

Gentlemen:

Reference is made to your application dated June 17, 1963, for administrative approval of an exception to Rule 303 (a) of the Commission Rules and Regulations to permit the commingling of the production from the Allison-Abo and Allison-Pennsylvanian Pools on your Federal Mills Lease comprising the SW/4 of Section 11, Township 9 South, Range 36 East, Lea County, New Mexico, allocating the production on the basis of periodic well tests. It is our understanding that the production from both pools on this lease is marginal.

By the authority vested in me under the provisions of Rule 303 (b) of the Commission Rules and Regulations, you are hereby authorized to commingle the production from the aforesaid pools on said lease in the above-described manner. Provided however, that the installation shall be operated in accordance with the provisions of the Commission "Manual for the Installation and Operation of Commingling Facilities"; and provided further, that you shall immediately notify the Commission at such time as any well in either pool is capable of top allowable production.

As to Order No. R-1795, issued October 11, 1960, the commingling authority and the ACT authority portions of that order are hereby rescinded.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSR/esr

cc: Oil Conservation Commission (with enclosure) - Hobbs
Oil & Gas Engineering Committee - Hobbs
United States Geological Survey - Roswell

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. 2091
Order No. R-1795

APPLICATION OF GULF OIL CORPORATION
FOR AN OIL-OIL DUAL COMPLETION IN
AN UNDESIGNATED ABO POOL AND IN THE
ALLISON-PENNSYLVANIAN POOL, LEA
COUNTY, NEW MEXICO, FOR PERMISSION
TO COMMINGLE PRODUCTION FROM TWO
SEPARATE POOLS, AND FOR PERMISSION
TO INSTALL AN AUTOMATIC CUSTODY
TRANSFER SYSTEM.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 5, 1960, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 11th day of October, 1960, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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 applicant, Gulf Oil Corporation, is the owner and operator of the Federal-Mills Well No. 1, located 660 feet from the North line and 1980 feet from the West line of Section 11, Township 9 South, Range 36 East, NMPM, Lea County, New Mexico.

(3) That the applicant proposes to dually complete the above-described Federal-Mills Well No. 1 in such a manner as to permit the production of oil from an undesignated Abo Pool and the production of oil from the Allison-Pennsylvanian Pool through parallel strings of 2 7/8-inch and 2 3/8-inch tubing, respectively.

(4) That the mechanics of the proposed dual completion are feasible and in accord with good conservation practices.

(5) That the applicant further proposes and the royalty owner consents, to commingle the Abo oil production with the

Allison-Pennsylvanian oil production from all wells presently completed or hereafter drilled on the said Federal-Mills lease, comprising the NW/4 of said Section 11, after separately metering the production from each pool.

(6) That the applicant further proposes to install an automatic custody transfer system to handle said commingled production.

(7) That the previous use of automatic custody transfer equipment, similar to that proposed by the applicant, has shown that such equipment is a reliable and economic means of transferring the custody of oil, and that the use of such equipment should be permitted, provided adequate safety features are incorporated therein.

(8) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Gulf Oil Corporation, be and the same is hereby authorized to dually complete its Federal-Mills Well No. 1, located 660 feet from the North line and 1980 feet from the West line of Section 11, Township 9 South, Range 36 East, NMPM, Lea County, New Mexico, in such a manner as to permit the production of oil from an undesignated Abo pool and the production of oil from the Allison-Pennsylvanian Pool through parallel strings of 2 7/8-inch and 2 3/8-inch tubing, respectively.

PROVIDED HOWEVER, That the applicant shall complete, operate, and produce the well in accordance with the applicable provisions of Section V, Rule 112-A.

PROVIDED FURTHER, That the applicant shall take packer-leakage tests upon completion and annually thereafter during the Gas-Oil Ratio Test Period for the Allison-Pennsylvanian Pool, or as directed by the Secretary-Director of the Commission.

PROVIDED FURTHER, That jurisdiction of this cause is hereby retained by the Commission for such further order or orders as may seem necessary or convenient for the prevention of waste and/or the protection of correlative rights; upon failure of the applicant to comply with any requirement of this order, the Commission may terminate the authority herein granted and require the applicant or its successors and assigns to limit its activities to regular single-zone production in the interest of conservation.

(2) That the applicant be and the same is hereby authorized to commingle the Abo oil production with the Allison-Pennsylvanian oil production from all wells presently completed or hereafter drilled on the Federal-Mills lease, comprising the NW/4 of said Section 11, after separately metering the production from each pool.

(3) That the applicant be and the same is hereby authorized to install an automatic custody transfer system to handle said commingled production.

PROVIDED HOWEVER, That the applicant shall install adequate facilities to permit the testing of all wells on the said Federal-Mills lease at least once each month to determine the individual production from each well.

PROVIDED FURTHER, That the applicant shall add additional storage facilities from time to time, as it becomes necessary, to store the production which will accrue during the hours that said system is unattended, or in the alternative shall so equip the existing facilities as to automatically cause production to cease in the event the storage facilities become full.

IT IS FURTHER ORDERED:

That all meters used in the above-described automatic custody transfer system shall be operated and maintained in such a manner as to ensure an accurate measurement of the liquid hydrocarbon production at all times.

That meters shall be checked for accuracy at least once each month until further direction by the Secretary-Director.

That meters shall be calibrated against a master meter or against a test tank of measured volume and the results of such calibration filed with the Commission on the Commission form entitled "Meter Test Report."

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 # 2091

Heard. 10-5-60
Recom. 10-5-60

1. I recommend that Gulf be given permission to dual their Ded. Wells #1, 660/N, 198/W 11-9S-36E in the Undesignated Abo and Allison-Penn. Pools.
Routine dual order.

2. Allow Gulf to commingle the Allison-Penn. with the Abo in the Ded-Mills lease consisting of NW/4 11-9S-36E. after each Pool has been metered. The productions between wells will be determined by well tests for each Pool.

3. Approve ACT system with the storage or safety precaution clause.

Elvis A. Utz

log in for hearing

Gulf Oil Corporation

ROSWELL PRODUCTION DISTRICT

W. A. Shellshear
DISTRICT MANAGER
F. O. Mortlock
DISTRICT EXPLORATION MANAGER
M. I. Taylor
DISTRICT PRODUCTION MANAGER
G. A. Price
DISTRICT SERVICES MANAGER

P. O. Drawer 669
Roswell, New Mexico

September 9, 1960

Re: Application for Approval to Dual Complete Federal-Mills Well No. 1 in Allison (Penn.) and Undesignated Abo Oil Pools, and Approval to Commingle Production between these Pools and Approval of ACT System on Gulf's Federal-Mills Lease, NW/4 Section 11, T-9-S, R-36-E, Lea County, New Mexico

Oil Conservation Commission
State of New Mexico
Post Office Box 871
Santa Fe, New Mexico

Gentlemen:

Gulf Oil Corporation herewith makes application for exception to the applicable rules and regulations of the New Mexico Oil Conservation Commission to: (1) dual complete Federal-Mills Well No. 1 between the Allison (Penn.) Oil Pool and an Undesignated Abo Oil Pool encountered in this well; (2) commingle crude produced from these pools; and, (3) install and operate ACT equipment to handle these crudes.

Gulf will seek exception to NMOCC Rules 303, which prohibits the commingling of oil between pools, and to NMOCC Rule 309 (a), which requires measurement of oil in tanks before such oil is transported from the lease, and to NMOCC Rule 112-A, which requires a hearing to dual complete a well if such well is the first in the pool.

The following facts are offered in support of this application:

(a) Applicant is the owner and operator of the Federal-Mills Lease which consists of the NW/4 of Section 11, T-9-S, R-36-E, Lea County, New Mexico. Well No. 1 on this lease is located 660 feet from the north line and 1,980 feet from the west line of said Section 11.

(b) The 13-3/8" OD casing in Gulf's Federal-Mills Well No. 1 was set at 375 feet and the cement circulated; 9-5/8" OD casing was set at 4,208 feet and the cement circulated; 7" OD casing was set at 9,670 feet and cemented with 1,653 sacks of cement. The top cement is at 4,015 feet. Applicant has perforated the 7" casing opposite an undesignated Abo oil zone from 8,970 to 8,990 feet. The Pennsylvanian interval is the open hole interval 9,670 - 9,703 feet.

(c) If approved, the subject well will be dually completed as shown on the diagrammatic sketch attached hereto. The two zones will be separated by means of a Baker Model "DA" packer set at approximately 9,655 feet which is capable of withstanding any differential in pressure expected to be encountered between the two producing formations.

GULF

(d) There is no diversity of royalty ownership underlying the above described lease.

(e) Applicant proposes to commingle Abo production with Pennsylvanian production after separately metering each zone. Production from the two Pennsylvanian wells will be allocated on the basis of monthly tests.

(f) The proposed ACT installation will have adequate facilities for all required tests and will result in efficient accounting of crude oil transferred to the pipeline gathering system.

(g) The granting of this application is in the interest of conservation and will protect correlative rights.

(h) By copy of this letter all offset operators and the pipeline concerned are notified of this application.

Gulf Oil Corporation respectfully requests that these matters be set for hearing.

Respectfully submitted,

GULF OIL CORPORATION

By: W. A. Shellshear
W. A. Shellshear

FWM:hs
Attachment

cc: Oil Conservation Commission
Post Office Box 2045
Hobbs, New Mexico

Socony-Mobil Oil Company, Inc.
Post Office Box 3115
Midland, Texas

Socony-Mobil Oil Company, Inc.
Post Office Box 177
Houston 1, Texas

Cosden Petroleum Corporation
Post Office Box 1311
Big Spring, Texas

Sun Oil Company
Post Office Box 2880
Dallas 21, Texas

cc: Trice Production Company
Post Office Box 167
Midland, Texas

Western Natural Gas Company
Midland Tower Building
Midland, Texas

Ada Oil Company
Post Office Box 947
Eunice, New Mexico

The Atlantic Refining Company
Post Office Box 1610
Midland, Texas

Ohio Oil Company
Post Office Box 552
Midland, Texas

United States Geological Survey (2)
Post Office Box 6721
Roswell, New Mexico
Attention: Mr. John A. Anderson

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

In the Matter of:

CASE 2091 Application of Gulf Oil Corporation for an oil-oil dual completion, for permission to commingle production from two separate pools, and for permission to install an automatic custody transfer system. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Federal-Mills Well No. 1, located 660 feet from the North line and 1980 feet from the West line of Section 11, Township 9 South, Range 36 East, Lea County, New Mexico, in such a manner as to permit the production of oil from an undesignated Abo pool and the production of oil from the Allison-Pennsylvanian Pool through parallel strings of 2 7/8-inch and 2 3/8-inch tubing respectively. The applicant further proposes to commingle the Abo production and the Allison-Pennsylvanian production from said well to handle the commingled production by means of an automatic custody transfer system.

Mabry Hall
State Capitol Building
October 5, 1960

BEFORE:

Elvis A. Utz, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: The next case will be 2091.

MR. PAYNE: Case 2091, "Application of Gulf Oil Corporation for an oil-oil dual completion, for permission to commingle production from two separate pools, and for permission to install an

automatic custody transfer system."

MR. KASTLER: If the Commission please, my name is Bill Kastler, attorney from Roswell, New Mexico, appearing on behalf of Gulf Oil Corporation. Our two witnesses in this case will be Mr. Clem Korzekwa and Mr. Lonnie C. Smith.

MR. PAYNE: Will you gentlemen stand to be sworn, please?

(Witnesses sworn in.)

MR. KASTLER: Mr. Korzekwa, would you please take the stand?

CLEM R. KORZEKWA

a witness, called by and on behalf of the Applicant, having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Would you please state your name, your address and who your employer is and what your present position is?

A Clem R. Korzekwa, employed by Gulf Oil Corporation at 1614 Chama Drive, Hobbs, New Mexico.

Q Mr. Korzekwa, what's your present position with Gulf Oil Corporation?

A Petroleum engineer.

Q Have you ever previously appeared before the New Mexico Oil Conservation Commission and qualified as an expert witness and given testimony as a petroleum engineer?

A No, I haven't.

Q Would you briefly outline your formal educational background?

A I entered St. Mary's University in San Antonio in 1948, where I took my pre-engineering studies through August of 1950; at that time, I transferred to the University of Texas and received my BS Degree in petroleum engineering in 1953.

Q Subsequent to your graduation, what has been your experience in petroleum engineering?

A My first oilfield experience was in the summer of 1952; I was a roustabout for Pan American Petroleum Corporation in the South Texas Gulfcoast area, and prior to my graduation in June, 1953, I entered the employment of Gulf Oil Corporation and have worked for them continuously since that time.

Q And substantially, was all of your work substantially in or around the vicinity of West Texas and Southeastern New Mexico?

A Yes, my entire period of employment was in the Permian Basin area, and my first sixteen months as an engineer was in the Permian area, and then transferred to Hobbs in November of 1954 and worked there continuously 'til this date.

Q Are you a member of any professional societies?

A Yes, I am; I am a member of the ISME and a registered professional engineer.

Q Have you become familiar with the completion and other aspects concerning this case, particularly Gulf's Federal-Mills Well Number 1?

A Yes, I am.

MR. KASTLER: Mr. Examiner, is the witness qualified to your satisfaction?

MR. UTZ: He's qualified as an engineering witness.

Q (By Mr. Kastler) Mr. Korzekwa, have you prepared for an exhibit in this case a plat to show the location of Gulf's Federal-Mills Number 1 Well?

A Yes, sir.

MR. KASTLER: That's Exhibit Number One.

(Thereupon, the document was marked as Gulf's Exhibit Number One for identification.)

Q (By Mr. Kastler) Referring to the exhibit --

A The Federal-Mills Lease is outlined in red, the lease is located in the northwest quarter of Section 11, Township 9, Range 35 East of Lea County, New Mexico; this plat shows the location of the two wells on the lease, including the well in question.

Q Does this plat also show the offset operators?

A Yes, it does.

Q Is this an 80-acre spacing area --

A Yes.

Q --as far as the Penn wells are concerned?

A That's right.

Q Have you prepared a log as an exhibit for this case?

A Yes, I have; this is Exhibit Number Two.

(Thereupon, the document was marked as Gulf's Exhibit Number Two for identification.)

A Referring to Exhibit Number Two, this well was completed as an Allison-Penn oil producer in--on November 15, 1954. The total depth of this well is 9703, the elevation is 4063 feet. This well has 7-inch OD casing set at 9670 feet, with production obtained from the Pennsylvania zone in the interval 9670 to 9703.

Q (By Mr. Kastler) That's the open hole interval?

A That is correct; the initial flowing potential on this well on completion was at the rate of 65 barrels of oil per hour and no water. The Allison-Penn oil is sweet crude and has an API gravity of 46 degrees.

Q Let me interrupt you; has Gulf performed any subsequent tests to the initial potential?

A Yes, they have; the latest official GOR test taken on March the 24th, 1960, the well flowed at the rate of 190 BOPD, no water, GOR of 616 on a 24/64-inch choke, tied in pressure, 125 pounds, casing pressure 125; latest production test ending September 2nd, 1960, the well flowed at the rate of 178 BOPD, 16 BWPD on a 16/64-inch choke, tubing pressure of 300 pounds and a GOR of 1826.

Q This is therefore at the present time a flowing top allowable well, is that correct?

A That's correct.

MR. UTZ: You are talking about the Pennsylvania now?

A That's right.

Q (By Mr. Kastler) Referring now to Exhibit Number Two, are there any other productive zones that might be shown and indicated on this log?

A Yes, on the DST conducted on completion of this well, the DST, an interval of--let's see, interval of 8911 to 9028 feet, showed the zone to be oil productive --

Q In what productive zone?

A This is shown to be in the Abo zone, which is just above the Wolfcamp as shown in Exhibit Number Two. The top of the Wolfcamp is shown to be 8995 feet, so this would be putting the zone immediately at the top of the Wolfcamp, so it would be the Abo.

Q There's a commonly understood pick of the top of the Wolfcamp, is that correct?

A That is correct.

Q Proceed; has this Abo productive zone been perforated and further tested?

A Yes, it has; in view of the fact that the Abo was shown to be productive, the zone was evaluated during the time interval of July 15, 1960 to July 31, 1960. The Abo zone was perforated with four one-half inch jet holes per foot from 8970 to 8990 following acid treatment consisting of 1500 gallons in two separate stages, and following a 22½ hour shutin, the well flowed at the rate of 384 BOPD and 43 BWPD on a 32/64-inch choke with an approximate GOR of 470. This well was shut in to take the test because it would

not kick off while swabbing. The Abo oil produced from this interval has a gravity of 39 degrees API and a sweet crude; the Abo zone was blanked off and the Penn zone returned to production on July the 30th, 1960.

Q It is indicated, however, that this Abo producing zone will necessitate a pump, is that correct?

A We feel that it probably will; we could not test the zone long enough to determine exactly whether the well would flow continuously or not. That will have to be determined when the dual completion is completed.

Q Does Gulf therefore wish that the application be somewhat made in the alternative, to allow the installation of a hydraulic pump in the event the Abo zone needs a pump.

A That is correct; our first attempt would be to flow the Abo zone if it will flow continuously; if it will not flow, we have a provision for placing the zone on pump.

Q Is there any possibility you might need a pump other than a hydraulic pump, as will be further shown in this case?

A There are other ways we could lift the well other than hydraulic, but we feel that the hydraulic would be the most economical route and would also allow the production of the greatest volume of fluid.

Q Now, Mr. Korzekwa, have you prepared for introduction as Exhibit Number Three in this case a schematic drawing of the proposed mechanical installation for the dual completion?

A Yes, I have.

Q Would you please refer to Exhibit Number Three and give the proposed completion data?

(Thereupon, the document was marked as Gulf's Exhibit Number Three for identification.)

A Referring to Exhibit Number Three, the 13 3/8-inch OD casing is set at 375 feet with cement circulated to the surface; 9 5/8-inch OD casing is set at 4208 feet, with cement circulated to the surface. The 7-inch OD casing is set at 9670 and cemented with a total of 1653 sacks, with the top of the cement at 4015 feet. Referring to the Penn zone on this drawing, there's a Baker Model DA Packer set at 9655 feet, and the Penn oil is conducted to the surface through 2 3/8 OD Hydril tubing.

Q Is that Hydril tubing?

A Yes, it is.

Q All right, proceed.

A Going from the bottom of the string, 2-inch string from the Penn zone, there's a 2-inch Garrett type BC circulating valve at 9687 feet, a 2-inch BMW seating nipple at 9655 feet, a Baker Model C-3 Receptacle seal assembly at 9651 feet, and tubing to surface. One other thing I might point out isthat this Hydril CS tubing will only be taken down to 8700 feet, from that point down it would be standard 2 3/8-inch upset tubing.

Q Mr. Korzekwa, is the Penn zone, Allison-Penn zone in this

well capable of further completion if it should ever become necessary as a pumping well?

A Yes, it is; there's different ways that this could be done, we could put in the Penn zone a pump, a conventional rod pump, or by putting another hydraulic pump at a later date if necessary.

Q Will you now proceed and indicate your proposed dual installation insofar as the Abo production is concerned?

A Continuing with this Exhibit Number Three, the Abo perforations are in the interval 8970 to 8990, a Baker Retreivable Model K Packer will be set at the approximate depth of 8700 feet, the tubing string on the Abo side will be 2 7/8-inch OD Hydril CS to be set at approximately 700 feet--8700 feet, correction, and swaged down to 2 3/8-inch OD at the packer. The tubing string will also have a 2 1/2 inch bottomhole assembly in the bottom of the string; as previously pointed out, an attempt will initially be made to flow the Abo zone if the well is strong enough to flow, and in the event the zone is not strong enough to flow, a 2 1/2-inch free casing type hydralift pump will be used to lift the Abo production.

Q Now, if the Abo zone is capable of flowing, that production then will be had through the tubing, is that correct?

A That is correct, the tubing, the production will enter through the top packer and up the 2 1/2-inch string of tubing; in the event that we put it on pump, the power oil will be conducted

down the 2 1/2-inch string of tubing, and the spent power oil and produced fluids will be conducted to the surface through the tubing casing, annulus.

Q What is the pressure differential between the Model K Packer differentiating the Abo zone and the Allison-Penn zone?

A The latest bottomhole pressure test conducted in the Allison-Penn zone was on January 12, 1959; a 73-hour shut-in pressure from an Abo datum of minus 5600 feet was 2343 pounds. The estimated current bottomhole pressure is in the range of 2000 to 2100 pounds. The only available bottomhole pressure data on the Abo zone that's known is the original DST, a 15-minute buildup pressure DST showed a 2900 pound bottomhole pressure. Adding the pressure of the Abo zone to the top of the Baker Model DA Packer gives an estimated pressure on top of the Model DA Packer of 3200, or slightly higher, and a pressure under the packer from 2000 to 2100 pounds, so a differential of approximately 1200 pounds across the packer is indicated.

Q Have the Baker Model DA Packers successfully proven in the field?

A Yes, it has; due to numerous installations performed by our company, it has proven to be a very effective tool for sealing off production between two zones.

Q In your opinion, will this packer as it is proposed on this completion insure positive separation between the two pays?

A Yes, it will.

Q And does Gulf propose to make whatever tests might be necessary or required by the Oil Conservation Commission of New Mexico?

A Yes, it will.

Q Will you please state the relative savings accomplished by dually completing the well?

A The estimated cost of dually completing the well in the two zones and to equip the Abo zone to pump is approximately $32,000.00; the estimated cost of drilling and completing a separate Abo well and equipping it to pump is $170,000.00; therefore, the estimated net savings is $138,000.00.

Q In your opinion, would the granting of this application, insofar as it concerns dually completing these two zones, prevent waste?

A Yes, it will.

Q How would that be accomplished?

A This dual completion design is performed in such a manner that both zones, both the Allison-Penn and the Abo zones can be efficiently produced both by flowing and by artificial lift.

Q Is it likely that Gulf or any other prudent operator would in these circumstances drill a second well into the Abo zone?

A In view of the limited size of the Abo pay in this pool and the appreciable water, it is very doubtful if an additional well could be drilled economically for production of the Abo oil only.

Q Were Exhibits One, Two and Three prepared by you or at your direction and under your supervision?

A Yes, they have.

MR. KASTLER: This concludes the questions on direct testimony of this witness.

MR. UTZ: What type crude is the Pennsylvania?

A It's a sweet crude?

MR. KASTLER: Sweet.

MR. UTZ: Any other questions of the witness? If there are no further questions, the witness may be excused.

(Witness excused.)

MR. KASTLER: I would like to call Mr. Lonnie C. Smith to the stand at this time.

LONNIE C. SMITH

a witness, called by and on behalf of the Applicant, having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Will you please state your name, by whom you are employed and your present position and where you are employed?

A My name is Lonnie C. Smith, I am employed by the Gulf Oil Corporation at the Hobbs area office.

Q Have you previously appeared before the New Mexico Oil Conservation Commission and testified as an expert petroleum engineer?

A Yes, sir.

Q Are you familiar with Gulf's Federal-Mills Lease and the application to commingle oil produced from two separate pools and to install an automatic tank battery?

A Yes, sir.

MR. KASTLER: Are this witness' qualifications acceptable?

MR. UTZ: Yes sir, they have been accepted as an engineering witness.

Q (By Mr. Kastler) Have you prepared for introduction here as Exhibit Number Four a schematic diagram to show the proposed method of commingling?

A Yes, sir.

(Thereupon, the document was marked as Gulf's Exhibit Number Four for identification.)

Q (By Mr. Kastler) Referring to Exhibit Four then, will you please trace the direction of flow of oil from each producing zone and the proposed direction?

A Beginning at the upper right hand corner, the flow lines from the two Allison-Penn wells come into a manual header arrangement whereby the production can go on into the Allison-Penn pressure heater treater, or any one well can be manually switched into the test separator. I might say at this point that tests are completely manual on this whole system as they are presently conducted. Following the flow diagram through production for the Allison-Penn,

we will come through a lease shut-in valve, both wells join at this point, this is the power oil and the production oil, and going to the pressure heater treater where the gas is separated and goes to the gas sales --

Q I would like to interrupt and clear up a point. The Allison-Penn Number 1 Well is a flowing well, we have heard from Mr. Kerselow's testimony; is Well Number 2 a flowing or pumping well?

A Well Number 2 is a flowing--I mean a pumping well.

Q And that's pumped by hydraulic pumping equipment?

A Hydraulic pumping equipment at the present time.

Q All right, proceed. Oh, one more question: Are Well Number 1 and Well Number 2 both top allowable wells?

A Well Number 2 is slightly below top, they are both very near, Well Number 1 is flowing and Well Number 2 is slightly below.

Q All right, proceed now through the Allison-Penn pressure heater treater, from there.

A From the Allison-Penn pressure heater treater, the gas then joins the gas sales, the water is separated and joins the waste water disposal system, and the oil is separated and goes through a dump meter, where both the power oil, it's all together still, the power oil and the production oil. The power oil is metered by the dump meter and continues on into the power oil tank at this point before the oil can go over into the surge tank. A continuous circulating BS & W Monitor checks the oil and monitors it to see if it's clean enough to meet the requirements to go

into the surge tank. If excessive BS & W is indicated, the automatic diverter valve between the two tanks diverts the bad oil into the test and bad oil tank on the extreme left of the page, and the oil will continue to fill up in that tank until a high level is reached, which will shut in the lease valve for shutting in the two wells. Now, if the oil is good, it will continue into the surge tank, and by means of control of the Varec. fluid level control will actuate the pipeline PD meter pump. The fluid would build up, fill up the H-500 barrel surge tank and then empty out through the PD meter, run to the pipeline automatically.

Q Automatically transfer it?

A Yes; we might go back to the header at the upper right hand part of the page, and taking a well on test, manually switched into the test separator, any one, either one of the wells could be switched down coming to the test separator, and from the test separator, the gas would be separated and join in the gas sales, the produced fluid would continue to go to the extreme end of the page into the test and bad oil tank.

Q By produced fluid, you mean both water and oil?

A Both power oil and produced water and oil.

Q All right.

A And the fluid would be measured manually, manually gauged by the pumper in this tank. Starting with the --

Q One question here: After this fluid is manually gauged, what happens to the oil and water in the H-500 test and bad oil tank?

A After the test is manually gauged, it is manually pumped over by means of the circulating pump and is routed back upstream of the Allison-Penn heater treater. It joins it just downstream of the least shut-in valve, upstream of the Allison-Penn here and thus this oil is put back with the regular production and metered through the dump meter. We have an additional feature which I might point out here. Right here in the surge tank, we have an automatic diverter valve which allows automatic circulation of the tank bottom on this tank. This is a requirement of the pipeline, which will prevent any bad oil from being in this tank, and thus being able to be prevented from being sent through the pipeline or sold to the pipeline.

Q If you have tested --

A This automatic valve will work on a timing arrangement with the circulating pump, and when the pumper is gone, he switches the manual valves downstream of the circulating pump so that the automatic circulated tank bottom will join the produced stream downstream from the dump meter. It goes just downstream of the circulating pump, it goes up on the page and joins the produced stream just downstream of the dump meter, thus preventing remeasurement of this oil or any circulated fluid.

Q If your test of Well Number 2 is made and you pass both power oil and produced oil into the test tank, how do you separate the power oil to make your test an accurate test?

A Well, the power oil in all cases depends on the dump

meter reading and the power oil PD meter reading, which we have not reached yet, with the PD meter on each power oil stream going to each well. We might go into that right now.

Q All right, would you, please?

A We have a line coming out of the bottom of the power oil tank, which is the supply, power oil supply line to the triplex pump, and on the triplex pump, we have a normal automatic pop-off, pressure pop-off valve, which lets it by-pass should something occur to increase the supply to a dangerous point, and beyond that the power oil is split into two positions by means of two manual chokes, and it goes through an automatic by-pass valve on each stream and through a high pressure PD meter and through a test header arrangement and to each individual well.

Q Do I understand that if you were testing Well Number 2, Allison-Penn Well Number 2, measuring both the power oil and the production oil, that you would have a positive subtraction figure of the power oil injected during the period of the test?

A Yes sir, we will, because we have the direct PD meter reading of the power oil for that one side ofthe well, which can be subtracted off the power oil, the total power oil and production, produced oil in the tank, measured in the tank on the test.

Q All right.

A And this is the way that is normally handled in a conventional tankbattery with a hydraulic setup.

Q Very well.

A If we take the--we might go through the Abo production stream right now. The flow line coming from the Abo well comes through a lease shut-in valve and into a pressure heater treater where the gas goes to gas sales and the water is separated and joins the water, waste water system, and the oil is separately metered with the dump meter and both power oil and produced oil is metered by the dump meter and then goes to the left, extreme left through it and joins in the by-pass line and goes up to the top of the page and joins the Allisen-Penn production just before entering the power oil tank. I might say that on the waste water line here, we'll install, plan to install a small inexpensive PD meter, this is just one well here, involved here, and if we have a means of measuring the water, we will have a continuous test on this well of both oil and water, so that by installing an additional water meter, that would alleviate controlling manual tests on this well.

Q So therefore, the test separator shown in Exhibit Number Four is for the purpose of testing the Allison-Penn production only?

A Mainly, but we will hook it up so that we can put the Abo well through a manual test also.

Q I see.

A Both of the heater treaters have high level floats, and since we propose to use just one triplex pump, should something happen to the production stream in either zone, the safety dump meter fails and stops dumping, and we've got a high level float in the Allison-Penn heater treater to prevent shutting down the

triplex and losing the production from both zones. We propose to by-pass with the automatic by-pass valve the production from the well, the flow stream, which has been stopped --

Q That is, you by-pass the power oil from further injection into that pumping activity?

A Yes, and the other well, however, would continue to produce, but it would cause continuous circulation of the power oil in that one well, and the triplex pump is also driven by a gas-powered engine, and we plan--should anything happen to shut, or we need to shut down both zones, both the Allison-Penn and the Abo production, then the triplex will not shut down in that case, either, but both valves will divert and by-pass all of the power oil and we will have just a circulating oil.

Q The triplex is just turned on and off by the pumper?

A That's right; the pumper, by the way, will visit this lease each day because of other production in the near area.

Q Well, as you have outlined it here then, Gulf would be capable of making tests on any of the wells in this system, is that correct?

A Yes, sir.

Q And do all vessels have fail safe features?

A Yes, sir; as I have outlined, the high level floats are installed in the heater treaters, the test separator does not have a fail safe device because it's a manual test, any test that it is being used for the pumper will be on hand, the bad oil test and bad

oil tank has a high level float which will actuate the lease shut-in valves, and the surge tank has a Varec. fluid level control, which will have probably two high levels, one high level and one extreme high level shut-in character which will actuate the lease shut-in valve, and the lease shut-in valve, of course, is fail safe, if the electricity fails, they will shut in the lease.

Q Have both dump meters, on both the Allison-Penn and the Abo system been tested for accuracy at periodic intervals?

A Yes sir, as I have shown here, both the dump meter and the two power oil PD meters may be routed into the test and bad oil tank for testing or proofing these meters, maintaining their accuracy.

Q Continuing out of the surge tank toward the pipeline, I notice you have a 10-barrel calibration vessel shown on PD meter run; is this for the purpose of testing any of the meters shown on Exhibit Number Four?

A No sir, it's only for testing the pipeline PD meter, and this can be best shown on the next exhibit, Exhibit Number Five.

(Thereupon, the document was marked as Gulf's Exhibit Number Five for identification.)

Q (By Mr. Kastler) Very well; would you now go to Exhibit Number Five, please? Would you identify Exhibit Number Five as a flow diagram showing the proposed lease automatic custody transfer system?

A Yes, sir.

Q Is this lease automatic custody transfer system similar to other such systems previously approved for Gulf by the New Mexico Oil Conservation Commission?

A Yes, sir.

Q Would you briefly trace the direction of flow and the installation features of this?

A The direction of flow is from the surge tank at the upper left hand corner of the page down through the strainer and in through the pump, the pipeline pump which is actuated by the Varec. fluid level control in the surge tank, and through an air eliminator, through a PD meter, and then at this point a proportioning type sampler is open through a back pressure valve and a shut-in valve, and then there's provision there for routing to and from the ten-barrel prover vessel. I might say that the ten-barrel prover vessel is a requirement of the pipeline involved here, and so we have shown it as a permanent installation.

Q Mr. Smith, since Gulf has to conduct, maintain well tests on these wells, why is the LACT proposed?

A Well, it's strictly a matter of the economics and of the equipment involved. Since we have an additional well, the Abo well, and a new well in a new pool in this area, it would require a separate tank battery, which at a minimum would be very expensive. For instance, since we anticipate pumping hydraulically, we would have to set at least another power oil tank and another triplex

to pump separately before we could commingle in the surge tank, from that point on, but by utilizing the same triplex to pump both wells, we have gained a great economic advantage in equipment and --

Q What would your savings be, approximately?

A In the neighborhood of $12,000.00, I think, but for the same money involved, we can install the LACT and at the same time salvage one 500-barrel tank which is now on battery. Anyway, we would have an additional heater treater and the present tanks as shown plus one other H-500 barrel tank and the Allison-Penn heater treater and the separators that are already there. We would still have to add the additional heater treater and the piping arrangements with their respective meters.

Q Who is the pipeline purchaser?

A Magnolia Pipeline.

Q Has Magnolia given consent to the proposed installation?

A I'm sorry, Magnolia Pipeline is the transporter; the pipeline purchaser is MacWood Corporation, I think it is.

Q Has the purchaser given its approval to the installation?

A Yes sir, both the purchaser and the pipeline have given their approval to the installation.

Q As I understand it, your procedure is to commingle production from two pay zones, and both of them contain top allowable wells, is that correct?

A Yes, sir.

Q Or a top allowable well; is there going to be separate

metering as to each productive zone so that the top allowable production will be effectively metered?

A Yes sir, we will have exact metering due to the--on the Allison-Penn, we have a flowing well plus a pumping well. The pumping well will have its total production, and the two wells plus the pumping well will be metered through the dump meter and the power oil will be metered through a PD meter, and the difference will be the total production from these zones.

Q And further--of course, in discussing this, I suppose it's appropriate to refer back to Exhibit Number Four briefly, the two meters that you have installed for metering the production from the relative pays, the respective pays, are dump meters. Now, will these meters be accurate, in view of the fact that you are injecting power oil for the purpose of pumping hydraulic --

A Yes sir, it will not affect them in any way.

Q How will the injected pump oil be separated from the produced oil?

A The power oil and the produced oil is essentially the same; of course, you are using the produced oil as power oil, that is what is being done at the present time, but of course after this takes on this proposed installation, the power oil will then be commingled with the produced oil and the essential separation is in the metering of the volumes from each one, and of course your power oil has a much higher point and does not enter into the surge tank.

Q So I understand that the amount of power oil injected

into each pay zone will be metered by PD mater?

A Yes, sir.

Q And the reading on that PD meter as to the amount of oil will be subtracted from the meter reading in the dump meter?

A Yes, sir.

Q So that the power oil is entirely recovered?

A Yes, sir.

Q And the amount of oil over the power oil will be produced oil?

A Yes, sir.

Q And you'll be able to prevent against producing more than your allowable by measuring and regulating that amount of produced oil?

A Yes sir, and this is essentially and exactly the same way that this is presently done in all hydraulic installations where more than one well is involved; you must meter the power oil to that one well to find out exactly what that well is making.

Q And this is then subtracted --

A Subtracted from the total production in the tank.

Q Have all offset operators been notified of this application?

A Yes, sir.

Q Is there any diversity of royalty ownership?

A No, sir.

Q Who is the royalty owner?

A The royalty owner, it's a Federal lease, and the royalty owner is the--well, the Federal Government, and it's the Las Cruces 067771-A Lease.

Q That's your Federal --

A That is the royalty designation of the Federal.

Q And the USGS has supervision of that production; has the royalty owner consented?

A Yes sir, I have a letter I submit as Exhibit Number Six from the USGS.

(Thereupon, the document was marked as Gulf's Exhibit Number Six for identification.)

Q (By Mr. Kastler) You have a copy of the letter, you say?

A Yes sir, a copy of the letter; I submit that as Exhibit Six, and I have the original letter here for the Examiner's verification.

Q Mr. Smith, in your opinion will this application for commingling and DHC result in the prevention of economic waste?

A Yes, sir.

Q Were Exhibits Four and Five prepared by you or at your direction and under your supervision?

A Yes, sir.

Q Is Exhibit Six a true copy of the letter received from the USGS pertaining to this case?

A Yes, sir.

MR. KASTLER: That concludes my questions, direct testimony of this witness, and I would like at this time to move for the introduction of Exhibits One, Two, Three, Four, Five and Six.

MR. UTZ: Without objection, the exhibits will be entered into the record.

Are there questions of the witness? If not, the witness may be excused.

(Witness excused.)

MR. UTZ: Other statements in this case? If there are none, the case will be taken under advisement.

INDEX

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, JERRY MARTINEZ, Notary Public in and for the County of Santa Fe, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same is a true and correct record of said proceedings to the best of my knowledge, skill and ability.

Dated at Albuquerque, New Mexico, this 6th day of October, 1960.

Notary Public

My Commission Expires:
January 24, 1962

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2091, heard by me on October 6, 1960.

, Examiner
New Mexico Oil Conservation Commission

GOVERNOR
JOHN BURROUGHS
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
MURRAY E. MORGAN
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY DIRECTOR

P. O. BOX 871
SANTA FE

October 11, 1960

Mr. Bill Kastler
Gulf Oil Corporation
Box 669
Roswell, New Mexico

Re: Case No. 2991
Order No. R-1795
Applicant:
Gulf Oil Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

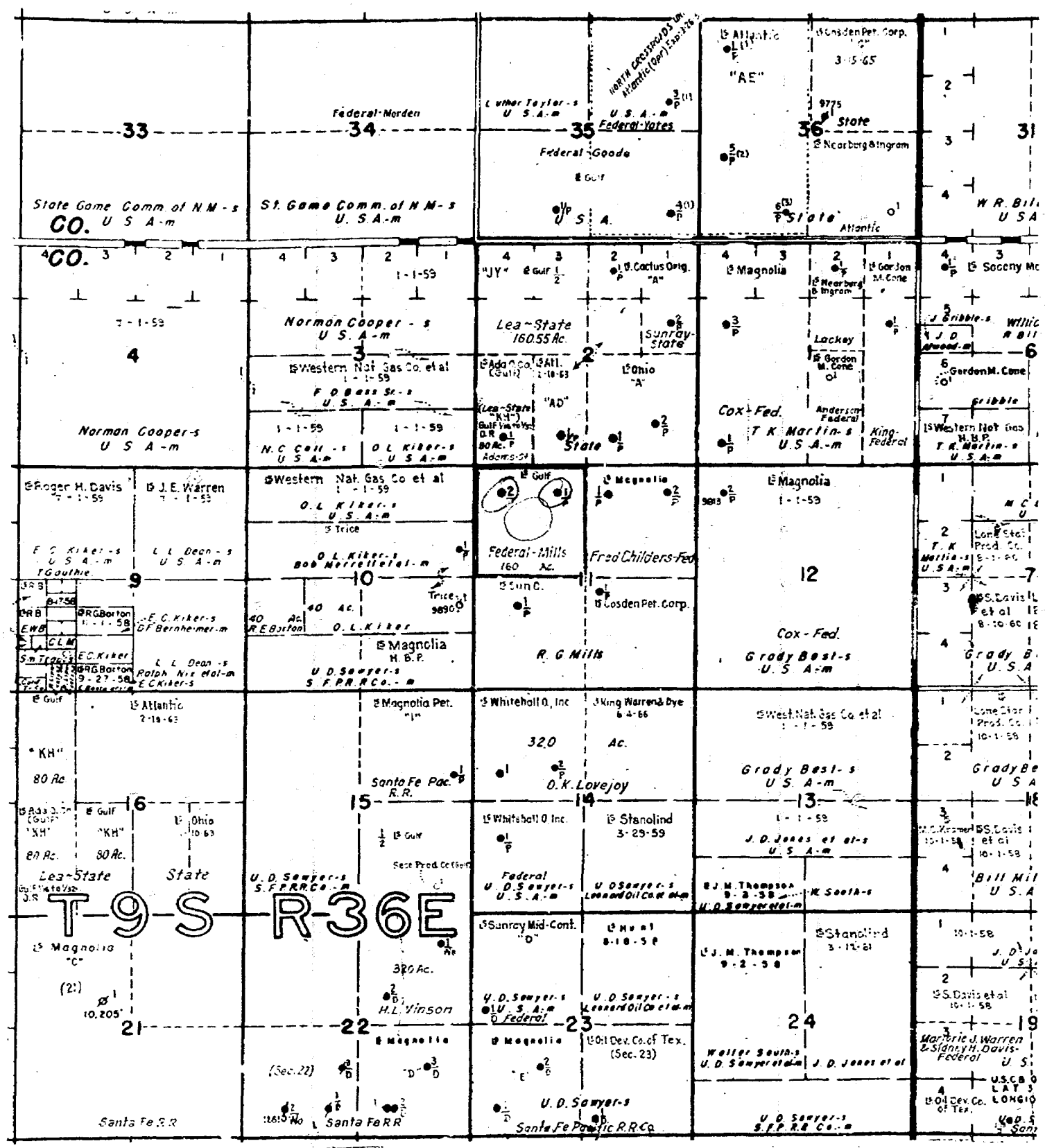
A. L. PORTER, Jr.,
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Gulf EXHIBIT NO. 1
CASE NO. 2091

LEASE PLAT
FEDERAL MILLS
Lea County, New Mexico

- LEGEND -

☐ **Pertinent Gulf Lease**

Case No. 2091
Exhibit No. 1

Gulf Oil Corporation October 5, 1960

SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

Electrical Log

COUNTY LEA
FIELD or LOCATION WILDCAT
WELL FEDERAL MILLS #1
COMPANY WARREN PETR. CORP.

COMPANY WARREN PETROLEUM CORPORATION
WELL FEDERAL MILLS #1
FIELD WILDCAT
LOCATION SEC. 11-9S-36E
COUNTY LEA
STATE NEW MEXICO

Location of Well

660' FNL & 1980' FWL
SEC. 11-9S-36E

ES, GRL

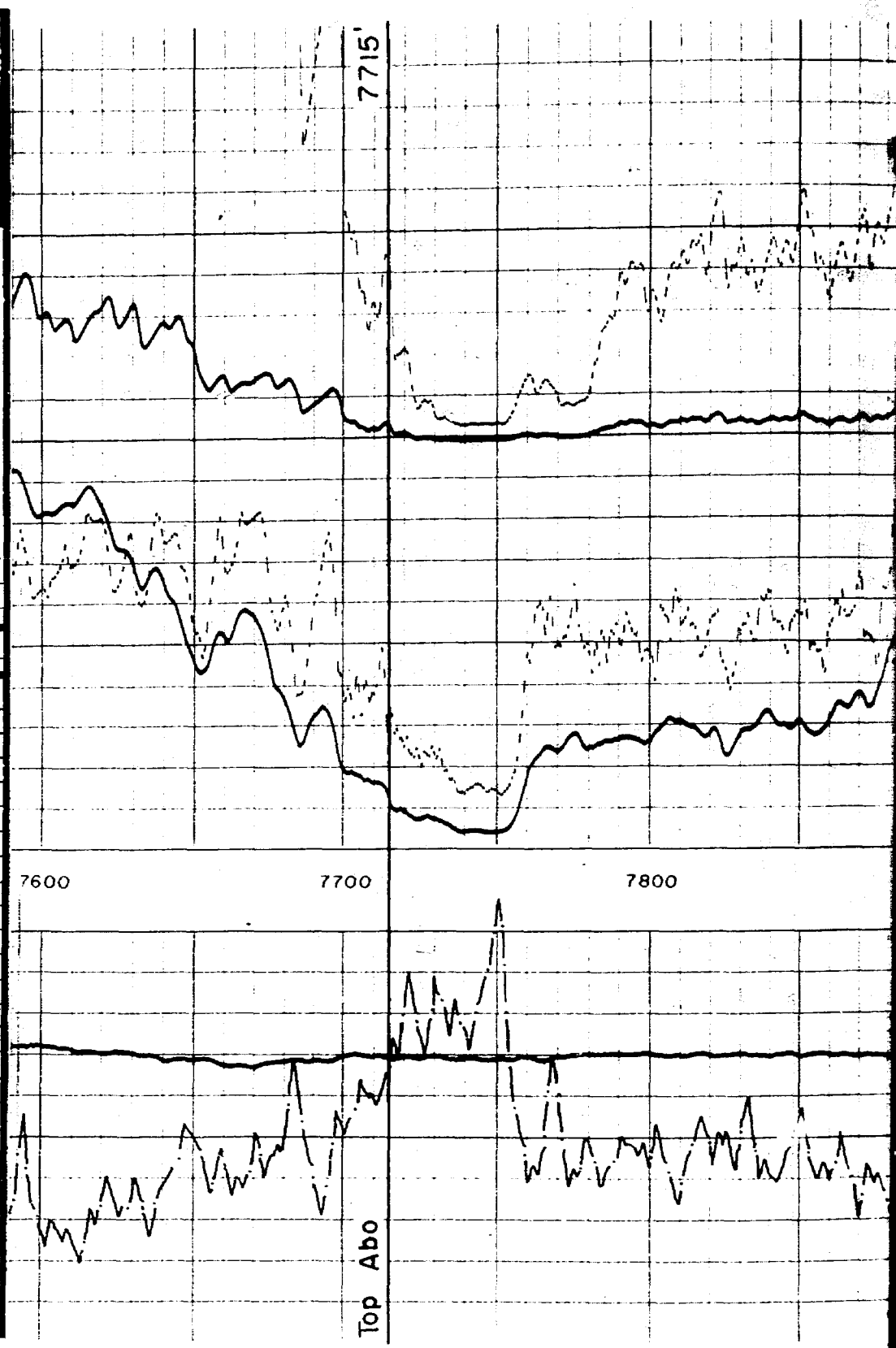
Elevation: D.F.: 4063
K.B.:
or G.L.:

FILING No.

RUN No.	1					
Date	1-30-54					
First Reading	9504					
Last Reading	4209					
Feet Measured	5295					
Csg. Schlum.	4209					
Csg. Driller	4210					
Depth Reached	9507					
Bottom Driller	9510					
Depth Datum	KB 12' ABV. GL					
Mud Nat.	SALT					
" Density	10.2					
" Viscosity	53					
" Resist.	.11@ 56°F	@ °F	@ °F	@ °F	@ °F	
" Res. BHT	.04@158°F	@ °F	@ °F	@ °F	@ °F	
" pH	@ °F	@ °F	@ °F	@ °F	@ °F	
" Wtr. Loss	9.6 CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	
Max. Temp. °F	158					
Bit Size	8 3/4"					
Spcgs.—AM	10" NOR					
AO	32" LS					
AO	19" [illegible]					
Opr. Rig Time	2 HRS.					
Truck No.	1732-[illegible]					
Recorded By	MAXWELL					
Witness By	[illegible]-NE					

Gulf Oil Corporation
Case No. 2091
Exhibit No. 2
Oct. 5, 1960

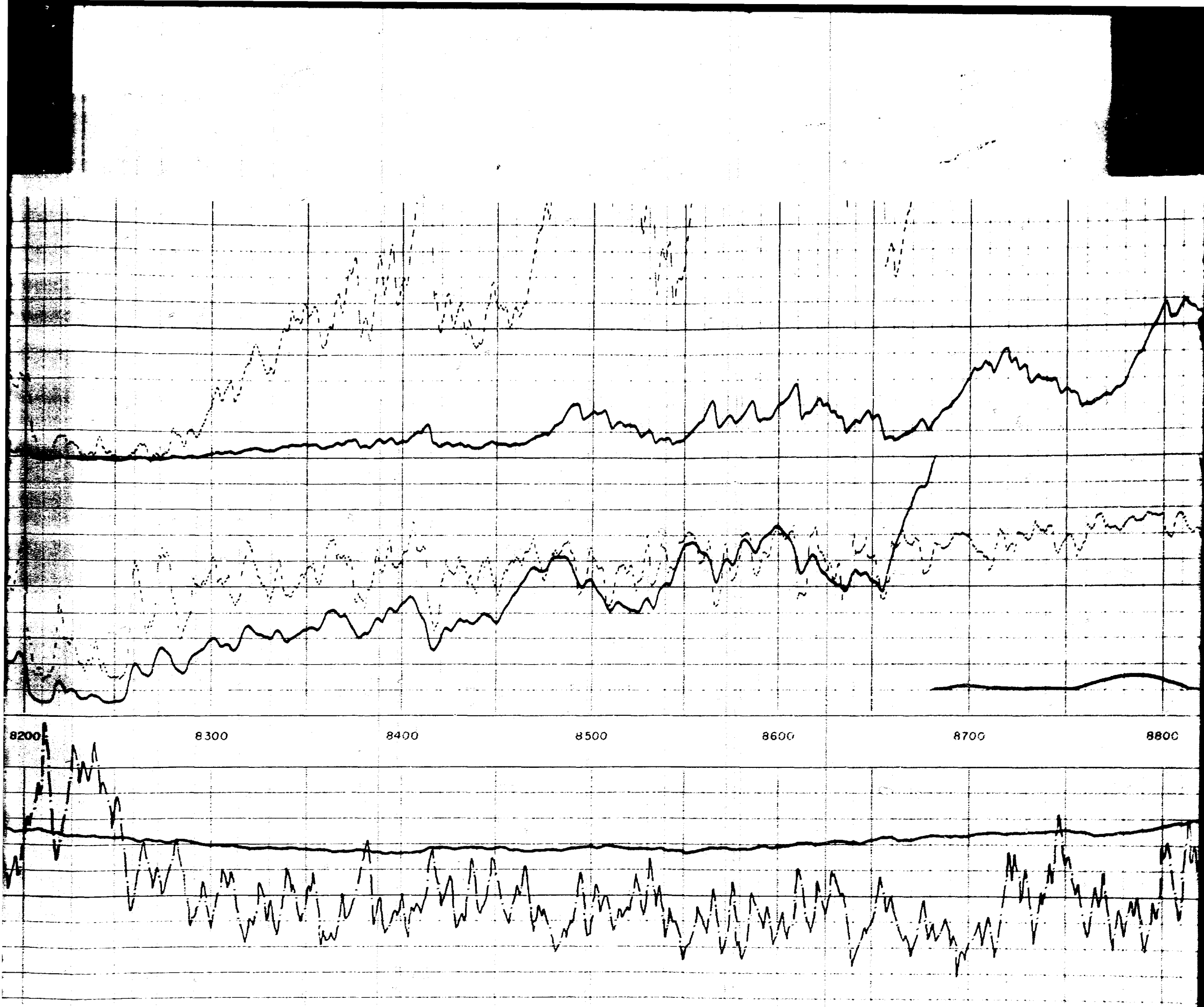
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
CASE NO. 2091 EXHIBIT NO. 2

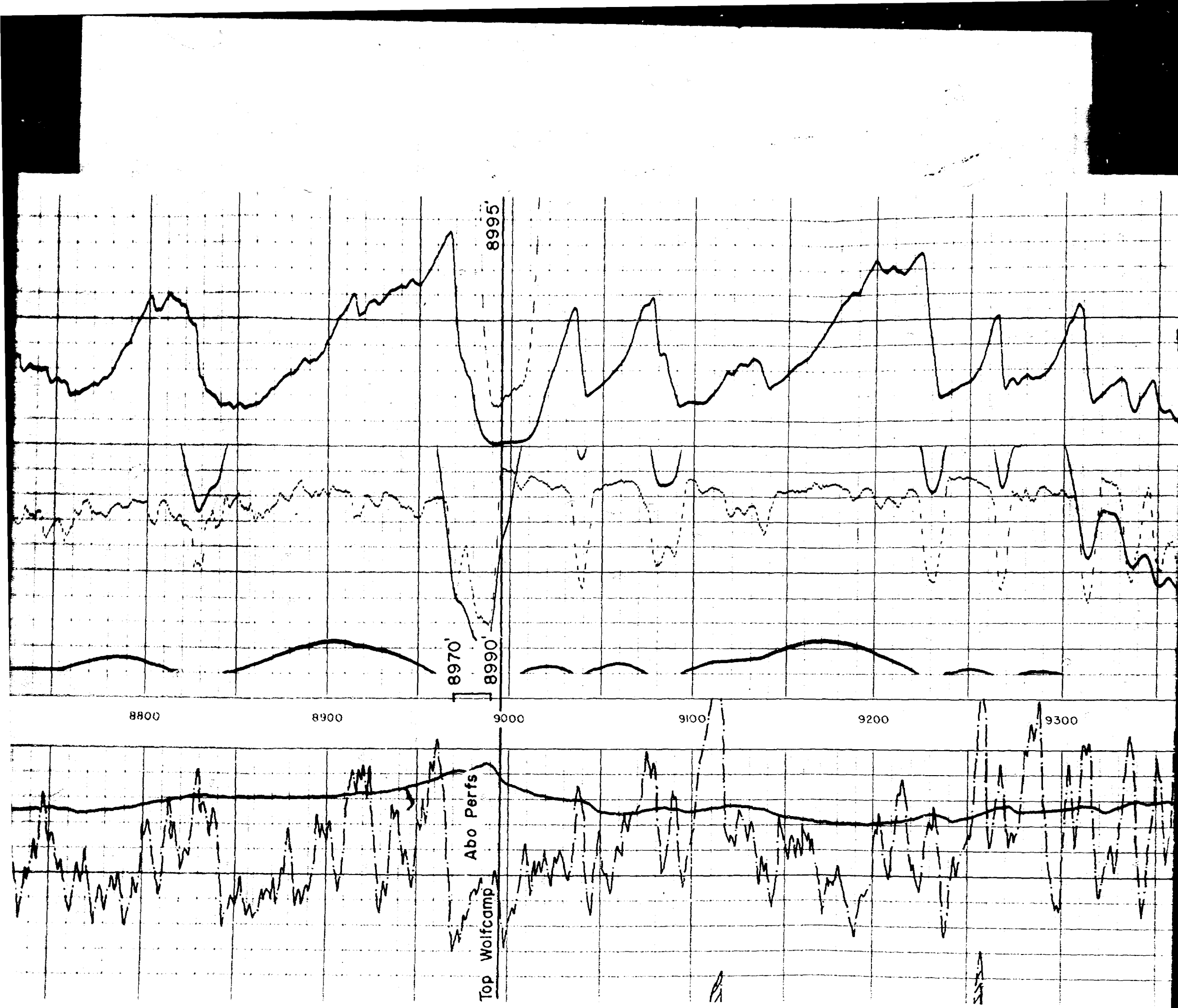


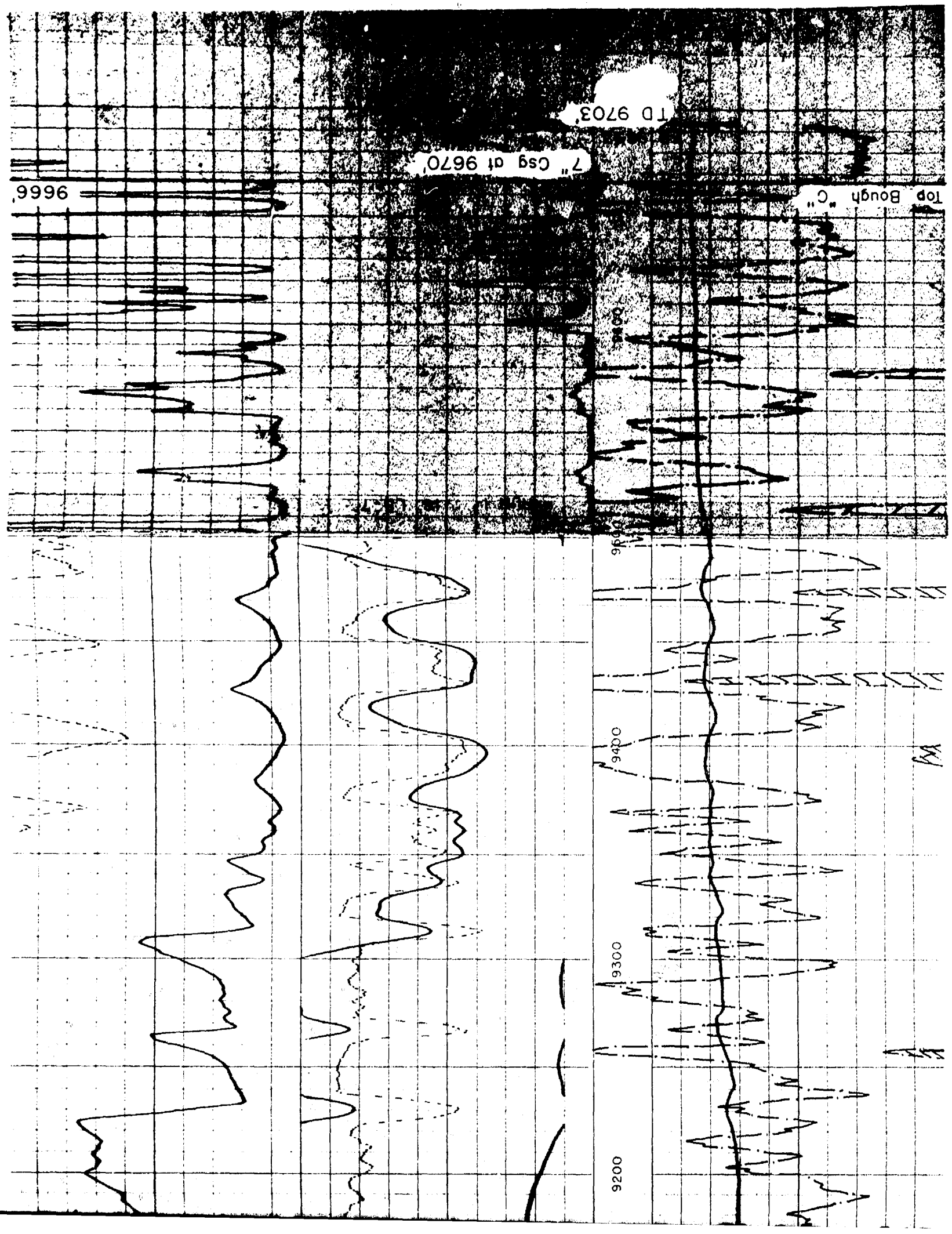
7715'

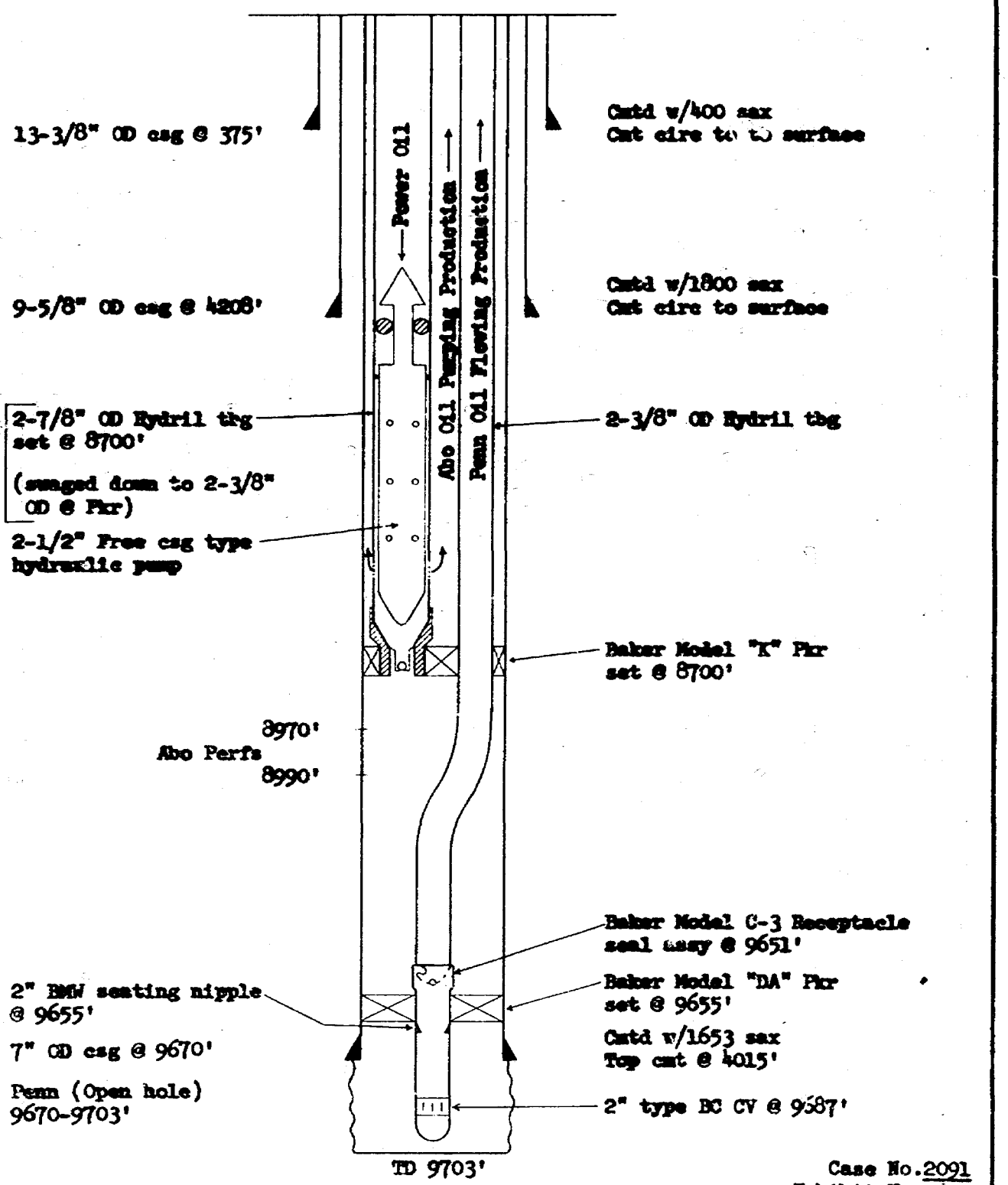
7700 7800 7900 8000 8100 8200 8300

Top Abo


8200
8300
8400
8500
8600
8700
8800


8995'
8970'
8990'
8800
8900
9000
9100
9200
9300
Abo Perfs
Top Wolfcamp


9666'
7" Csg at 9670'
TD 9703'
Top Bough "C"
9600
9400
9300
9200



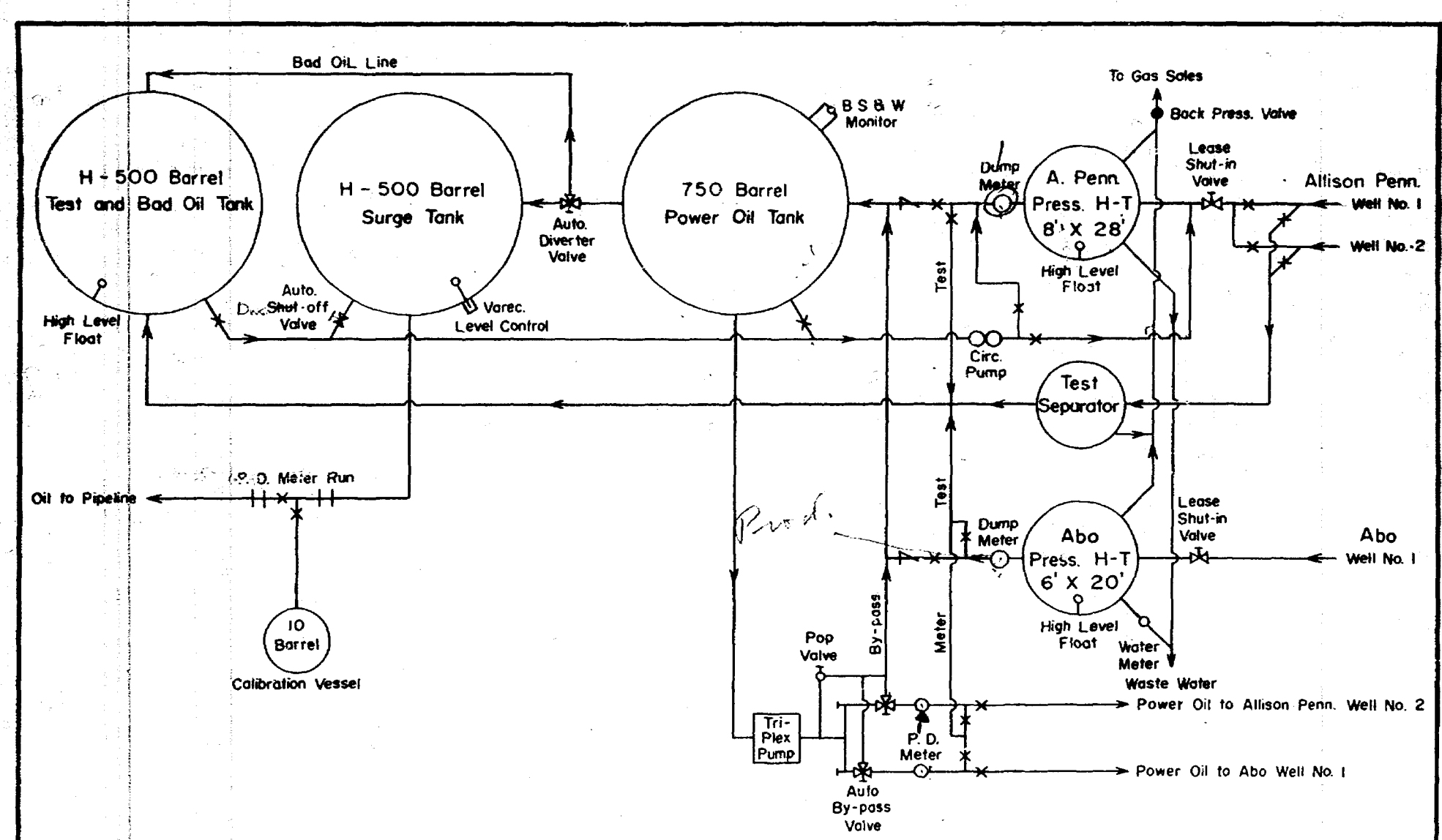
Case No. 2091
Exhibit No. 3

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Gulf EXHIBIT NO. 3
CASE NO. 2091

PROPOSED MECHANICAL INSTALLATION
OIL-OIL DUAL COMPLETION
FEDERAL MILLS NO. 1

ALLISON PENN AND UNDESIGNATED ABO OIL
LEA COUNTY, NEW MEXICO

Gulf Oil Corp. October 5, 1960



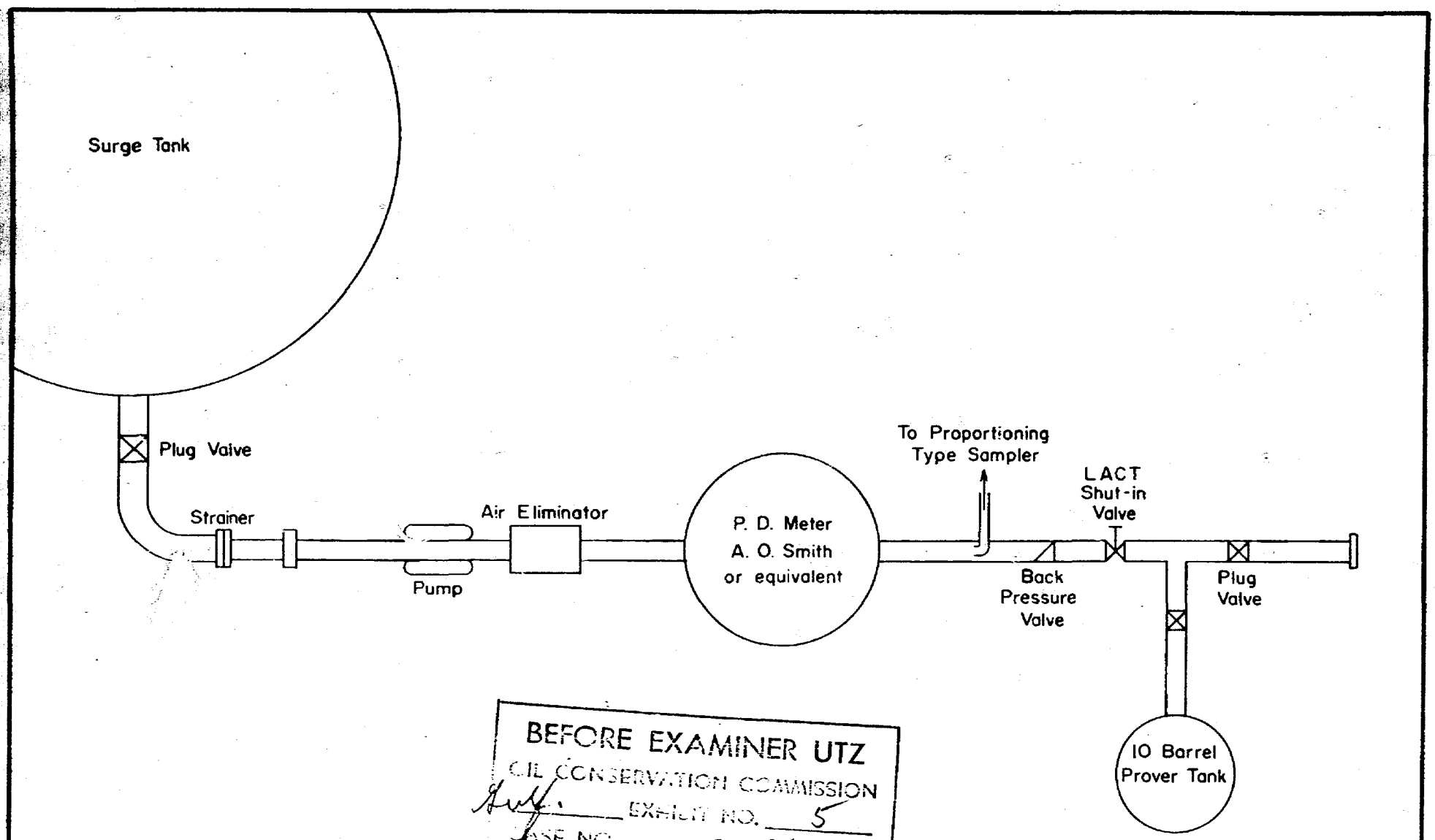
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 2091

Case No. 2091
Exhibit No. 4

PRODUCTION FLOW DIAGRAM OF FEDERAL MILLS TANK BATTERY AND L.A.C.T.

Gulf Oil Corporation

October 5, 1960



BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Gulf EXHIBIT NO. 5
CASE NO. 2091

Case No. 2091
Exhibit No. 5

PROPOSED AUTOMATIC CUSTODY TRANSFER SYSTEM

Federal Mills Lease

Gulf Oil Corporation — October 5, 1960

IN REPLY REFER TO:

5472

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 6721
Roswell, New Mexico

September 30, 1960

Gulf Oil Corporation
P. O. Drawer 669
Roswell, New Mexico

Attention: W. A. Shellshear

Gentlemen:

Your letter of September 26 requests approval of the commingling of Abo and Pennsylvanian production on lease Las Cruces 067771-A, and of the use of automatic custody transfer equipment for shipment of lease products from said lease.

The method you propose for metering and custody transfer of oil produced on lease Las Cruces 067771-A is satisfactory to this office.

Very truly yours,

EDWIN M. THOMASON

Case No. 2091

Exhibit No. 6

October 5, 1960