CASE 3864: Application of PUBCO PETROLEUM CORPORATION FOR SALT WATER DISPOSAL, LEA COUNTY, N.M.

Case Number

3864

Application

Transcripts.

SmaLL Exhibits

ETC.

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

October 2, 1968

Re: Case No. 3864
Order No. R-3509
Applicant:
Pubco Petroleum Corporation

Mr. James E. Sperling
Modrall, Seymour, Sperling, Roehl & Harris
Public Service Building
Box 2168
Albuquerque, New Mexico

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

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
Other

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. 3864
Order No. R-3509

APPLICATION OF PUBCO PETROLEUM CORPORATION
FOR SALT WATER DISPOSAL, LEA COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 25, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 2nd day of October, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, 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, Pubco Petroleum Corporation, is the owner and operator of the Sinclair 668 State Well No. 1, located in Unit E of Section 27, Township 16 South, Range 34 East, NMPM, Kemnitz-Wolfcamp Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Wolfcamp formation, with injection into the perforated interval from approximately 10,756 feet to 10,834 feet.

(4) That the injection should be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 10,710 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be

attached to the annulus or the annulus left open at the surface in order to determine leakage in the casing, tubing, or packer.

(5) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Pubco Petroleum Corporation, is hereby authorized to utilize its Sinclair 668 State Well No. 1, located in Unit E of Section 27, Township 16 South, Range 34 East, NMPM, Kemnitz-Wolfcamp Pool, Lea County, New Mexico, to dispose of produced salt water into the Wolfcamp formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 10,710 feet, with injection into the perforated interval from approximately 10,756 feet to 10,834 feet;

PROVIDED HOWEVER, that the casing-tubing annulus shall be filled with an inert fluid, and that a pressure gauge shall be attached to the annulus or the annulus left open at the surface in order to determine leakage in the casing, tubing, or packer;

PROVIDED FURTHER, that the applicant shall be permitted to inject through larger tubing in the event the aforesaid 2 3/8-inch tubing should prove inadequate.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

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

esr/

Hearing

PUBCO

POST OFFICE BOX 869 • ALBUQUERQUE, NEW MEXICO 87103 • TELEPHONE (505) 842-1940

August 27, 1968

Case 3864

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

'68 AUG 28 PM 1 09

Gentlemen:

Application is hereby made to dispose of produced salt water into the Wolfcamp formation in the Sinclair 668 State #1 well, Unit E, Section 27, T. 16 S., R. 34 E., Kemnitz Field, Lea County, New Mexico. Attached in support of this application please find the following:

1. Plat showing location of proposed disposal well, Pubco acreage from which salt water is produced, and operators and lease owners within a two mile radius of the proposed disposal well.

2. Schematic diagram of the proposed disposal well.

3. Marked electric log of the Wolfcamp zone in the proposed disposal well.

Water to be disposed of consists of approximately 400 barrels per day of salt water produced from the Wolfcamp formation from Pubco's properties in the immediate area. Applicant requests permission to dispose of this water back into the Wolfcamp formation, predominantly into perforations located below the original oil-water contact established by production tests in the area.

An initial injection test of three to six months is proposed, using uncoated 2-3/8 in. tubing and a packer, to determine corrosiveness of the water and injection capacity of the well. Based on this test, final tubing size and the necessity of plastic lined tubing will be determined.

Sincerely,

Charles E. Ramsey, Jr.
Area Production Manager

CERJr:kf
attachs.

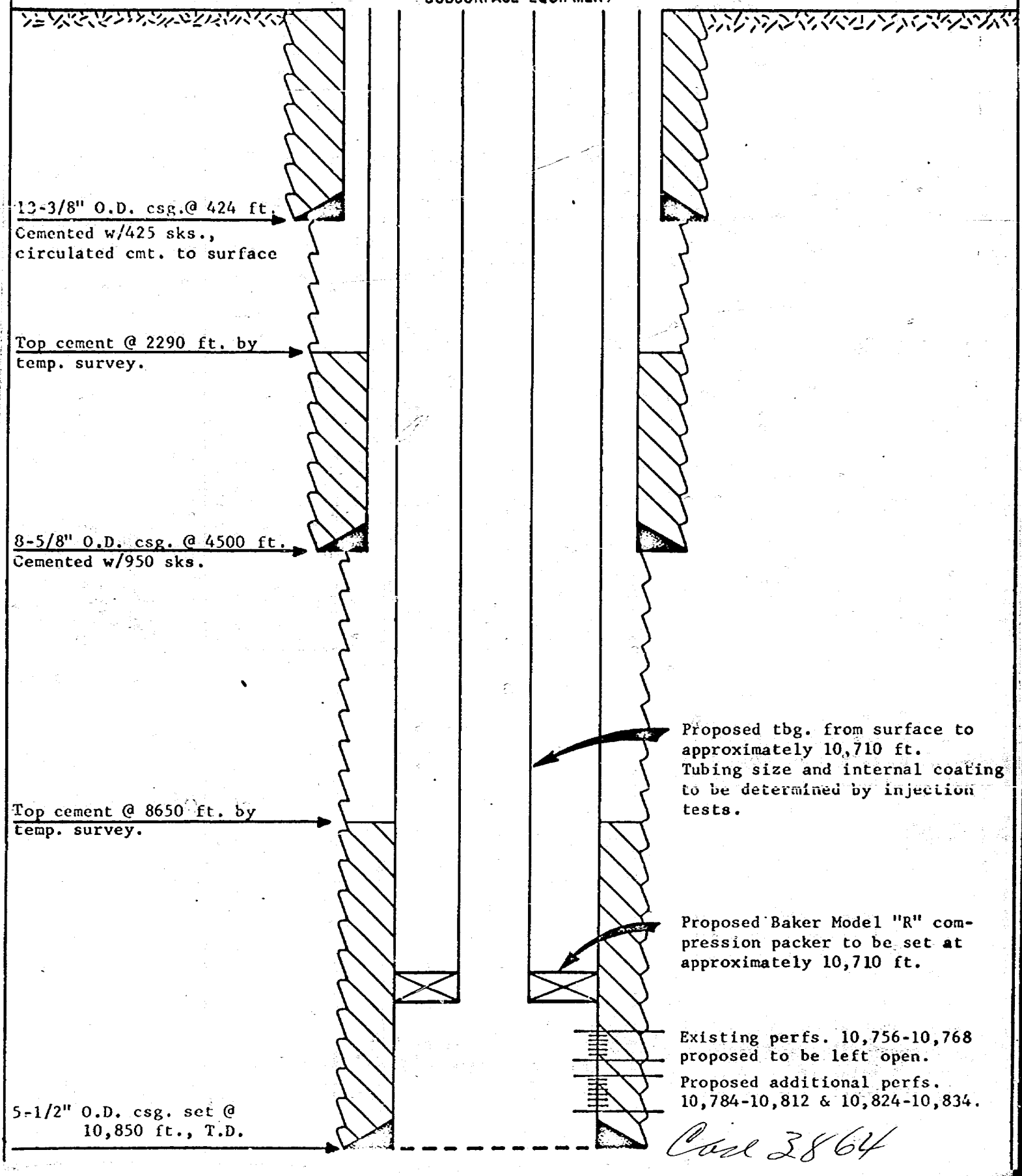
DOCKET MAILED
Date 9-13-68

PUBCO PETROLEUM CORPORATION

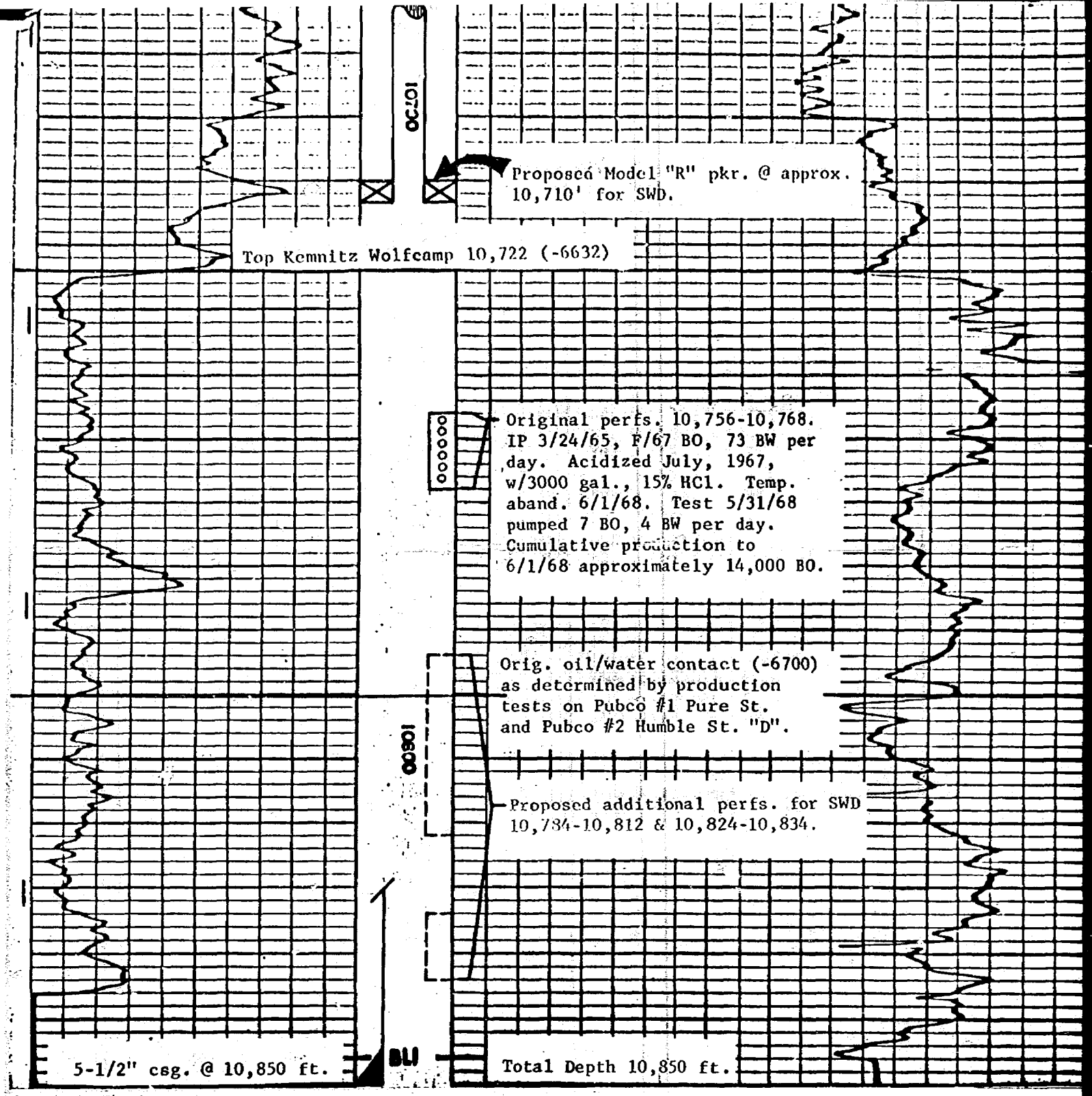
PROPOSED KEMNITZ SWD WELL

SW/NW Sec. 27 T16S R34E

SCHEMATIC DIAGRAM
SUBSURFACE EQUIPMENT



Case 3864



PUBCO
PETROLEUM CORPORATION

PROPOSED KEMNITZ

SALT WATER DISPOSAL SYSTEM

Case 3864. **GAMMA RAY - SONIC LOG SECTION**

Docket No. 28-68

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 25, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Elvis A. Utz, Alternate Examiner:

CASE 3778: (Continued from the August 7, 1968, Examiner Hearing)

Application of Atlantic Richfield Company for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its State BH Well No. 1 located 660 feet from the North and West lines of Section 13, Township 19 South, Range 34 East, Quail-Queen Pool, Lea County, New Mexico, in such a manner as to permit production of oil from 5080 feet to 5136 feet in the lower Queen formation through tubing and the disposal of produced salt water into the upper Queen formation through the casing-tubing annulus in the perforated interval from 4820 feet to 4830 feet.

CASE 3862: Application of Gulf Oil Company - U. S. for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its W. D. Grimes (NCT-A) Well No. 16, located in Unit D of Section 32, Township 18 South, Range 38 East, Lea County, New Mexico, to produce oil from undesignated Paddock and Blinebry oil pools through parallel strings of tubing.

CASE 3863: Application of Pan American Petroleum Corporation for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Crow Flats Unit Area comprising 6,419 acres, more or less, of Federal, State and Fee lands in Township 16 South, Range 28 East, Eddy County, New Mexico.

CASE 3864: Application of Pubco Petroleum Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Wolfcamp formation in the perforated interval from approximately 10,756 feet to 10,834 feet in the Sinclair 668 State Well No. 1 located in Unit E of Section 27, Township 16 South, Range 34 East, Kemnitz-Wolfcamp Pool, Lea County, New Mexico.

TENNECO OIL COMPANY · P. O. BOX 1031 · 1800 WILCO BUILDING · MIDLAND, TEXAS 79701

September 27, 1968

New Mexico Oil Conservation Commission
P. O. Drawer DD
Artesia, New Mexico 88210

Re: Case No. 3864
Salt Water Disposal
Kemnitz Field

Gentlemen:

Pubco Petroleum Company recently applied for permission to dispose of produced salt water in the former Sinclair State Well, Kemnitz Field, Lea County, New Mexico. This application was heard as Case No. 3864 on September 25, 1968. Unfortunately, Tenneco Oil Company was not able to support this application at the hearing.

Tenneco Oil Company, as operator of the offsetting Kemnitz Wolfcamp Unit, has no objections to Pubco's application to dispose of produced salt water at the proposed location. We recommend your favorable consideration of their request.

Yours very truly,

TENNECO OIL COMPANY

F. J. McDonald
District Production Superintendent

JFC:gs

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 25, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Pubco Petroleum Corporation for salt water disposal, Lea County, New Mexico.

Case No. 3864

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Now, we'll proceed with case Number 3864, Mr. Sperling.

MR. HATCH: Case 3864, application of Pubco Petroleum Corporation for salt water disposal, Lea County, New Mexico.

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

MR. SPERLING: Mr. Examiner, I'm J.E. Sperling of Modrall, Seymour, Sperling, Roehl and Harris of Albuquerque, appearing for the applicant in this case. We have one witness: Mr. Charles Ramsey.

(Witness sworn.)

CHARLES RAMSEY

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Will you please state your name, your place of residence, by whom you are employed, and in what capacity?

A Charles Ramsey, Area Production Manager for Pubco Petroleum Corporation in Albuquerque.

Q Have you, on a previous occasion, testified before the Commission and are your qualifications as a petroleum engineer a matter of record?

A That's correct.

MR. SPERLING: Are Mr. Ramsey's qualifications acceptable?

MR. NUTTER: They are.

Q Mr. Ramsey, would you please explain what is sought by the application of Pubco Petroleum Corporation in this matter?

A Pubco has five producing wells in the Kemnitz-Wolfcamp Field. From these wells, we are producing with our oil approximately 400 barrels of salt water per day; from the Wolfcamp, between 10,500 at 11,000 feet. We are presently disposing of this water into surface pits, and we propose to dispose of this water back into the Kemnitz Formation in an abandoned well that is on the down dip limits of the field.

We have on our Exhibit Number 1 a plat of this area showing Pubco's acreage in yellow, and the proposed disposal well which is currently known as the Sinclair 668 Lea State No. 1 which is colored in in red. That's in the southwest northwest of Section 27.

Q What other information is shown on Exhibit 1?

A All of the producing wells and operators and dry holes which have been drilled in this area are shown on here. I'd like to point out that the only other nearby production from the Kemnitz zone is the Kemnitz-Wolfcamp unit which is to the

west of the proposed injection well, and this unit is operated by Tenneco. I spoke with Tenneco, with Mr. Jim Karns, our District Engineer, yesterday, and I had previously sent him copies of our application and he stated that Tenneco had no objection to the application and that they would send a telegram to the Commission to that effect.

Q Is the unit area to which you have referred indicated by the heavy broken line?

A Right. The heavy dashed line, and it's labeled there "Kemnitz Unit, Tenneco operated."

MR. NUTTER: What is this pool to the south, Mr. Ramsey?

THE WITNESS: That's the north end of the vacuum area.

Q I assume the other information as contained on Exhibit 1 is self-explanatory in view of the legend and in view of the indicated area explanation.

A Right. I think it's all indicated there. The only thing I haven't mentioned is that the red lines on there are the approximate locations of our proposed salt water gathering lines for this disposal from our existing tank batteries.

Q And the wells which are connected by the red lines are the wells from which you expect to dispose of produced salt

water in the disposal well?

A Those are the locations of our tank batteries. There's one well which is not connected by those red lines, but is producing in one of those tank batteries.

Q Would you please refer to Exhibit Number 2 and explain what it is?

A Exhibit Number 2 is a section of the electric log from the proposed disposal well. This well was originally drilled by Sinclair. It's called their Lea State 668 No. 1 Well. It was completed in March of 1965. It was perforated 10,756 to 10,768 in the Wolfcamp which is the principal pay of Pubco's and Tenneco's wells in the area.

It initially potentialed for 67 barrels of oil and 73 barrels of water per day. As of June the first of this year, that well was temporarily abandoned by Sinclair and all the equipment, surface and subsurface equipment, with the exception of the casing, has been removed from the well. It produced a total of approximately 14,000 barrels of oil, and on their final test on May 31st of this year, it was producing at a rate of 7 barrels of oil per day and 4 barrels of water per day. Pubco has made an arrangement with Sinclair to acquire this well for disposal purposes.

Now, on our Exhibit Number 2, the electric log section,

I've indicated the well was drilled to a total depth of 10,850 feet and I've shown on there the perforations which I just discussed, which Sinclair perforated, to produce the well and our proposed perforations for salt water disposal are also shown on this log: 10,784 to 10,812 and 10,824 to 10,834. Also shown on this log section is the original oil-water contact in this area, which was at a subsea depth of minus 6,700, or approximately, in the Sinclair well, at 10,790 feet. Now, this oil-water contact was established by production tests in Pubco's Pure State Number 1 and Pubco's Humble State No. 1, two of the offsetting wells to the north.

The dip in this area is generally to the south and the southeast, and the Sinclair well is located on the extreme southern edge of the original oil accumulation on the down-dip edge. We're proposing to leave the original Sinclair perforations open to perforate these additional perforations as indicated on this log to set a packer at approximately 10,710 feet and dispose of our salt water through tubing into all of these sets of perforations.

Q Do you have any other comment concerning Exhibit 2?

A I think that the low productivity of Sinclair's original perforations, plus the character of the sonic log, indicates that a very large majority of our disposed water will

go into our new perforations which are all substancially below the original oil-water contact. In addition, we have evidence from increasing water cuts from all of our wells and Tenneco's wells in the area that this oil-water contact has advanced upward. The exact level of where the oil-water contact is today, we really don't know for sure, but it is definitely above this original level.

Q You may have mentioned it, but would you mention again, Mr. Ramsey, the cumulative volume from the producing wells, that is, of water, which you expect to dispose of in this well?

A We're currently producing approximately 400 barrels of water per day, and I imagine that this will be very close to the maximum amount of water that we'll be putting into this well. We intend to dispose of the water from our five producing wells only, and our water cut trends have fairly well leveled off at 400 barrels of water per day.

Q Now, would you please refer to Exhibit Number 3 and explain it?

A Exhibit Number 3 is a schematic diagram of the proposed disposal well. As I mentioned, Sinclair drilled the well. They set thirteen and three-eighths casing at 424 feet, cemented with 25 sacks, circulated to surface. They set eight and five-eighths casing at 4500 feet, cemented with 950 sacks

and they have a temperature survey which indicates the top of that cement job at 2,290 feet. They drilled the well to a total depth of 10,850 feet where they set five and a half casing, cemented up to 8,650 feet.

We would propose to run tubing inside the five and a half inch casing and set it on a packer, retrievable packer, at approximately 10,710 feet and dispose into the perforations which are indicated here and were shown in a greater detail on the log section.

We don't know the injectivity of this well, nor do we know the corrosion effect of this water. We would like to start out by using two and three-eighths uncoated tubing until we determine both the injectivity and the corrosiveness of the water and, at that time, decide whether we will go to a larger-sized tubing or whether we will or will not need to use coated tubing, plastic-coated tubing for corrosion protection; but in any event, we will dispose through tubing and below this packer.

Q Do you propose to fill the casing tubing annulus with inhibited water?

A Yes, we will fill that annulus at all times above the packer with water treated with corrosion inhibitor and we will place a pressure gauge on tubing casing annulus to detect any leaks in the tubing or the packer and, of course, we'll

correct any leaks in the event that they occur.

Q Well, do I understand, Mr. Ramsey, that what you're proposing is an initial tubing installation, in other words, to determine whether or not the formation will take the volumes of water that you are speaking of, and leaving the question open of whether the tubing size has to be changed and whether or not the corrosive nature, if any, of the disposed water will require coating of the tubing?

A That's correct.

Q How long do you think it will take to make that determination?

A Oh, it will probably take us between one and three months.

Q Is the proposed system a closed system?

A Yes. We will definitely have a closed system. We will use plastic collection lines and bury them, and we expect that our injection will be on a vacuum at the surface and we will not have to use any injection pressure because of the combination of the depth and the relatively small volume of water that we have to dispose of.

Q Is there anything else you'd like to add at this time?

A No.

MR. SPERLING: I offer, at this time, Pubco's Exhibits 1 through 3.

MR. NUTTER: Pubco's Exhibits 1 through 3 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 3, were admitted in evidence.)

MR. SPERLING: That's all we have at this time on direct, Mr. Examiner.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Ramsey, this well originally was, and still is, strictly an edge well, as far as this pool is concerned, is that correct?

A Yes, sir.

Q And you stated that the structural dip is to the east and the southeast. So, presumably, this well being where it is, as far as the remainder of the pool is concerned, is structurally low?

A It's the structurally lowest producing well that produced any oil from the Kemnitz Field.

Q I see. For example, how does the structural position of this well compare with your Pure State No. 1, which is one location northwest?

A I don't have those exact numbers, but the Pure State No. 1 perforated interval is at least some 30 to 50 feet higher than any of the perforations in this well.

MR. NUTTER: Are there any other questions of Mr. Ramsey? He may be excused. Do you have anything further, Mr. Sperling?

MR. SPERLING: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in case Number 3864? We'll take the case under advisement and call a fifteen-minute recess.

I N D E X

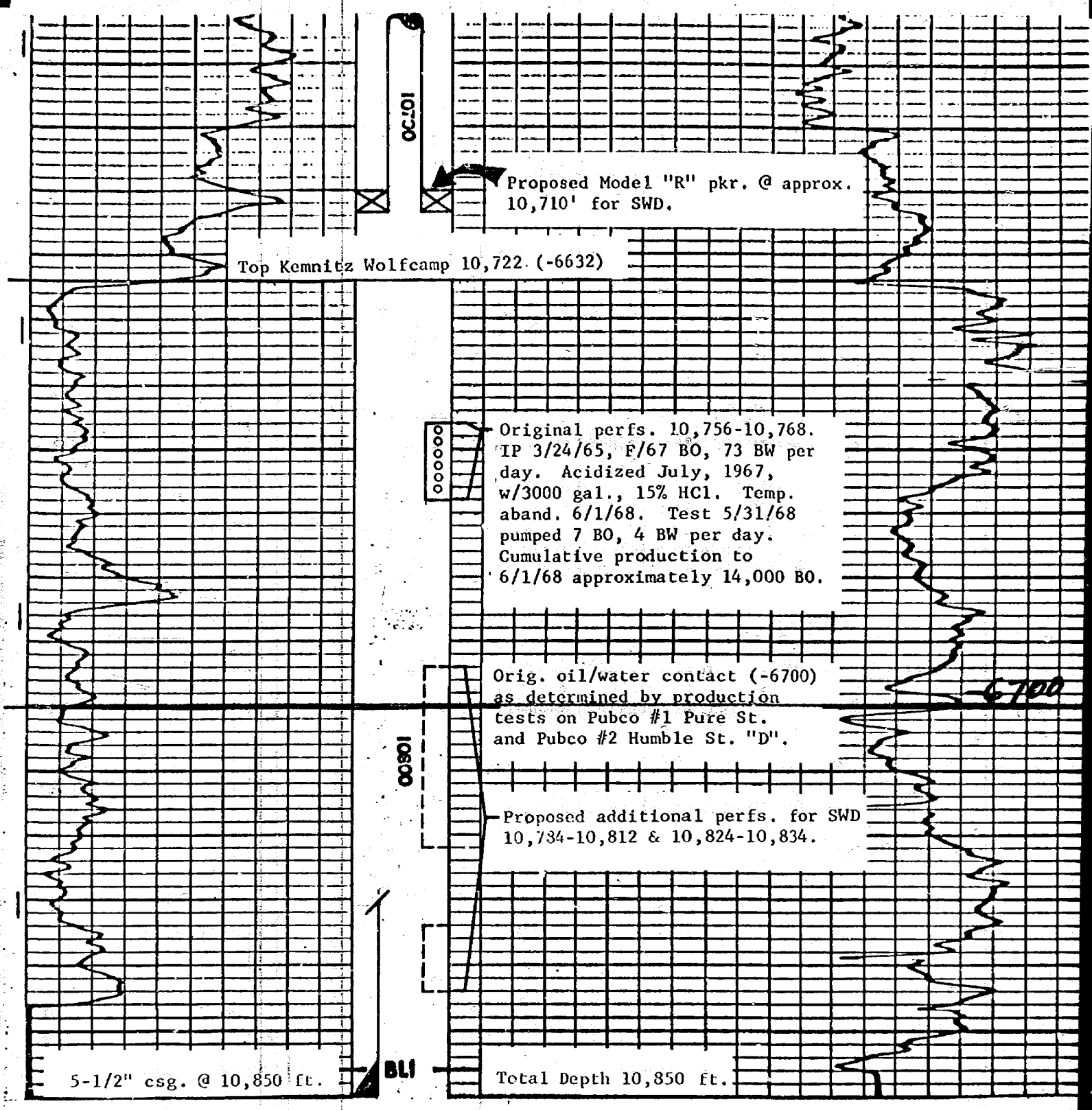
STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, CHARLOTTE MACIAS, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Charlotte Macias
Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3864, heard by me on 9/25, 1968.

Examiner
New Mexico Oil Conservation Commission



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3864

Case No. 3864
Exhibit No. 2

PUBCO
PETROLEUM CORPORATION

PROPOSED KEMNITZ

SALT WATER DISPOSAL SYSTEM

GAMMA RAY - SONIC LOG SECTION

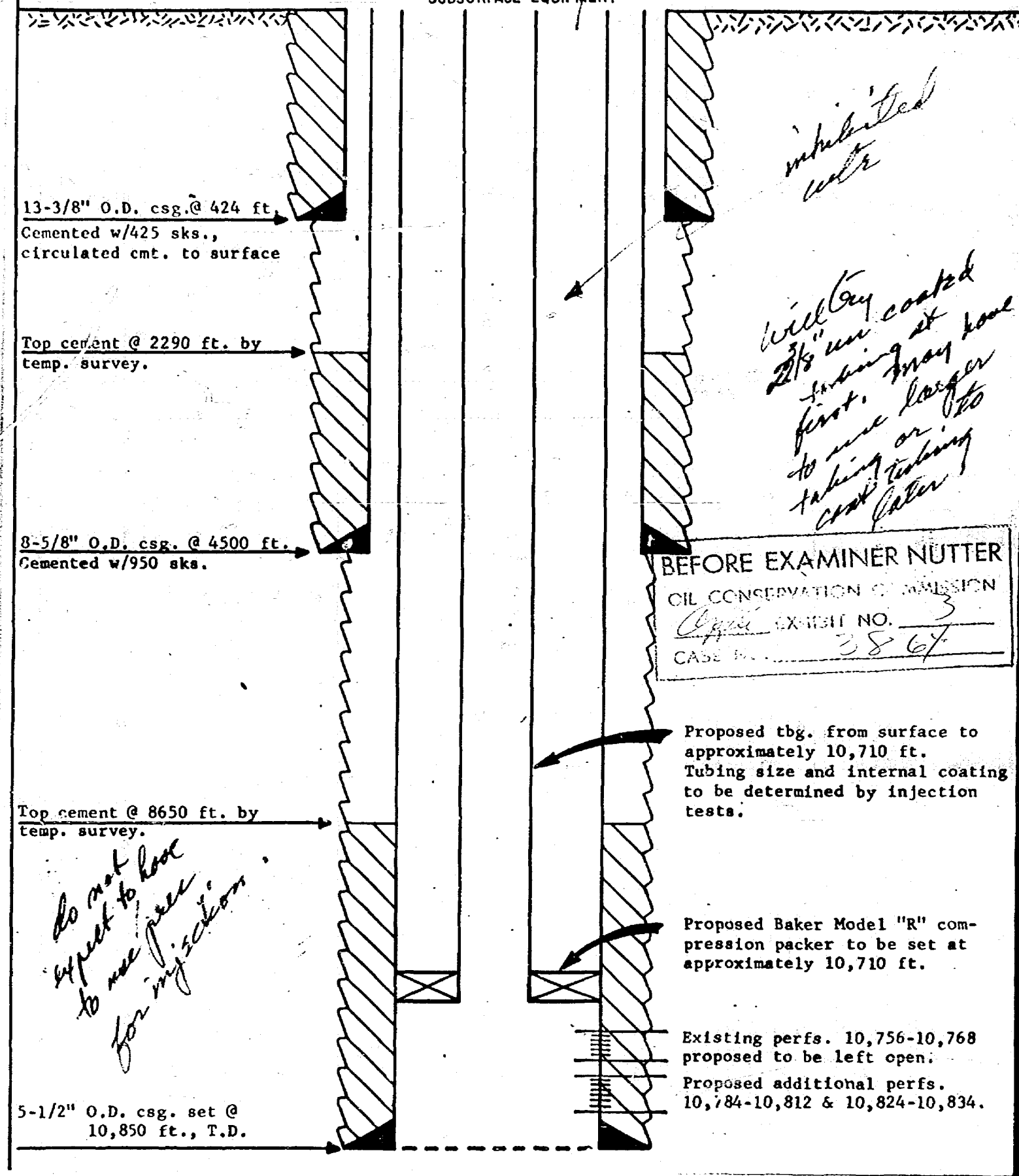
PUBCO PETROLEUM CORPORATION

PROPOSED KEMNITZ SWD WELL

SW/NW Sec. 27 T16S R34E

SCHEMATIC DIAGRAM
SUBSURFACE EQUIPMENT

Case No. 3864
Exhibit No. 3



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 3867