Case No.

6593

Application

Transcripts

Small Exhibits

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

February 19, 1981

Dyco Petroleum Corporation
420 NBT Building
320 South Boston
Tulsa, Oklahoma 74103

Attention: David E. Holley

Re: C. S. Stone Well No. 3
Unit F, Section 22, T15S,
R38E, Salt Water Disposal
Well, Lea County, New Mexico

Dear Mr. Holley:

Based upon information and test data submitted by your letter of February 5, 1981, the maximum authorized wellhead injection pressure for the subject well is hereby increased to 1800 psi.

Please note that it remains the responsibility of the well operator to promptly report any disposal well failures or indications that injected fluid is "out-of-zone" to the supervisor of the Division's Hobbs district office.

Yours very truly,

JOE D. RAMEY
Director

JDR/RLS/fd

cc: Jerry Sexton
Case File No. 6593

OK Joe Ramey 2-18-81 Case 6593

Dyco Petroleum Corporation
420 NBT BUILDING
320 SOUTH BOSTON
TULSA, OKLAHOMA 74103
AREA 918/587-2181

February 5, 1981

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: C.S. Stone No. 3 - SWD Well
Unit F, Sec 22, T15S, R38E
Medicine Rock - Devonian Pool
Lea County, N.M.

Dear Sir:

On August 17, 1979, Order No. R-6082 was issued granting permission for the use of the above well for saltwater disposal into the San Andres formation. This order provided that the maximum allowable surface injection pressure be limited to 980 psi based on 0.2psi/ft. times depth to the top of the San Andres.

After recompletion of the well, injection began in January, 1980 at an initial rate of 450 BWPD with a maximum injection pressure of 400 psi. Injection pressures have slowly increased during the past twelve months on this well to the point where 1000 to 1400 psi is now required to inject 450 BWPD into this well.

Cumulative injection into the San Andres during this period is approximately 162,000 barrels of produced Devonian water, which has increased the reservoir pressure in the vicinity of the wellbore approximately 400 psi.

Dyco Petroleum Corporation hereby requests that the allowable surface injection pressure for this well be increased from 980 psi to 1800 psi based on the following information:

1) During recompletion on 12-3-79, the San Andres formation was fracture treated with a total of 31,500 gallons of fluid and 65,000 lbs of sand. The instantaneous shut in pressure following this treatment was 1950 psi surface pressure, indicating formation fracture pressure to be 1950 psi at that time.

2) A step-rate injectivity test conducted on January 30, 1981 indicates that with the current injection pressure conditions, injection is occurring at less than fracture pressure.

3) Monitoring of the surface and intermediate casing pressures on the well shows that no migration of water to zones above the San Andres is occurring.

4) Based on the fact that the well was initially fracture simulated and the results of pressure fall-off tests conducted on the well, additional formation stimulation will not materially reduce the injection pressures on the well. Rather, the increase in injection pressure which has occurred is a result of the low porosity and permeability within the formation.

5) No other disposal zones are available for use in the wellbore and no other economically viable water disposal methods are available in the vicinity of the C.S. Stone lease.

If you should need additional information concerning this matter, please give me a call. Your earliest attention to this matter is appreciated.

Sincerely,

David E. Holley

David E. Holley
Vice President

DEH:be

Attachs.

cc. Hobbs District Office
NMOCC
Attn: J.T. Sexton

STEP-RATE INJECTIVITY TEST
C.S. Stone No. 3 SWD Well
Unit F, Sec. 22, T15S, R38E
Lea County, N.M.

January 30, 1981

1950 PSI - MIN. FORM. FRACTURE PRESSURE - BASED ON DATA OF 12-3-79

THEORETICAL RATE TO ACHIEVE FRAC. PRESSURE = 2.3 BPM

ACTUAL SURFACE PRESSURE CURVE PLOT - CURVATURE CAUSED BY TUBULAR FRICTION LOSSES

DISPOSAL PUMP OPERATING RANGE - 0.8 to 1.0 BPM

WELLHEAD INJECTION PRESSURE, PSI

0
500
1000
1500
2000

1/4 1/2 3/4 1 1 1/4 1 1/2 2

INJECTION RATE, BPM

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
11 July 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Dyco Petroleum Corporation for salt water disposal, Lea County, New Mexico.) CASE 6593

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest L. Padilla, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87503

For the Applicant: Conrad Coffield, Esq.
HINKLE, COX, EATON, COFFIELD & HENSLEY
Midland, Texas

I N D E X

TOM SPRINKLE

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MR. STAMETS: We'll call next Case 6593.

MR. PADILLA: Application of Dyco Petroleum Corporation for salt water disposal, Lea County, New Mexico.

MR. COFFIELD: Conrad Coffield, with the Hinkle Law Firm, of Midland, Texas, appearing on behalf of the applicant, and I have one witness.

(Witness sworn.)

TOM SPRINKLE

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. COFFIELD:

Q. Mr. Sprinkle, would you please state your name, address, occupation, and employer?

A. My name is Tom Sprinkle, S-P-R-I-N-K-L-E; employed by Dyco Petroleum, D-Y-C-O, as Area Manager of the Permian Basin Office, located in Midland, Texas.

Q. Mr. Sprinkle, have you previously testified before the Division as a petroleum engineer?

A. Yes, I have.

Q. Were your qualifications made a matter of

record and accepted by the Division?

A. Yes.

Q. And are you familiar with this particular application?

A. Yes, I am.

Q. And the property involved?

A. Yes, I am.

MR. COFFIELD: Is the witness considered qualified?

MR. STAMETS: He is.

Q. Mr. Sprinkle, would you please state very briefly what it is that Dyco seeks by this particular application?

A. Dyco seeks authority to dispose of produced salt water in the San Andres-Glorieta-Tubb formations in the open hole interval from 4894 feet to 8725 feet in the C. S. Stone No. 3 Well, located in Unit F of Section 22, Township 15 South, Range 38 East, Medicine Rock-Devonian Pool.

Q. Mr. Sprinkle, please refer to what we've marked Exhibit One and explain that exhibit.

A. Exhibit One is a land plat of the Medicine Rock Field area. The Dyco jointly owned acreage is outlined in yellow. The Stone No. 3 salt water disposal system disposal well is circled in red.

This plat indicates that Dyco and others own 3/4ths of Section 22 as to the leased rights for oil production. The well indicates the plugged and producing wells within a half mile of the No. 3 disposal well system. Indicates that in fact all wells within a half mile are plugged and abandoned, either as dry holes originally or as depleted producing wells, excepting the Dyco C. S. Stone No. 1 Well, located immediately east of the No. 3 Well, which is currently productive from the Devonian formation.

In addition, just outside the lease area there is indicated production -- productive wells in Section 23, and also in the extreme southwest of Section 14 to the northeast of the area.

These wells are in some kind of productive status with Polaris Production of Midland, Texas, being the operator.

To my knowledge the well in Section 23, being the Roberts No. 1, has attempted to be recompleted but it's not productive at this time.

The well to the northeast in Section 14 makes 10 barrels of oil per day from the Devonian formation under artificial lift conditions.

Q. Mr. Sprinkle, perhaps you've already covered this, but is Dyco the operator of this -- this particular property?

A. Yes, Dyco is the operator for the jointly owned property.

Q. Okay. Would you please state -- just give a history of this injection well, what has -- what has happened to it? When it was drilled, and so forth, do you have that information?

A. The C. S. Stone No. 3 Well was completed drilling in April the 7th, 1962, with Sinclair Oil and Gas as the operator.

The well was completed as a Devonian producer on April 13th, 1962, by Sinclair Oil and Gas. Total depth at that time was 12,815 feet; plugged back depth was 12,800 feet. The Devonian formation was initially completed in the interval 12,738 to 12,758 feet.

The well initially potentialed flowing for 320 barrels of oil per day from the Devonian formation.

On September the 14th, 1962, indicated the well was making 230 barrels of oil per day plus 336 barrels of water per day from the Devonian, at which time it was plugged back to 12,730 feet. The Devonian interval then was perforated from 12,687 to 12,708 feet. The well produced from that interval until -- I don't have the exact date; that was sometime in 1963.

By Order SWD-41, effective December 13th, 1963, the well was permitted to be converted to salt water

disposal. At that time a cast iron bridge plug was set at 12,650 feet, which is above all the previously indicated Devonian perforations, and was squeezed with 70 sacks of cement in preparation for the disposal well conversion.

The well was effectively converted to salt water disposal on June the 9th, 1964, indicating it was disposing of produced Devonian formation water from other wells in the Medicine Rock Pool at that time, at the rate of 359 barrels of water in 7 hours at 1100 psig surface pressure. It later indicated that it was --

A SPECTATOR: What was that pressure, sir?

A. 1100 psig. And as later exhibits will show, this water was being disposed of into the Wolfcamp formation at that time, as per the SWD 41 permit.

The cumulative injection to November, 1974, was about 2,250,000 barrels of water, all of which was produced Devonian salt water associated with the Devonian oil production from the Sinclair Oil and Gas, later Atlantic Richfield, well in the area.

The estimated current cumulative injection volume in the Wolfcamp formation is 2,400,000 barrels of produced Devonian formation water.

Q. Okay, Mr. Sprinkle, refer to what's been marked as Exhibit Two, and state what this represents.

A. Exhibit Two is the schematic diagram of

the C. S. Stone No. 3 salt water disposal well. The sketch indicates the TD was 12,815 feet; 5-1/2 inch casing was set at that depth; cemented with 730 sacks of cement. The top of cement behind the 5-1/2 inch casing indicated by a temperature survey to be 8,725 feet; the cast iron bridge plug was indicated at 12,625 feet; that was squeezed with 77 sacks, thus isolating the former productive Devonian perforations.

The Wolfcamp interval was perforated from 10,050 feet to 10,336 feet with 162 holes through the casing to affect disposal into the Wolfcamp formation.

A 5-1/2 inch Model N type packer is indicated to be set at 10,009 feet kb depth. We also indicate the 2-7/8ths inch tubing stub is located at 8,729 feet from the surface.

We indicate that there is communication above the top of the cement on the 5-1/2 inch casing string to the open hole interval between 4,894 feet and 8,725 feet somewhere.

Moving up the hole, the 9-5/8ths casing string is indicated to be set at 4,894 feet. It was cemented to surface with 2,100 sacks. In addition there is 13-3/8ths casing at 364 feet, also cemented to surface with 400 sacks.

This schematic has, as I've indicated, is the current schematic of the downhole tubular equipment.

Q. And you propose to show by a subsequent exhibit the status of the well upon completion of your proposed conversion, is that correct?

A. Yes.

Q. Anything more on this exhibit Two?

A. I believe that's all.

Q. Okay, let's go to what we've marked as Exhibit Three and explain that, please.

A. Okay, Exhibit Three is the schematic diagram of the producing and plugged wells within one half mile of the C. S.Stone No. 3 salt water disposal well, as was indicated on Exhibit One, the wells' location in relation to the No. 3 disposal well.

The first well is indicated to be the ARCO Oil and Gas Read Estate No. 1 Well, located in the northwest of the southeast of Section 22, being the direct diagonal southeast offset to the well of interest.

This well is indicated to be plugged at this time. It was originally drilled to 12,848 feet; produced from the Devonian formation, and was plugged as noncommercial in November, 1972. At that time the well was plugged, cast iron bridge plug was set at 12,425 feet. Additional cementing and plugging operations set plugs at 8130 feet over a 5-1/2 casing stub and open hole; 35 sack plug at 350 feet; 35 sacks at the 9-5/8ths casing seat at

4860 feet.

Note that the 9-5/8ths was cemented to surface. Additionally the 10-sack plug was set at the surface. The 13-3/8ths casing at 332 feet had also been originally cemented to surface.

The next well is the ARCO Oil and Gas C. S. Stone No. 2 Well, which is located diagonally northeast of the Stone No. 3 salt water disposal system, northeast offset, in the northwest of the northeast of Section 22.

This well formerly produced from the Devonian formation; was depleted as to economic production and plugged. That was plugged January 15th, 1976.

Again, the schematic shows the plugging procedure, cast iron bridge plug over the formerly productive interval in the Devonian; 30-sack plug inside the 5-1/2 inch casing; 40-sack plug inside the 5-1/2 inch casing at 6900 feet; 40-sack plug over the 5-1/2 inch casing stub at 5310 feet; a 60-sack plug across the 9-5/8ths casing seat into the open hole; again, the 9-5/8ths has been cemented to surface originally with 2100 sacks; a 50-sack plug was set inside the 9-5/8ths at 2200 feet; 13-3/8ths had originally been cemented to surface from 344 feet; of course the 13-3/8ths and 9-5/8ths strings were left intact in the plugged well. Final plug of 10 sacks on top.

The next well on the Exhibit Three is the

C. S. Stone No. 1, the immediate east offset, indicating that this well has not been plugged. Indeed, it is still producing from the Devonian formation.

That well had set 13-3/8ths at 327 feet and was cemented to surface; 9-5/8ths inch casing had been set at 4880 feet, cemented to surface with 1980 sacks. All of these 9-5/8ths casing seats, I might mention, are casing seats into the top of the San Andres formation, thus isolating it from formations above.

5-1/2 inch casing had been set in that well, 12,848 feet and cemented with 195 sacks. Top of the cement being approximately 11,840 feet behind the 5-1/2 string.

We indicate a bridge plug over the lower part of the Devonian formation, which had been produced and then watered out. The well was plugged back to the upper portion of the Devonian formation where it still produces from.

This well is, as indicated, our only productive well and the only productive well that we operate in the field. It produces under artificial lift equipment 27 barrels of oil a day and a maximum of 400 barrels of water a day, which is the capacity of the lift equipment.

Q It's from this well that you will be taking the water for disposal?

A. That's correct.

The next well in Exhibit Three is the John Eisner Atlantic State No. 1, located in the southeast of the southwest of Section 15, Township 15 South, Range 38 East, being the north offset, exactly one half mile away.

That well was drilled to a TD of 12,872 feet and was plugged in September of 1963 as the Devonian formation was low and only water-bearing at that point.

The well was then plugged with the plugs indicated on the schematic. All plugs were 25 sacks except the top, being at 12,850 feet, 9200 feet, 8160 feet, 7200 feet, 6420 feet. A 25-sack plug at the top of the 8-5/8ths casing stub plugging of the 8-5/8ths at that point inside and outside; another sack at 359 feet across the 13-3/8ths casing seat; 10-sack plug at the top. 13-3/8ths had been cemented to surface, as indicates. The 8-5/8th inch casing had been set at 4915 feet and cemented with 600 sacks. The top is not known except by possible calculation, which I haven't made that calculation. You could probably -- several thousand feet of fillup, which would put it about 3000 feet, perhaps, from the surface.

Q. Please refer to what we've marked as Exhibit Four and identify that for the Examiner.

A. Okay. This is a tabulation of the wells shown -- indicated on the schematics of Exhibit Three.

Q. Does this show all the wells within a half mile which have penetrated the injection zone?

A. That's correct.

Q. And the casing strings and setting depths, sacks of cement used, cement tops, total depth --

A. That's correct.

Q. -- producing interval --

A. Yes.

Q. -- as well as the well identification and location.

A. It indicates all those features, plugging, plugs, and if plugged at this time.

Q. Okay, Mr. Sprinkle, what kind of fluid will be injected into the -- although I think you've already alluded to it -- and the source of the fluid that you stated would be in your well?

A. This will be Devonian salt water produced in association with Devonian oil production from the C. S. Stone No. 1 Well.

Q. And what's the volume of salt water that you anticipate?

A. It would range from 350 to 400 barrels of water per day, 400 being the maximum, because of the limit of the lifting equipment.

Q. Let's go on now to what we've marked as

Exhibit Five, Mr. Sprinkle, and explain that exhibit of several pages to the Examiner.

A. Exhibit Five consists of various structural maps in the immediate vicinity of the C. S. Stone No. 3 salt water disposal well.

The first page indicates the structure on the top of the San Andres porosity, which is one of the intervals of request. Scale of one inch to four miles; contour interval on the structure in 10 feet.

This structure map indicates that there is slight nosing to the south/southeast across this San Andres feature. Of course, this San Andres has not been proven oil productive in the area; had no shows on drilling from sample analysis on many of the wells drilled in the area. The only drill stem test taken, I believe, was on the C. S. Stone No. 1 in the upper part or first porosity, possible porosity in the high position, recovered only mud, and they did not get into the indicated higher permeability - porosity section because they probably figured they were wet at that point and they were already low, which the logs tend to confirm.

The second page indicates the structure at the top of the Glorieta, which is the next recognized horizon directly below the San Andres, still within the Permian interval of formations.

This plat shows a little more of a structural feature there. Remember that we're getting deeper.

The third plat jumps back up the holes. May have been out of order here but it's on the Yates horizon in this particular area. This is a commercial map. The Section 22 of interest is outlined in yellow. The Yates formation in this area is indicated to be in a low or sink area as opposed to the Yates formation surrounding the area; that is, it's higher to the -- in about any direction away from this area, and that tends to reflect partly the previous two pages, that there is low to little relief on the shallower beds.

The fourth page indicates an intermediate depth type structural picture. Again, the area of interest outlined in yellow. There appears to be a little low relief feature in the Pennsylvanian type formations. The geologic formations below the Permian in this area, immediately below.

The last commercial structure picture indicates that in the area of Section 22 we have the small, high area of Devonian production. The highest structural position indicates that our Stone No. 1 Well is located within that high feature and it is the highest well in the field, and because of its structural position still had remaining economic oil reserves, in our opinion.

In general, as you can see, the Siluro-Devonian formations are dipping to the west into the basin. This feature is still relatively low relief for a Devonian producing feature. There's just a slight roll over there that caused the entrapment of this oil in the Devonian porosity.

The -- again reflecting back on the shallower beds and the fact that the Permian or shallower horizons are our area of interest at this time, we are in a sink to flat area within these shallow beds. This might reduce or possibly eliminate migration.

Q. Okay, Mr. Sprinkle, go to what we've marked as Exhibit Six and discuss that, please.

A. This cross section is through the area of interest, and referring back to Exhibit Five, we indicate the line of section coursing generally from north to south across the area, and through all the wells within one half mile, as well as one well just outside that limit.

This cross section is concerned with the proposed zones of injection, being the Permian, including the San Andres, Glorieta, Clearfork Tubb, possibly Abo on the bottom, which is open partially in the open hole interval.

As indicated, there is not any significant relief to the San Andres formation, on which the first

line of demarcation below the datum of -1300 feet is the top of the gross porosity interval. Then the next line, horizontal line, indicates the top of the main porosity interval within the San Andres.

Most of these logs are porosity type logs, being neutron gamma ray radioactive logs for the most part.

The No. 4 Well on the cross section, going from left to right, is the C. S. Stone No. 1 Well, which is the producer, and the closest offset to the proposed disposal well zone. This well, besides showing some neutron porosity in yellow within the San Andres, indicates by some markings there microlog permeabilities within that interval.

This is the only well in the immediate area that had microlog logging across this interval to help determine some more permeable intervals.

As a result of that and then correlating with the No. 3 Well, which is the well of interest, No. 3 Stone, we see we have some correlative neutron porosity intervals. If we can correlate some of these intervals as also having pemerability based on microlog porosity -- separation in the No. 1 Well, there is indicated to be enough net pay for disposal in an already water-saturated reservoir.

In the Stone No. 1 Well by this log analysis,

there is indicated to be 163 feet of net pay, net disposable pay interval, perhaps. There is something in that range, at least 100 feet, probably, on the average in our well of interest, as well as the other wells in the area.

Based on a 100-foot net pay disposal interval, we can project that the disposed volumes anticipated will utilize only 2.4 acres of reservoir volume per year of disposal operations. In a projected 10-year productive life perhaps remaining in this well, then we might be utilizing 24 acres of volumetric storage for disposal, still well within the confines of this No. 3 disposal well's area, and within the lease area that Dyco co-owns.

Q. All right. Let's go on to what we've marked as Exhibit Seven, Mr. Sprinkle, and discuss that, please.

A. Exhibit Seven then is the chemical analysis of the produced water from the Devonian formation.

The extreme righthand column indicates the chloride content as 39,600 parts per million. The total dissolved solids in the Devonian water of 70,222 parts per million.

Q. Do you have a comparable analysis of fluids which may have been taken from the formation in which you propose to dispose of this Devonian water?

A. There has not been any formation water

recovered from the interval in the San Andres-Glorieta-Tubb or Abo formations from drill stem testing nor by production in this area.

Q. In your opinion, from experience in other areas, and so forth, do you anticipate any incompatibility as between whatever fluids there may be in those formations as compared with this Devonian water?

A. No, I do not. The San Andres-Glorieta type intervals in other parts of the Permian Basin are usually greater than 100,000 parts per million in chloride content; more 150,000 sodium chloride type saturations. Therefore, in my opinion, we'll be putting fresher water into this formation than currently exists.

Q. Will you be injecting this water by pressure?

A. Yes.

Q. And you already have the equipment on location as to the injection procedures that you expect to undertake?

A. Yes. Recall that this well has previously been a Wolfcamp approved disposal well and still is, as far as to status. The water was being injected under pressure into that formation. The equipment we have available, we would probably limit to 2000 psig surface pressure rating so as to keep it intact.

Q. Will the casing-tubing annulus be filled with an inert fluid?

A. Yes.

Q. Will you have a pressure gauge then attached to the annulus?

A. Yes.

Q. And you've just mentioned the pressure you have involved. I trust you are aware of the requirement by the Division that there is to be no surface injection pressure in a project of this sort greater than .2 psi per foot of depth to the top of the injection zone.

A. Yes, we would --

Q. Do you expect to stay within this guideline?

A. We feel like we can treat the San Andres-Glorieta type intervals with acid, which is a common stimulant, and achieve surface pressures in this range. Should we not be able to, we still think it will be below any fracturing pressure, and we would so advise and request modification of that pressure limit.

Q. Okay. Would you go to what we've marked as Exhibit Eight and identify that exhibit?

A. These are signed waivers from the near offset producing operator, being Polaris Production Company in Midland, and a signed waiver from the surface owner

in Section 22, Mr. Troy Fort.

Q. Okay, now let's go to what we've marked as Exhibit Nine. Identify that exhibit for the Examiner, please.

A. This is a C. S. Stone No. 3 salt water disposal well schematic as revised to indicate the proposed injection schematic under the current request for San Andres-Glorieta-Tubb-Abo, if you want to break it down at fine intervals.

This indicates that again we have cemented 13-3/8ths inch casing at 364 feet; cemented all the way to the surface. We have a 9-5/8ths string intermediate pipe set at 4894 that's been cemented all the way to the surface.

We propose to effectively seal the Wolfcamp injection interval. We would set a cast iron bridge plug retainer-type device at about 8700 feet and either squeeze or dump some cement on top of that.

We would then effect communication with the intervals of interest by perforating additionally or to affect the injection into the -- through the 5-1/2 inch casing, coming down through the 2-7/8ths tubing strings set on a packer inside the 5-1/2 inch casing.

The 5-1/2 inch casing would be further cemented from a point in the top of the San Andres but below

the 9-5/8ths casing seat with sufficient cement to affect a seal between the 5-1/2 inch casing string and the 9-5/8ths casing string, which is already cemented. And with the 2-7/8ths injection tubing of at least 2000 psi working pressure and of the fiberglass type that we propose, set on a retrievable packer at approximately 49 -- say 4880 feet, we would have isolated all formations except the injection zone of interest.

Additionally, the fluids behind the tubing string and casing strings at that point either have mud or inhibited packer type fluids for continued corrosion protection, and with the fiberglass strings which I believe are being used now, show competence at the higher working pressures, that we would eliminate corrosion in the tubing string almost 100 percent.

Q And, Mr. Sprinkle, is it your opinion that the casing and cement program that you have proposed here with this proposed system is of such a type that there would be no danger to oil or gas or fresh water reservoirs which the well might encounter?

A That's correct.

Q Were these Exhibits One through Nine prepared by you or under your supervision?

A Yes.

Q Will Dyco undertake to notify the Division

of the date of commencement of injection operations under this proposed system and keep accurate records and report monthly to the Division the volume of fluids injected and injection pressures?

A. Yes.

Q. And, in your opinion, will the approval of this application be in the interest of conservation and prevention of waste and protection of correlative rights?

A. Yes. Without an authorized disposal well in the immediate area, such as we're proposing, this well would not be economic to produce and would have to be plugged and abandoned as to productive wells in the area, which being the Stone No. 1.

MR. COFFIELD: Mr. Examiner, I move the admission of Exhibits One through Nine.

MR. STAMETS: These exhibits will be admitted.

MR. COFFIELD: And I have no other questions of the witness on direct examination.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Sprinkle, when did Dyco acquire these two wells, the No. 1 Well and the No. 2 Well?

A. Effectively April the 1st, 1978.

Q. You say effectively.

A. Probably when it was recorded. We earned interest in this property through agreement with another joint owner.

Q. When did you acquire responsibility for the operation of the wells? Was it before the paperwork was filed with the Division?

A. We commenced workover procedures on the No. 1 Stone almost simultaneously.

Q. Okay. Why are you not going back into the Wolfcamp zone in this well?

A. Primarily economics. We indicate on the schematic and information that the tubing, 2-7/8ths tubing and the packer are currently in the hole as a fish from 8729 feet to 10,000 feet, being still above the Wolfcamp injection interval. In attempting to pull that tubing to replace it for leaks that we encountered, more time and cost than we anticipated, and believe the proposed procedure is the best way to economically remedy the situation and still permit disposal of produced water on the producing operations.

Q. Did you try to put water in the Wolfcamp in this well?

A. Yes.

Q. After you acquired the property?

A. Yes, the water, to my knowledge, has been

going into the Wolfcamp.

Q. What were the results of your attempt to utilize this well? As an injector into the Wolfcamp?

A. The well was taking water in the Wolfcamp interval at the rate of 350 barrels of water per day at pressures between 1000 and 1500 psi surface pressure recently.

Q. If that was the situation, why then would you attempt to work the well over and pull the tubing?

A. We had indications that we had a tubing leak and we had pressure on the tubing annulus.

Q. Immediately?

A. Well, at the first time we checked it, which would probably be several months after we -- or when we completed working over the No. 1 Well, we found that we had restored production. Then we repaired the disposal pump, which put it on injection under the current scheme, and it in effect took water at the indicated pressures.

Q. How long after you put it on did you check the annulus pressure?

A. Well, this would be, I'd say, within three months.

Q. You didn't check the well to see if it was sound until three months after you started using it?

A. Well, the production history of the Stone

No. 1 Well is such that we spent, say from April to June recompleting the well. After $150,000 of tangible and intangible costs we put the well on production, consistently producing, and disposal operations. In August the producing well again had mechanical problems. We were down a number of weeks. The well was back on in September and went down again in October for mechanical problems. We're pumping that well with a 456 large beam pumping unit, rod string and insert pump of 6700 feet through tubing.

We did not feel that we had assurance that we had economic conditions until toward the end of last year, and then the timing of workload and operations were scheduled to do this workover on the disposal well.

Q. When did you discover that you had holes in the 5-1/2 inch casing?

A. To our knowledge it was probably in March of this year, in March, 1979.

We again had problems with our producing well and, you know, made plans at that time to jointly work over that well and move the rig to the other well to do the work.

Q. At the same time that you found the holes in the tubing?

A. Well, yeah, physically found them. We suspected, you know, that we had tubing leaks earlier, be-

cause we had defective pressure monitoring on the tubing annulus, or at least checked it.

Q. What was the condition of the tubing when you did get it out of the hole?

A. Well, it had primarily external collar corrosion. The tubes were generally intact. There were indications that the coupling area had failed.

Q. Did you get this tubing out all in one piece or a piece at a time? Was it totally eaten up or was it really in pretty good shape?

A. Well, we -- it was in bad shape as regards there were numerous collars and as I indicated in the application, I think I indicated ten to twenty joints, we recovered maybe 2000 feet in one bite, so to speak. That's probably the maximum recovery on one run. We had other runs, and five -- most of them five or six hundred feet being in the 20-30 joint recovery per run.

Of course, the closer we got to the packer, the more tension and force had to be applied to attempt to free the tubing or unseat the packer, and we, at the expedience of time and expense, made an internal cut in the tubing string at 8729 feet in order to pull as much as possible and yet have the 5-1/2 casing cleaned out inside across the San Andres-Glorieta type intervals.

Q. Now, do you expect this maximum life for

this field to be another ten years for the operations that you've got here?

A. Our experience in other areas of the Permian Basin, being in Texas, but still Devonian production, at these 12,000 foot depths, we're in effect skimming, you know, making marginal production, these wells will produce in the extents that we've seen a number of years, you know, with volumes of water mainly restricted to your lifting capacity.

Q. Is the Devonian the only pay in the area?

A. I think we're probably the only ones that have proven this in some areas. You know, other operators have not elected to do this for the most part.

Q. Is the Devonian the only pay in this area?

A. It's the only pay in the Medicine Rock Pool, and there's -- the nearest production would probably be in the four or five mile range to the east in Texas of formations other than the Devonian.

Q. You indicated that you had no analysis of formation fluids in the San Andres to the Abo interval, but that you did feel that they would be more highly contaminated than the Devonian waters.

A. Yes.

Q. And what was that based on?

A. My own experience with San Andres production

in the Permian Basin. We produce a lot of San Andres wells in the Permian Basin and they all make some water and they are all of this 100,000 plus chloride content. I believe that will be borne out by any investigation.

Q. I noticed on Exhibit Number Three on some of the plugging, like on the first page there's a plug at 5350, which would be right in the middle of the -- your injection interval; on the last page there's a plug at 6420, 7200, again in the middle of your injection interval. Do you have any idea why those plugs were set?

A. Well, the -- let me go to the last page first, the John Eisner Well.

This well was not productive in any horizon. It appears that that plugging procedure was based on so many plugs per 1000 feet of open hole section, is the only justification I can see.

The important plugs, of course, are those above the 8-5/8ths casing seat, which, jumping back to the number one sheet, the Read Estate Well, which did produce, set a usual plug at the cutoff 5-1/2 point; had a plug again possibly associated with the interval between plugs at 6350 feet and a more usual plug at the 9-5/8ths casing seat.

That's the only reason I know, to my know-ledge, you know, essentially that thing was productive in

there.

Q That same exhibit, your No. 1 Well does not have any cement across this injection interval. Do you anticipate any casing corrosion problems or possible casing collapse because of the injection?

A Oh, as the cement top behind the 5-1/2 indicates, 11,840 feet, that well has not had cement behind it all during the period of injection in the Wolfcamp interval in the No. 3 Well, so that interval has been exposed to the Wolfcamp injection for the last fifteen years.

There has been on all producing operations, for example, no pressure from injection, say, on the 5-1/2 annulus, which would only be there if it came from an external source, which zero pressure.

Q Well, your Exhibit Number Six, did you intend to show that most of this water, or all of the water, will likely go into the San Andres formation?

A That's the most likely indication, you know, where we have information to put any quantitative figures to, as to net pay and porosity. But only injection profiling would actually determine the specific interval within there, even if we put one hole in the casing and it goes out, well, from then on it's going to go in the over all open hole interval at the most permeable porosity point, which may or may not be one of the points in the San Andres

perfs.

Q. On completion of use of this well, do you think you'll be able to get in there and isolate the San Andres-Glorieta interval from the Abo-Tubb interval with a plug?

A. Yes. We can, of course, as the cement plug indicated at the top of the San Andres, outside the 5/8ths but inside the 9-5/8ths, that affects that plug there, were that plug either extended or moved out to cover, say, at least to the bottom of the San Andres, then selectively perforated in the San Andres, it would confine injection under -- below frac pressure type pressures, to the San Andres formation.

Likewise any deeper horizon within that open hole interval that was cemented off by essentially a primary cement job would be -- could be isolated.

Q. Could you reasonably get in there and -- and plug off this well at the base of the San Andres at this time before you start your injection?

A. Yes, that is the plan as proposed under our application.

Q. No, I think you misunderstood me.

So that there would be no injection into the Glorieta-Tubb-Abo section, but inject only into the San Andres.

We have right if we, depending exactly on where the communication is in the 5-1/2, you know, it can be done period, but you know, it's how much trouble remains to be seen.

Q. Okay.

A. The proposed schematic again would be the most expedient economically and timely.

Q. Where are the fresh water zones in this area?

A. To my knowledge, the 13-3/8ths inch casing strings case off all surface fresh water, being in general above 350 feet.

Q. This fiberglass tubing, do you land that in that packer or is there some sort of a metal sleeve that runs through the packer?

A. It has been recommended that we latch in, so to speak. There would be a fiberglass to metal connection point at the packer. All of that connecting equipment, however, could be internally and externally plastic coated, would be the proposed scheme to minimize corrosion, and this would again, as per the fiberglass design, minimize pulsation effects.

MR. STAMETS: Any other questions of this witness? He may be excused.

Anything further in this case?

MR. COFFIELD: No, sir.

MR. STAMETS: Take the case under advisement.

(Hearing concluded.)

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
3011 Plaza Blanca (505) 471-2463
Santa Fe, New Mexico 87501

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd C.S.R.
Sally W. Boyd, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6593 heard by me on 7-11 1989,
Richard L. Stamets, Examiner
Oil Conservation Division

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
[illegible] Plaza Blanca (505) 471-[illegible]
Santa Fe, New Mexico 87501

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

October 25, 1979

Dyco Petroleum Corporation
420 NBT Building
320 South Boston
Tulsa, Oklahoma 74103

Attention: Mr. David E. Holley

Gentlemen:

As requested in your letter of October 23, 1979, permission is granted to install 2 7/8-inch steel tubing in your C. S. Stone No. 3 SWD well until March 1, 1980.

Because of corrosion experienced in the disposal of Devonian waters, no extension of this period will be considered.

Please notify our Hobbs District Office at least 24 hours prior to running the fiberglass tubing in the well.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

cc: OCD, Hobbs

COPY

Dyco Petroleum Corporation

420 NBT BUILDING
320 SOUTH BOSTON
TULSA, OKLAHOMA 74103
AREA 918/587-2181

October 23, 1979

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501
Attn: Mr. Joe D. Ramey

Re: Case No. 6593
Order No. R-6082

Dear Sir:

On August 17, 1979 the above order was entered in Dyco Petroleum Corporation's application to plug back and recomplete the C.S. Stone No. 3-SWD well located in the Medicine Rock - Devonian Pool, Lea County, New Mexico.

One of the provisions of the proposal and order (Item 1) was that the injection tubing string be 2 7/8 inch fiberglass tubing.

At the time that the application was filed by Dyco, the quoted delivery for the fiberglass tubing was four weeks, which did not present a problem. However, upon contacting the supplier this past week, Dyco now finds that the earliest estimated delivery for the fiberglass tubing by the manufacturer has been extended to 18 weeks, which means that the earliest anticipated delivery date is about February 15, 1980.

This presents a significant problem relative to the C.S. Stone lease, as there is no other viable means for disposal of the produced water except by subsurface disposal in the Stone No. 3 well, and Dyco is faced with expiration of the lease unless it is returned to a producing status by November 15, 1979.

Therefore, Dyco requests a temporary exception be granted to Item 1 of Order R-6082 to allow use of a 2 7/8 inch steel tubing string until March 1, 1980 for injection tubing in the C.S. Stone No. 3. Operation of the disposal well will comply with all other provisions of the Order, and Dyco believes that this temporary exception will not alter the intent of the Order.

Your earliest attention to this request is appreciated.

Sincerely,

David E. Holley
Vice President

DEH:rc

Attachment

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

August 17, 1979

RECEIVED
AUG 20 1979
HINKLE, COX, EATON,
COFFIELD & HENSLEY
MIDLAND, TEXAS

Re: CASE NO. 6593
ORDER NO. R-6082

Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield
& Hensley
Attorneys at Law
P. O. Box 3580
Midland, Texas 79702

Applicant:

Dyco Petroleum Corporation

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6593
Order No. R-6082

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

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 11, 1979, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 16th day of August, 1979, the Division Director, 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 Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Dyco Petroleum Corporation, is the owner and operator of the C. S. Stone Well No. 3, located in Unit F of Section 22, Township 15 South, Range 38 East, NMPM, Medicine Rock-Devonian Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres, Glorieta and Tubb formations, with injection into the open-hole interval from approximately 4894 feet to 8725 feet.

(4) That the applicant expects essentially all of the injected water to enter porous zones within the San Andres formation from a depth of approximately 4894 feet to 6100 feet.

(5) That said C. S. Stone Well No. 3 should be plugged back to an approximate depth of 6100 feet prior to initiation of injection.

(6) That the 5 1/2-inch casing should be cemented across the 9 5/8-inch casing shoe in order to isolate the casing-casing annulus from the injected fluid.

(7) That the injection should be accomplished through 2 7/8-inch fiber glass tubing installed in a packer set at approximately 4850 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(8) That the injection well or system should be equipped with a pressure limiting device or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 980 psi.

(9) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(10) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(11) 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, Dyco Petroleum Corporation, is hereby authorized to utilize its C. S. Stone Well No. 3, located in Unit F of Section 22, Township 15 South, Range 28 East, NMPM, Medicine Rock-Devonian Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 7/8-inch fiber glass tubing installed in a packer set at approximately 4850 feet, with injection into the open-hole interval from approximately 4894 feet to 6100 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 shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

PROVIDED FURTHER, that prior to initiation of injection the applicant shall plug back said C. S. Stone Well No. 3 to an approximate depth of 6100 feet and shall cement the 5 1/2-inch casing across the 9 5/8-inch casing shoe both in accordance with Division-approved programs.

(2) That the injection well or system shall be equipped with a pressure limiting device or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 980 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

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

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6593
Order No. R-6082

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

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(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres, Glorieta and Tubb formations, with injection into the open-hole interval from approximately 4894 feet to 8725 feet.

(4) That the applicant expects essentially all of the injected water to enter porous zones within the San Andres formation from a depth of approximately 4894 feet to 6100 feet.

(5) That said C. S. Stone Well No. 3 should be plugged back to an approximate depth of 6100 feet prior to initiation of injection.

(6) That the 5 1/2-inch casing should be cemented across the 9 5/8-inch casing shoe in order to isolate the casing-casing annulus from the injected fluid.

(7) That the injection should be accomplished through 2 7/8-inch fiber glass tubing installed in a packer set at approximately 4850 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(8) That the injection well or system should be equipped with a pressure limiting device or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 980 psi.

(9) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(10) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(11) 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, Dyco Petroleum Corporation, is hereby authorized to utilize its C. S. Stone Well No. 3, located in Unit P of Section 22, Township 15 South, Range 38 East, NMPM, Medicine Rock-Devonian Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, injection to be accomplished through 2 7/8-inch fiber glass tubing installed in a packer set at approximately 4850 feet, with injection into the open-hole interval from approximately 4894 feet to 6100 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 shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

PROVIDED FURTHER, that prior to initiation of injection the applicant shall plug back said C. S. Stone Well No. 3 to an approximate depth of 6100 feet and shall cement the 5 1/2-inch casing across the 9 5/8-inch casing shoe both in accordance with Division-approved programs.

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(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

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

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico
11 July 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of Dyco Petroleum Corporation for salt water disposal, Lea County, New Mexico.) CASE 6593

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest L. Padilla, Esq.
Legal Counsel for the Division
State Land Office Bldg.
Santa Fe, New Mexico 87503

For the Applicant: Conrad Coffield, Esq.
HINKLE, COX, EATON, COFFIELD & HENSLEY
Midland, Texas

I N D E X

TOM SPRINKLE

Direct Examination by Mr. Coffield 3

Cross Examination by Mr. Stamets 23

E X H I B I T S

Applicant Exhibit One, Plat 4

Applicant Exhibit Two, Diagram 7

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Applicant Exhibit Four, Tabulation 12

Applicant Exhibit Five, Structure Maps 14

Applicant Exhibit Six, Cross Section 16

Applicant Exhibit Seven, Chemical Analysis 18

Applicant Exhibit Eight, Waivers 20

Applicant Exhibit Nine, Diagram 21

MR. STAMETS: We'll call next Case 6593.

MR. PADILLA: Application of Dyco Petroleum Corporation for salt water disposal, Lea County, New Mexico.

MR. COFFIELD: Conrad Coffield, with the Hinkle Law Firm, of Midland, Texas, appearing on behalf of the applicant, and I have one witness.

(Witness sworn.)

TOM SPRINKLE

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. COFFIELD:

Q. Mr. Sprinkle, would you please state your name, address, occupation, and employer?

A. My name is Tom Sprinkle, S-P-R-I-N-K-L-E; employed by Dyco Petroleum, D-Y-C-O, as Area Manager of the Permian Basin Office, located in Midland, Texas.

Q. Mr. Sprinkle, have you previously testified before the Division as a petroleum engineer?

A. Yes, I have.

Q. Were your qualifications made a matter of

record and accepted by the Division?

A. Yes.

Q. And are you familiar with this particular application?

A. Yes, I am.

Q. And the property involved?

A. Yes, I am.

MR. COFFIELD: Is the witness considered qualified?

MR. STAMETS: He is.

Q. Mr. Sprinkle, would you please state very briefly what it is that Dyco seeks by this particular application?

A. Dyco seeks authority to dispose of produced salt water in the San Andres-Glorieta-Tubb formations in the open hole interval from 4894 feet to 8725 feet in the C. S. Stone No. 3 Well, located in Unit F of Section 22, Township 15 South, Range 38 East, Medicine Rock-Devonian Pool.

Q. Mr. Sprinkle, please refer to what we've marked Exhibit One and explain that exhibit.

A. Exhibit One is a land plat of the Medicine Rock Field area. The Dyco jointly owned acreage is outlined in yellow. The Stone No. 3 salt water disposal system disposal well is circled in red.

This plat indicates that Dyco and others own 3/4ths of Section 22 as to the leased rights for oil production. The well indicates the plugged and producing wells within a half mile of the No. 3 disposal well system. Indicates that in fact all wells within a half mile are plugged and abandoned, either as dry holes originally or as depleted producing wells, excepting the Dyco C. S. Stone No. 1 Well, located immediately east of the No. 3 Well, which is currently productive from the Devonian formation.

In addition, just outside the lease area there is indicated production -- productive wells in Section 23, and also in the extreme southwest of Section 14 to the northeast of the area.

These wells are in some kind of productive status with Polaris Production of Midland, Texas, being the operator.

To my knowledge the well in Section 23, being the Roberts No. 1, has attempted to be recompleted but it's not productive at this time.

The well to the northeast in Section 14 makes 10 barrels of oil per day from the Devonian formation, under artificial lift conditions.

Q Mr. Sprinkle, perhaps you've already covered this, but is Dyco the operator of this -- this particular property?

A. Yes, Dyco is the operator for the jointly owned property.

Q. Okay. Would you please state -- just give a history of this injection well, what has -- what has happened to it? When it was drilled, and so forth, do you have that information?

A. The C. S. Stone No. 3 Well was completed drilling in April the 7th, 1962, with Sinclair Oil and Gas as the operator.

The well was completed as a Devonian producer on April 13th, 1962, by Sinclair Oil and Gas. Total depth at that time was 12,815 feet; plugged back depth was 12,800 feet. The Devonian formation was initially completed in the interval 12,738 to 12,758 feet.

The well initially potentialed flowing for 320 barrels of oil per day from the Devonian formation.

On September the 14th, 1962, indicated the well was making 230 barrels of oil per day plus 336 barrels of water per day from the Devonian, at which time it was plugged back to 12,730 feet. The Devonian interval then was perforated from 12,687 to 12,708 feet. The well produced from that interval until -- I don't have the exact date; that was sometime in 1963.

By Order SWD-41, effective December 13th, 1963, the well was permitted to be converted to salt water

disposal. At that time a cast iron bridge plug was set at 12,650 feet, which is above all the previously indicated Devonian perforations, and was squeezed with 70 sacks of cement in preparation for the disposal well conversion.

The well was effectively converted to salt water disposal on June the 9th, 1964, indicating it was disposing of produced Devonian formation water from other wells in the Medicine Rock Pool at that time, at the rate of 359 barrels of water in 7 hours at 1100 psig surface pressure. It later indicated that it was --

A SPECTATOR: What was that pressure, sir?

A. 1100 psig. And as later exhibits will show, this water was being disposed of into the Wolfcamp formation at that time, as per the SWD 41 permit.

The cumulative injection to November, 1974, was about 2,250,000 barrels of water, all of which was produced Devonian salt water associated with the Devonian oil production from the Sinclair Oil and Gas, later Atlantic Richfield, well in the area.

The estimated current cumulative injection volume in the Wolfcamp formation is 2,400,000 barrels of produced Devonian formation water.

Q. Okay, Mr. Sprinkle, refer to what's been marked as Exhibit Two, and state what this represents.

A. Exhibit Two is the schematic diagram of

the C. S. Stone No. 3 salt water disposal well. The sketch indicates the TD was 12,815 feet; 5-1/2 inch casing was set at that depth; cemented with 730 sacks of cement. The top of cement behind the 5-1/2 inch casing indicated by a temperature survey to be 8,725 feet; the cast iron bridge plug was indicated at 12,635 feet; that was squeezed with 77 sacks, thus isolating the former productive Devonian perforations.

The Wolfcamp interval was perforated from 10,050 feet to 10,336 feet with 162 holes through the casing to affect disposal into the Wolfcamp formation.

A 5-1/2 inch Model H type packer is indicated to be set at 10,009 feet kb depth. We also indicate the 2-7/8ths inch tubing stub is located at 8,729 feet from the surface.

We indicate that there is communication above the top of the cement on the 5-1/2 inch casing string to the open hole interval between 4,894 feet and 8,725 feet somewhere.

Moving up the hole, the 9-5/8ths casing string is indicated to be set at 4,894 feet. It was cemented to surface with 2,100 sacks. In addition there is 13-3/8ths casing at 364 feet, also cemented to surface with 400 sacks.

This schematic has, as I've indicated, is the current schematic of the downhole tubular equipment.

Q And you propose to show by a subsequent exhibit the status of the well upon completion of your proposed conversion, is that correct?

A Yes.

Q Anything more on this exhibit Two?

A I believe that's all.

Q Okay, let's go to what we've marked as Exhibit Three and explain that, please.

A Okay, Exhibit Three is the schematic diagram of the producing and plugged wells within one half mile of the C. S.Stone No. 3 salt water disposal well, as was indicated on Exhibit One, the wells' location in relation to the No. 3 disposal well.

The first well is indicated to be the ARCO Oil and Gas Read Estate No. 1 Well, located in the northwest of the southeast of Section 22, being the direct diagonal southeast offset to the well of interest.

This well is indicated to be plugged at this time. It was originally drilled to 12,848 feet; produced from the Devonian formation, and was plugged as noncommercial in November, 1972. At that time the well was plugged, cast iron bridge plug was set at 12,425 feet. Additional cementing and plugging operations set plugs at 8130 feet over a 5-1/2 casing stub and open hole; 35 sack plug at 350 feet; 35 sacks at the 9-5/8ths casing seat at

4860 feet.

Note that the 9-5/8ths was cemented to surface. Additionally the 10-sack plug was set at the surface. The 13-3/8ths casing at 332 feet had also been originally cemented to surface.

The next well is the ARCO Oil and Gas C. S. Stone No. 2 Well, which is located diagonally northeast of the Stone No. 3 salt water disposal system, northeast offset, in the northwest of the northeast of Section 22.

This well formerly produced from the Devonian formation; was depleted as to economic production and plugged. That was plugged January 15th, 1976.

Again, the schematic shows the plugging procedure, cast iron bridge plug over the formerly productive interval in the Devonian; 30-sack plug inside the 5-1/2 inch casing; 40-sack plug inside the 5-1/2 inch casing at 6900 feet; 40-sack plug over the 5-1/2 inch casing stub at 5310 feet; a 60-sack plug across the 9-5/8ths casing seat into the open hole; again, the 9-5/8ths has been cemented to surface originally with 2100 sacks; a 50-sack plug was set inside the 9-5/8ths at 2200 feet; 13-3/8ths had originally been cemented to surface from 344 feet; of course the 13-3/8ths and 9-5/8ths strings were left intact in the plugged well. Final plug of 10 sacks on top.

The next well on the Exhibit Three is the

C. S. Stone No. 1, the immediate east offset, indicating that this well has not been plugged. Indeed, it is still producing from the Devonian formation.

That well had set 13-3/8ths at 327 feet and was cemented to surface; 9-5/8ths inch casing had been set at 4880 feet, cemented to surface with 1980 sacks. All of these 9-5/8ths casing seats, I might mention, are casing seats into the top of the San Andres formation, thus isolating it from formations above.

5-1/2 inch casing had been set in that well, 12,848 feet and cemented with 195 sacks. Top of the cement being approximately 11,840 feet behind the 5-1/2 string.

We indicate a bridge plug over the lower part of the Devonian formation, which had been produced and then watered out. The well was plugged back to the upper portion of the Devonian formation where it still produces from.

This well is, as indicated, our only productive well and the only productive well that we operate in the field. It produces under artificial lift equipment 27 barrels of oil a day and a maximum of 400 barrels of water a day, which is the capacity of the lift equipment.

Q It's from this well that you will be taking the water for disposal?

A That's correct.

The next well in Exhibit Three is the John Eisner Atlantic State No. 1, located in the southeast of the southwest of Section 15, Township 15 South, Range 38 East, being the north offset, exactly one half mile away.

That well was drilled to a TD of 12,872 feet and was plugged in September of 1963 as the Devonian formation was low and only water-bearing at that point.

The well was then plugged with the plugs indicated on the schematic. All plugs were 25 sacks except the top, being at 12,850 feet, 9200 feet, 8160 feet, 7200 feet, 6420 feet. A 25-sack plug at the top of the 8-5/8ths casing stub plugging of the 8-5/8ths at that point inside and outside; another sack at 359 feet across the 13-3/8ths casing seat; 10-sack plug at the top. 13-3/8ths had been cemented to surface, as indicates. The 8-5/8th inch casing had been set at 4915 feet and cemented with 600 sacks. The top is not known except by possible calculation, which I haven't made that calculation. You could probably -- several thousand feet of fillup, which would put it about 3000 feet, perhaps, from the surface.

Q Please refer to what we've marked as Exhibit Four and identify that for the Examiner.

A Okay. This is a tabulation of the wells shown -- indicated on the schematics of Exhibit Three.

Q. Does this show all the wells within a half mile which have penetrated the injection zone?

A. That's correct.

Q. And the casing strings and setting depths, sacks of cement used, cement tops, total depth --

A. That's correct.

Q. -- producing interval --

A. Yes.

Q. -- as well as the well identification and location.

A. It indicates all those features, plugging, plugs, and if plugged at this time.

Q. Okay, Mr. Sprinkle, what kind of fluid will be injected into the -- although I think you've already alluded to it -- and the source of the fluid that you stated would be in your well?

A. This will be Devonian salt water produced in association with Devonian oil production from the C. S. Stone No. 1 Well.

Q. And what's the volume of salt water that you anticipate?

A. It would range from 350 to 400 barrels of water per day, 400 being the maximum, because of the limit of the lifting equipment.

Q. Let's go on now to what we've marked as

Exhibit Five, Mr. Sprinkle, and explain that exhibit of several pages to the Examiner.

A. Exhibit Five consists of various structural maps in the immediate vicinity of the C. S. Stone No. 3 salt water disposal well.

The first page indicates the structure on the top of the San Andres porosity, which is one of the intervals of request. Scale of one inch to four miles; contour interval on the structure in 10 feet.

This structure map indicates that there is a slight nosing to the south/southeast across this San Andres feature. Of course, this San Andres has not been proven oil productive in the area; had no shows on drilling from sample analysis on many of the wells drilled in the area. The only drill stem test taken, I believe, was on the C. S. Stone No. 1 in the upper part or first porosity, possible porosity in the high position, recovered only mud, and they did not get into the indicated higher permeability - porosity section because they probably figured they were wet at that point and they were already low, which the logs tend to confirm.

The second page indicates the structure at the top of the Glorieta, which is the next recognized horizon directly below the San Andres, still within the Permian interval of formations.

This plat shows a little more of a structural feature there. Remember that we're getting deeper.

The third plat jumps back up the holes. May have been out of order here but it's on the Yates horizon in this particular area. This is a commercial map. The Section 22 of interest is outlined in yellow. The Yates formation in this area is indicated to be in a low or sink area as opposed to the Yates formation surrounding the area; that is, it's higher to the -- in about any direction away from this area, and that tends to reflect partly the previous two pages, that there is low to little relief on the shallower beds.

The fourth page indicates an intermediate depth type structural picture. Again, the area of interest outlined in yellow. There appears to be a little low relief feature in the Pennsylvanian type formations. The geologic formations below the Permian in this area, immediately below.

The last commercial structure picture indicates that in the area of Section 22 we have the small, high area of Devonian production. The highest structural position indicates that our Stone No. 1 Well is located within that high feature and it is the highest well in the field, and because of its structural position still had remaining economic oil reserves, in our opinion.

In general, as you can see, the Siluro-Devonian formations are dipping to the west into the basin. This feature is still relatively low relief for a Devonian producing feature. There's just a slight roll over there that caused the entrapment of this oil in the Devonian porosity.

The -- again reflecting back on the shallower beds and the fact that the Permian or shallower horizons are our area of interest at this time, we are in a sink to flat area within these shallow beds. This might reduce or possibly eliminate migration.

Q. Okay, Mr. Sprinkle, go to what we've marked as Exhibit Six and discuss that, please.

A. This cross section is through the area of interest, and referring back to Exhibit Five, we indicate the line of section coursing generally from north to south across the area, and through all the wells within one half mile, as well as one well just outside that limit.

This cross section is concerned with the proposed zones of injection, being the Permian, including the San Andres, Glorieta, Clearfork Tubb, possibly Abo on the bottom, which is open partially in the open hole interval.

As indicated, there is not any significant relief to the San Andres formation, on which the first

line of demarcation below the datum of -1300 feet is the top of the gross porosity interval. Then the next line, horizontal line, indicates the top of the main porosity interval within the San Andres.

Most of these logs are porosity type logs, being neutron gamma ray radioactive logs for the most part.

The No. 4 Well on the cross section, going from left to right, is the C. S. Stone No. 1 Well, which is the producer, and the closest offset to the proposed disposal well zone. This well, besides showing some neutron porosity in yellow within the San Andres, indicates by some markings there microlog permeabilities within that interval.

This is the only well in the immediate area that had microlog logging across this interval to help determine some mor permeable intervals.

As a result of that and then correlating with the No. 3 Well, which is the well of interest, No. 3 Stone, we see we have some correlative neutron porosity intervals. If we can correlate some of these intervals as also having pemerability based on microlog porosity -- separation in the No. 1 Well, there is indicated to be enough net pay for disposal in an already water-saturated reservoir.

In the Stone No. 1 Well by this log analysis,

there is indicated to be 163 feet of net pay, net disposable pay interval, perhaps. There is something in that range, at least 100 feet, probably, on the average in our well of interest, as well as the other wells in the area.

Based on a 100-foot net pay disposal interval, we can project that the disposed volumes anticipated will utilize only 2.4 acres of reservoir volume per year of disposal operations. In a projected 10-year productive life perhaps remaining in this well, then we might be utilizing 24 acres of volumetric storage for disposal, still well within the confines of this No. 3 disposal well's area, and within the lease area that Dyco co-owns.

Q All right. Let's go on to what we've marked as Exhibit Seven, Mr. Sprinkle, and discuss that, please.

A Exhibit Seven then is the chemical analysis of the produced water from the Devonian formation.

The extreme righthand column indicates the chloride content as 39,600 parts per million. The total dissolved solids in the Devonian water of 70,222 parts per million.

Q Do you have a comparable analysis of fluids which may have been taken from the formation in which you propose to dispose of this Devonian water?

A There has not been any formation water

recovered from the interval in the San Andres-Glorieta-Tubb or Abo formations from drill stem testing nor by production in this area.

Q In your opinion, from experience in other areas, and so forth, do you anticipate any incompatibility as between whatever fluids there may be in those formations as compared with this Devonian water?

A No, I do not. The San Andres-Glorieta type intervals in other parts of the Permian Basin are usually greater than 100,000 parts per million in chloride content; more 150,000 sodium chloride type saturations. Therefore, in my opinion, we'll be putting fresher water into this formation than currently exists.

Q Will you be injecting this water by pressure?

A. Yes.

Q. And you already have the equipment on location as to the injection procedures that you expect to undertake?

A. Yes. Recall that this well has previously been a Wolfcamp approved disposal well and still is, as far as to status. The water was being injected under pressure into that formation. The equipment we have available, we would probably limit to 2000 psig surface pressure rating so as to keep it intact.

Q. Will the casing-tubing annulus be filled with an inert fluid?

A. Yes.

Q. Will you have a pressure gauge then attached to the annulus?

A. Yes.

Q. And you've just mentioned the pressure you have involved. I trust you are aware of the requirement by the Division that there is to be no surface injection pressure in a project of this sort greater than .2 psi per foot of depth to the top of the injection zone.

A. Yes, we would --

Q. Do you expect to stay within this guideline?

A. We feel like we can treat the San Andres-Glorieta type intervals with acid, which is a common stimulant, and achieve surface pressures in this range. Should we not be able to, we still think it will be below any fracturing pressure, and we would so advise and request modification of that pressure limit.

Q. Okay. Would you go to what we've marked as Exhibit Eight and identify that exhibit?

A. These are signed waivers from the near offset producing operator, being Polaris Production Company in Midland, and a signed waiver from the surface owner

in Section 22, Mr. Troy Fort.

Q Okay, now let's go to what we've marked as Exhibit Nine. Identify that exhibit for the Examiner, please.

A This is a C. S. Stone No. 3 salt water disposal well schematic as revised to indicate the proposed injection schematic under the current request for San Andres-Glorieta-Tubb-Abo, if you want to break it down at fine intervals.

This indicates that again we have cemented 13-3/8ths inch casing at 364 feet; cemented all the way to the surface. We have a 9-5/8ths string intermediate pipe set at 4894 that's been cemented all the way to the surface.

We propose to effectively seal the Wolfcamp injection interval. We would set a cast iron bridge plug retainer-type device at about 8700 feet and either squeeze or dump some cement on top of that.

We would then effect communication with the intervals of interest by perforating additionally or to affect the injection into the -- through the 5-1/2 inch casing, coming down through the 2-7/8ths tubing strings set on a packer inside the 5-1/2 inch casing.

The 5-1/2 inch casing would be further cemented from a point in the top of the San Andres but below

the 9-5/8ths casing seat with sufficient cement to affect a seal between the 5-1/2 inch casing string and the 9-5/8ths casing string, which is already cemented. And with the 2-7/8ths injection tubing of at least 2000 psi working pressure and of the fiberglass type that we propose, set on a retrievable packer at approximately 49 -- say 4880 feet, we would have isolated all formations except the injection zone of interest.

Additionally, the fluids behind the tubing string and casing strings at that point either have mud or inhibited packer type fluids for continued corrosion protection, and with the fiberglass strings which I believe are being used now, show competence at the higher working pressures, that we would eliminate corrosion in the tubing string almost 100 percent.

Q And, Mr. Sprinkle, is it your opinion that the casing and cement program that you have proposed here with this proposed system is of such a type that there would be no danger to oil or gas or fresh water reservoirs which the well might encounter?

A That's correct.

Q Were these Exhibits One through Nine prepared by you or under your supervision?

A Yes.

Q Will Dyco undertake to notify the Division

of the date of commencement of injection operations under this proposed system and keep accurate records and report monthly to the Division the volume of fluids injected and injection pressures?

A. Yes.

Q. And, in your opinion, will the approval of this application be in the interest of conservation and prevention of waste and protection of correlative rights?

A. Yes. Without an authorized disposal well in the immediate area, such as we're proposing, this well would not be economic to produce and would have to be plugged and abandoned as to productive wells in the area, which being the Stone No. 1.

MR. COFFIELD: Mr. Examiner, I move the admission of Exhibits One through Nine.

MR. STAMETS: These exhibits will be admitted.

MR. COFFIELD: And I have no other questions of the witness on direct examination.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Sprinkle, when did Dyco acquire these two wells, the No. 1 Well and the No. 2 Well?

A. Effectively April the 1st, 1978.

Q. You say effectively.

A. Probably when it was recorded. We earned interest in this property through agreement with another joint owner.

Q. When did you acquire responsibility for the operation of the wells? Was it before the paperwork was filed with the Division?

A. We commenced workover procedures on the No. 1 Stone almost simultaneously.

Q. Okay. Why are you not going back into the Wolfcamp zone in this well?

A. Primarily economics. We indicate on the schematic and information that the tubing, 2-7/8ths tubing and the packer are currently in the hole as a fish from 8729 feet to 10,000 feet, being still above the Wolfcamp injection interval. In attempting to pull that tubing to replace it for leaks that we encountered, more time and cost than we anticipated, and believe the proposed procedure is the best way to economically remedy the situation and still permit disposal of produced water on the producing operations.

Q. Did you try to put water in the Wolfcamp in this well?

A. Yes.

Q. After you acquired the property?

A. Yes, the water, to my knowledge, has been

going into the Wolfcamp.

Q. What were the results of your attempt to utilize this well? As an injector into the Wolfcamp?

A. The well was taking water in the Wolfcamp interval at the rate of 350 barrels of water per day at pressures between 1000 and 1500 psi surface pressure recently.

Q. If that was the situation, why then would you attempt to work the well over and pull the tubing?

A. We had indications that we had a tubing leak and we had pressure on the tubing annulus.

Q. Immediately?

A. Well, at the first time we checked it, which would probably be several months after we -- or when we completed working over the No. 1 Well, we found that we had restored production. Then we repaired the disposal pump, which put it on injection under the current scheme, and it in effect took water at the indicated pressures.

Q. How long after you put it on did you check the annulus pressure?

A. Well, this would be, I'd say, within three months.

Q. You didn't check the well to see if it was sound until three months after you started using it?

A. Well, the production history of the Stone

No. 1 Well is such that we spent, say from April to June recompleting the well. After $150,000 of tangible and intangible costs we put the well on production, consistently producing, and disposal operations. In August the producing well again had mechanical problems. We were down a number of weeks. The well was back on in September and went down again in October for mechanical problems. We're pumping that well with a 456 large beam pumping unit, rod string and insert pump of 6700 feet through tubing.

We did not feel that we had assurance that we had economic conditions until toward the end of last year, and then the timing of workload and operations were scheduled to do this workover on the disposal well.

Q When did you discover that you had holes in the 5-1/2 inch casing?

A To our knowledge it was probably in March of this year, in March, 1979.

We again had problems with our producing well and, you know, made plans at that time to jointly work over that well and move the rig to the other well to do the work.

Q At the same time that you found the holes in the tubing?

A Well, yeah, physically found them. We suspected, you know, that we had tubing leaks earlier, be-

cause we had defective pressure monitoring on the tubing annulus, or at least checked it.

Q. What was the condition of the tubing when you did get it out of the hole?

A. Well, it had primarily external collar corrosion. The tubes were generally intact. There were indications that the coupling area had failed.

Q. Did you get this tubing out all in one piece or a piece at a time? Was it totally eaten up or was it really in pretty good shape?

A. Well, we -- it was in bad shape as regards there were numerous collars and as I indicated in the application, I think I indicated ten to twenty joints, we recovered maybe 2000 feet in one bite, so to speak. That's probably the maximum recovery on one run. We had other runs, and five -- most of them five or six hundred feet being in the 20-30 joint recovery per run.

Of course, the closer we got to the packer, the more tension and force had to be applied to attempt to free the tubing or unseat the packer, and we, at the expedience of time and expense, made an internal cut in the tubing string at 8729 feet in order to pull as much as possible and yet have the 5-1/2 casing cleaned out inside across the San Andres-Glorieta type intervals.

Q. Now do you expect this maximum life for

this field to be another ten years for the operations that you've got here?

A. Our experience in other areas of the Permian Basin, being in Texas, but still Devonian production, at these 12,000 foot depths, we're in effect skimming, you know, making marginal production, these wells will produce in the extents that we've seen a number of years, you know, with volumes of water mainly restricted to your lifting capacity.

Q. Is the Devonian the only pay in the area?

A. I think we're probably the only ones that have proven this in some areas. You know, other operators have not elected to do this for the most part.

Q. Is the Devonian the only pay in this area?

A. It's the only pay in the Medicine Rock Pool, and there's -- the nearest production would probably be in the four or five mile range to the east in Texas of formations other than the Devonian.

Q. You indicated that you had no analysis of formation fluids in the San Andres to the Abo interval, but that you did feel that they would be more highly contaminated than the Devonian waters.

A. Yes.

Q. And what was that based on?

A. My own experience with San Andres production

in the Permian Basin. We produce a lot of San Andres wells in the Permian Basin and they all make some water and they are all of this 100,000 plus chloride content. I believe that will be borne out by any investigation.

Q. I noticed on Exhibit Number Three on some of the plugging, like on the first page there's a plug at 5350, which would be right in the middle of the -- your injection interval; on the last page there's a plug at 6420, 7200, again in the middle of your injection interval. Do you have any idea why those plugs were set?

A. Well, the -- let me go to the last page first, the John Eisner Well.

This well was not productive in any horizon. It appears that that plugging procedure was based on so many plugs per 1000 feet of open hole section, is the only justification I can see.

The important plugs, of course, are those above the 8-5/8ths casing seat, which, jumping back to the number one sheet, the Read Estate Well, which did produce, set a usual plug at the cutoff 5-1/2 point; had a plug again possibly associated with the interval between plugs at 6350 feet and a more usual plug at the 9-5/8ths casing seat.

That's the only reason I know, to my knowledge, you know, essentially that thing was productive in

there.

Q. That same exhibit, your No. 1 Well does not have any cement across this injection interval. Do you anticipate any casing corrosion problems or possible casing collapse because of the injection?

A. Oh, as the cement top behind the 5-1/2 indicates, 11,840 feet, that well has not had cement behind it all during the period of injection in the Wolfcamp interval in the No. 3 Well, so that interval has been exposed to the Wolfcamp injection for the last fifteen years.

There has been on all producing operations, for example, no pressure from injection, say, on the 5-1/2 annulus, which would only be there if it came from an external source, which zero pressure.

Q. Well, your Exhibit Number Six, did you intend to show that most of this water, or all of the water, will likely go into the San Andres formation?

A. That's the most likely indication, you know, where we have information to put any quantitative figures to, as to net pay and porosity. But only injection profiling would actually determine the specific interval within there, even if we put one hole in the casing and it goes out, well, from then on it's going to go in the over all open hole interval at the most permeable porosity point, which may or may not be one of the points in the San Andres

perfs.

Q On completion of use of this well, do you think you'll be able to get in there and isolate the San Andres-Glorieta interval from the Abo-Tubb interval with a plug?

A Yes. We can, of course, as the cement plug indicated at the top of the San Andres, outside the 5/8ths but inside the 9-5/8ths, that affects that plug there, were that plug either extended or moved out to cover, say, at least to the bottom of the San Andres, then selectively perforated in the San Andres, it would confine injection under -- below frac pressure type pressures, to the San Andres formation.

Likewise any deeper horizon within that open hole interval that was cemented off by essentially a primary cement job would be -- could be isolated.

Q Could you reasonably get in there and -- and plug off this well at the base of the San Andres at this time before you start your injection?

A Yes, that is the plan as proposed under our application.

Q No, I think you misunderstood me.

So that there would be no injection into the Glorieta-Tubb-Abo section, but inject only into the San Andres.

We have right if we, depending exactly on where the communication is in the 5-1/2, you know, it can be done period, but you know, it's how much trouble remains to be seen.

Q. Okay.

A. The proposed schematic again would be the most expedient economically and timely.

Q. Where are the fresh water zones in this area?

A. To my knowledge, the 13-3/8ths inch casing strings case off all surface fresh water, being in general above 350 feet.

Q. This fiberglass tubing, do you land that in that packer or is there some sort of a metal sleeve that runs through the packer?

A. It has been recommended that we latch in, so to speak. There would be a fiberglass to metal connection point at the packer. All of that connecting equipment, however, could be internally and externally plastic coated, would be the proposed scheme to minimize corrosion, and this would again, as per the fiberglass design, minimize pulsation effects.

MR. STAMETS: Any other questions of this witness? He may be excused.

Anything further in this case?

MR. COFFIELD: No, sir.

MR. STAMETS: Take the case under advisement.

(Hearing concluded.)

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
3010 Plaza Blanca (505) 471-2468
Santa Fe, New Mexico 87501

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____ heard by me on _____ 19____.

_____, Examiner
Oil Conservation Division

SALLY WALTON BOYD
CERTIFIED SHORTHAND REPORTER
1010 Plaza Blanca (505) 471-2402
Santa Fe, New Mexico 87501

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

August 17, 1979

Re: CASE NO. 6593
ORDER NO. R-6082

Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield
& Hensley
Attorneys at Law
P. O. Box 3580
Midland, Texas 79702

Applicant:

Dyco Petroleum Corporation

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

DENTON

MEDICINE ROCK

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 6593
Submitted by Dyco
Hearing Date 7-11-79

2

6593

Dyco

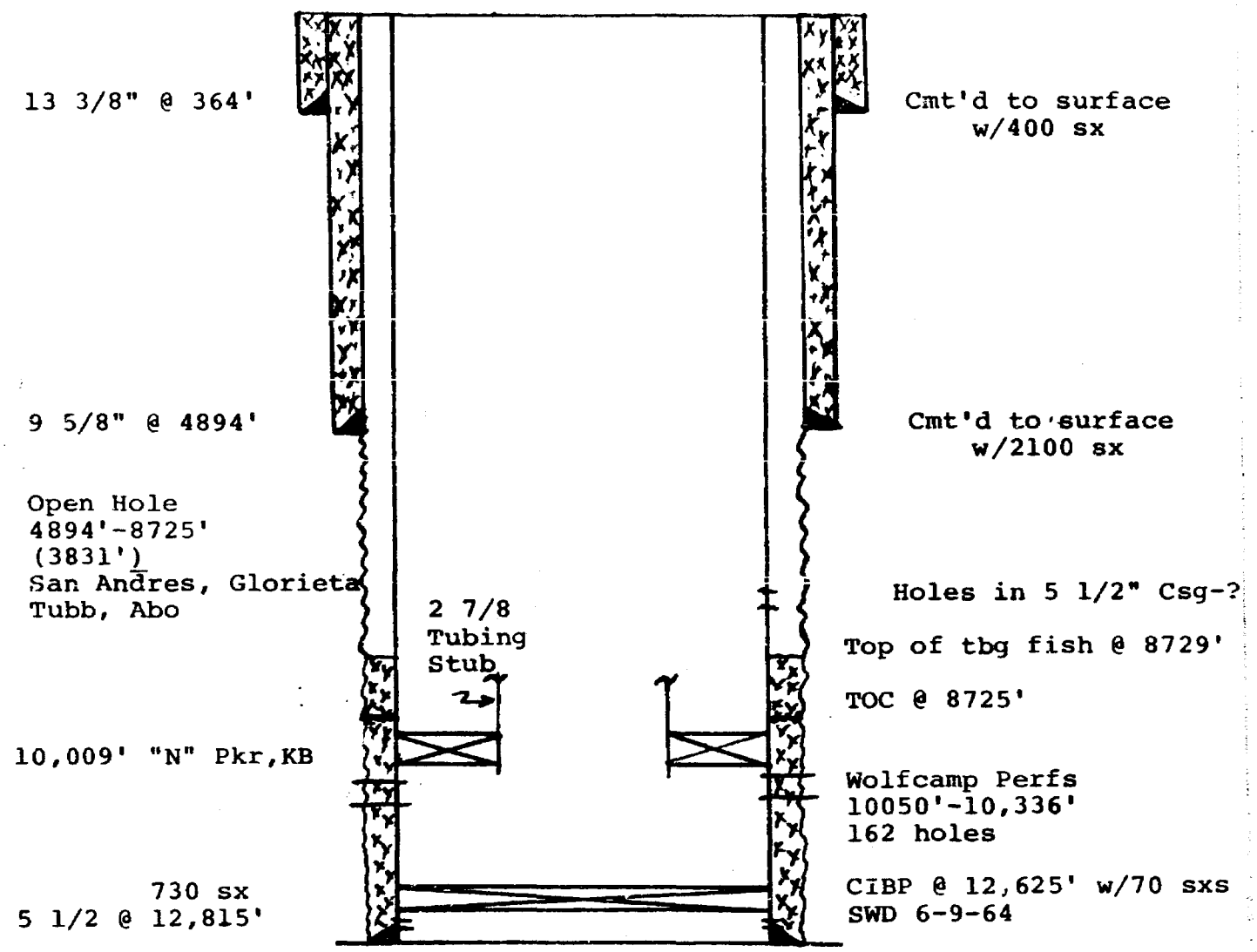
7/11/79

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT NO. 2

C. S. STONE NO. 3
UNIT F 1980' FNL & 1980' FWL
SECTION 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, NEW MEXICO



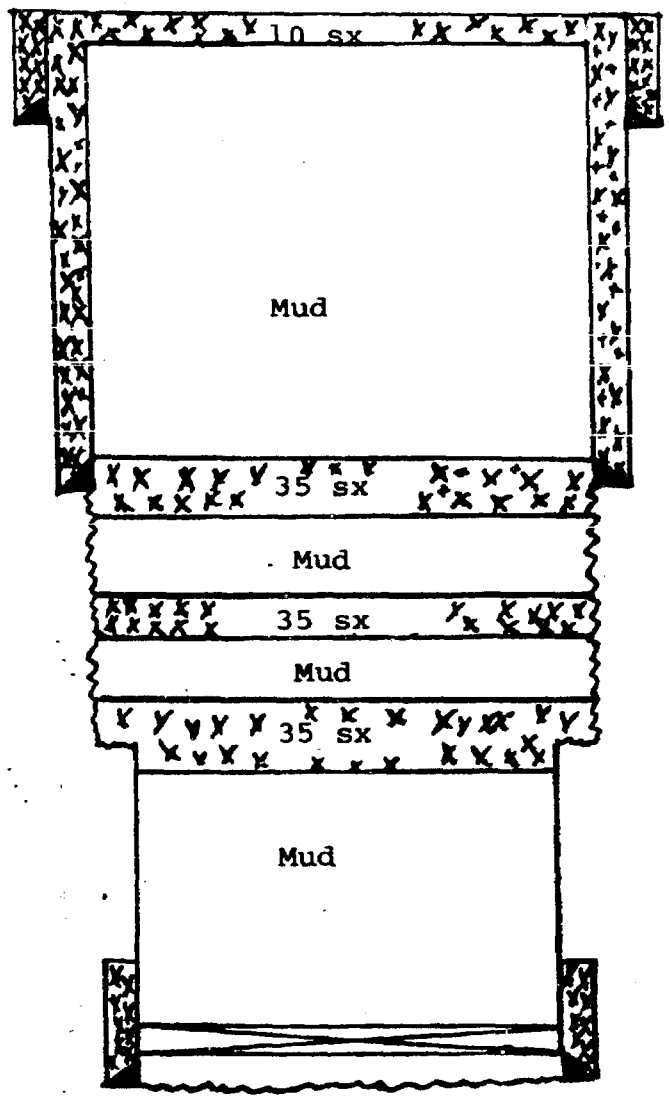
Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 6593
Submitted by Dyco
Hearing Date 7-11-79

EXHIBIT #3

ARCO OIL & GAS COMPANY
REED-ESTATE NO. 1
J 1980' FSL & 1980' FEL
Sec. 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.



13 3/8" @ 332' Cmt'd to surface

9 5/8" @ 4860' Cmt'd to surface

6350'

5 1/2" csg stub @ 8130'

TOC 10,260' on 5 1/2"

CIBP @ 12,425'
TD 12,848'
P&A 11-28-72

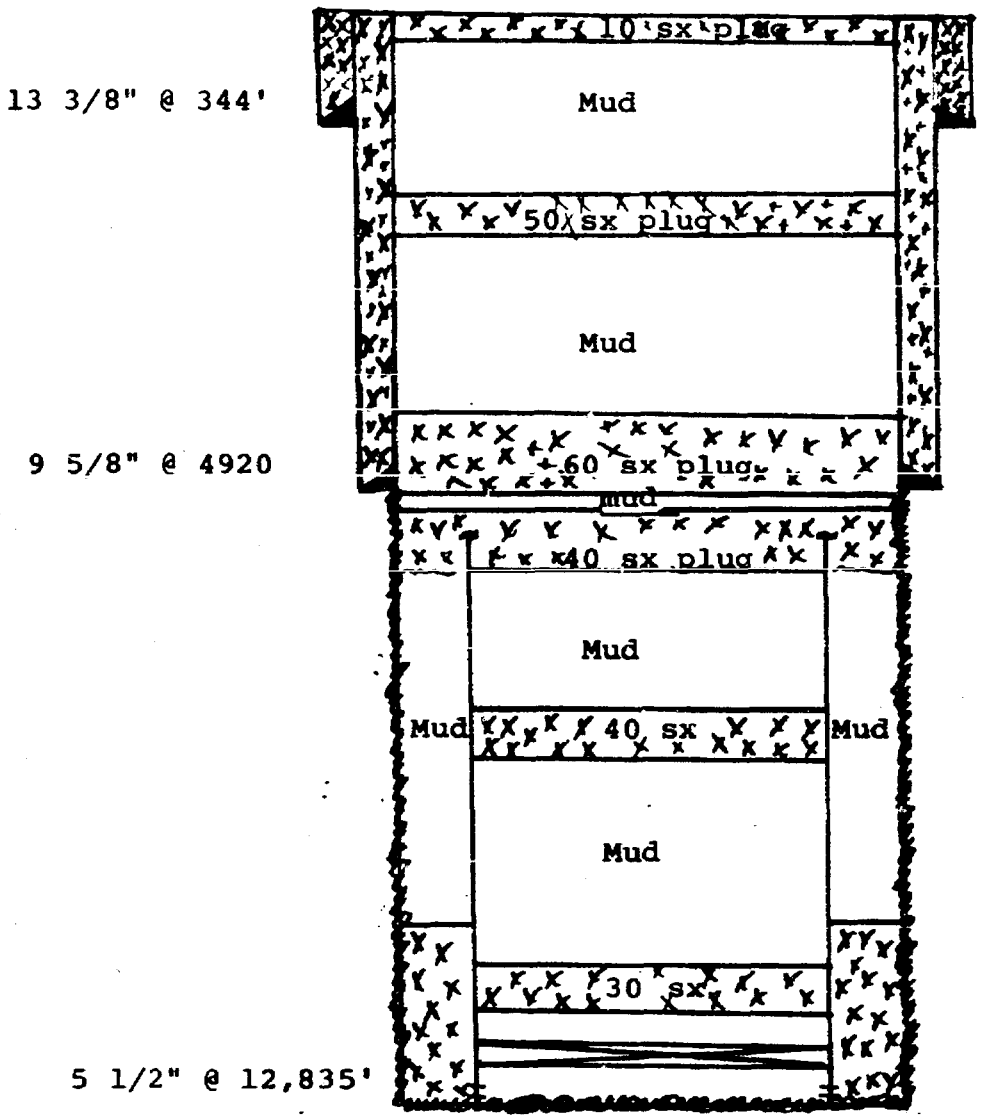
5 1/2" Csg @ 12,848'

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT #3

ARCO OIL & GAS COMPANY
C. S. STONE #2
B 660' FNL & 1980' FEL
Sec. 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.



13 3/8" @ 344'

Cmt'd to surface
w/400 sx

2200'

9 5/8" @ 4920

Cmt'd to surface
w/2100 sx

5 1/2" stub @ 5310'

6900'

TOC @ 8200'

5 1/2" @ 12,835'

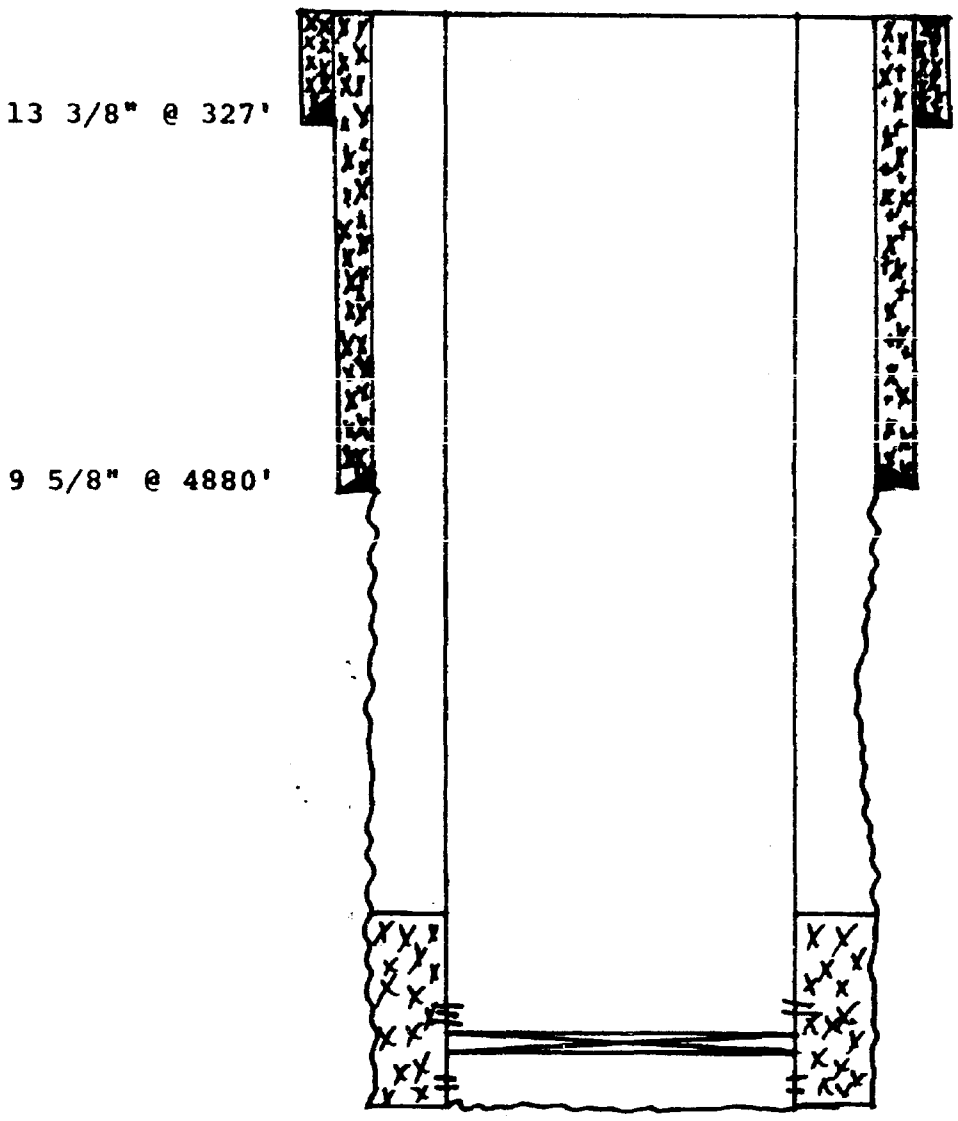
CIBP @ 12,630'
T.D. 12835'

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT #3

C. S. STONE #1 WELL
G 1980 FNL & 1980' FEL
Section 22, T15S R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.

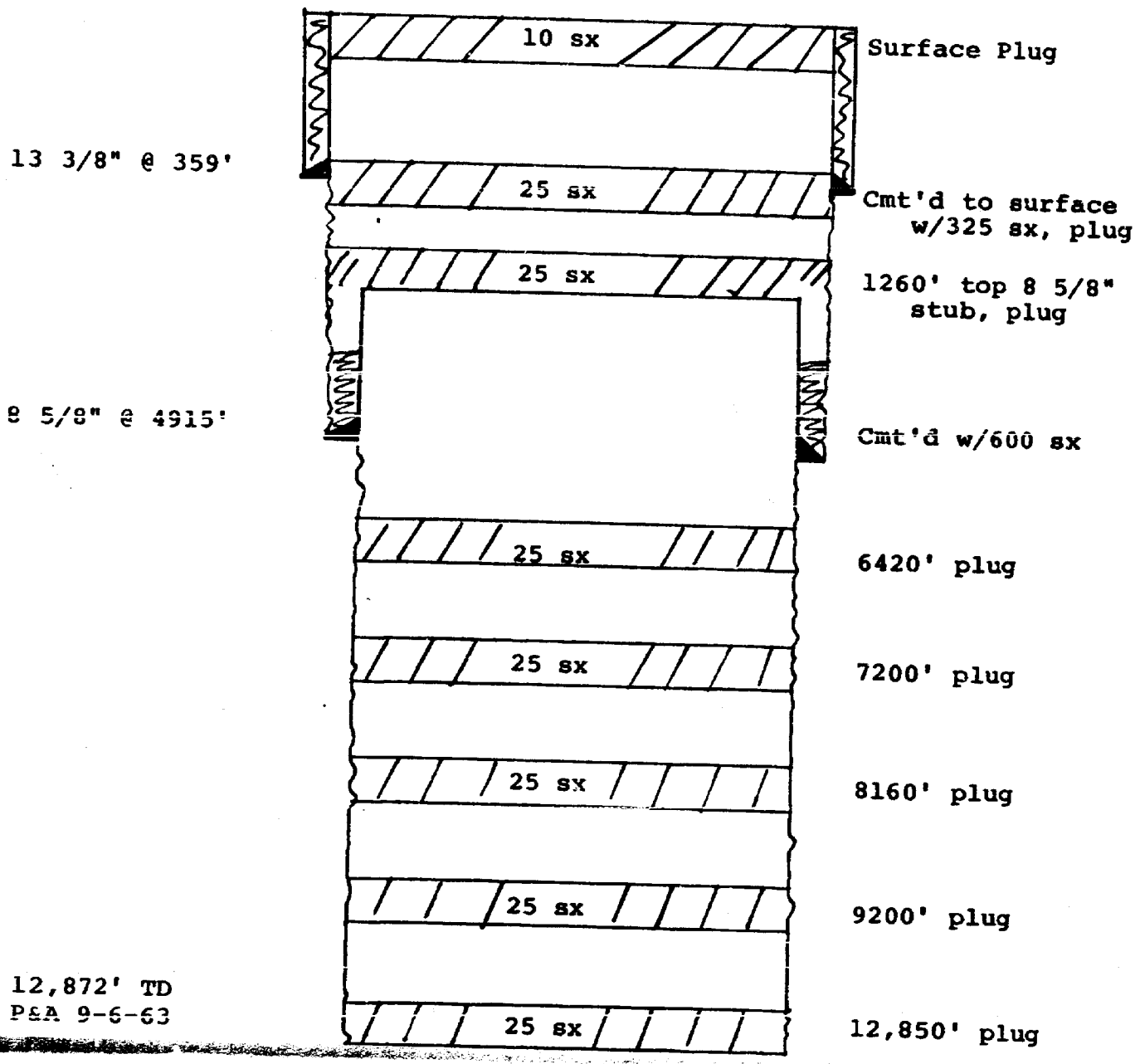


Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT #3

JOHN J. EISNER
ATLANTIC-STATE #1
N 554' FSL & 2086' FWL
Sec. 15, T15S, R38E
LEA COUNTY, NEW MEXICO



MEDICINE ROCK SWD SYSTEM
LEA COUNTY, NEW MEXICO
SUMMARY DATA - WELLS WITHIN 1/2 MILE
CASING - CEMENTING

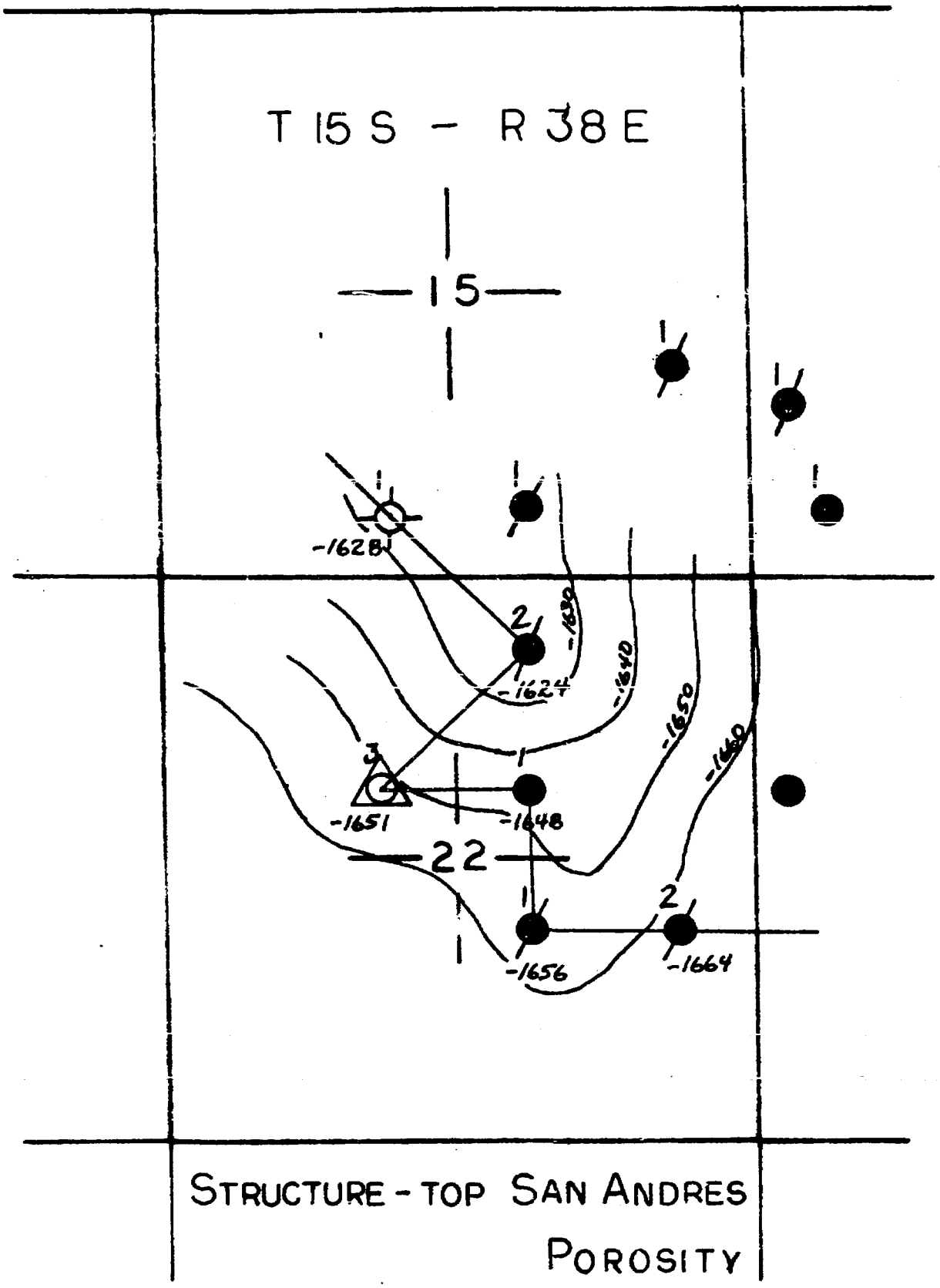
LAST OP.	WELL	LOCATION	SURFACE CSG.DEPTH	TOC SURF.CSG.	DEPTH INTER CSG	TOC SX INT.CSG	PROD CSG.DEPTH	TOC SX PROD CSG	P&A PLUGS
DYCO	C. S. STONE #1	G-SWNE-22-T15S-R38E	327'	Circ-400 sx	4880'	Circ.1980 sx	12,848'	195 sx-11,840'	NOT PLUGGED
		Perforations: Devonian	12,633' - 12,670'						CIBP @ 12740'PBTD
ARCO	C. S. STONE #2	B- NWNE 22-T15S-R38E	334'	Circ 400 sx	4920'	Circ.2100 sx	12,835'	1005 sx TOC 8200'	P&A 1-15-76, CIBP @ 12630' w/40 sx, 9100'-9500', 30 sx; 6900-7400',40sx 5900'-40 sx; 5310'-40 sx, 4920-60 sx; 2200'-50sx surface 10sx
ARCO	REED-ESTATE #1	J-NWSE 22-T15S-R38E	332'	Circ	4860'	Cir	12848'	TOC 10,260'	P&A 11-28-72 CIBP @ 12,425' w/35 sx 8130'-35 sx;6350'-35 sx;4860-35 sx, Surf 10 sx
EISNER ATLANTIC-STATE		#1 N-SESW 15-T15S-R38E	359'	Circ 325 sx	4915'	600 sx	No csg set		P&A 9-6-63 12,850'-25sx; 25 sx @ following depths, 9200',8160',7200', 6420', 1260',360'; 10 sx @ top

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 4
CASE NO. 6593
Submitted by Dyco
Hearing Date 7/11/79

DYCO PETROLEUM CORPORATION
CASE 6593
EXHIBIT NO. 4

5
6593
Dyco
Recording Date 7-11-79

T 15 S - R 38 E

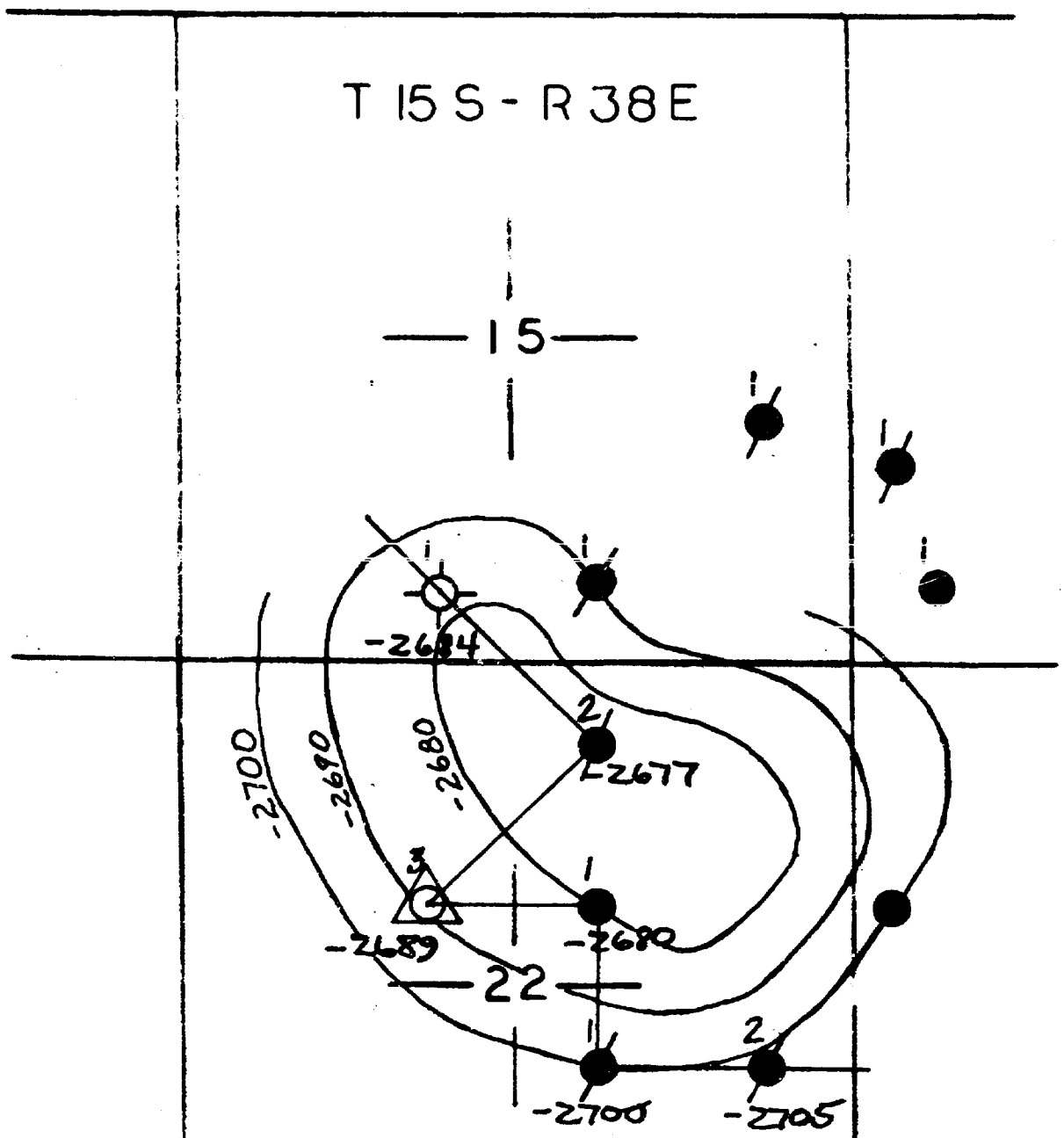


STRUCTURE - TOP SAN ANDRES

POROSITY

SCALE: 4" = 1 MILE C.I. = 10'

EXHIBIT 5A



STRUCTURE - TOP GLORIETTA

SCALE 4" = 1 MILE C.I. = 10'

EXHIBIT 5B

4.1.1979

BRONCO S., 69

BAY, 68

WBD, 68

CONRAD, 58 (Abnd)

DENTON E., 68

JANICE, 55

MEDICINE ROCK, 61

DENTON, 55

R 38 E

R38E

R39E

JONES RANCH, 45

GARRETT, 47

KNOWLES, 49

T 16 S

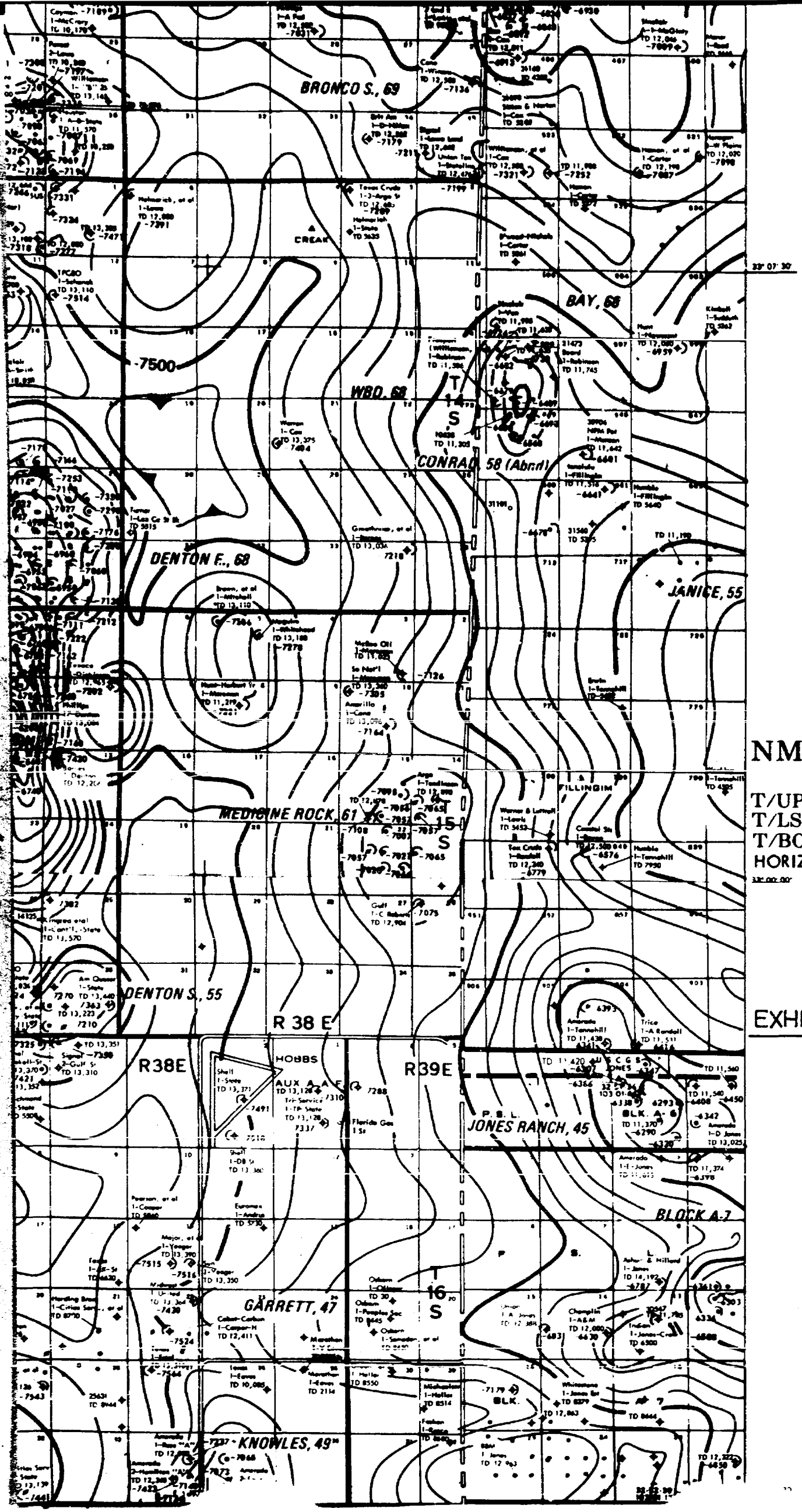
NM-13B

T/SA

T/YATES ✓

HORIZON A

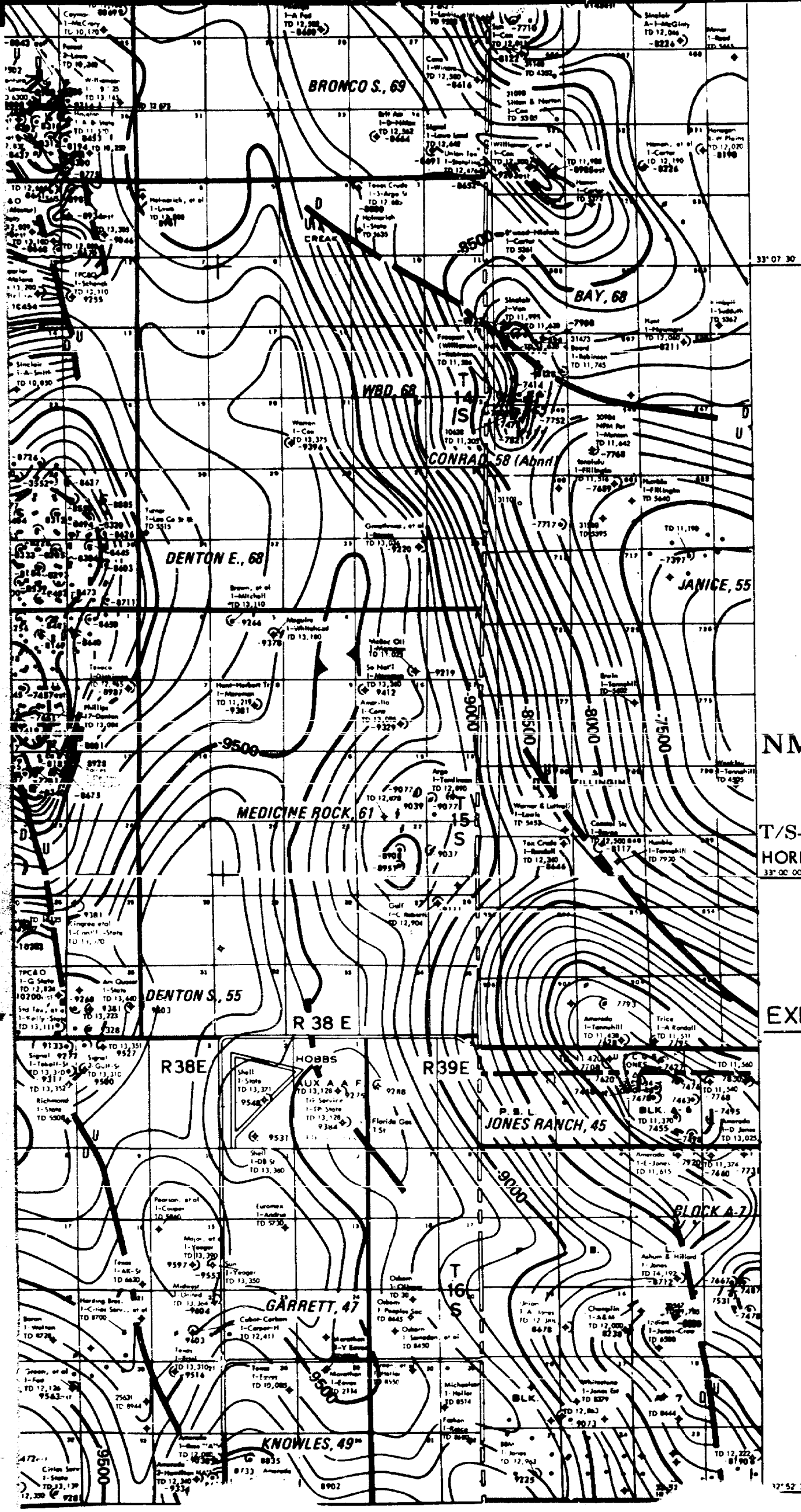
EXHIBIT
No. 5C



NM-13B

T/UPNLM
T/LST
T/BOC
HORIZON B

EXHIBIT 5E



NM-13B

T/S-D
HORIZON C

EXHIBIT 5 F

PHONE HOBBS 393-7...
AREA CODE 50...

...CORPORATION

P O BOX 1499
HOBBS, NEW MEXICO 88240

Dyco Petroleum Corporation

Vertic... Rock Dev... n

C. S. Stone #1 Sampling Date 5-12-78

...ed - Devonian Formation

WATER ANALYSIS

		me/l	mg/l
Calcium (Ca++)		105.20	2,104
Magnesium (Mg++)		43.98	528
Sodium (Na+)	(CALCULATED)	1,047.89	24,045
Iron (Total)			150

Disposal Water Analysis

C.S. Stone #3 - SWD Well

Bicarbonate (HCO_3)		14.00	854
Carbonate (CO_3 -)		Not	found
Hydroxide (OH-)		Not	found
Sulphate (SO_4 -)		64.35	3,093
Chloride (Cl-)		1,116.72	39,600
Total Dissolved Solids		TDS	70,222
6.65 ph @ 68 °F			
Dissolved Solids on Evap. at 103° - 105° C			
Hardness as $CaCO_3$		149.18	7,459
Carbonate Hardness as $CaCO_3$ (temporary)		14.00	700
Non-Carbonate Hardness as $CaCO_3$ (permanent)		135.18	6,759
Alkalinity as $CaCO_3$		14.00	700
Specific Gravity @ 68° F	1.050		

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 7
CASE NO. 6593
Submitted by Dyco
Hearing Date 7-11-79 CASE 6593
EXHIBIT #7

$CaCO_3$ Scaling Index slightly positive @ 86°F (0.14)

$CaSO_4$ Scaling ... negative (0.63)

Mid-ea. Water Analysis

file - Stone #3

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
200 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Polaris Production Company
First Nat'l Bank Bldg.
303 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Case 8
Case 6593
Submitted by: Dyco
Hearing Date 7/11/79

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L Sprinkle

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this 5th day of June, 1979 by the undersigned.

CASE 6593
Ex. 9-2

Troy C. Fort

POLARIS PRODUCTION CORP.
BY:

DYCO PETROLEUM CORPORATION
905 V... UNITED ... BUILDING
200 W... TEXAS
MIDLAND, TEXAS 79701

2nd
6-11-79

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Polaris Production Company
First Nat'l Bank Bldg.
30? West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Case
Submitted by
Hearing Date
RECEIVED JUN 7 1979

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this _____ day of _____, 1979 by the undersigned.

CASE 6593
Ex. 8-1

Troy C. Fort

POLARIS PRODUCTION CORP.

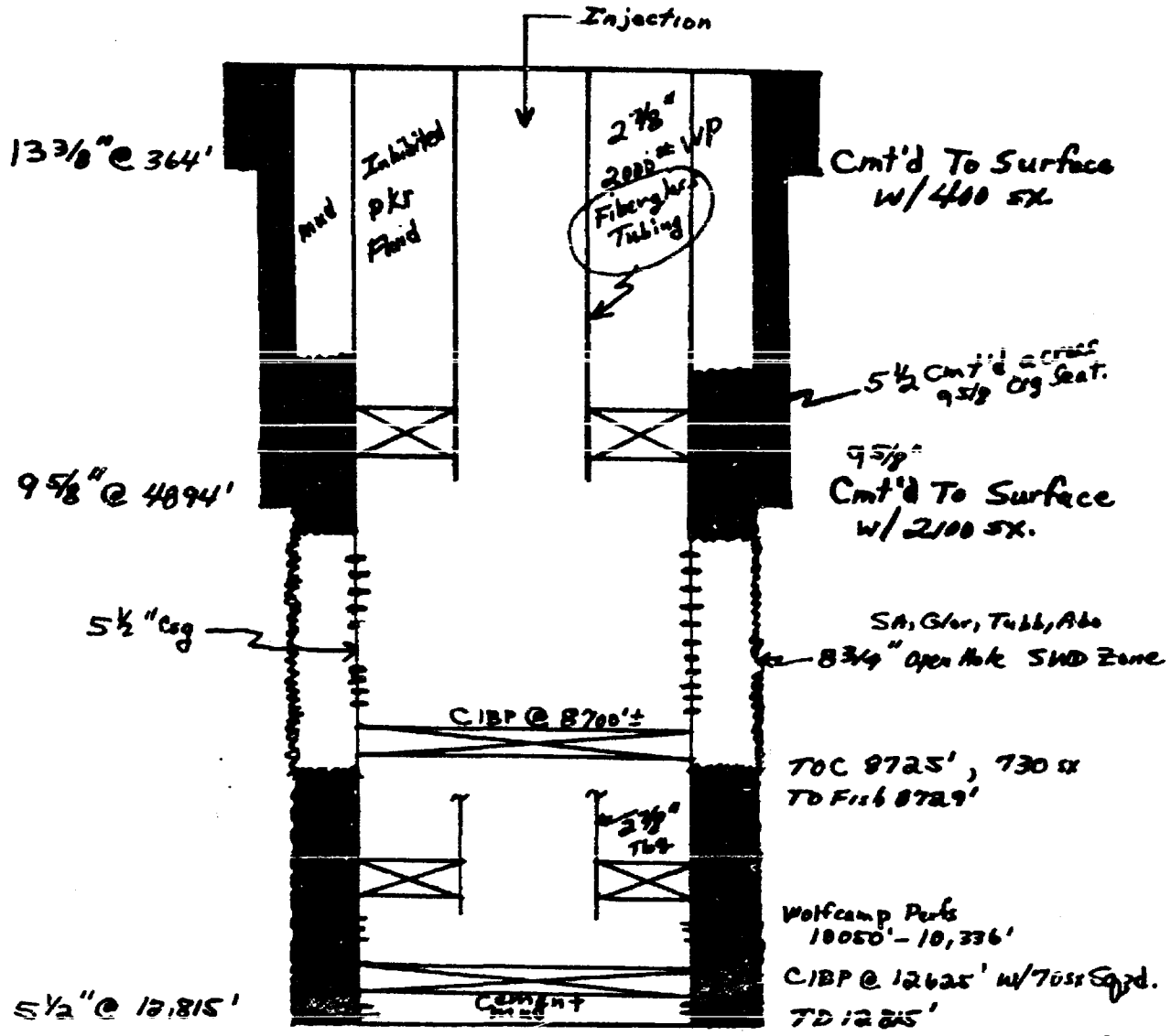
BY: _____

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

Exhibit No. 9
Case No. 6593
Submitted by: Dyco
Hearing Date 7-11-79

C. S. Stone #3 SWD Well
Proposed Injection System
San Andres, Glorieta, Tubb, Abo



Ex. No. 9
CASE 6593

Exhibit No. 9

CASE 6590: Application of Grace Petroleum Corporation for compulsory pooling and an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying Lots 9, 10, 15, and 16 and the SE/4 of Section 6, Township 21 South, Range 32 East, to be dedicated to a well to be drilled at an unorthodox location 4650 feet from the South line and 660 feet from the East line of said Section 6. Also to be considered will be the cost of drilling and completing said well and the allocation of the costs thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6591: Application of Exxon Corporation for vertical pool limit redefinition, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order extending the vertical limits of the Langlie Mattix Pool to include the lowermost 165 feet of the Seven Rivers formation and the concomitant contraction of the vertical limits of the Jalmat Gas Pool underlying the NE/4 of Section 2, Township 24 South, Range 36 East.

CASE 6592: Application of Maddox Energy Corporation for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Malaga Well No. 1 located in Unit G of Section 3, Township 24 South, Range 28 East, to produce gas from the Atoka and Morrow formations through parallel strings of tubing.

CASE 6593: Application of Dyco Petroleum Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the San Andres, Glorieta and Tubb formations in the open-hole interval from 4894 feet to 8725 feet in its C. S. Stone Well No. 3 located in Unit F of Section 22, Township 15 South, Range 38 East, Medicine Rock-Devonian Pool.

CASE 6594: Application of Flag-Redfern Oil Co. for an exception to Order No. R-3221, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit disposal of produced brine in an unlined surface pit located in Unit K, Section 2, Township 19 South, Range 31 East, Shugart Field.

CASE 6595: Application of Stevens Oil Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the NW/4 SW/4 of Section 30, Township 8 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6270: (Reopened and Readvertised)

In the matter of Case 6270 being reopened pursuant to the provisions of Order No. R-5771 which order created the South Peterson-Fusselman Pool, Roosevelt County, New Mexico, and provided for 80-acre spacing. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

****

Docket No. 26-79

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 18, 1979

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for August, 1979, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for August, 1979, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

Dockets Nos. 27-79 and 28-79 are tentatively set for hearing on July 25 and August 8, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 11, 1979

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

CASE 6583: Application of Amoco Production Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of B.S. Mesa-Gallup and Basin-Dakota production in the wellbore of its Jicarilla Apache 102 Well No. 13 located in Unit B of Section 10, Township 26 North, Range 4 West.

CASE 6584: Application of Texas Oil & Gas Corp. for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Shugart State Com. Well No. 2 660 feet from the South line and 1980 feet from the East line of Section 16, Township 18 South, Range 31 East, to test the Wolfcamp through Mississippian formations, the E/2 of said Section 16 to be dedicated to the well.

CASE 6574: (Continued from June 13, 1979, Examiner Hearing)

Application of Texas Oil & Gas Corp. for an unorthodox gas well location and compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp through Morrow formations underlying the E/2 of Section 6, Township 17 South, Range 35 East, to be dedicated to a well to be drilled at an unorthodox location 660 feet from the South and East lines of said Section 6. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6563: (Continued from June 27, 1979, Examiner Hearing)

Application of Roy L. McKay for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for his North Woolworth Ranch Unit Area, comprising 1,280 acres, more or less, of State lands in Township 23 South, Range 35 East.

CASE 6585: Application of Dugan Production Corporation for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of undesignated Fruitland and West Kutz-Pictured Cliffs production in the wellbores of its Paul Wells Nos. 1 and 2 located in Units G and C of Section 19, Township 27 North, Range 11 West.

CASE 6586: Application of Dugan Production Corporation for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Conner-Fruitland and undesignated Pictured Cliffs production in the wellbores of the following wells: Big Field Well No. 2 in Unit C of Section 3; Big Field Well No. 5 in Unit P of Section 10; Dinero Well No. 1 in Unit H of Section 13; and Molly Pitcher Well No. 2 in Unit H of Section 14, all in Township 30 North, Range 14 West.

CASE 6587: Application of Caribou Four Corners, Inc., for three unorthodox well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox locations of the following wells in the Cha Cha-Gallup Pool: Kirtland Wells Nos. 3 and 4 located 730 feet from the North line and 2250 feet from the East line and 1450 feet from the North line and 595 feet from the East line, respectively, of Section 18, Township 29 North, Range 14 West; and Kirtland Well No. 2 260 feet from the North line and 2100 feet from the East line of Section 13, Township 29 North, Range 15 West.

CASE 6588: Application of Caribou Four Corners, Inc., for a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 64.32-acre non-standard oil proration unit comprising the NW/4 NW/4 and that part of Lot 5 lying north of the San Juan River, all in Section 18, Township 29 North, Range 14 West, Cha Cha-Gallup Oil Pool.

CASE 6589: Application of Atlantic Richfield Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State "BV" No. 2 Well 2109 feet from the North line and 1778 feet from the West line of Section 25, Township 17 South, Range 28 East, to test the Morrow formation, the N/2 of said Section 25 to be dedicated to the well.

Case 6593

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

June 25, 1979

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Dyco Petroleum Corporation
905 Western United Life Bldg.
300 West Texas Street
Midland, Texas 79701

Attention: Tom L. Sprinkle

Re: Medicine Rock (Devonian) Field
Section 22, T-15-S, R-38-E,
Lea County, New Mexico
C. S. Stone #3 SWD System Permit
Revision of Order No. SWD-41
(12-13-63)

Gentlemen:

Your application for salt water disposal has been set for hearing on July 11, 1979. A docket will be mailed to you in a few days.

Very truly yours,

(Ms.) DIANE RICHARDSON
Secretary
Legal Division

dr/

Case 6593

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

June 20, 1979

State of New Mexico
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
Lea County, New Mexico
C. S. Stone #3 SWD System Permit
Revision of Order No. SWD-41 (12-13-63)

Gentlemen:

Attached please find additional supporting data for our revised SWD permit request in the above well as per requirements of Memo No. 3-77, dated August 24, 1977:

(1) Surface injection pressure will probably be 0.3 psi per foot, which is still below frac pressure according to injectivity tests on untreated formation. Acid stimulation could result in surface injection pressure of 0.2 psi per foot or less.

(2) Tabular summary of all wells penetrating the injection zone within one-half mile as required.

(3) Schematic of all plugged and abandoned wells within one-half mile which penetrated the proposed injection zone.

It is hoped the attached information plus that previously submitted, will permit early positive action on our request to convert from the Wolfcamp disposal zone to the San Andres disposal zone in the referenced well.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

RECEIVED
JUN 22 1979
OIL CONSERVATION DIVISION
SANTA FE

cc: Polaris Production Corp.-offset operator
Troy Fort-Surface Owner

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

MEDICINE ROCK FIELD
C. S. STONE NO. 3
SALT WATER DISPOSAL SYSTEM
LOCATION: F-1980- FNL & 1980' FWL, Sec. 22, T15S, R38E
LEA COUNTY, NEW MEXICO

Re: Dyco Petroleum Corporation
Application to Convert from Wolfcamp Disposal Zone to
San Andres-Glorieta Disposal Zone

Summary of Casing & Cementing
Records of Producing and Plugged Wells
Within One-half Mile of C. S. Stone No.3

C. S. Stone #1	C. S. Stone #2	Reed-Estate #1
Dyco Pet. Corp. G-1980' FNL & 1980' FEL, Sec. 22, T15S, R38E Lea County, N.M.	Arco Oil & Gas B-660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.	Arco Oil & Gas J-1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.

See Attached Sheets For Well Schematics And Casing-Cementing Detail.

MEDICINE ROCK

1538

SO. DENTON

R38E

Lea Co. NM

Ownership Map

R39E

15 S

T3900'

TO DENVER CITY

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
C. S. STONE #2

LOCATION: B - 660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CSG: 13 3/8", 45# csg set @ 334', cmt'd w/400 sx to surface

INT. CSG: 9 5/8", 36# & 40# csg set @ 4920', cmt'd w/2100 sx to surface

PROD. CSG: 5 1/2", 17#& 20# csg set @ 12,835'; cmt'd w/1005 sx,TOC @ 8200'

P&A EFFECTIVE 1-15-76 AS FOLLOWS:

1. CIBP @ 12,630' w/40 sx cmt plug on top
2. 9500'-9100', 30 sx cmt plug inside 5 1/2" casing
3. 7400'-6900', 40 sx cmt plug in 8 3/4" open hole
4. 6400'-5900', 40 sx cmt plug in 8 3/4" open hole
5. 5310'-5 1/2" csg stub. 40 sx cmt. plug 1/2 in-1/2 out
6. 4920'-9 5/8" csg seat. 60 sx cmt. plug 1/2 in-1/2 out
7. 2390'-2200', 50 sx cmt plug inside 9 5/8" csg.
8. Surface, 10 sx plug w/DH marker

NOTE: Pulled 5310'-5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
REED-ESTATE NO. 1

LOCATION: Unit J, 1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CASING: 13 3/8" @ 332', Cmt'd to surface

INTER. CASING: 9 5/8" @ 4,860', cmt'd to surface

PROD. CASING: 5 1/2" @ 12,848', Cmt'd to 10,260'

P&A EFFECTIVE 11-28-72 AS FOLLOWS:

1. CIBP @ 12,425' w/35' cmt on top
2. 8130'; 35 sx plug 1/2 in-1/2 out of 5 1/2" csg stub
3. 6465'-6350', 35 sx plug in 8 3/4" open hole
4. 4860', 35 sx plug across 9 5/8" casing seat
5. Surface, 10 sx plug w/DH marker

NOTE: Pulled 8130' - 5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

DYCO PETROLEUM CORPORATION
(ARCO OIL & GAS COMPANY)
C. S. STONE NO. 1

LOCATION: Unit G - 1980' FEL & 1980' FNL, Sec. 22, T15S, R38E, Lea County, N.M. Medicine Rock Field

SURFACE CASING: 13 3/8" @ 327', cmt'd to surface

INTER. CASING: 9 5/8" @ 4880', cmt'd to surface w/1980 sx.

PROD. CASING: 5 1/2" @ 12,848', cmt'd w/195 sx, est. TOC @ 11,840' by temperature survey. PBTD 12,740'

This well is the only productive well in the Medicine Rock (Devonian) Field, except the Polaris Production-Carter Estate #1 Well which is 4500' NE of the C. S. Stone #3 SWD well and 3500' NE of the C. S. Stone #1 producing well.

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

JOHN J. EISNER
ATLANTIC-STATE #1
N-554' FSL & 2086' FWL
Sec. 15-T15S-R38E
LEA COUNTY, NEW MEXICO

SURFACE CASING: 13 3/8" @ 359' w/325 sx to surface

INTER. CASING: 8 5/8" @ 4915' w/600 sx - no top

DST 12,864-72', rec 90' SGC Salty Sul Water Cut Mud

TD 12,872'

P&A 9-6-63:

No plugging record. Assume cement plug across 8 5/8" casing seat and at surface

Dyco Petroleum Corp.

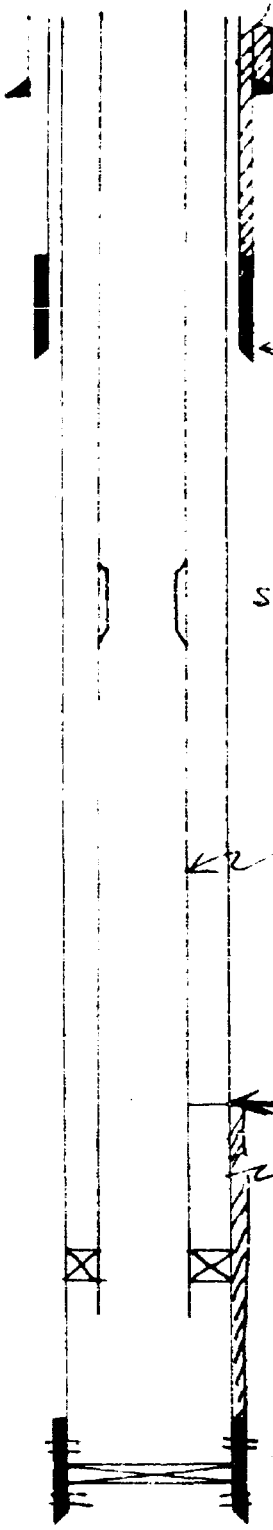
BAKER OIL TOOLS, INC.

SERVING THE WORLD

Producer ●

DATE 6-29-79 WELL NO. 1 LEASE C. S. Stone FIELD Medicine Rock

Loc: G - 1980' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea Co., N.M.



13 3/8" @ 327', cmt'd to surface

9 5/8" @ 4880', cmt'd to surface w/ 1980 sx.

SN @ 6700' ; Rod pump depth

2 3/8" tbg

TOC 11,840'

5 1/2" csg

2 3/8", N-80 Tbg @ 12,000' ±, Baker Lok-Set Pkr

Devonian Perforations 12,633' - 12,670'

12,740' PBTD

5 1/2" @ 12,848', cmt'd w/ 195 sx, Est. TOC 11,840'

T.D. 12,848'

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corp.

BAKER OIL TOOLS, INC.

SERVING THE WORLD

P & A
9-6-63

DATE 6-20-79 WELL NO. 1 LEASE Elsner-Atlantic State FIELD Medicine Rock

Unit N - ~~660~~ 554' FSL & ~~1980~~ 2086' FWL, Sec. 15-T 15S, R 38E. Lea Co. N.M.

10 sx plug

13 3/8 @ 359', cmt'd to surface w/ 325 sx

mud

cmt plug

8 5/8" @ 4915', cmt'd ~~to surface~~ w/ 600 sx, no top indicated.

mud

no report on open hole plugs.

T.D. @ 12,872'

BRIDGE PLUG | PACKER | SCRATCHER | BASKET | PERFORATION

Dyco Petroleum Corporation

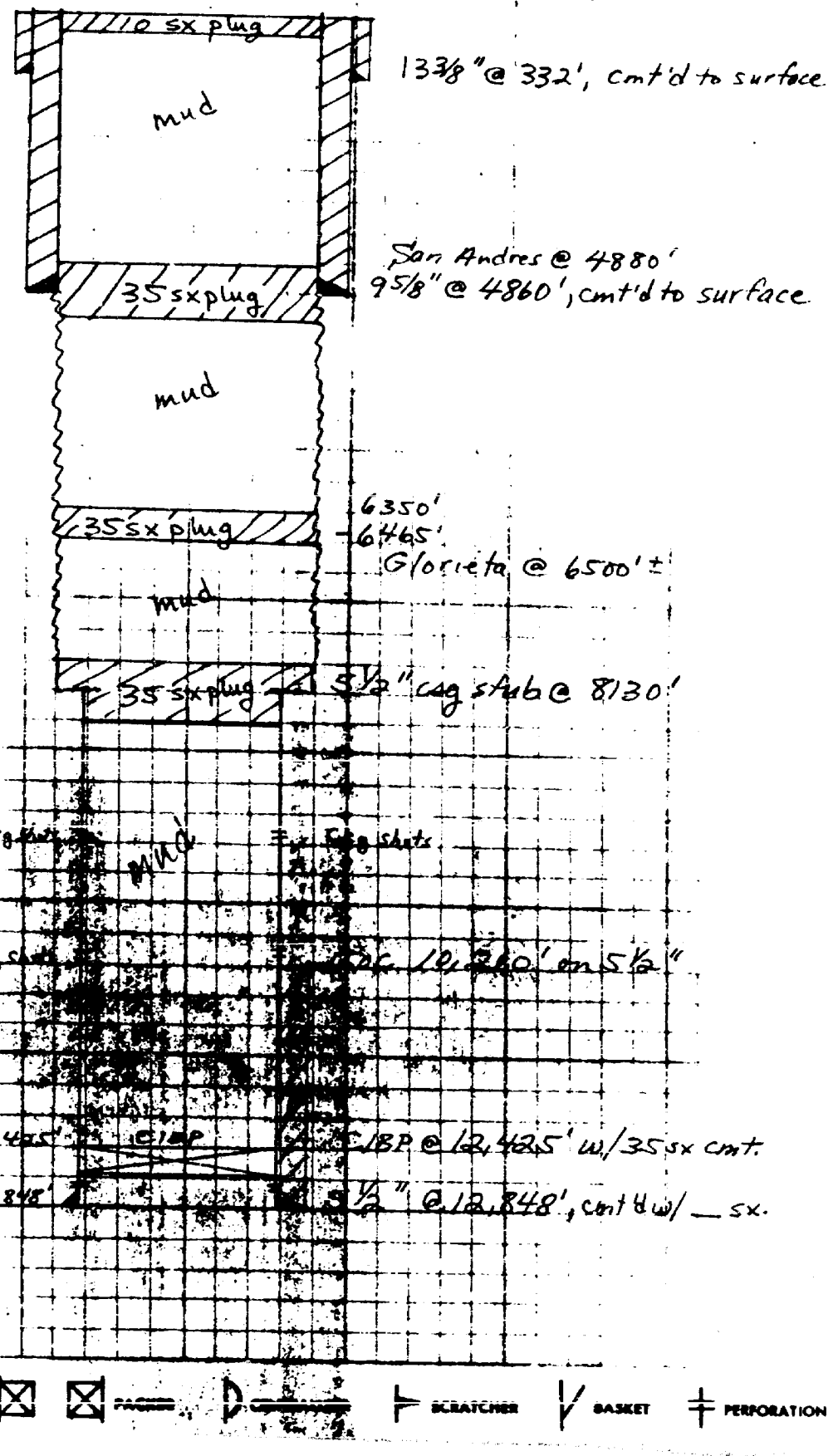
P & A

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 4-23-79 WELL NO. 1 LEASE Reed Estate FIELD Medicine Rock

Loc: J-1980'FSL & 1980'FEL, Sec. 22, T15S, R38E, Lea Co., N.M.



BRIDGE PLUG PACKER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corp.

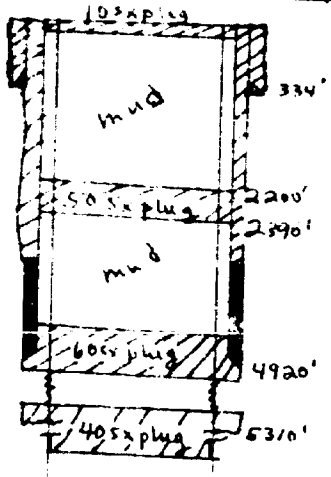
PRA

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-21-79 WELL NO. ~~C.S.S~~ #2 LEASE C. S. Stone FIELD Medicine Rock

B-660'FNL & 1980'FEL, Sec. 22, T 15 S., R 38 E, Lea Co. N.M.



13 3/8", 45# csg set @ 334', cmt'd w/ 400 sx to surface.

Est. Top San Andres – 4875'

9 5/8", 36# & 40# csg set @ 4920', cmt'd w/ 2100 sx to surface

5310', 5½" csg stub, 40 sx cmt plug

Est. Glorieta 6500'

Est. Tubb 7500'

← TOC – 5½" @ 8200'

Est. Wolfcamp 9200'

5½", 17# & 20# csg set @ 12,835', cmt'd w/ 1005 sx, TOC @ 8200'

BRIDGE PLUG PACKER PERFORATION BASKET

Case 6593

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

June 20, 1979

State of New Mexico
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
Lea County, New Mexico
C. S. Stone #3 SWD System Permit
Revision of Order No. SWD-41 (12-13-63)

Gentlemen:

Attached please find additional supporting data for our revised SWD permit request in the above well as per requirements of Memo No. 3-77, dated August 24, 1977:

(1) Surface injection pressure will probably be 0.3 psi per foot, which is still below frac pressure according to injectivity tests on untreated formation. Acid stimulation could result in surface injection pressure of 0.2 psi per foot or less.

(2) Tabular summary of all wells penetrating the injection zone within one-half mile as required.

(3) Schematic of all plugged and abandoned wells within one-half mile which penetrated the proposed injection zone.

It is hoped the attached information plus that previously submitted, will permit early positive action on our request to convert from the Wolfcamp disposal zone to the San Andres disposal zone in the referenced well.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

RECEIVED
JUN 22 1979
OIL CONSERVATION DIVISION
SANTA FE

cc: Polaris Production Corp.-offset operator
Troy Fort-Surface Owner

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

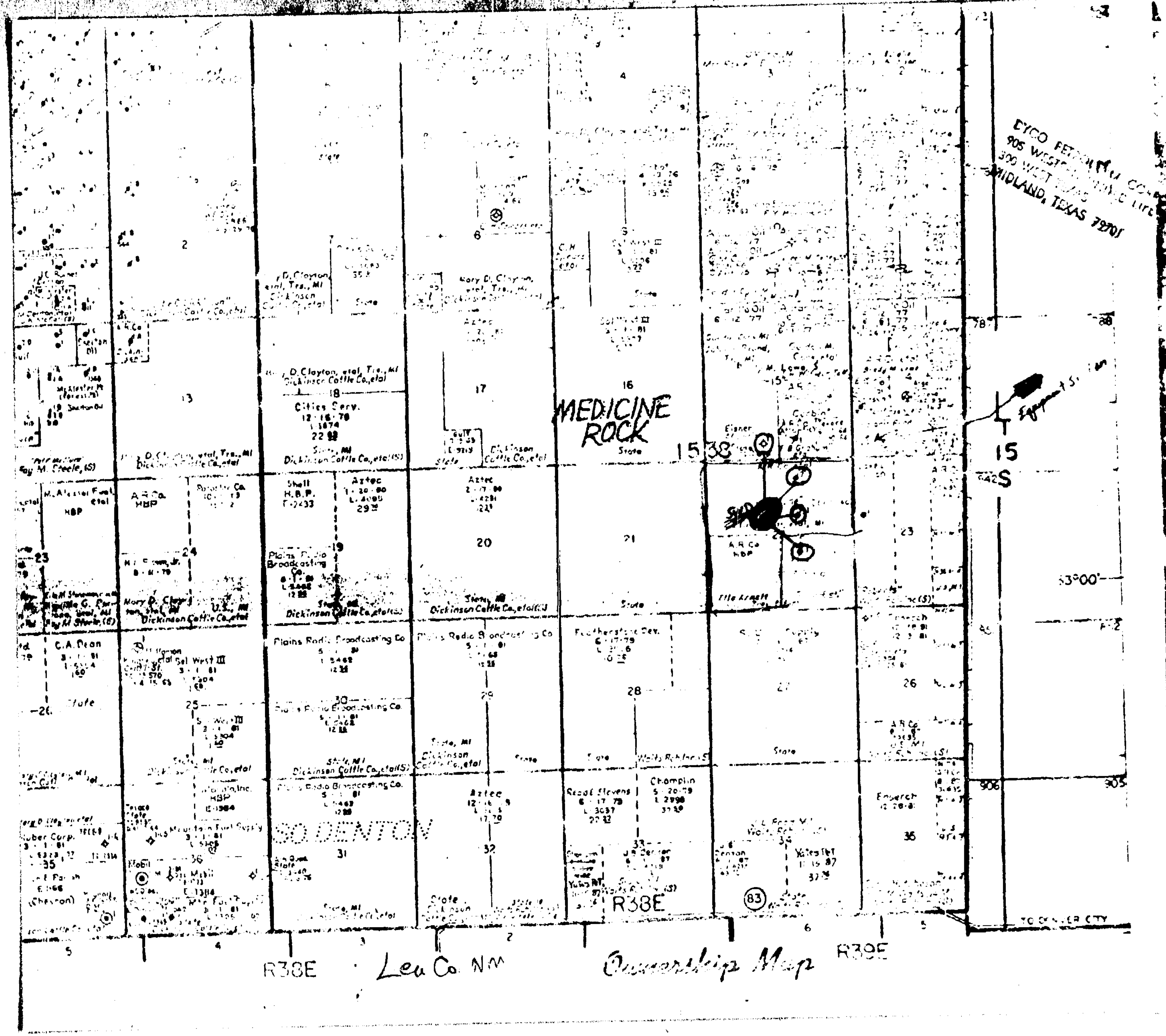
MEDICINE ROCK FIELD
C. S. STONE NO. 3
SALT WATER DISPOSAL SYSTEM
LOCATION: F-1980- FNL & 1980' FWL, Sec. 22, T15S, R38E
LEA COUNTY, NEW MEXICO

Re: Dyco Petroleum Corporation
Application to Convert from Wolfcamp Disposal Zone to
San Andres-Glorieta Disposal Zone

Summary of Casing & Cementing
Records of Producing and Plugged Wells
Within One-half Mile of C. S. Stone No.3

C. S. Stone #1	C. S. Stone #2	Reed-Estate #1
Dyco Pet. Corp. G-1980' FNL & 1980' FEL, Sec. 22, T15S, R38E Lea County, N.M.	Arco Oil & Gas B-660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.	Arco Oil & Gas J-1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.

See Attached Sheets For Well Schematics And Casing-Cementing Detail.



DYCO PETROLEUM CORPORATION
MIDLAND, TEXAS 79701
MEDICINE ROCK
15 38
15 S
R38E
R39E
SO. DENTON
Cities Serv.
Aztec
Shell
Plains Radio Broadcasting Co.
Dickinson Cattle Co., etal
Mary D. Clayton, etal, Tr., MI
Featherstone Dev.
Champlin
Yates Pet.
Emerech
A.R. Co.
HBP
State
Lea Co. NM
Ownership Map

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
C. S. STONE #2

LOCATION: B - 660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CSG: 13 3/8", 45# csg set @ 334', cmt'd w/400 sx to surface

INT. CSG: 9 5/8", 36# & 40# csg set @ 4920', cmt'd w/2100 sx to surface

PROD. CSG: 5 1/2", 17#& 20# csg set @ 12,835'; cmt'd w/1005 sx,TOC @ 8200'

P&A EFFECTIVE 1-15-76 AS FOLLOWS:

1. CIBP @ 12,630' w/40 sx cmt plug on top
2. 9500'-9100', 30 sx cmt plug inside 5 1/2" casing
3. 7400'-6900', 40 sx cmt plug in 8 3/4" open hole
4. 6400'-5900', 40 sx cmt plug in 8 3/4" open hole
5. 5310'-5 1/2" csg stub. 40 sx cmt. plug 1/2 in-1/2 out
6. 4920'-9 5/8" csg seat. 60 sx cmt. plug 1/2 in-1/2 out
7. 2390'-2200', 50 sx cmt plug inside 9 5/8" csg.
8. Surface, 10 sx plug w/DH marker

NOTE: Pulled 5310'-5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
REED-ESTATE NO. 1

LOCATION: Unit J, 1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CASING: 13 3/8" @ 332', Cmt'd to surface

INTER. CASING: 9 5/8" @ 4,860', cmt'd to surface

PROD. CASING: 5 1/2" @ 12,848', Cmt'd to 10,260'

P&A EFFECTIVE 11-28-72 AS FOLLOWS:

1. CIBP @ 12,425' w/35' cmt on top
2. 8130'; 35 sx plug 1/2 in-1/2 out of 5 1/2" csg stub
3. 6465'-6350', 35 sx plug in 8 3/4" open hole
4. 4860', 35 sx plug across 9 5/8" casing seat
5. Surface, 10 sx plug w/DH marker

NOTE: Pulled 8130' - 5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

DYCO PETROLEUM CORPORATION
(ARCO OIL & GAS COMPANY)
C. S. STONE NO. 1

LOCATION: Unit G - 1980' FEL & 1980' FNL, Sec. 22, T15S, R38E, Lea County, N.M. Medicine Rock Field

SURFACE CASING: 13 3/8" @ 327', cmt'd to surface

INTER. CASING: 9 5/8" @ 4880', cmt'd to surface w/1980 sx.

PROD. CASING: 5 1/2" @ 12,848', cmt'd w/195 sx, est. TOC @ 11,840' by temperature survey. PBTD 12,740'

This well is the only productive well in the Medicine Rock (Devonian) Field, except the Polaris Production-Carter Estate #1 Well which is 4500' NE of the C. S. Stone #3 SWD well and 3500' NE of the C. S. Stone #1 producing well.

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

JOHN J. EISNER
ATLANTIC-STATE #1
N-554' FSL & 2086' FWL
Sec. 15-T15S-R38E
LEA COUNTY, NEW MEXICO

SURFACE CASING: 13 3/8" @ 359' w/325 sx to surface

INTER. CASING: 8 5/8" @ 4915' w/600 sx - no top

DST 12,864-72', rec 90' SGC Salty Sul Water Cut Mud

TD 12,872'

P&A 9-6-63:

No plugging record. Assume cement plug across 8 5/8" casing seat and at surface

Dyco Petroleum Corp.

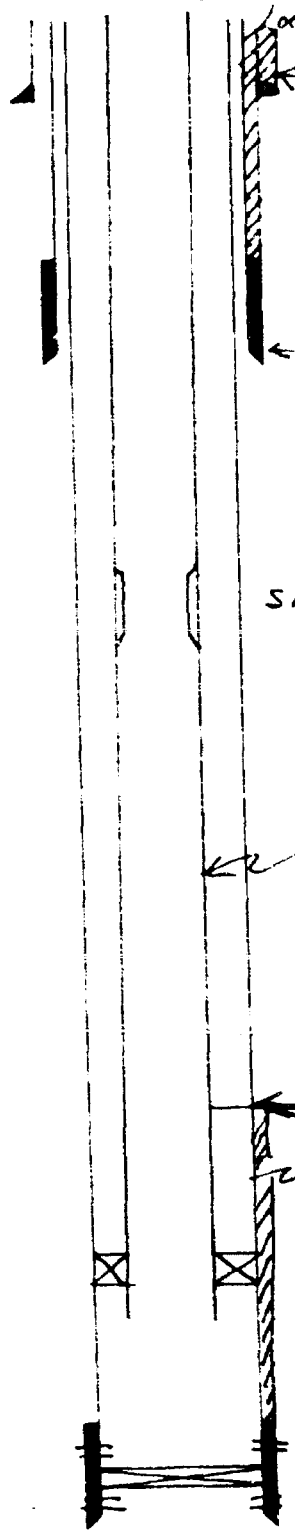
Producer ●

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-26-79 WELL NO. 1 LEASE C. S. Stone FIELD Medicine Rock

Loc: G - 1980' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea. Co., N.M.



13 3/8" @ 327', cmt'd to surface

9 5/8" @ 4880', cmt'd to surface w/ 1980 sx.

SN @ 6700'; Rod pump depth

2 3/8" tbg

TOC 11,840'

5 1/2" csg

2 3/8", N-80 Tbg @ 12,000'±, Baker Lok-Set Pkr

Devonian Perforations 12,633'-12,670'

12,740' PBTD

5 1/2" @ 12,848', cmt'd w/ 195 sx, Est. TOC 11,840'

T.D. 12,848'

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corp.

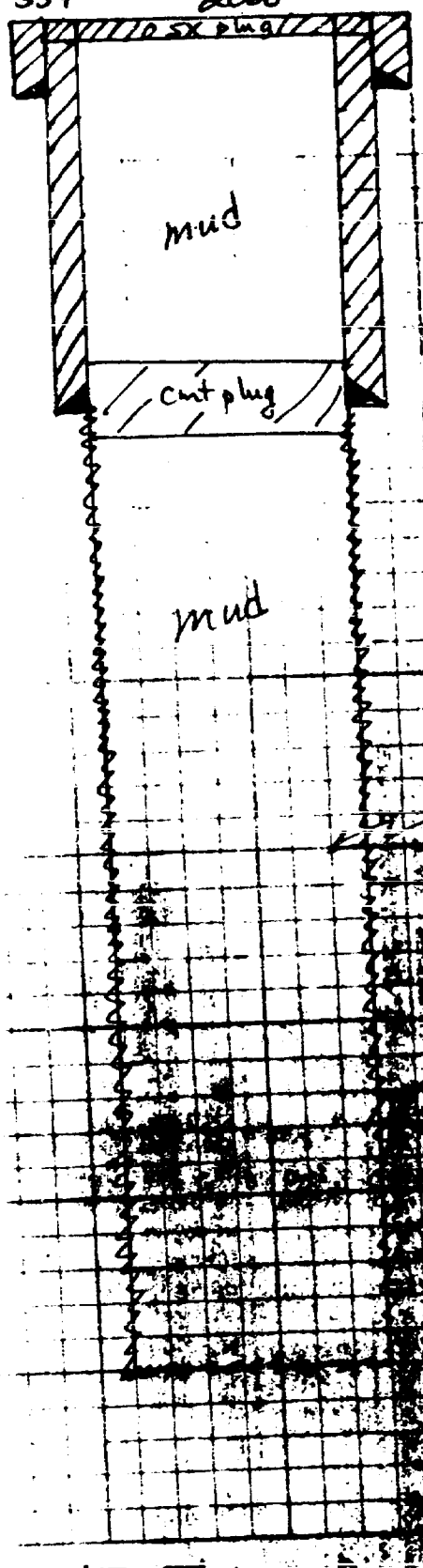
BAKER OIL TOOLS, INC.

SERVING THE WORLD

P & A
9-6-63

DATE 4-20-79 WELL NO. 1 LEASE Elsner-Atlantic State FIELD Medicine Rock

Unit N - ~~660~~ 554' FSL & ~~1980~~ 2086' FWL, Sec. 15- T 15S, R 38E. Lea. Co., N. M.



13 3/8 @ 359', cmt'd to surface w/ 325 sx

8 5/8" @ 4915', cmt'd ~~to surface~~ w/ 600 sx, no top indicated.

no report on open hole plug.

T.D. @ 12,872'

BRIDGE PLUG | PACKER | CEMENT | SCRATCHER | BASKET | PERFORATION

Dyco Petroleum Corporation

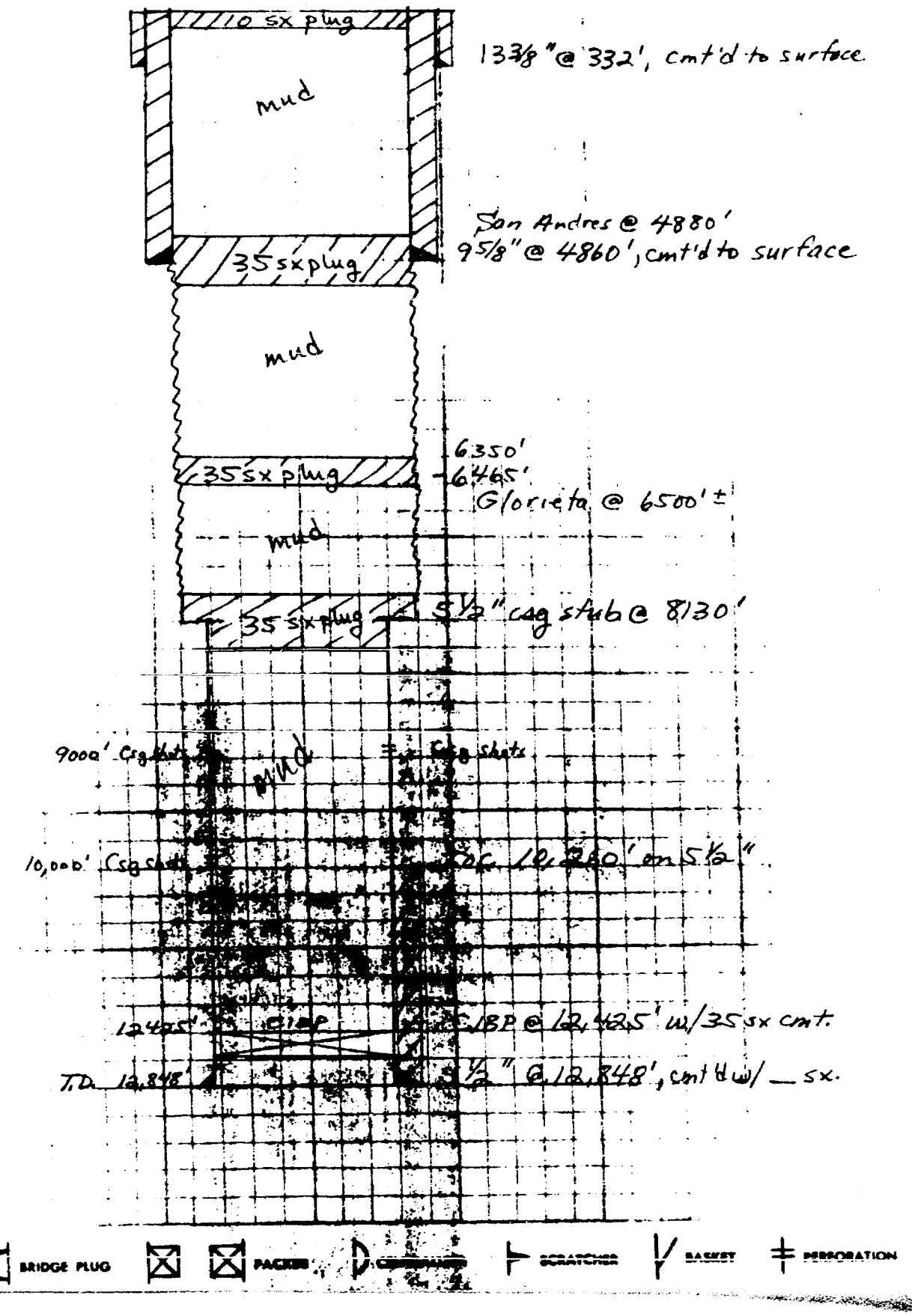
P & A

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-20-79 WELL NO. 1 LEASE Reed Estate FIELD Medicine Rock

Loc: J-1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea Co., N.M.



Dyco Petroleum Corp.

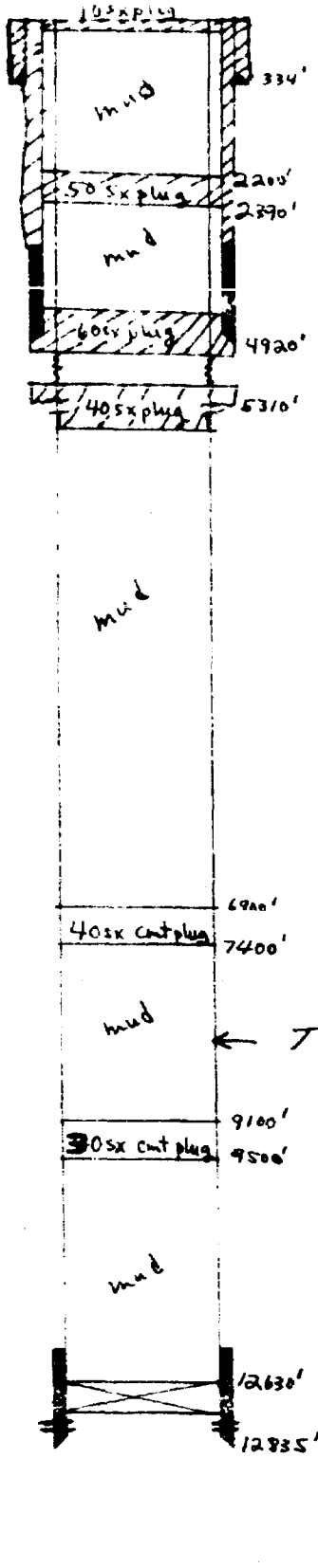
PRA

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-21-79 WELL NO. ~~C.S. Stone~~ #2 LEASE C. S. Stone FIELD Medicine Rock

B- 660' FNL & 1980' FEL, Sec. 22, T 15 S, R 38 E, Lea. Co. N.M.



13 3/8", 45# csg set @ 334', cmt'd w/ 400 sx to surface.

Est. Top San Andres – 4875'

9 5/8", 36# & 40# csg set @ 4920', cmt'd w/ 2100 sx to surface

5310', 5 1/2" csg stub, 40 sx cmt plug

Est. Glorieta 6500'

Est. Tubb @ 7500'

← TOC - 5 1/2" @ 8200'

Est. Wolfcamp 9300'

5 1/2", 17# & 20# csg set @ 12,835', cmt'd w/ 1105 sx, TOC @ 8200'

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

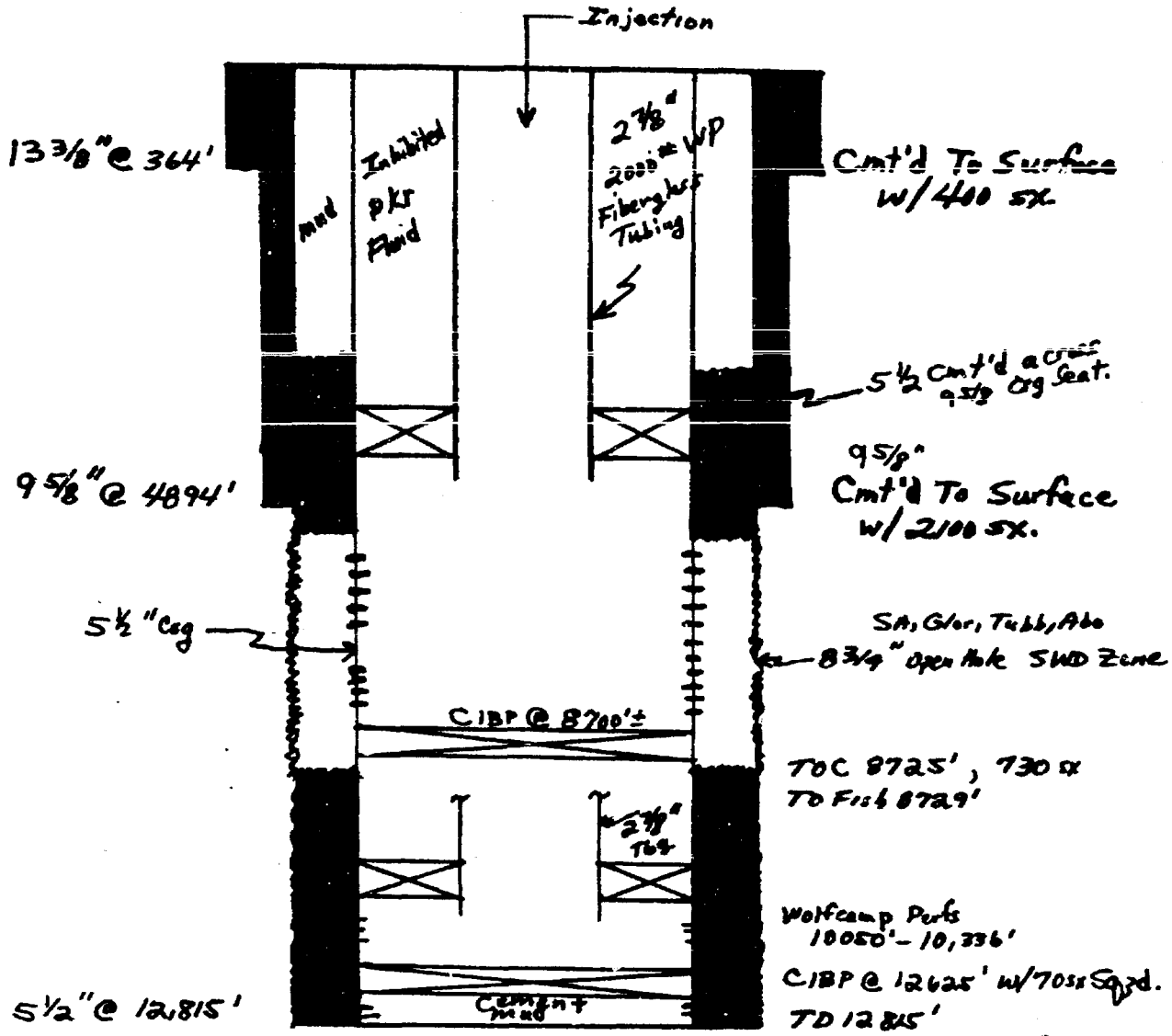
9

6593

Dyco

Hearing Date 7-11-79

C. S. Stone #3 SWD Well
Proposed Injection System
San Andres, Glorieta, Tubb, Abo



EX. No. 9
CASE 6593

file - Stone #3

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
200 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Polaris Production Company
First Nat'l Bank Bldg.
303 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Case	6593
Submitted by	Dyco
Hearing Date	7/11/79

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L Sprinkle

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this 5th day of June, 1979 by the undersigned.

T. C. Fort

POLARIS PRODUCTION CORP.
BY: [signature]

CASE 6593
Ex. 8-2

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
200 WEST TEXAS
MIDLAND, TEXAS 79701

6-11-79

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Polaris Production Company
First Nat'l Bank Bldg.
300 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Case No. 6593
Submitted by:
Hearing Date

RECEIVED JUN 7 1979

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this _____ day of _____, 1979 by the undersigned.

CASE 6593
Ex. 8-1

Troy C. Fort

POLARIS PRODUCTION CORP.

BY: _____

PRINT NOBBS 193 7
PLA CODE 50

CORPORATION

P O BOX 1499
HOBBS NEW MEXICO 88240

Dyco Petroleum Corporation

Yates-Seven Rivers-Queen Rock Pressure

C. S. Stone #1 Sampling Date 5-12-78

Devonian Formation

WATER ANALYSIS

		mg/l	mg
Calcium (Ca++)		105.00	2,104
Magnesium (Mg++)		43.98	528
Sodium (Na+)	(CALCULATED)	1,045.39	24,045
Iron (Total)			150

Disposal Water Analysis

C.S. Stone #3 - SWD Well

Bicarbonate (HCO_3)	14.00	854
Carbonate (CO_3 -)	Not	found
Hydroxide (OH-)	Not	found
Sulphate (SO_4 -)	64.35	3,09?
Chloride (Cl-)	1,116.72	39,600
Total Dissolved Solids		70,222

6.65 ph c 68 °F
Dissolved Solids on Evap. at 103° - 105° C
Hardness as Ca CO_3 149.18 7,459
Carbonate Hardness as $CaCO_3$ (temporary) 14.00 700
Non-Carbonate Hardness as $CaCO_3$ (permanent) 135.18 6,759
Alkalinity as $CaCO_3$ 14.00 700
Specific Gravity c 68° F 1.050

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
CASE NO. 7
CASE NO. 6593
Submitted by Dyco
Hearing Date 7-11-79

CASE 6593
EXHIBIT #7

$CaCO_3$ Scaling Index slightly positive (0.94)

$CaSO_4$ Scaling Index negative (0.63)

Hobbs Water Plant

MEDICINE ROCK SWD SYSTEM
LEA COUNTY, NEW MEXICO
SUMMARY DATA - WELLS WITHIN 1/2 MILE
CASING - CEMENTING

LAST OP.	WELL	LOCATION	SURFACE CSG.DEPTH	TOC SURF.CSG.	DEPTH INTER CSG	TOC SX INT.CSG	PROD CSG.DEPTH	TOC SX PROD CSG	P&A PLUGS
DYCO	C. S. STONE #1	G-SWNE-22-T15S-R38E	327'	Circ-400 sx	4880'	Circ.1980 sx	12,848'	195 sx-11,840'	NOT PLUGGED
		Perforations: Devonian	12,633' - 12,670'						CIBP @ 12740'PBTD
ARCO	C. S. STONE #2	B- NWNE 22-T15S-R38E	334'	Circ 400 sx	4920'	Circ.2100 sx	12,835'	1005 sx TOC 8200'	P&A 1-15-76, CIBP @ 12630' w/40 sx, 9100'-9500', 30 sx; 6900-7400',40sx 5900'-40 sx; 5310'-40 sx, 4920-60 sx; 2200'-50sx surface 10sx
ARCO	REED-ESTATE #1	J-NWSE 22-T15S-R38E	332'	Circ	4860'	Cir	12848'	TOC 10,260'	P&A 11-28-72 CIBP @ 12,425' w/35 sx 8130'-35 sx;6350'-35 sx;4860-35 sx, Surf 10 sx
EISNER ATLANTIC-STATE	#1 N-SESW 15-T15S-R38E		359'	Circ 325 sx	4915'	600 sx	No csg set		P&A 9-6-63 12,850'-25sx; 25 sx @ following depths, 9200',8160',7200', 6420', 1260',360'; 10 sx @ top

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 4
CASE NO. 6593
Submitted by Dyco
Hearing Date 7/11/79

DYCO PETROLEUM CORPORATION
CASE 6593
EXHIBIT NO. 4

5
6593
Dyco
7-11-29

T 15 S - R 38 E

15

22

-1628

-1624

-1639

-1640

-1650

-1640

-1651

-1648

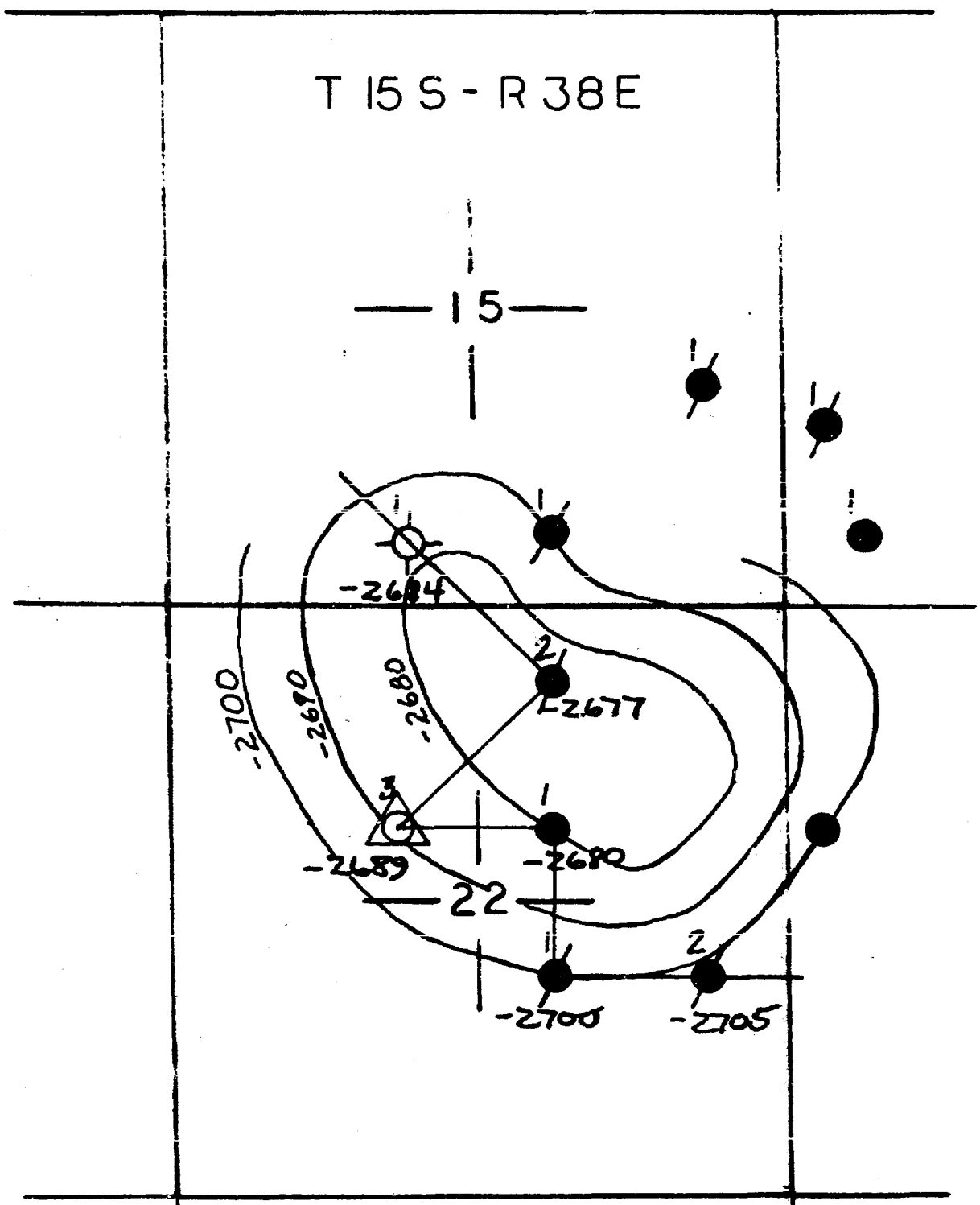
-1656

-1664

STRUCTURE - TOP SAN ANDRES
POROSITY

SCALE: 4" = 1 MILE C.I. = 10'

EXHIBIT 5A

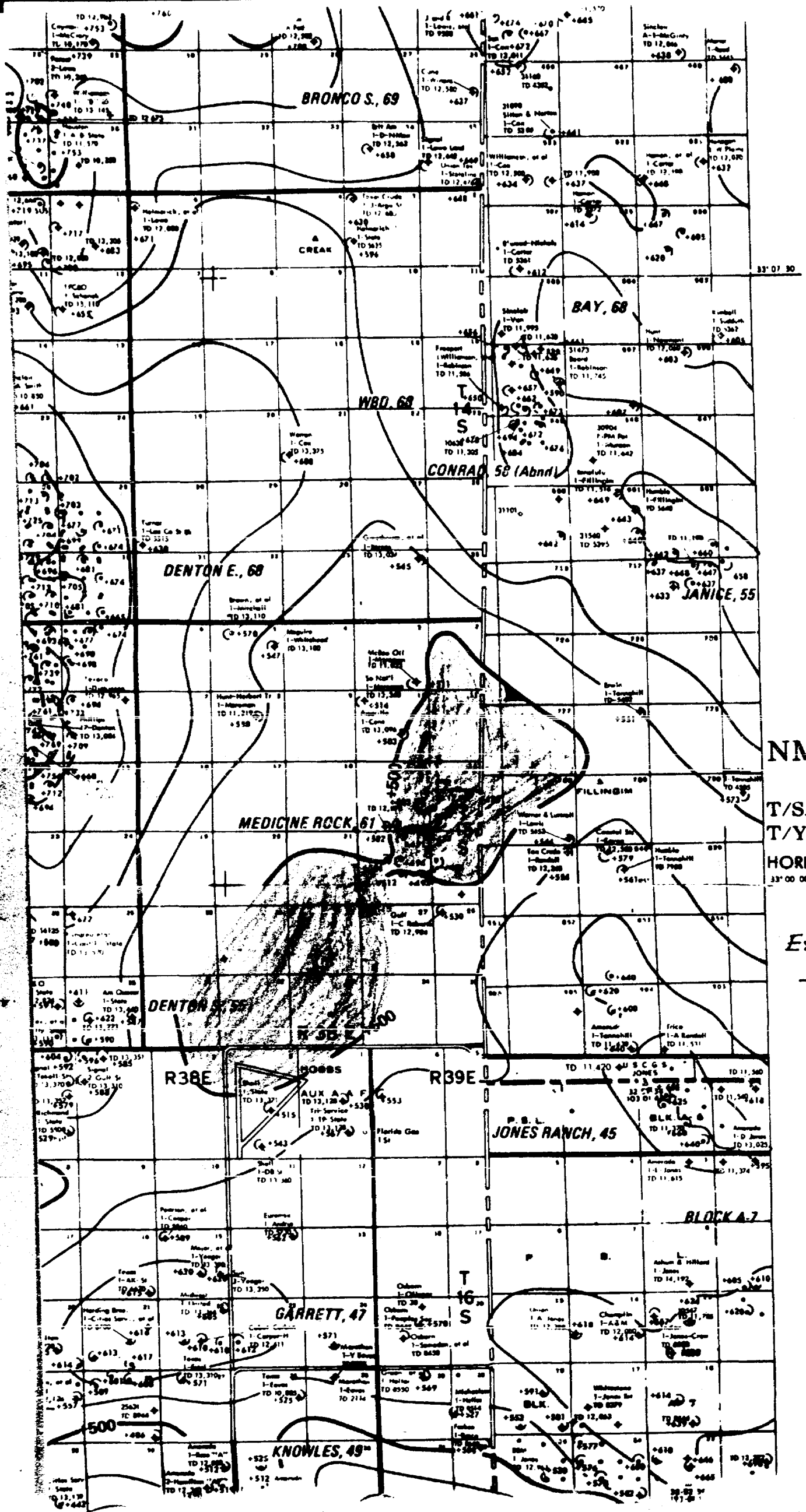


STRUCTURE - TOP GLORIETTA

SCALE 4" = 1 MILE C.I. = 10'

EXHIBIT 5B

4, 1, 1979



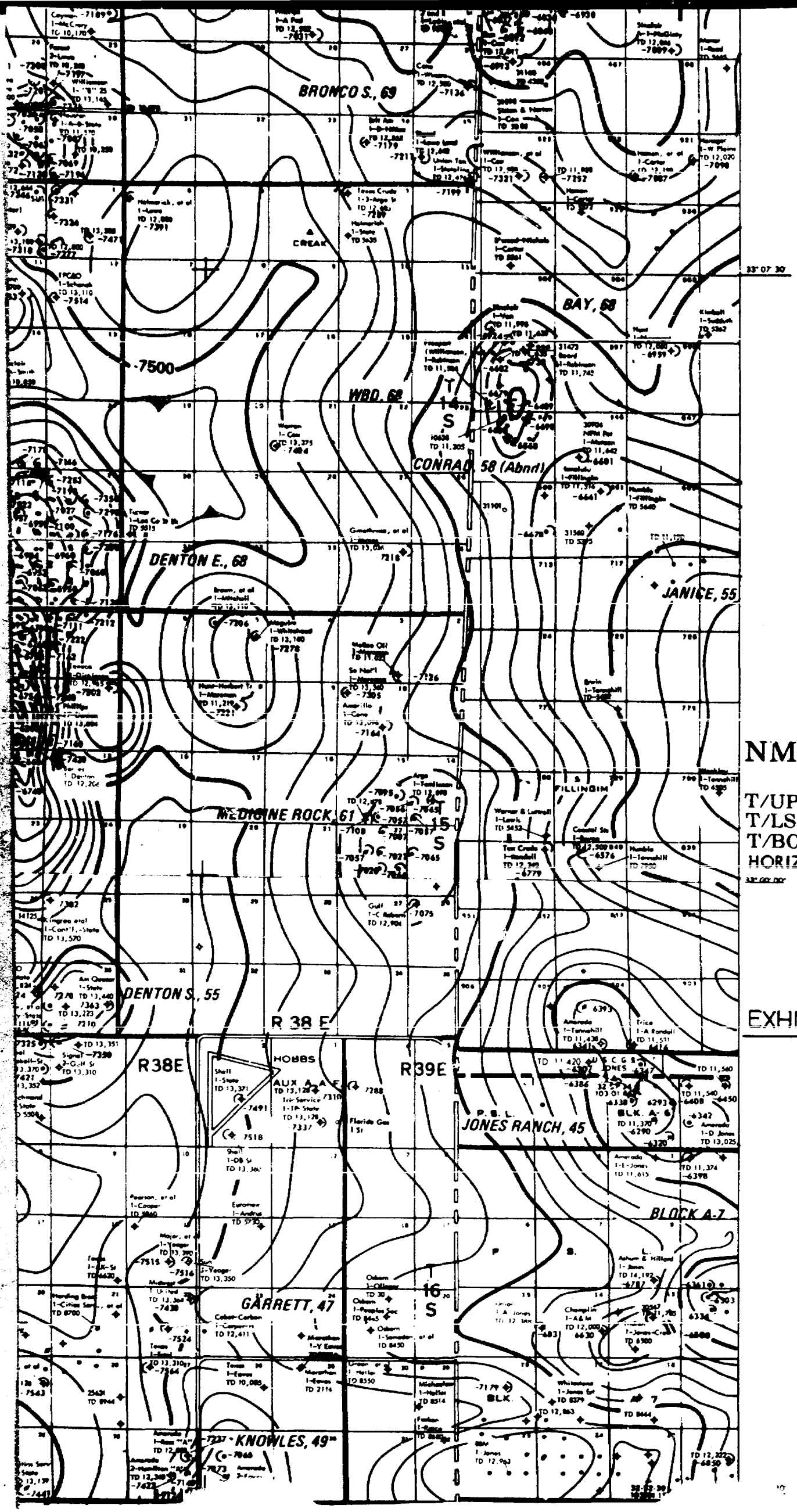
NM-13B

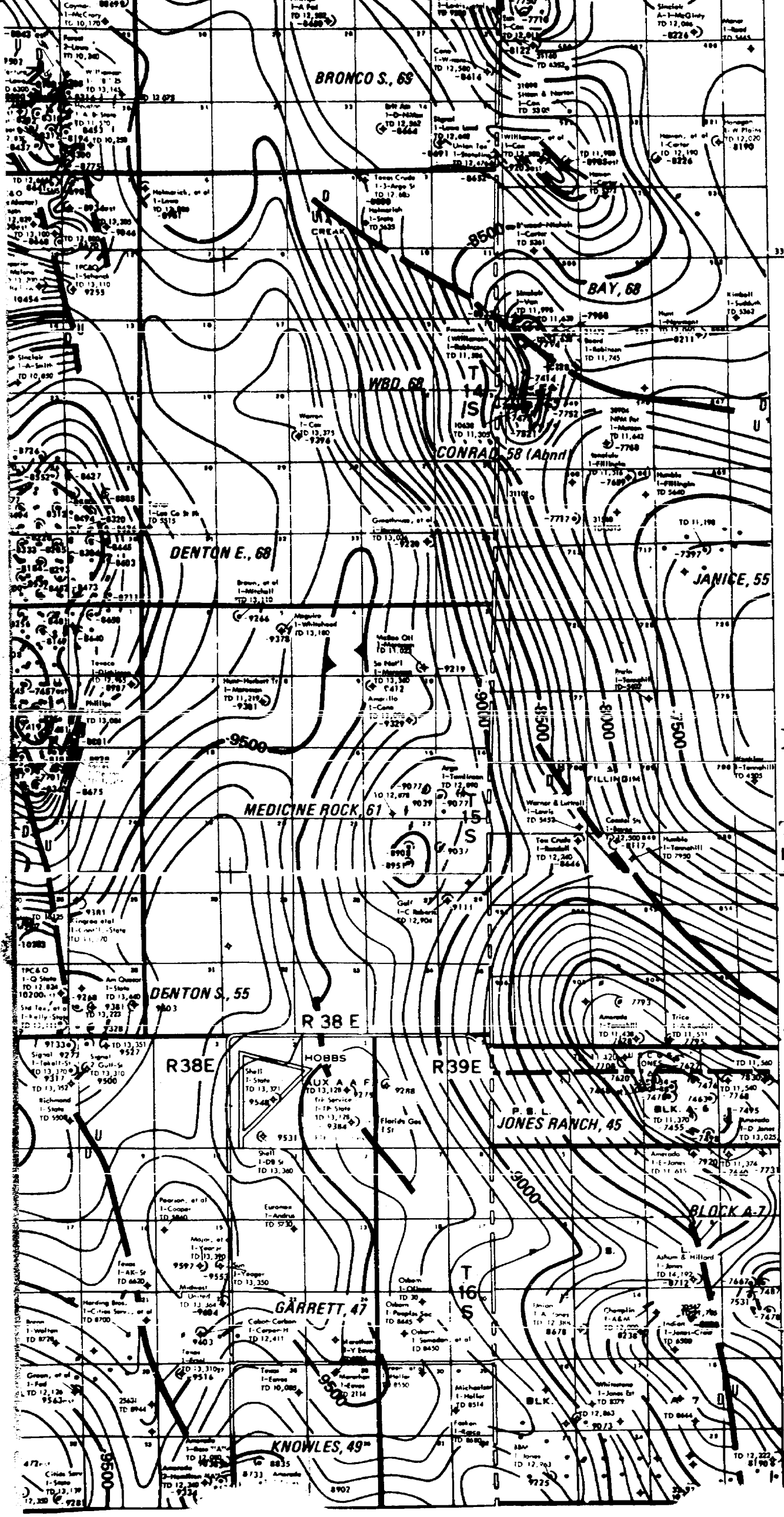
T/SA

T/YATES ✓

HORIZON A

EXHIBIT
No. 5C

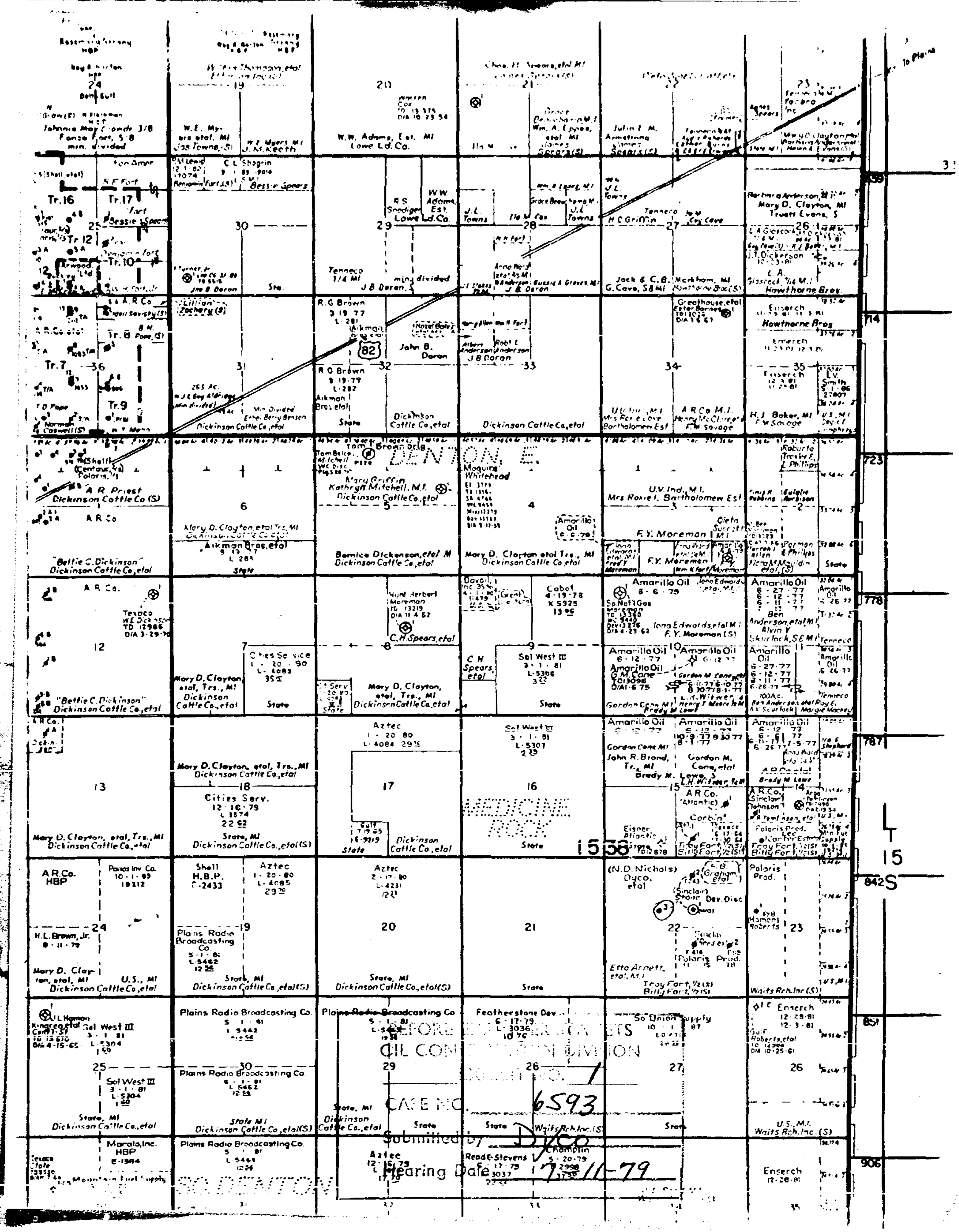

BRONCO S., 69
CREAK
-7500
WBD, 68
CONRAD, 58 (Abnrd)
BAY, 68
33° 07' 30"
DENTON E., 68
JANICE, 55
MEDICINE ROCK, 61
15 S
FILLINGIM
DENTON S., 55
R 38 E
HOBBS
R38E
R39E
JONES RANCH, 45
BLOCK A-7
GARRETT, 47
16 S
KNOWLES, 49
NM-13B
T/UPNLM
T/LST
T/BOC
HORIZON B
EXHIBIT 5E



NM-13B

T/S-D
HORIZON C

EXHIBIT 5 F



DENTON, E.
MEDICINE ROCK
SO. DENTON
Dickinson Cattle Co., etal
Mary D. Clayton, etal, Trs., MI
Amarillo Oil
Plains Radio Broadcasting Co.
Sol West III
Aztec
Cities Serv.
Ensearch
F.Y. Moreman
Tenneco
Hawthorne Bros.
Polaris Prod.
15
S
1558
BEFORE ... OIL CONSERVATION DIVISION
CASE NO. 6593
Submitted by Dyco
Hearing Date 7/11-79

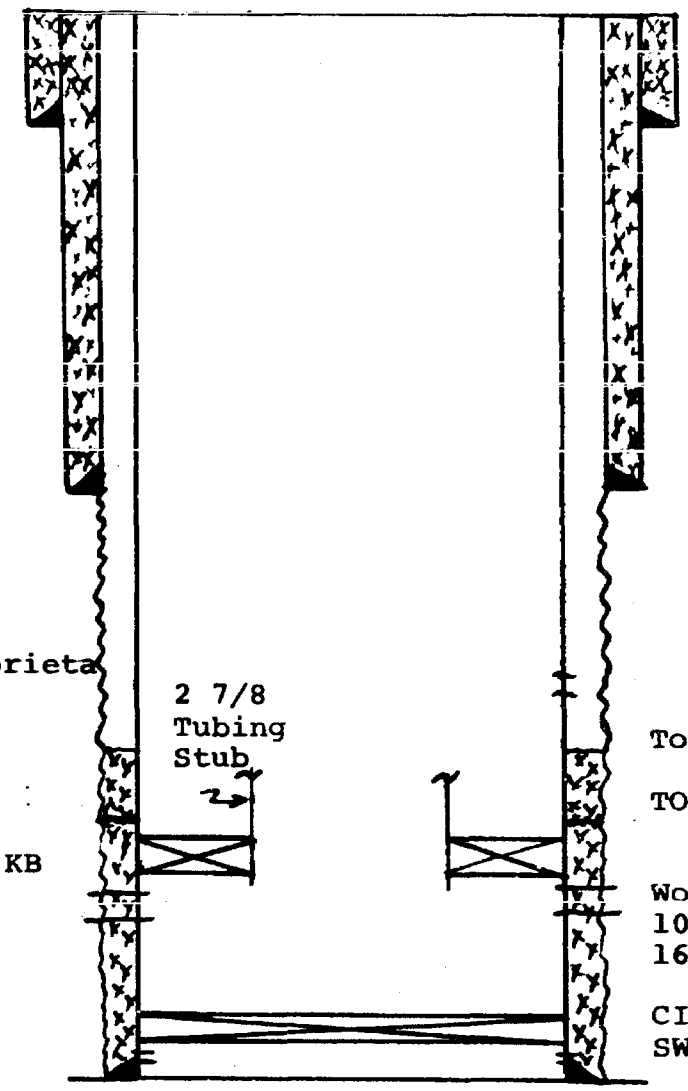
Case 6593 2
Submitted by: Dyco
Hearing Date: 7/11/79

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT NO. 2

C. S. STONE NO. 3
UNIT F 1980' FNL & 1980' FWL
SECTION 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, NEW MEXICO



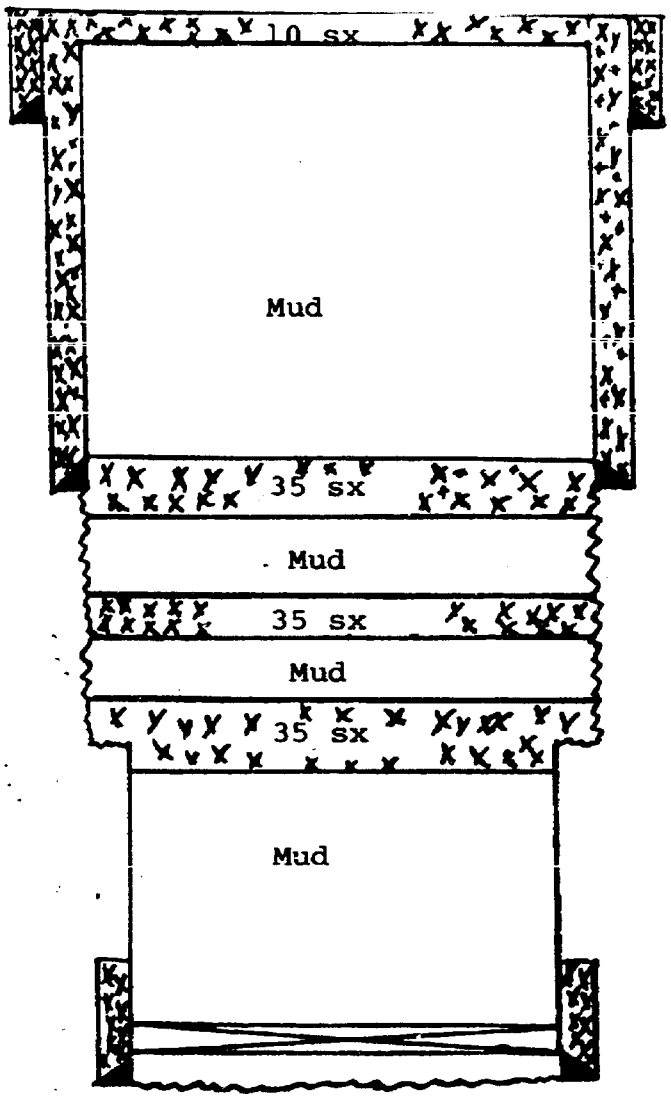
Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 6593
Submitted by Dyco
Hearing Date 7-11-79

EXHIBIT #3

ARCO OIL & GAS COMPANY
REED-ESTATE NO. 1
J 1980' FSL & 1980' FEL
Sec. 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.



13 3/8" @ 332'

Cmt'd to surface

9 5/8" @ 4860'

Cmt'd to surface

6350'

5 1/2" csg stub @ 8130'

TOC 10,260' on 5 1/2"

CIBP @ 12,425'
TD 12,848'
P&A 11-28-72

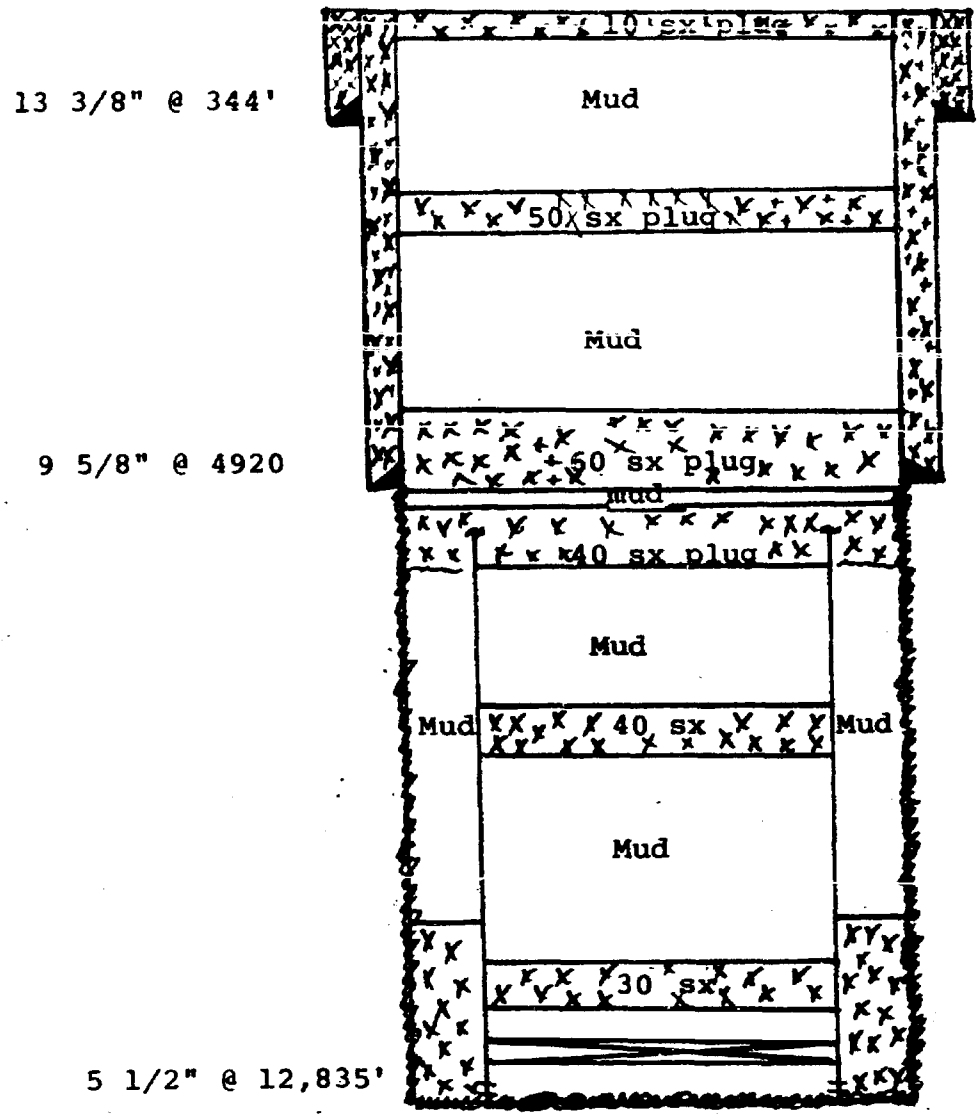
5 1/2" Csg @ 12,848'

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT #3

ARCO OIL & GAS COMPANY
C. S. STONE #2
B 660' FNL & 1980' FEL
Sec. 22, T15S, R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.



13 3/8" @ 344'

Cmt'd to surface w/400 sx

2200'

9 5/8" @ 4920

Cmt'd to surface w/2100 sx

5 1/2" stub @ 5310'

6900'

TOC @ 8200'

5 1/2" @ 12,835'

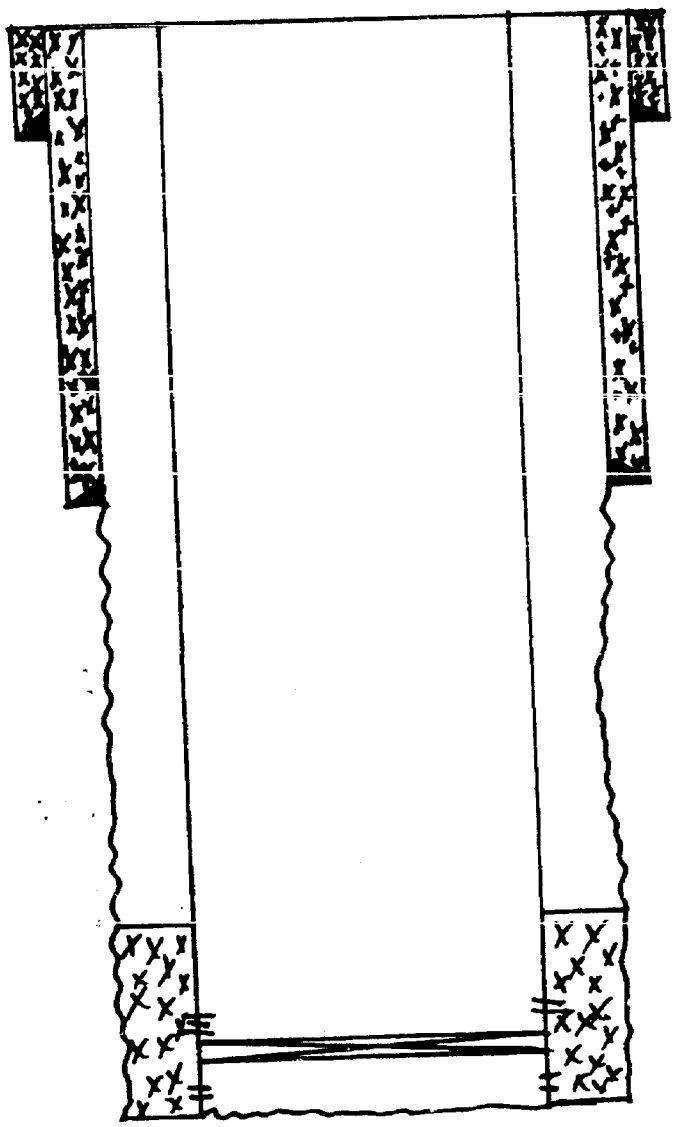
CIBP @ 12,630'
T.D. 12835'

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WI TEXAS STREET
MIDLA, TEXAS 79701
AREA 91! /683-6344

EXHIBIT #3

C. S. STONE #1 WELL
1980 FNL & 1980' FEL
Section 22, T15S R38E
MEDICINE ROCK FIELD
LEA COUNTY, N. M.

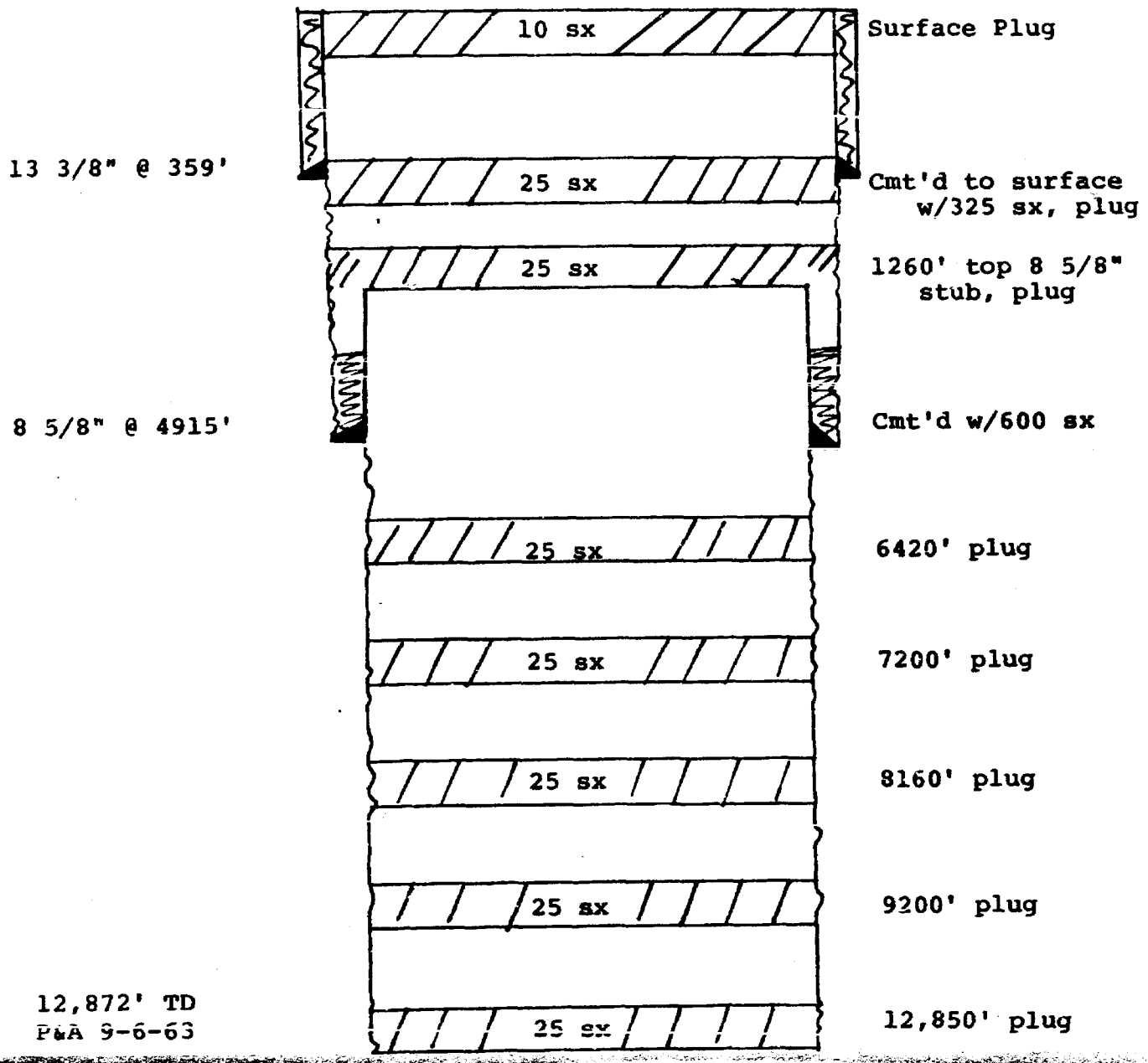


Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

EXHIBIT #3

JOHN J. EISNER
ATLANTIC-STATE #1
N 554' FSL & 2086' FWL
Sec. 15, T15S, R38E
LEA COUNTY, NEW MEXICO



Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

June 20, 1979

State of New Mexico
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
Lea County, New Mexico
C. S. Stone #3 SWD System Permit
Revision of Order No. SWD-41 (12-13-63)

Gentlemen:

Attached please find additional supporting data for our revised SWD permit request in the above well as per requirements of Memo No. 3-77, dated August 24, 1977:

(1) Surface injection pressure will probably be 0.3 psi per foot, which is still below frac pressure according to injectivity tests on untreated formation. Acid stimulation could result in surface injection pressure of 0.2 psi per foot or less.

(2) Tabular summary of all wells penetrating the injection zone within one-half mile as required.

Schematic of all plugged and abandoned wells within one-half mile which penetrated the proposed injection zone.

It is hoped the attached information plus that previously submitted, will permit early positive action on our request to convert from the Wolfcamp disposal zone to the San Andres disposal zone in the referenced well.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

cc: Polaris Production Corp.-offset operator
Troy Fort-Surface Owner

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG.
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

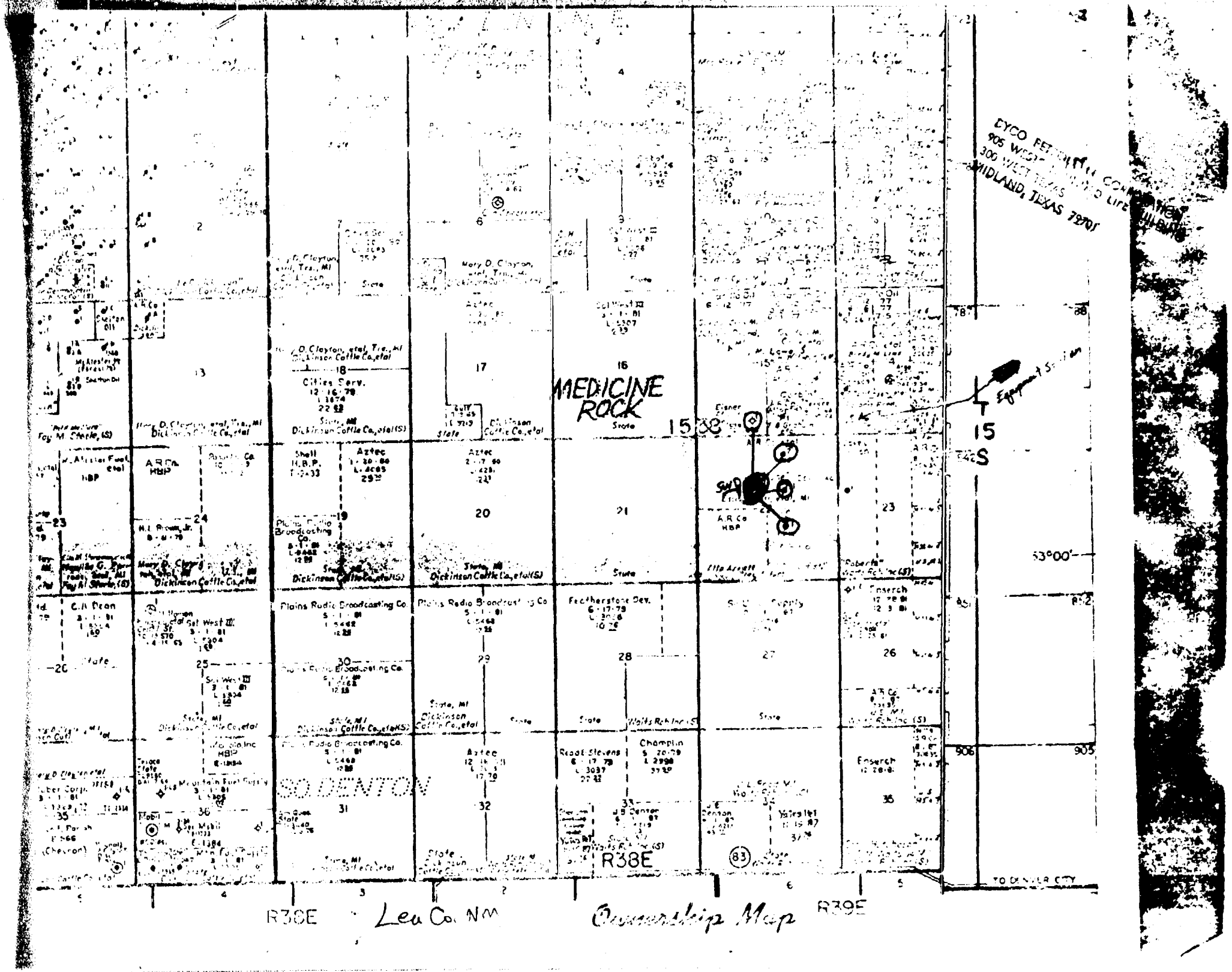
MEDICINE ROCK FIELD
C. S. STONE NO. 3
SALT WATER DISPOSAL SYSTEM
LOCATION: F-1980- FNL & 1980' FWL, Sec. 22, T15S, R38E
LEA COUNTY, NEW MEXICO

Re: Dyco Petroleum Corporation
Application to Convert from Wolfcamp Disposal Zone to
San Andres-Glorieta Disposal Zone

Summary of Casing & Cementing
Records of Producing and Plugged Wells
Within One-half Mile of C. S. Stone No.3

C. S. Stone #1	C. S. Stone #2	Reed-Estate #1
Dyco Pet. Corp. G-1980' FNL & 1980' FEL, Sec. 22, T15S, R38E Lea County, N.M.	Arco Oil & Gas B-660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.	Arco Oil & Gas J-1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M.

See Attached Sheets For Well Schematics And Casing-Cementing Detail.


MEDICINE ROCK
SO. DENTON
T 15 S
R38E
R39E
53°00'
TO DENVER CITY
Lea Co. NM
Ownership Map

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
C. S. STONE #2

LOCATION: B - 660' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CSG: 13 3/8", 45# csg set @ 334', cmt'd w/400 sx to surface

INT. CSG: 9 5/8", 36# & 40# csg set @ 4920', cmt'd w/2100 sx to surface

PROD. CSG: 5 1/2", 17#& 20# csg set @ 12,835'; cmt'd w/1005 sx,TOC @ 8200'

P&A EFFECTIVE 1-15-76 AS FOLLOWS:

1. CIBP @ 12,630' w/40 sx cmt plug on top
2. 9500'-9100', 30 sx cmt plug inside 5 1/2" casing
3. 7400'-6900', 40 sx cmt plug in 8 3/4" open hole
4. 6400'-5900', 40 sx cmt plug in 8 3/4" open hole
5. 5310'-5 1/2" csg stub. 40 sx cmt. plug 1/2 in-1/2 out
6. 4920'-9 5/8" csg seat. 60 sx cmt. plug 1/2 in-1/2 out
7. 2390'-2200', 50 sx cmt plug inside 9 5/8" csg.
8. Surface, 10 sx plug w/DH marker

NOTE: Pulled 5310'-5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

ARCO OIL & GAS COMPANY
REED-ESTATE NO. 1

LOCATION: Unit J, 1980' FSL & 1980' FEL, Sec. 22, T15S, R38E, Lea County, N.M., Medicine Rock Field

SURFACE CASING: 13 3/8" @ 332', Cmt'd to surface

INTER. CASING: 9 5/8" @ 4,860', cmt'd to surface

PROD. CASING: 5 1/2" @ 12,848', Cmt'd to 10,260'

P&A EFFECTIVE 11-28-72 AS FOLLOWS:

1. CIBP @ 12,425' w/35' cmt on top
2. 8130'; 35 sx plug 1/2 in-1/2 out of 5 1/2" csg stub
3. 6465'-6350', 35 sx plug in 8 3/4" open hole
4. 4860', 35 sx plug across 9 5/8" casing seat
5. Surface, 10 sx plug w/DH marker

NOTE: Pulled 8130' - 5 1/2" casing. All 13 3/8" casing and all 9 5/8" casing cemented to surface and left in well

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

DYCO PETROLEUM CORPORATION
(ARCO OIL & GAS COMPANY)
C. S. STONE NO. 1

LOCATION: Unit G - 1980' FEL & 1980' FNL, Sec. 22, T15S, R38E, Lea County, N.M. Medicine Rock Field

SURFACE CASING: 13 3/8" @ 327', cmt'd to surface

INTER. CASING: 9 5/8" @ 4880', cmt'd to surface w/1980 sx.

PROD. CASING: 5 1/2" @ 12,848', cmt'd w/195 sx, est. TOC @ 11,840' by temperature survey. PBTD 12,740'

This well is the only productive well in the Medicine Rock (Devonian) Field, except the Polaris Production-Carter Estate #1 Well which is 4500' NE of the C. S. Stone #3 SWD well and 3500' NE of the C. S. Stone #1 producing well.

Dyco Petroleum Corporation

905 WESTERN UNITED LIFE BLDG
300 WEST TEXAS STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

JOHN J. EISNER
ATLANTIC-STATE #1
N-554' FSL & 2086' FWL
Sec. 15-T15S-R38E
LEA COUNTY, NEW MEXICO

SURFACE CASING: 13 3/8" @ 359' w/325 sx to surface

INTER. CASING: 8 5/8" @ 4915' w/600 sx - no top

DST 12,864-72', rec 90' SGC Salty Sul Water Cut Mud

TD 12,872'

P&A 9-6-63:

No plugging record. Assume cement plug across 8 5/8" casing seat and at surface

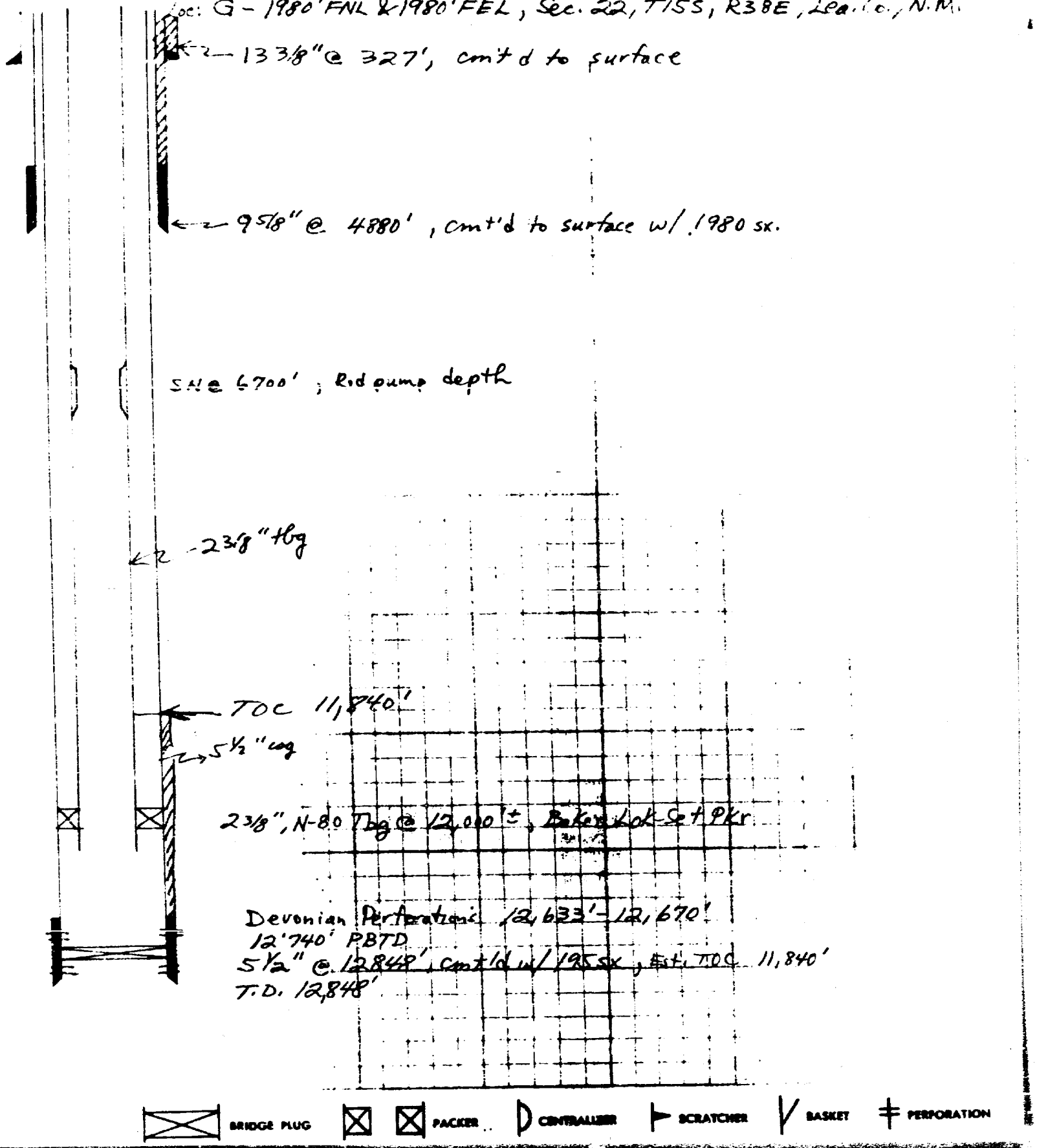
Dyco Petroleum Corp. Producer

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-6-79 WELL NO. 1 LEASE C. S. Stone FIELD Medicine Rock

Loc: G - 1980' FNL & 1980' FEL, Sec. 22, T15S, R38E, Lea Co., N.M.



BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corp.

P & A

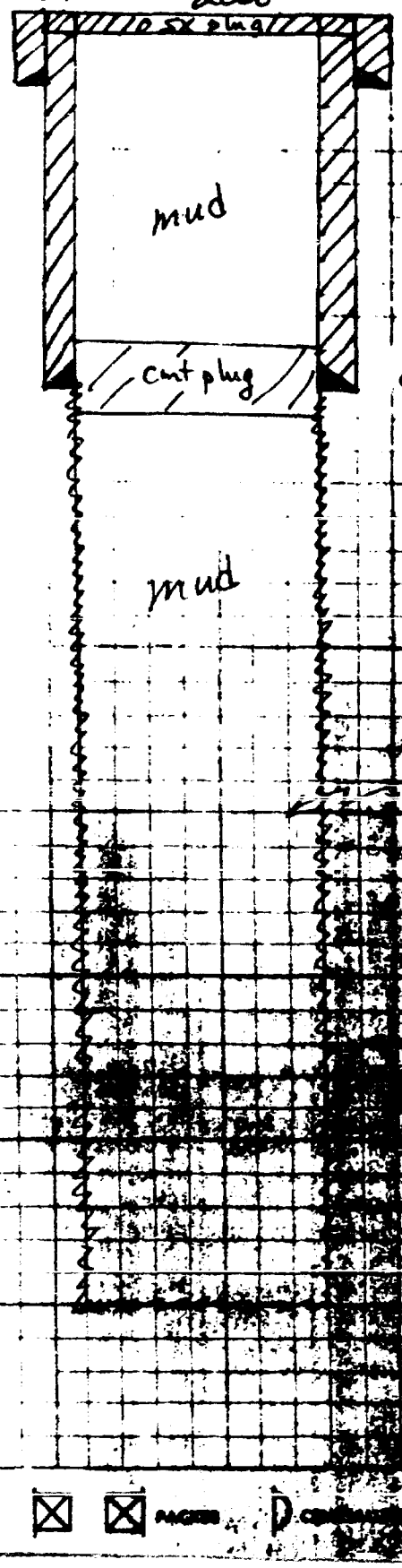
9-6-63

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-20-79 WELL NO. 1 LEASE Eisner-Atlantic State FIELD Medicine Rock

Unit N - ~~660~~ 554' FSL & ~~1980~~ 2086' FWL, Sec. 15- T 15S, R 38E. Lea Co. N.M.



13 3/8 @ 359', cmt'd to surface w/ 325 sx

8 5/8" @ 4915', cmt'd ~~to surface~~ w/ 600 sx, no top indicated.

no report on open hole plugs.

TD @ 12,872'

BRIDGE PLUG PACKER CEMENTER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corporation

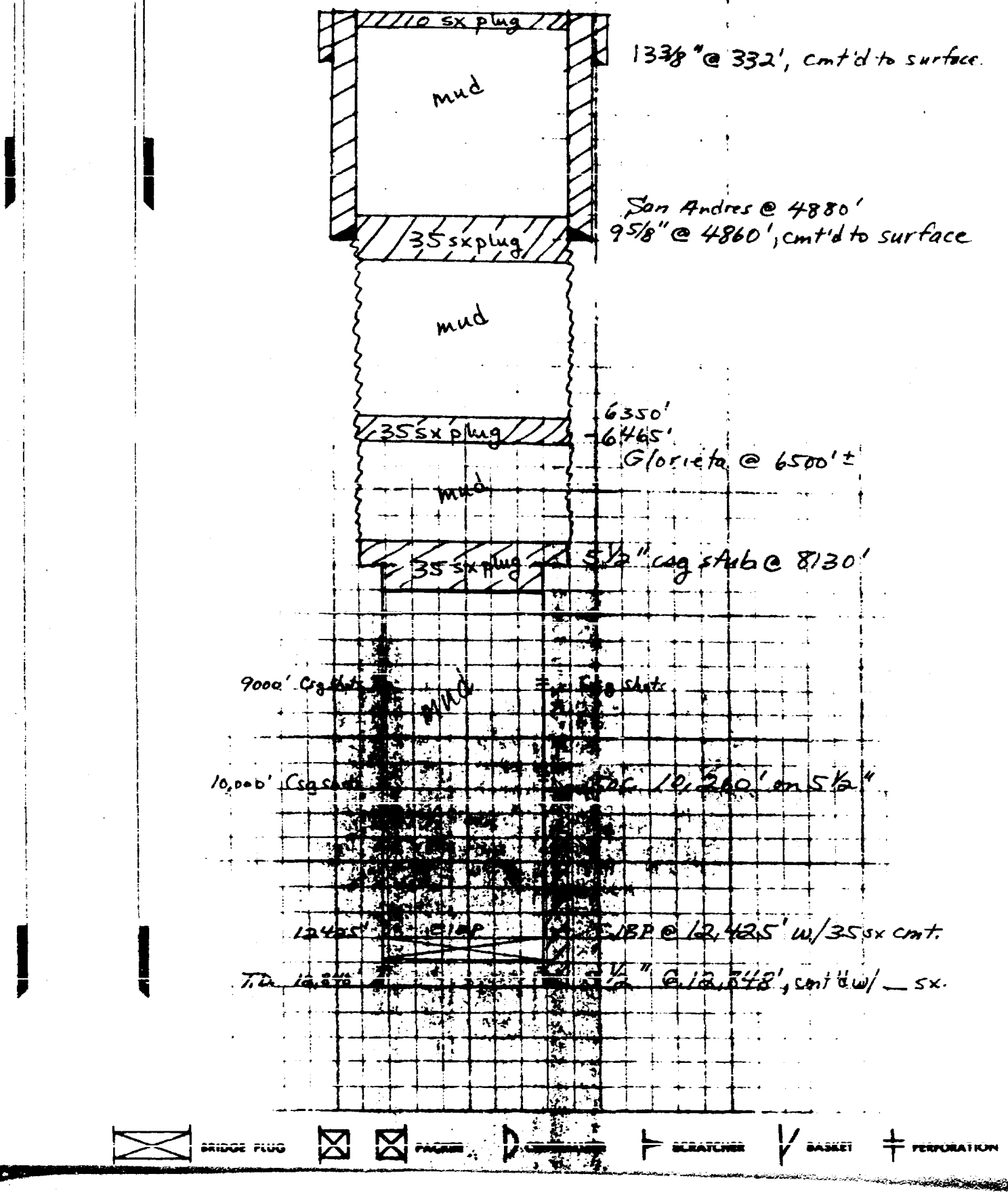
P&A

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 4-11-79 WELL NO. 1 LEASE Reed Estate FIELD Medicine Rock

Loc: J-1980'FSL & 1980'FEL, Sec. 22, T15S, R38E, Lea Co., N.M.



BRIDGE PLUG PACKER CEMENTER SCRATCHER BASKET PERFORATION

Dyco Petroleum Corp.

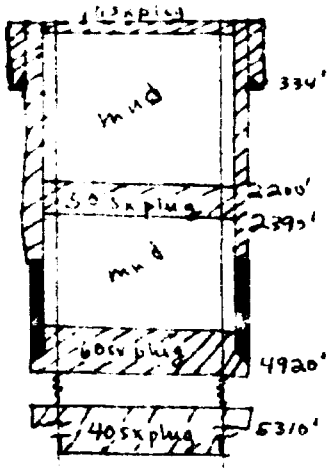
PRA

BAKER OIL TOOLS, INC.

SERVING THE WORLD

DATE 6-21-79 WELL NO. ~~C-555~~ #2 LEASE C. S. Stone FIELD Medicine Rock

B- 660' FNL & 1980' FEL, Sec. 22, T 15 S, R 38 E, Lea Co. N.M.



13 3/8", 45# csg set @ 334', cmt'd w/ 400 sx to surface.

Est. Top San Andres – 4875'

9 5/8", 36# & 40# csg set @ 4920', cmt'd w/ 2100 sx to surface

5310', 5 1/2" csg stub, 40 sx cmt plug

Est. Glorieta 6500'

Est. Tubb a 7500'

← TOC – 5 1/2" @ 8200'

Est. Wolfcamp 9300'

5 1/2", 17# & 20# csg set to 12,835', cmt'd w/ 1105 sx, TOC @ 8200'

BRIDGE PLUG PACKER CENTRALIZER SCRATCHER BASKET PERFORATION

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 30, 1979

State Of New Mexico
Oil Conservation Commission
Box 2088
Santa Fe, New Mexico 87501

Case 6593

Attn: Mr. Joe D. Ramey

Re: Dyco-Stone #3 SWD Well
Medicine Rock Field
Sec. 22, T15S, R38E
Lea County, New Mexico

Gentlemen:

Attached please find information supporting Dyco's C-108 Form to convert the above SWD well to SWD in another formation. Order No. SWD-41 was approved December 13, 1963, permitting Sinclair Oil & Gas to dispose of salt water in the above well in the Wolfcamp-Pennsylvanian interval from 9990' to 11,000'.

As the attached C-103 indicates, the 2 7/8" tubing was fished to 8726', leaving 1300' + of 2 7/8" tubing in the hole as a fish along with the 5 1/2" Model "N" packer. During casing cleaning operations to fish the tubing, the tubing-fish is now plugged inside and outside with iron-sulphide and scale or collapsed preventing injection into the Wolfcamp. In addition, the 5 1/2" casing may have failed as deep as 8720', the last 5 1/2" packer setting depth.

Form C-108 indicates the 13 3/8" casing and 9 5/8" casing strings are cemented to surface; therefore, we propose to cement the 5 1/2" casing - 9 5/8" casing annulus w/200 sx from 4894' to permit disposal into the Permian open hole section from 4894' to 8725' through tubing set on a 5 1/2" packer @ 4890. There is no nearby oil or gas production in these zones to my knowledge and no shows were encountered originally when drilling this interval.

Dyco's Stone #1 well on the same lease produces from the Devonian @ 12,630-12,670' at 27 BOPD and 390 BWPD on artificial lift. The produced water is disposed into the Stone #3 SWD system. This well will have to be shut down until SWD can resume in the Stone #3 well because it would not be economic to produce if water has to be trucked to a commercial disposal system. Disposal cost would be about $10,000 per month while net income would be about $7,000 per month under normal DOC. About $30,000 has already been spent on the remedial work to this point.

Thank you for your early attention to this matter.
Yours very truly,

Tom L. Sprinkle

Tom L Sprinkle
Vice President

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OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease
State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

7. Unit Agreement Name

OIL WELL ☐ GAS WELL ☐ OTHER- Salt Water Disposal Well

2. Name of Operator
Dyco Petroleum Corporation

8. Farm or Lease Name
C. S. Stone

3. Address of Operator
905 Western United Life Bldg, Midland, Texas 79701

9. Well No.
3

4. Location of Well
UNIT LETTER F , 1980 FEET FROM THE North LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat
Medicine Rock Wolfcamp SWD

15. Elevation *(Show whether DF, RT, GR, etc.)*
3721 GR

12. County
Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☒	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Change SWD injection Zone ☒		OTHER ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

May 3, 1979 to May 19, 1979 Started pulling tubing to repair tubing leak(s). Had pressure on 5 1/2" casing annulus and 9 5/8" casing annulus (see attached schematic). Tubing string weakened by corrosion(external) that only 10 to 20 joints could be recovered per run as it would part in the collars before reaching full string weight. In 14 days fishing with tubing spear and overshot recovered 8726' (328 1/2 jts). Cut tubing internally at 8726, PBTD inside tubing; attempts to fish remaining string with spear was not successful, could not get good bite, could not release from packer @ 9997'. Went in hole with 5 1/2" packer and 2 7/8", N-80 tubing to 8720', set packer, pressured to 4,000#, no injection; spotted 168 gallons 15% HCL, pressured to 3700#, casing failed, had communication on 5 1/2" & 9 5/8" casing; pulled up 300', closed casing valves and BOP injected down tubing at 1.5 BPM at 1800#; fluid apparently going into open hole through 5 1/2" casing from 4894'-8725'(Permian-San Andres, Glorietta,Tubb). Laid down 2 7/8", N-80 tubing workstring, shut well in to apply for new SWD permit

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JUN
OIL CONSERVATION DIVISION
SANTA FE

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Ingram TITLE Vice Pres & Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☐ OTHER. SWD Well

7. Unit Agreement Name: F

2. Name of Operator: Dyco Petroleum Corporation

8. Farm or Lease Name: C. S. Stone

3. Address of Operator: 905 Western United Life Bldg, Midland, Texas 79701

9. Well No.: 3

4. Location of Well: UNIT LETTER F, 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Medicine Rock (Dev)

15. Elevation (Show whether DF, RT, GR, etc.): 3721 GR

12. County: Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☒	PLUG AND ABANDON ☐		REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐			COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐		CASING TEST AND CEMENT JOB ☐	
OTHER ☐			OTHER ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

In support of Form C-108 for the above well, Dyco proposes the following work to convert from salt water disposal in the Wolfcamp Formation to injection in the Permian Formation.

1) Run 5 1/2" casing inspection log. Dump 30' cement inside 5 1/2" casing from 8729' to 8699' to permanently plug Wolfcamp injection zone.
2) Cement 5 1/2" casing from 4894' w/200 sx or to good 5 1/2" casing whichever is higher. Drill out cement, perforate 5 1/2" casing in San Andres from 5462-5500 and 5615-5650 w/1 SPF.
3) Run 5 1/2" injection packer to 4890' and 4890'-2 3/8", fiberglass tubing with 2000 psi working pressure rating.
4) Inject into Permian- San Andres formation through fiberglass tubing strin g at 400 BWPD.

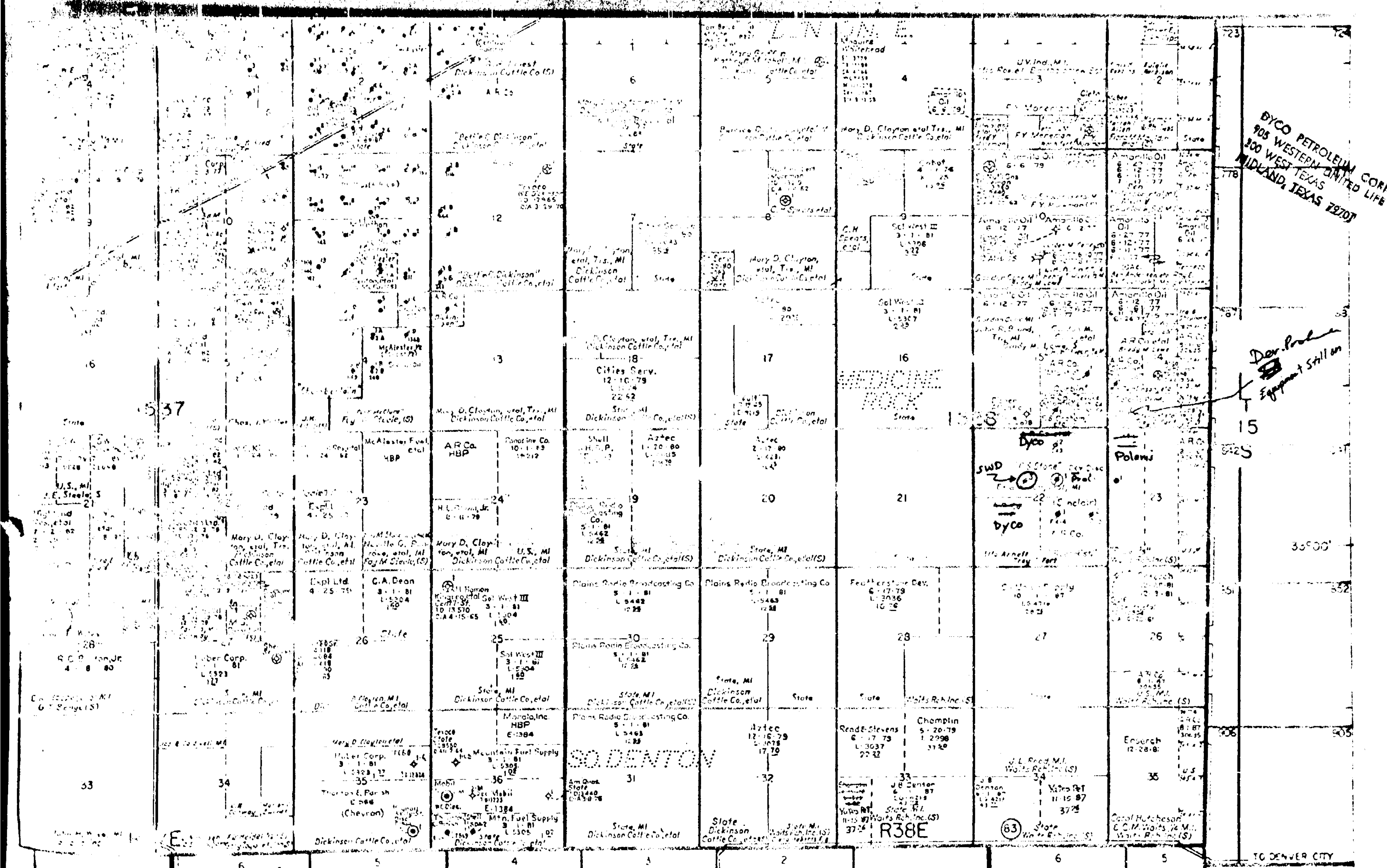
RECEIVED
JUN 1 1979
OIL CONSERVATION DIVISION
SANTA FE

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Hopkins TITLE Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

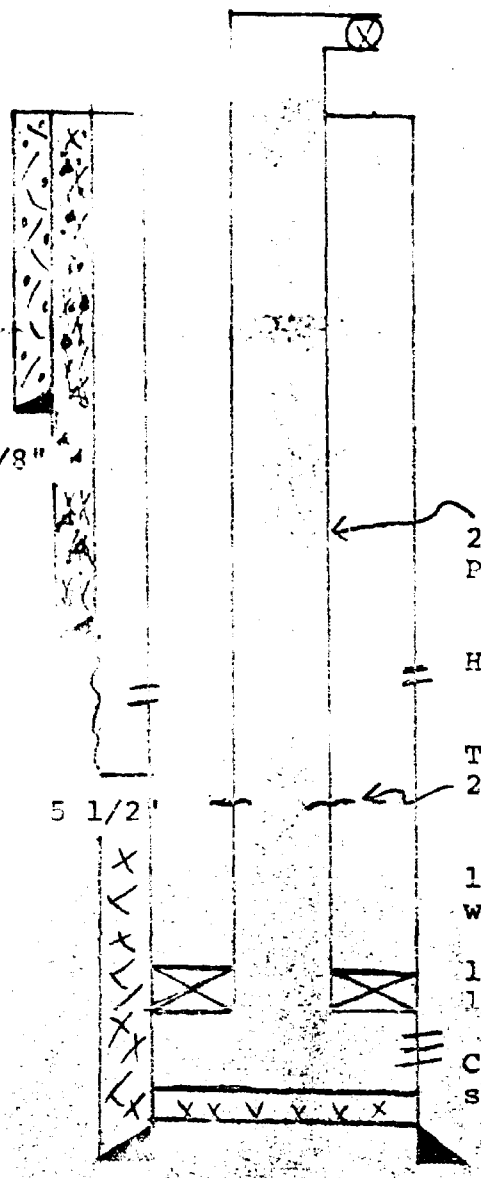
CONDITIONS OF APPROVAL, IF ANY:



Ownership Map

STONE #3 SWD

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701



13 3/8"
36.5#

400 sx 364'

9 5/8"

2 7/8", N-80, PC tbg
Pulled to 8729'

2100 sx 4894'
Circ

Holes in 5 1/2"

TOC 8725'

Top of Fish @ 8729'
2 7/8" tube

5 1/2"

10009.32' RKB Baker "N"
w/anchor assembly

TD 12815'
Cmt'd w/
730 sks

10050'-10,336' w/162,
1/2" holes

CIBP 12625' retainer
sqzd w/70 sxs

Open Hole Section is 8725
-4894
3831'

1st Inj. 9-12-64

Status: Holes(s) in tbg; Hole (s) in 5 1/2" csg,
Have pressure on 5 1/2" annulus & 9 5/8" annulus

TELEPHONE HOBBS 393-7[illegible]
AREA CODE 505

KELTONE

UNICO CHEMICAL CORPORATION

OF NEW MEXICO

701 NORTH LEECH
P. O. BOX 1499
HOBBS, NEW MEXICO 88240

Company	Dyco Petroleum Corporation	DYCO PETROLEUM CORPORATION 905 WESTERN UNITED LIFE BUILDING 300 WEST TEXAS MIDLAND, TEXAS 79701
Field	Medicine Rock Devonian	
Lease	C. S. Stone #3	Sampling Date 5-12-78
Type of Sample	Wellhead - Devonian Formation	

WATER ANALYSIS

IONIC FORM		me/l*	mg/l*
Calcium (Ca^{++})		105.20	2,104
Magnesium (Mg^{++})		43.98	528
Sodium (Na^{+})	(CALCULATED)	1,045.89	24,045
Iron (Total)			150

Disposal Water Analysis
C.S. Stone #3 - SWD Well

Bicarbonate (HCO_3^{-})	14.00	854
Carbonate (CO_3^{--})	Not	found
Hydroxide (OH^{-})	Not	found
Sulphate (SO_4^{--})	64.35	3,091
Chloride (Cl^{-})	1,116.72	39,600
Total Dissolved Solids		70,222

pH 7.65			
Specific Gravity at 60° F		1.050	
Calcium as $CaCO_3$		149.18	7,459
Magnesium as $CaCO_3$ (Temporary)		14.00	700
Total Hardness as $CaCO_3$ (Permanent)		135.18	6,759
Resistivity		14.00	700

* milligrams per liter
** milliequivalents per liter

CO_3 Scaling Index slightly positive @ 86°F (0.14)

$CaSO_4$ Scaling Index negative (0.63)

Maxi Water Work

SCHLUMBERGER

GAMMA RAY - NEUTRON

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY LEA
FIELD or LOCATION MEDICINE ROCK
WELL C. S. STONE #3
COMPANY SINCLAIR OIL & GAS COMPANY

COMPANY SINCLAIR OIL & GAS COMPANY

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701

WELL C. S. STONE #3
FIELD MEDICINE ROCK
COUNTY LEA STATE NEW MEXICO

Location: 1980' FNL 1980' FWL

Sec. 22 Twp. 15S Rge. 38E

Other Services:
2IL-LL8
ML-CDM

Permanent Datum: GROUND LEVEL Elev.: 3721
Log Measured From G.L. Ft. Above Perm. Datum
Drilling Measured From GROUND LEVEL

Elev.: K.B.
D.F.
G.L. 3721

Date	4-7-62
Run No.	1
Type Log	GRN
Depth—Driller	12815
Depth—Logger	12801
Bottom logged interval	12800
Top logged interval	0
Type fluid in hole	CHEM-GEL
Salinity, PPM Cl.	3600
Density	8.9
Level	FULL
Max rec. temp., deg F.	146
Operating rig time	6 HOURS
Recorded by	EASLEY-MILLER
Witnessed by	ANDREWS

MARKED

BORE-HOLE RECORD

Run No.	Bit	From	To
1	8 3/4	4888	12815

CASING RECORD

Size	Wgt.	From	To
9 5/8		0	4688

FOLD HERE — THIS HEADING AND LOG CONFORMS TO API RP 33

EQUIPMENT DATA

Gamma Ray		Neutron	
Run No.	1	Run No.	1
Tool Model No.	GNT-G	Log Type	N-G+N-N THERM
Diameter	3 7/8	Tool Model No.	GNT-G
Det'r Model No.	SGD-F	Diameter	3 7/8
Type	SCINT.	Det'r Model No.	NLD-D
Length	8"	Type	G.M.
Dist. to N. Source	87"	Length	6"
		Source Model No.	NLS-B
General		Serial No.	20
Hoist Truck No.	1582	Spacing	15.5 C-C
Inst. Truck No.	1582	Type	RA BE
Tool Serial No.	20	Strength	10 N/SEC
Location	KERMIT		

LOGGING DATA

Run No.	General Depths From	General Depths To	Speed Ft/Min.	Gamma Ray T.C. Sec.	Gamma Ray Sens. Settings	Gamma Ray Zero Div. L or R	Gamma Ray API G.R. Units per Log Div.	Neutron T.C. Sec.	Neutron Sens. Settings	Neutron Zero Div. L or R	Neutron API N. Units per Log Div.
1	0	12800	30/60	2	400	0	10	2	400	8L	80
			60	2	300	0	7.5	2	300	8L	60

Reference Literature:

Remarks: GR CAL: B 80 - 410 - 82.5 - 800
N CAL: B 5 - 1220/320 - 16.6/4.5 - 500

GAMMA RAY
API UNITS
0 75

DEPTH

NEUTRON
API UNITS
480 1080 1680

15

Store #3

0100

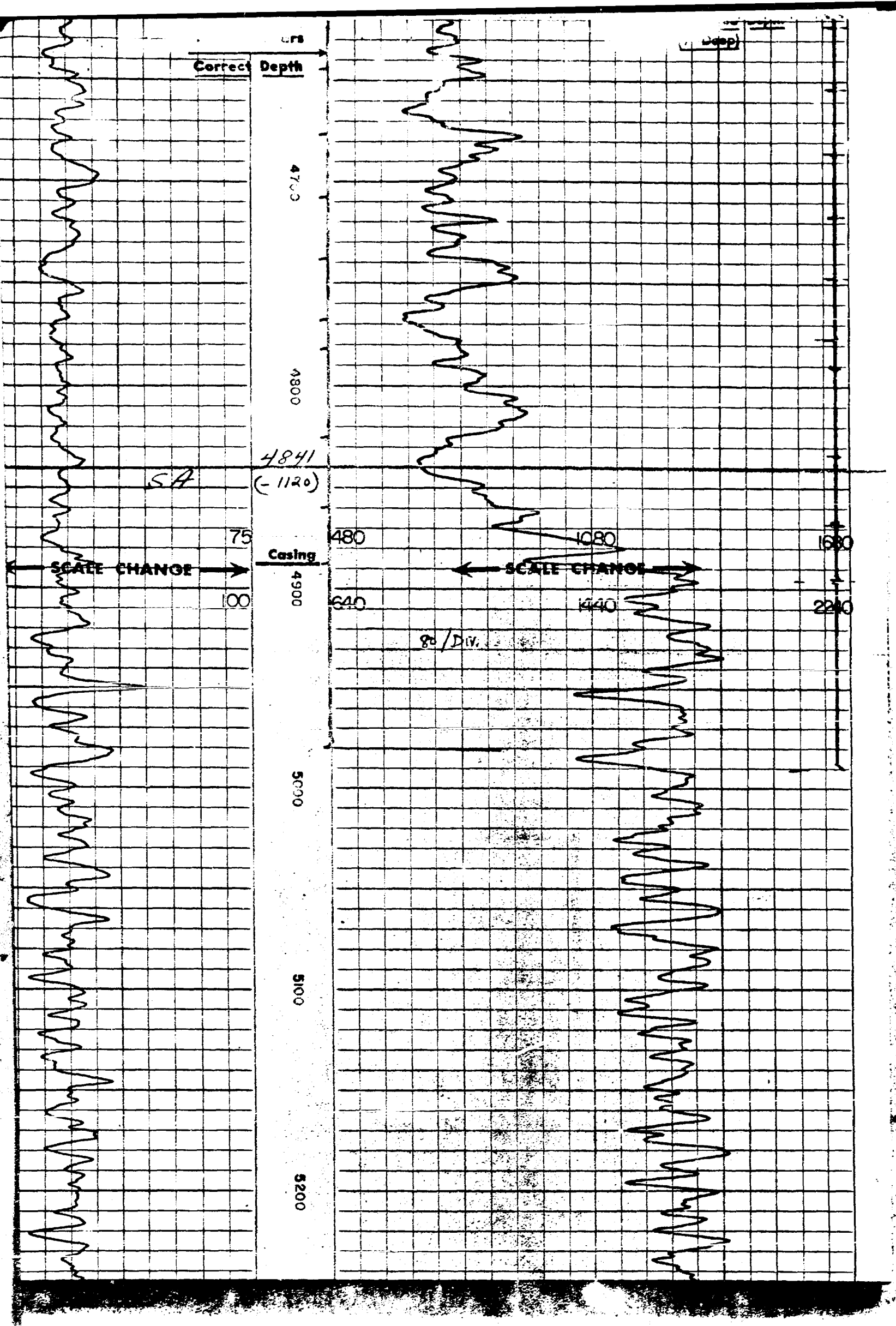
Casing Collars
Correct Depth

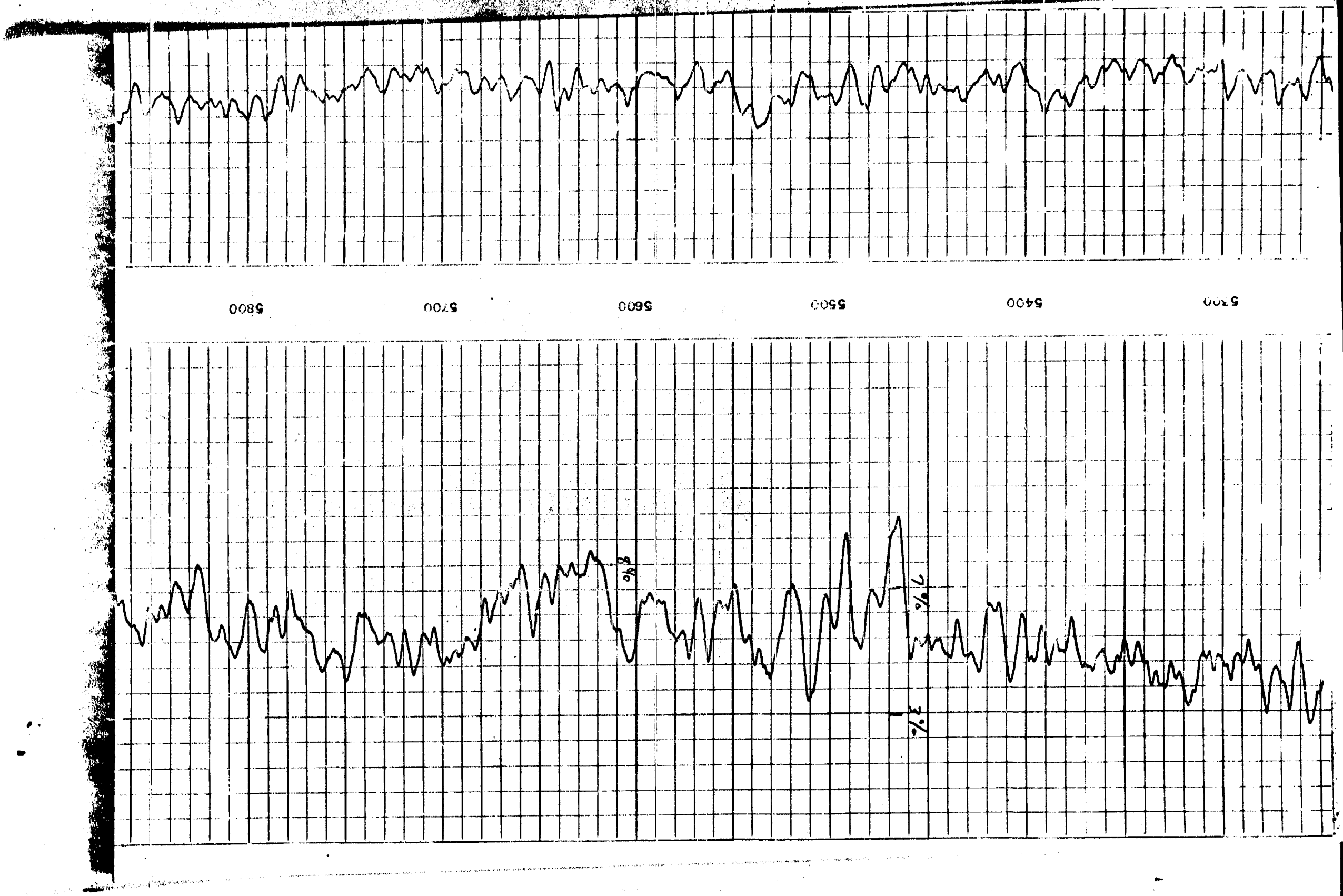
0200

Casing Collars
Recorded Depth
(F. Deep)

0300

Red Beds


Correct Depth
4700
4800
4841
SA
(-1120)
75
SCALE CHANGE
100
Casing
4900
480
1080
1680
SCALE CHANGE
640
1440
2240
80/Div.
5000
5100
5200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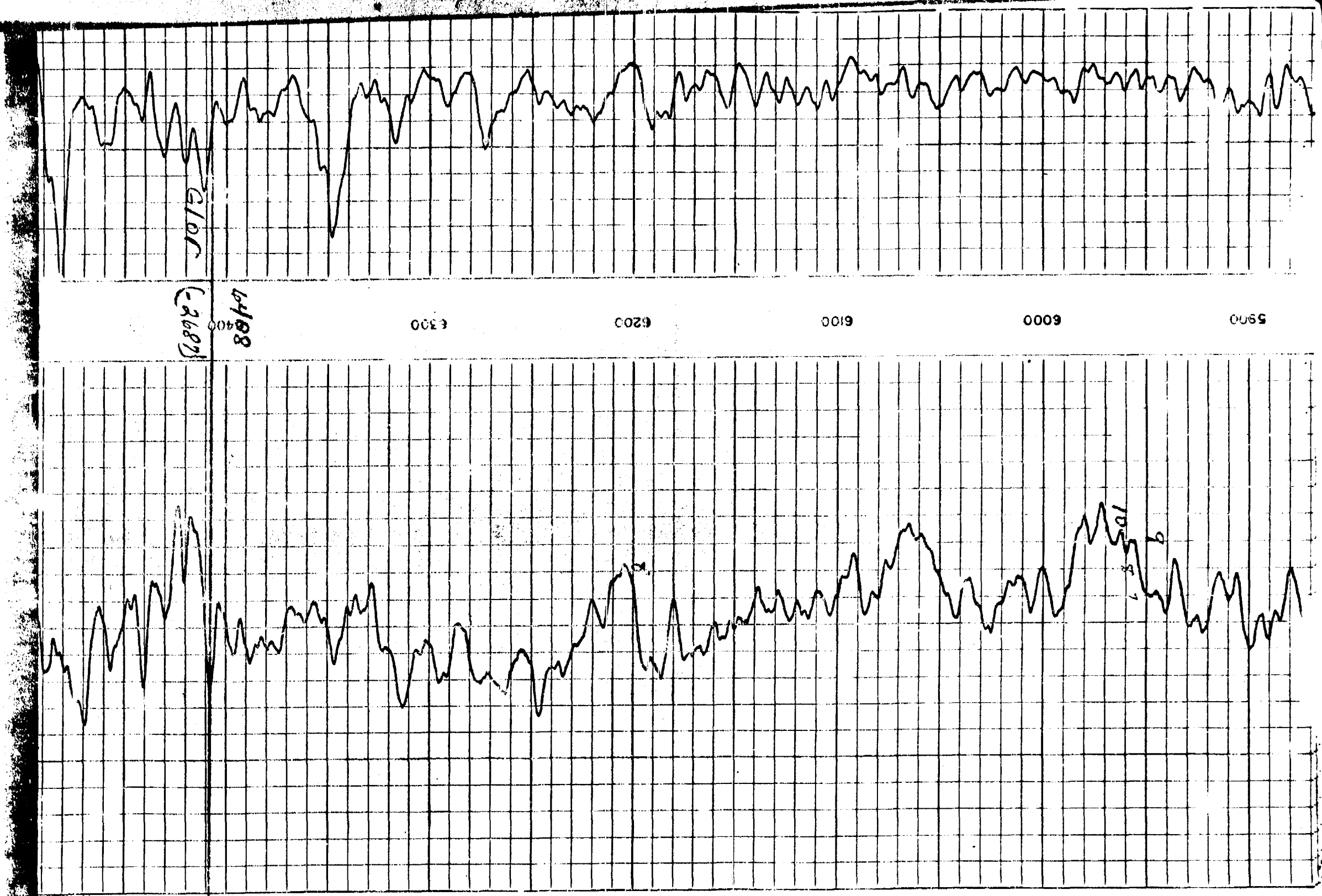
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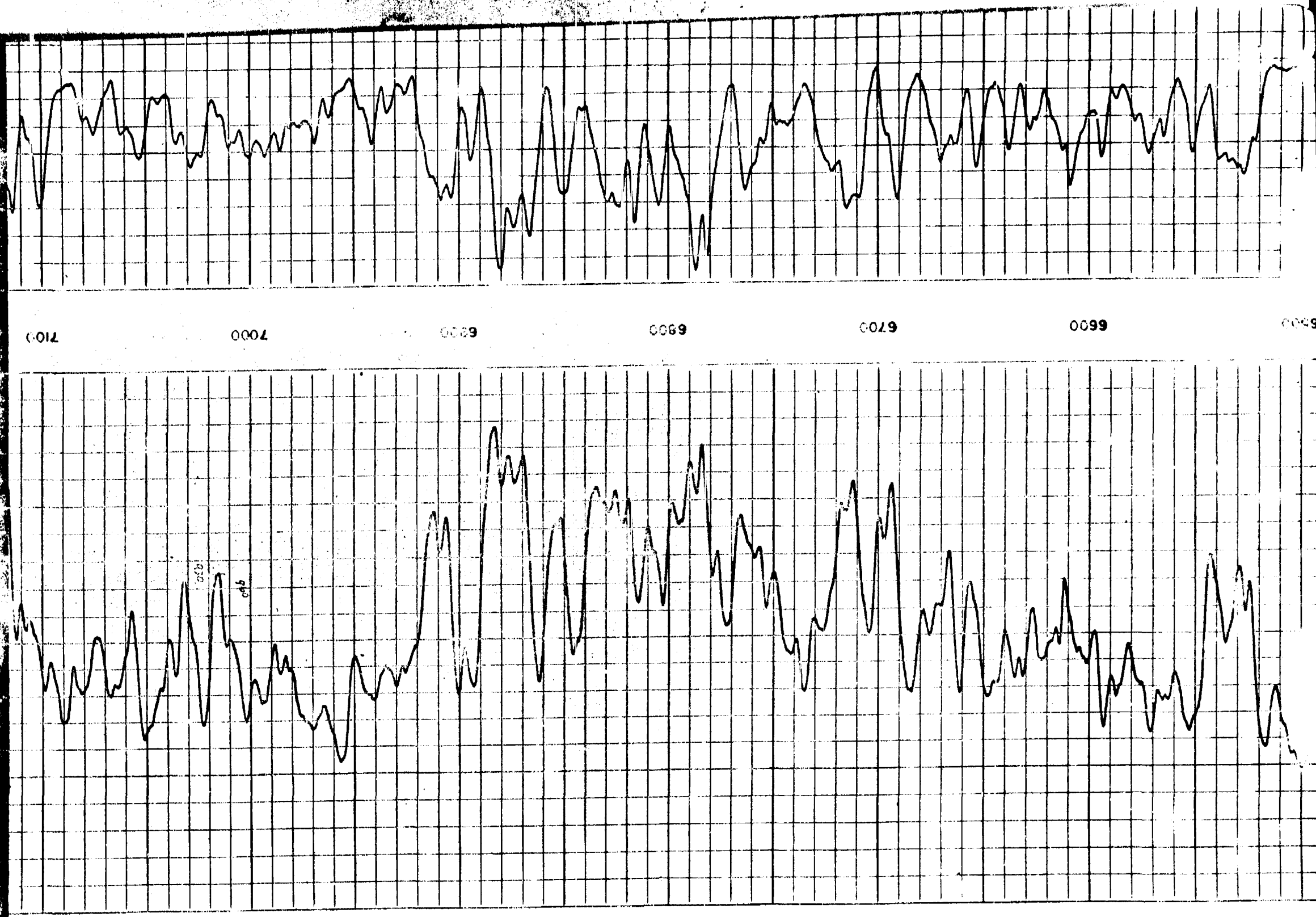
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6800
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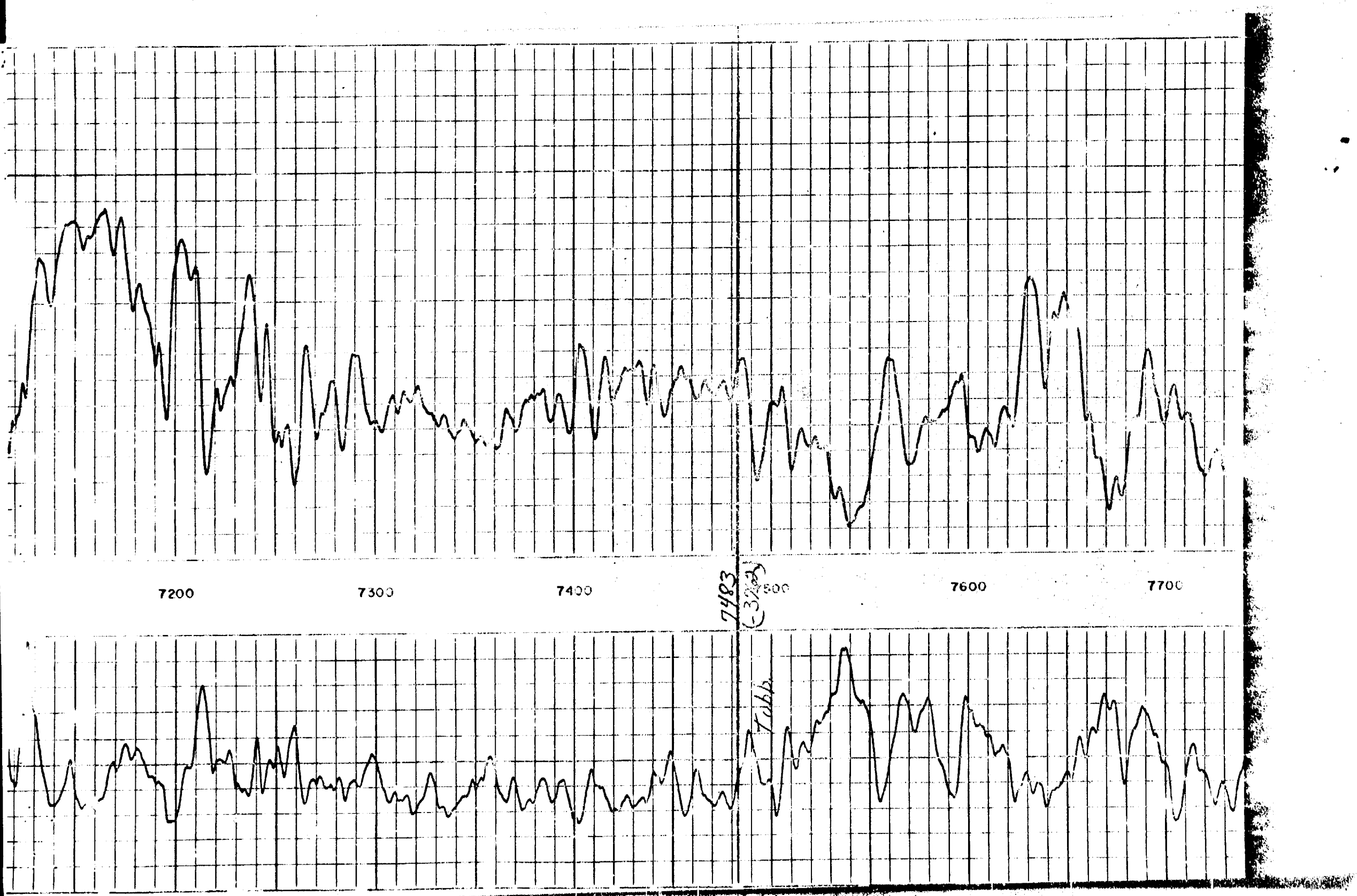
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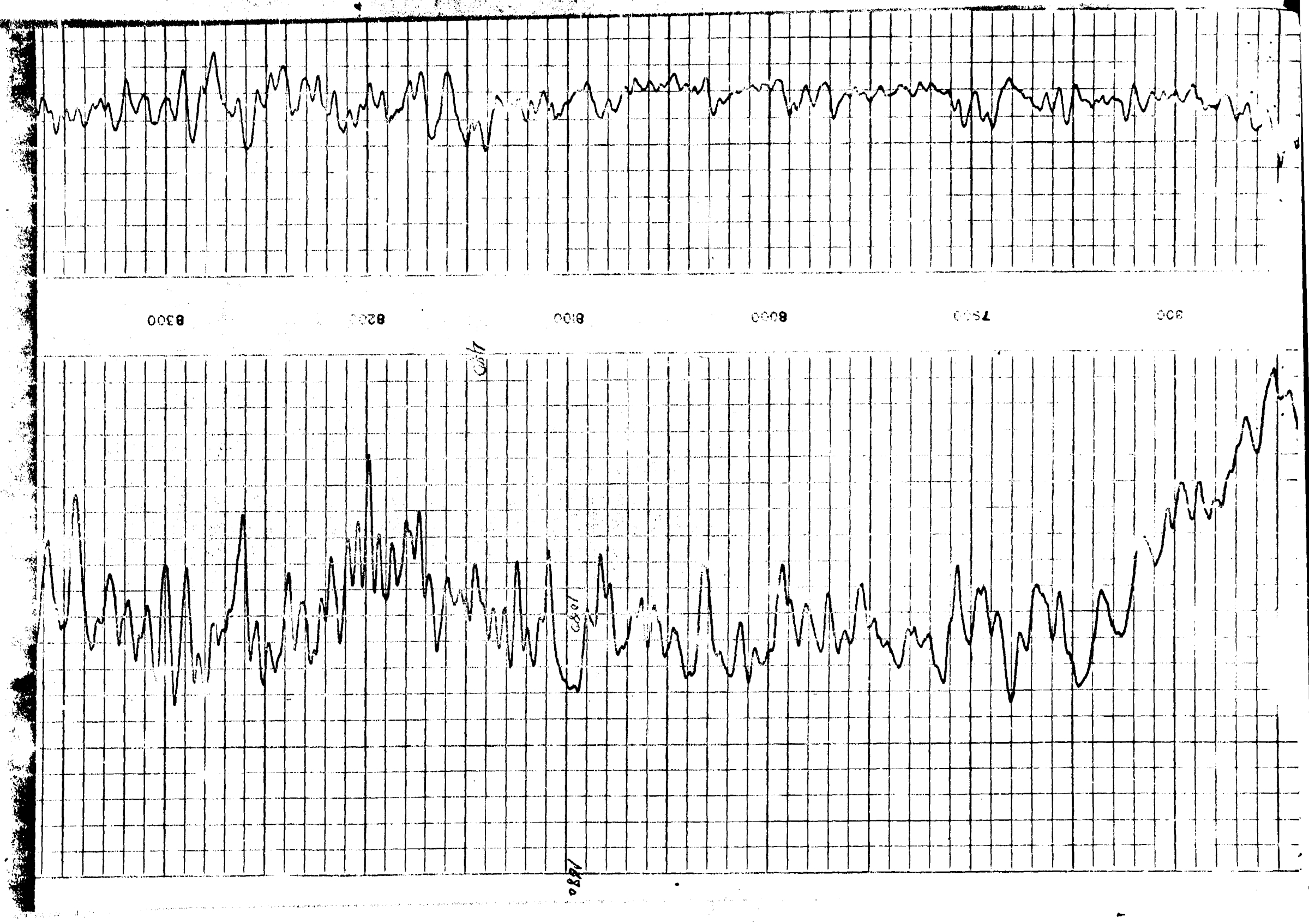
7700
Tubb.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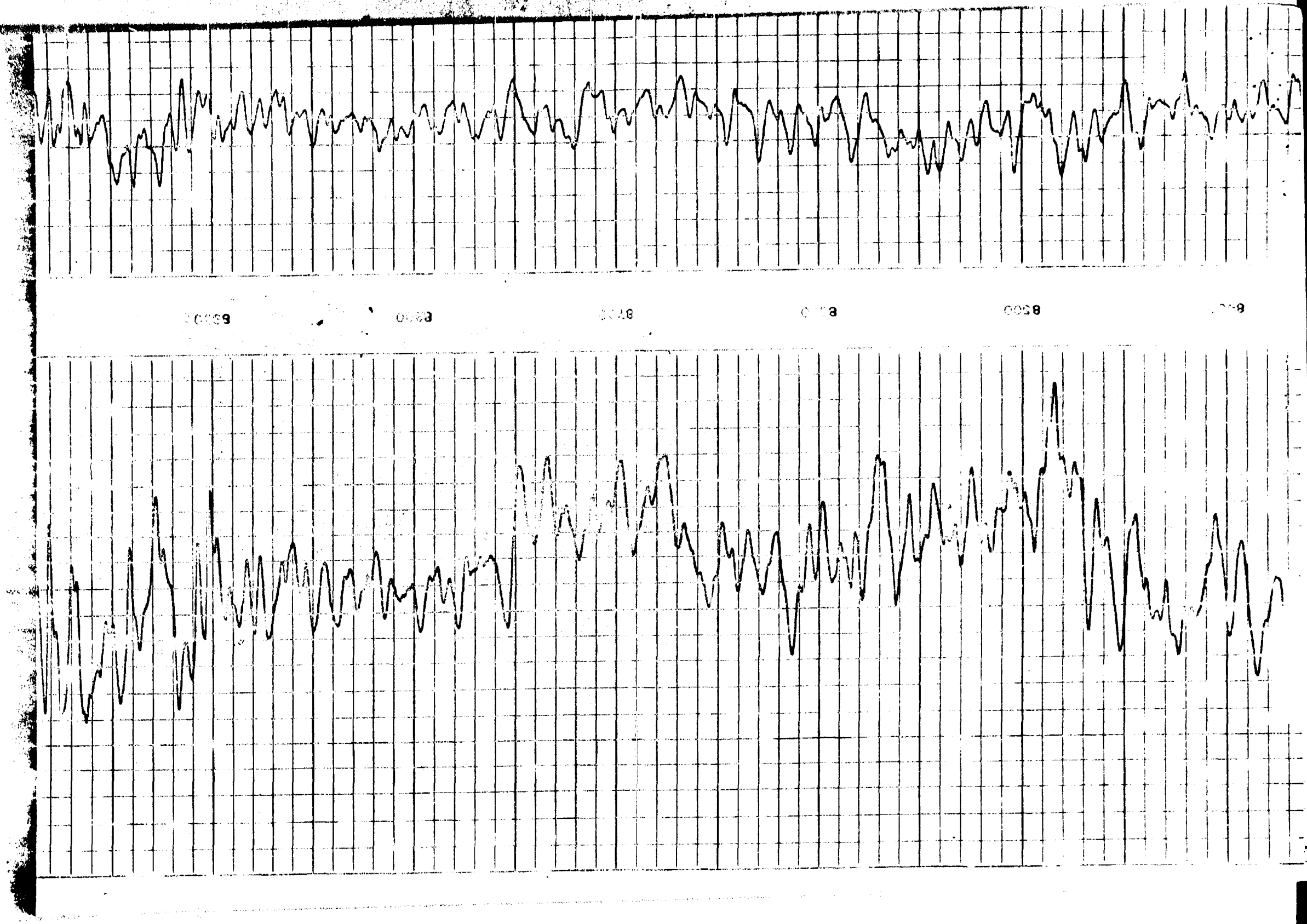
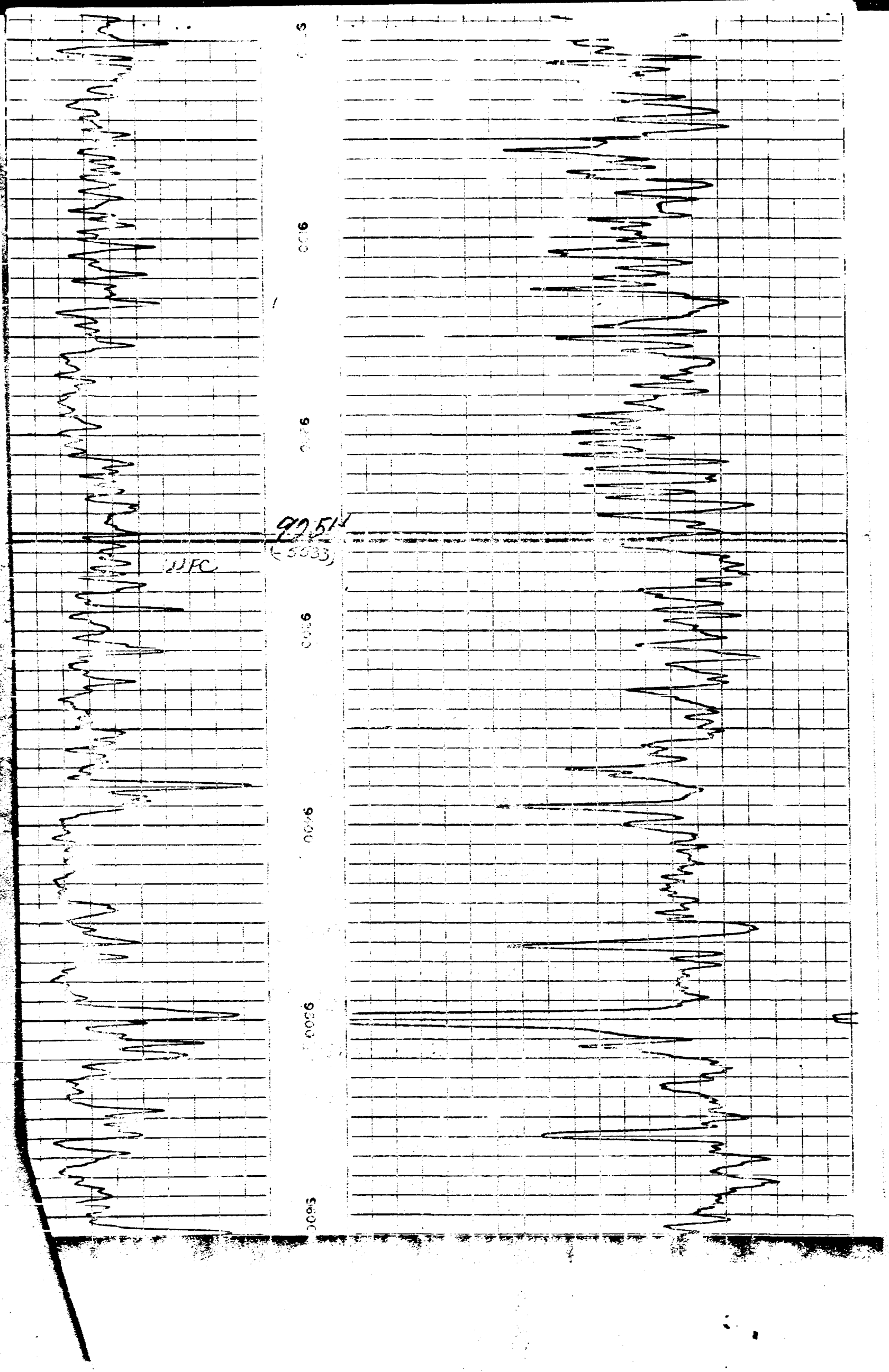
7500
6000
8100
8250
8300




9251'
(-9033)
UFC
9015
9016
9016
9016
9016

DYCO PETROLEUM CORPORATION
905 WESTERN NATURAL LIFE BUILDING
[illegible]
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 30, 1979

State Of New Mexico
Oil Conservation Commission
Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: Dyco-Stone #3 SWD Well
Medicine Rock Field
Sec. 22, T15S, R38E
Lea County, New Mexico

Gentlemen:

Attached please find information supporting Dyco's C-108 Form to convert the above SWD well to SWD in another formation. Order No. SWD-41 was approved December 13, 1963, permitting Sinclair Oil & Gas to dispose of salt water in the above well in the Wolfcamp-Pennsylvanian interval from 9990' to 11,000'.

As the attached C-103 indicates, the 2 7/8" tubing was fished to 8726', leaving 1300' + of 2 7/8" tubing in the hole as a fish along with the 5 1/2" Model "N" packer. During casing cleaning operations to fish the tubing, the tubing-fish is now plugged inside and outside with iron-sulphide and scale or collapsed preventing injection into the Wolfcamp. In addition, the 5 1/2" casing may have failed as deep as 8720', the last 5 1/2" packer setting depth.

Form C-108 indicates the 13 3/8" casing and 9 5/8" casing strings are cemented to surface; therefore, we propose to cement the 5 1/2" casing - 9 5/8" casing annulus w/200 sx from 4894' to permit disposal into the Permian open hole section from 4894' to 8725' through tubing set on a 5 1/2" packer @ 4890. There is no nearby oil or gas production in these zones to my knowledge and no shows were encountered originally when drilling this interval.

Dyco's Stone #1 well on the same lease produces from the Devonian @ 12,630-12,670' at 27 BOPD and 390 BWPD on artificial lift. The produced water is disposed into the Stone #3 SWD system. This well will have to be shut down until SWD can resume in the Stone #3 well because it would not be economic to produce if water has to be trucked to a commercial disposal system. Disposal cost would be about $10,000 per month while net income would be about $7,000 per month under normal DOC. About $30,000 has already been spent on the remedial work to this point.

Thank you for your early attention to this matter.
Yours very truly,

Tom L Sprinkle
Vice President

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

7. Unit Agreement Name

OIL WELL ☐ GAS WELL ☐ OTHER- Salt Water Disposal Well

2. Name of Operator: Dyco Petroleum Corporation

8. Farm or Lease Name: C. S. Stone

3. Address of Operator: 905 Western United Life Bldg, Midland, Texas 79701

9. Well No.: 3

4. Location of Well: UNIT LETTER F, 1980 FEET FROM THE North LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Medicine Rock Wolfcamp SWD

15. Elevation (*Show whether DF, RT, GR, etc.*): 3721 GR

12. County: Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☒	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Change SWD injection Zone ☒		OTHER ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

May 3, 1979 to May 19, 1979 — Started pulling tubing to repair tubing leak(s). Had pressure on 5 1/2" casing annulus and 9 5/8" casing annulus (see attached schematic). Tubing string weakened by corrosion(external) that only 10 to 20 joints could be recovered per run as it would part in the collars before reaching full string weight. In 14 days fishing with tubing spear and overshot recovered 8726' (328 1/2 jts). Cut tubing internally at 8726, PBTD inside tubing; attempts to fish remaining string with spear was not successful, could not get good bite, could not release from packer @ 9997'. Went in hole with 5 1/2" packe and 2 7/8", N-80 tubing to 8720', set packer, pressured to 4,000#, no injection; spotted 168 gallons 15% HCL, pressured to 3700#, casing failed, had communication on 5 1/2" & 9 5/8" casing; pulled up 300', closed casing valves and BOP injected down tubing at 1.5 BPM at 1800#; fluid apparently going into open hole through 5 1/2" casing from 4894'-8725'(Permian-San Andres, Glorietta,Tubb). Laid down 2 7/8", N-80 tubing workstring, shut well in to apply for new SWD permit

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Ingram TITLE Vice Pres & Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 14-65

5a. Indicate Type of Lease State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☐ OTHER. SWD Well

7. Unit Agreement Name: F

2. Name of Operator: Dyco Petroleum Corporation

8. Farm or Lease Name: C. S. Stone

3. Address of Operator: 905 Western United Life Bldg, Midland, Texas 79701

9. Well No.: 3

4. Location of Well
UNIT LETTER F, 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Medicine Rock (Dev)

15. Elevation (*Show whether DF, RT, GR, etc.*): 3721 GR

12. County: Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☒	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

In support of Form C-108 for the above well, Dyco proposes the following work to convert from salt water disposal in the Wolfcamp Formation to injection in the Permian Formation.

1) Run 5 1/2" casing inspection log. Dump 30' cement inside 5 1/2" casing from 8729' to 8699' to permanently plug Wolfcamp injection zone.
2) Cement 5 1/2" casing from 4894' w/200 sx or to good 5 1/2" casing whichever is higher. Drill out cement, perforate 5 1/2" casing in San Andres from 5462-5500 and 5615-5650 w/1 SPF.
3) Run 5 1/2" injection packer to 4890' and 4890'-2 3/8", fiberglass tubing with 2000 psi working pressure rating.
4) Inject into Permian- San Andres formation through fiberglass tubing strin g at 400 BWPD.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Ingram TITLE Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR: Dyco Petroleum Corporation		ADDRESS: 905 Western United Life Bldg. Midland, Texas 79701	
LEASE NAME: C. S. Stone	WELL NO.: 3	FIELD: Medicine Rock (Devonian)	COUNTY: Lea

LOCATION: UNIT LETTER F; WELL IS LOCATED 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13 3/8"	364	400	surface	circulation
INTERMEDIATE	9 5/8"	4894	2100	surface	Circulation
LONG STRING	5 1/2"	12815	730	8725'	Temperature Survey
TUBING	2 3/8"	4890'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Lockset 4890'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Permian-San Andres, Glorietta, Tubb	4841	9254

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Open Hole Perforations &	4894'-8725'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Devonian Oil Production	Wolfcamp, Devonian

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH: 12738-58' sqzd 100 sks; perf 12687-708', retainer @ 12625', sqzd w/70 sks

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
310	none	12676

ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSIG)
380	350	400	open	pressure	1500

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
unfit	yes	yes	yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND): Troy C. Fort, P. O. Box 998, Lovington, New Mexico 88260

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL: Polaris Production Corp., First Nat'l Bnk Bldg, 303 W. Wall, Midland, Texas 79701

Perf Wolfcamp 10320-336-, 10274-308', 10101'-10122', 10050',60', will dump 30' cmt on top of fish @ 8725'

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	
	yes	yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	yes	yes	yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Tom L. Sprinkle (Signature) Area Manager (Title) 5-29-79 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

Ownership Map

DYCO PETROLEUM CORP
300 WESTERN UNITED LIFE B
MIDLAND, TEXAS 79701

TA Equipment Still on

TO DENTON

TO DENVER CITY

R37E

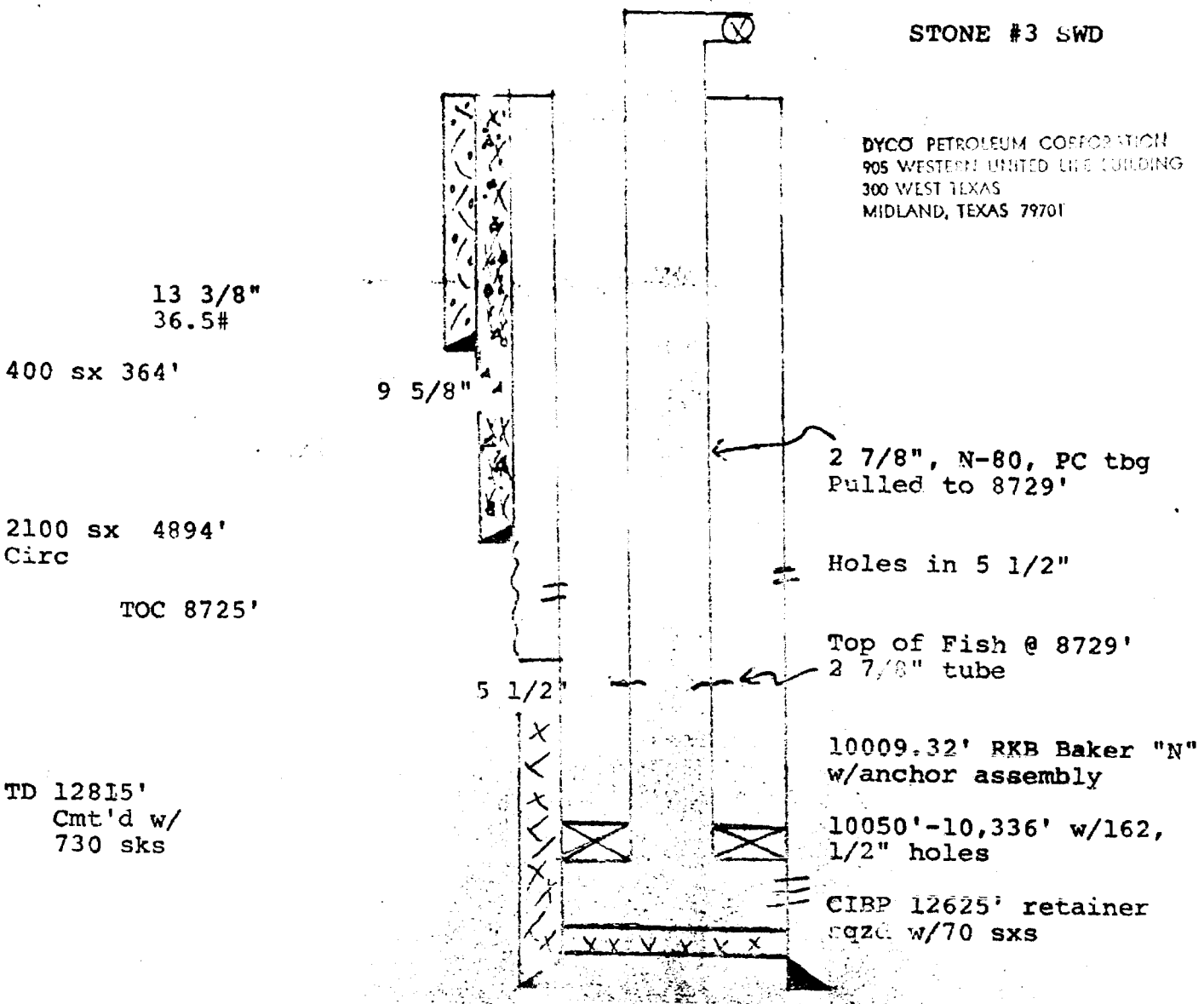
R38E

R39E

N

STONE #3 SWD

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701



Open Hole Section is 8725
-4894
3831'

1st Inj. 9-12-64

Status: Holes(s) in tbg; Hole (s) in 5 1/2" csg,
Have pressure on 5 1/2" annulus & 9 5/8" annulus

TELEPHONE HOBBS 393 7251
AREA CODE 505

CHEMICAL CORPORATION
OF NEW MEXICO

401 NORTH LEECH
HOBBS, NEW MEXICO 88240

P. O. BOX 1499

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701

Company: Dyco Petroleum Corporation

Field: Medicine Rock Devonian

Lease: C. S. Stone #1

Sampling Date: 5-12-78

Type Sample: Wellhead - Devonian Formation

WATER ANALYSIS

IONIC FORM	mg/l *	mg. *
Calcium (Ca++)	105.20	2,104
Magnesium (Mg++)	43.98	528
Sodium (Na+)	1,045.89	24,045
Iron (Total)		150

(CALCULATED)

Disposal Water Analysis
C.S. Stone #3 - SWD Well

Bicarbonate (HCO_3^-)	14.00	854
Carbonate (CO_3^{--})	Not	found
Hydroxide (OH-)	Not	found
Sulphate (SO_4^{--})	64.35	3,091
Chloride (Cl^-)	1,116.72	39,600
Total Dissolved Solids		70,222
pH	6.55	
Specific Gravity at 68°F	1.050	
Calcium Hardness as $CaCO_3$ (Temporary)	149.18	7,459
Total Hardness as $CaCO_3$ (Temporary)	4.00	700
Non-Carbonate Hardness as $CaCO_3$ (Permanent)	135.18	6,759
Total Alkalinity as $CaCO_3$	14.00	700

* mg/l - milligrams per Liter
* mg. - milligram equivalents per Liter

$CaCO_3$ Scaling Index slightly positive @ 86°F (0.14)

Calcium Sulfate Scaling Index negative (0.69)

Mabee Water Clerk

SCHLUMBERGER

GAMMA RAY - NEUTRON

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY LEA
FIELD or
LOCATION MEDICINE ROCK
WELL C. S. STONE #3
COMPANY SINCLAIR OIL & GAS COMPANY

COMPANY SINCLAIR OIL & GAS COMPANY

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701

WELL C. S. STONE #3
FIELD MEDICINE ROCK
COUNTY LEA STATE NEW MEXICO

Location: 1980' FNL 1980' FWL
Sec. 22 Twp. 15S Rge. 38E

Other Services:
2IL-LL8
ML-CDM

Permanent Datum: GROUND LEVEL ; Elev.: 3721
Log Measured From G.L. Ft. Above Perm. Datum
Drilling Measured From GROUND LEVEL

Elev.: K.B.
D.F.
G.L. 3721

Date	4-7-62
Run No.	1
Type Log	GRN
Depth—Driller	12815
Depth—Logger	12801
Bottom logged interval	12800
Top logged interval	0
Type fluid in hole	CHEM-GEL
Salinity, PPM Cl.	3600
Density	8.9
Level	FULL
Max rec. temp., deg F.	146
Operating rig time	6 HOURS
Recorded by	EASLEY-MILLER
Witnessed by	ANDREWS

Marked

RUN No.	Bit	BORE-HOLE RECORD From	To	CASING RECORD Size	Wgt.	From	To
1	8 3/4	4888	12815	5 5/8		0	4888

FOLD HERE — THIS HEADING AND LOG CONFORMS TO API RP 33

EQUIPMENT DATA

Gamma Ray		Neutron	
Run No.	1	Run No.	1
Tool Model No.	GNT-G	Log Type	N-G+N-N THERM
Diameter	3 7/8	Tool Model No.	GNT-G
Det'r Model No.	SGD-F	Diameter	3 7/8
Type	SCINT.	Det'r Model No.	NLD-D
Length	8"	Type	G.M.
Dist. to N. Source	87"	Length	6"
		Source Model No.	NLS-B
General		Serial No.	20
Hoist Truck No.	1582	Spacing	15.5 C-C
Inst. Truck No.	1582	Type	RA BE
Tool Serial No.	20	Strength	10 N/SEC
Location	KERMIT		

LOGGING DATA

Run No.	General Depths From	To	Speed Ft/Min.	Gamma Ray T.C. Sec.	Sens. Settings	Zero Div. L or R	API G.R. Units per Log Div.	Neutron T.C. Sec.	Sens. Settings	Zero Div. L or R	API N. Units per Log Div.
1	0	12800	30/60	2	400	0	10	2	400	8L	80
			60	2	300	0	7.5	2	300	8L	60

Reference Literature:

Remarks: GR CAL: B 80 - 410 - 82.5 - 800
N CAL: B 5 - 1220/320 - 16.6/4. - 500

GAMMA RAY API UNITS	DEPTHS	NEUTRON API UNITS
0 7.5	480	1080 1680

Stone #3

5

0010

0020

0030

Casing Collars

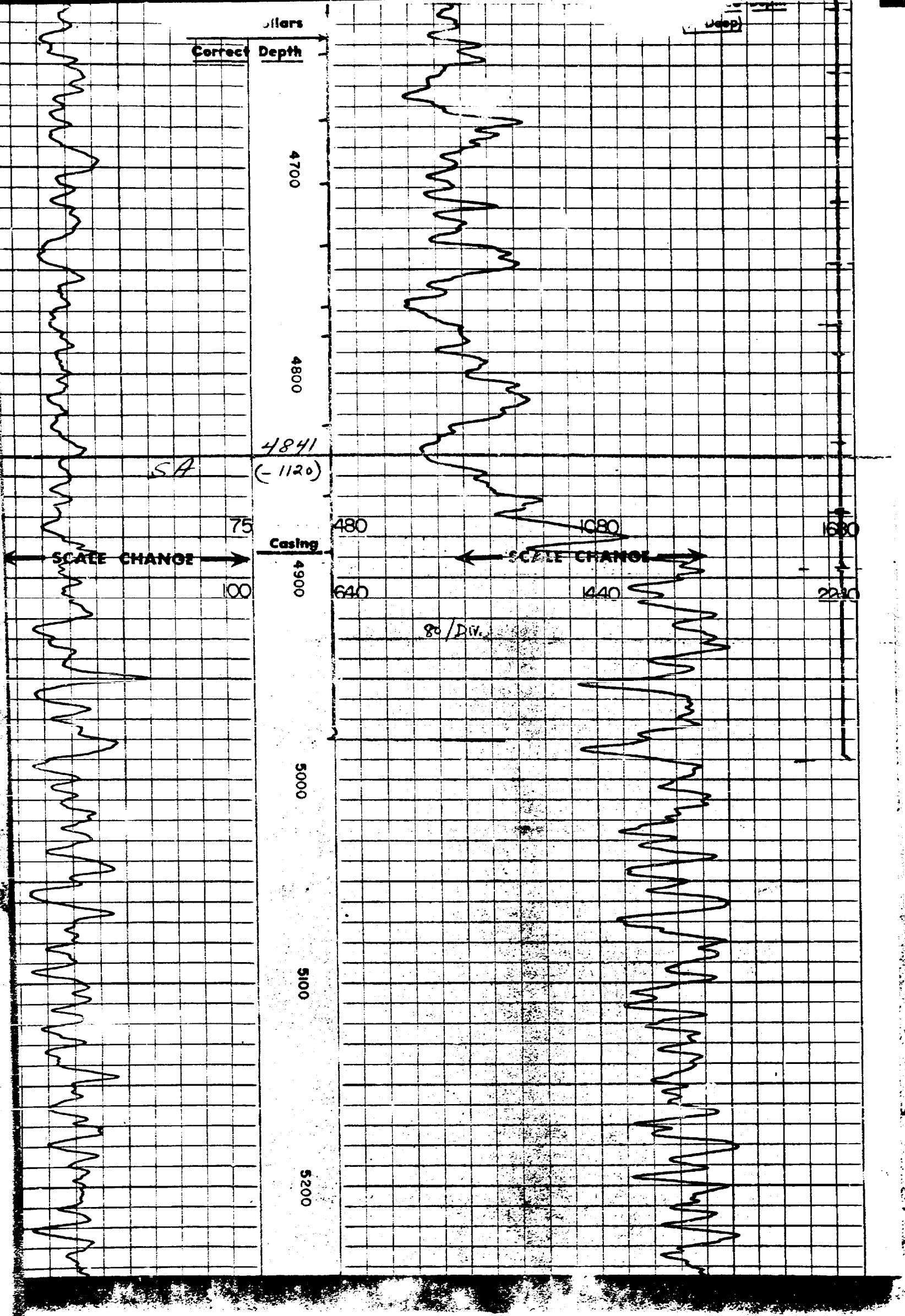
Correct Dep

Casing Collars

Recorded Depth

9' Deep

Redbeds


Correct Depth
4700
4800
4841
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SA
75
SCALE CHANGE
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Casing
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5200
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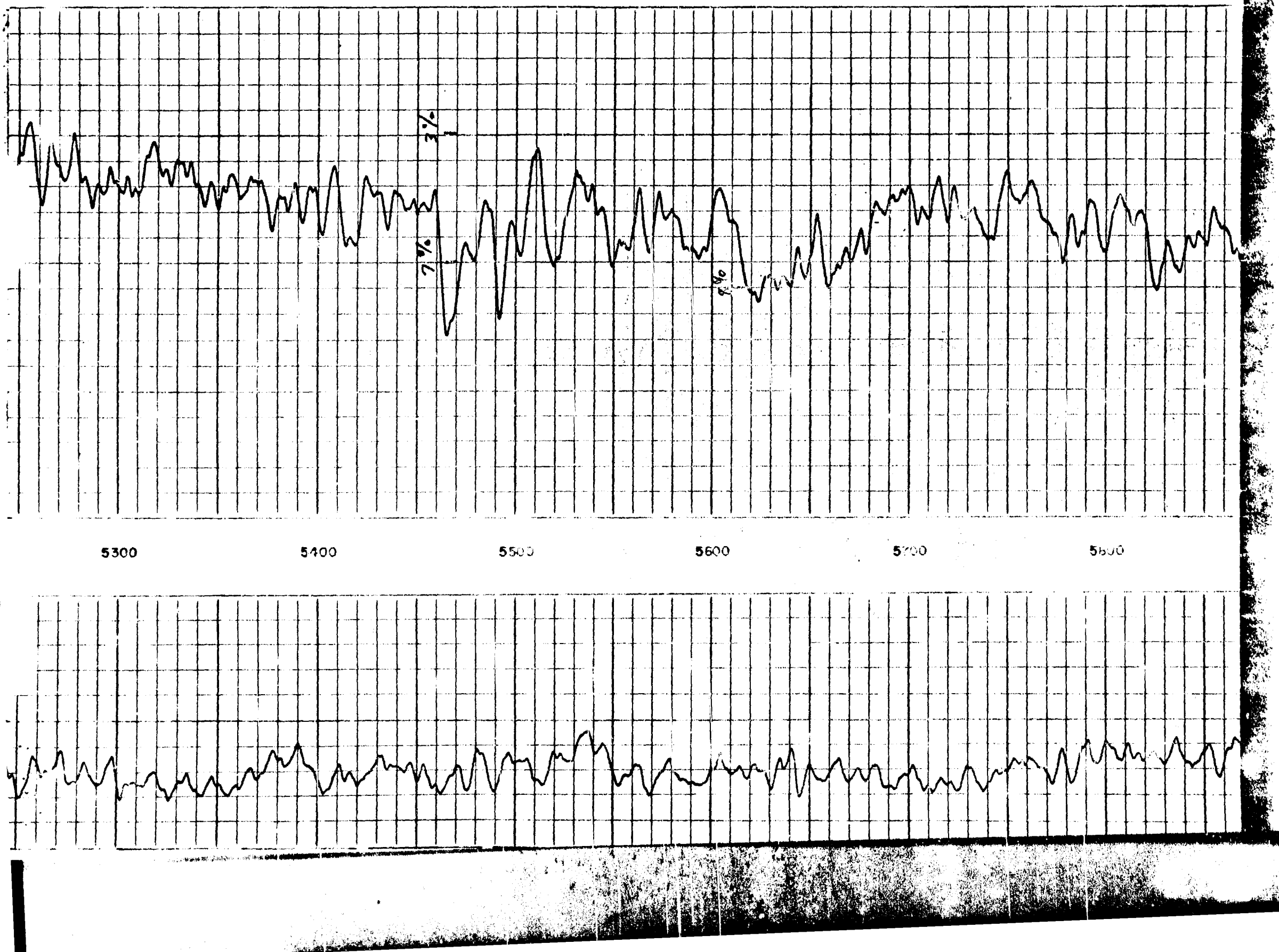
1080
1680
640
1440
2240
80/Div.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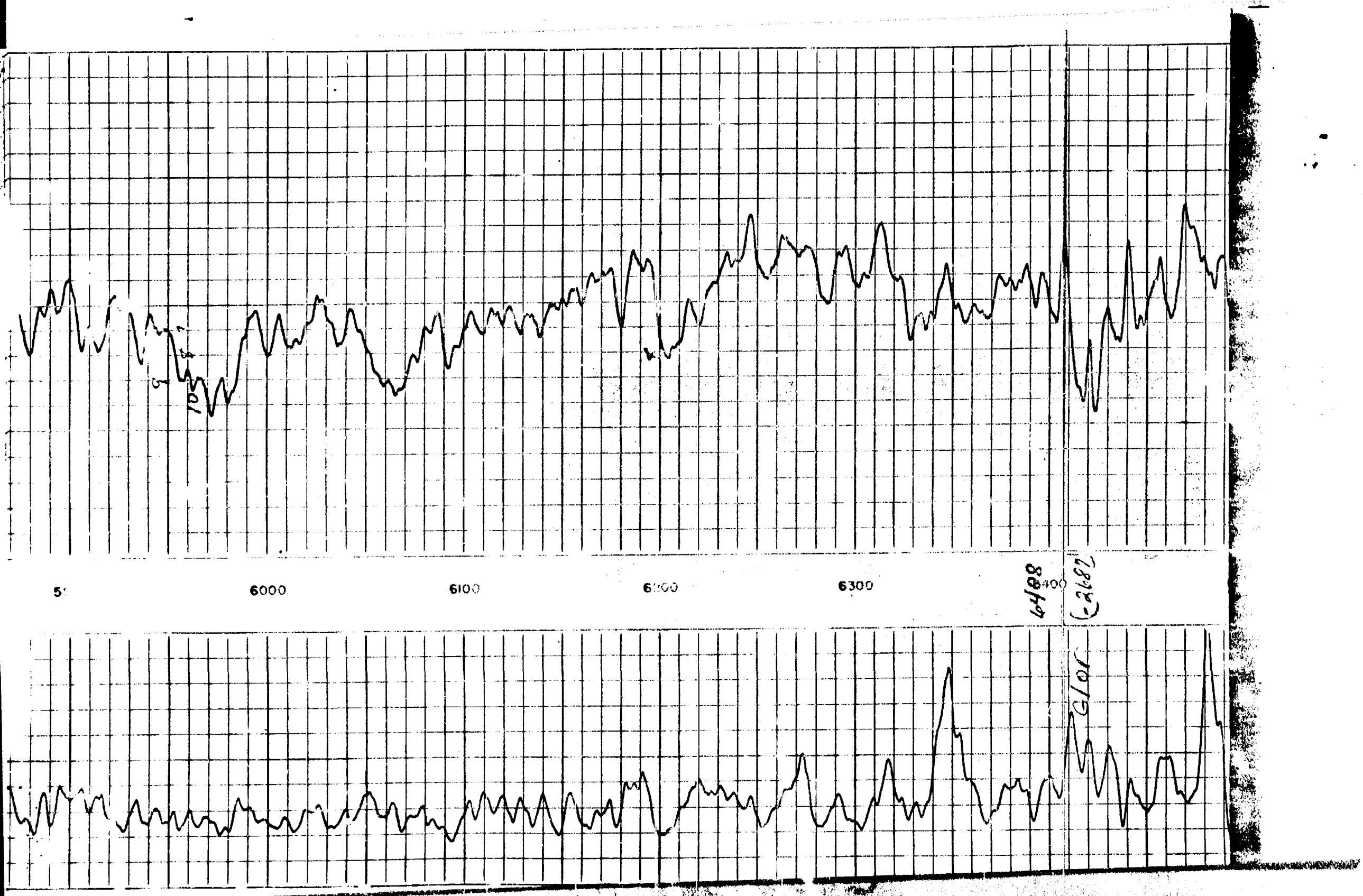
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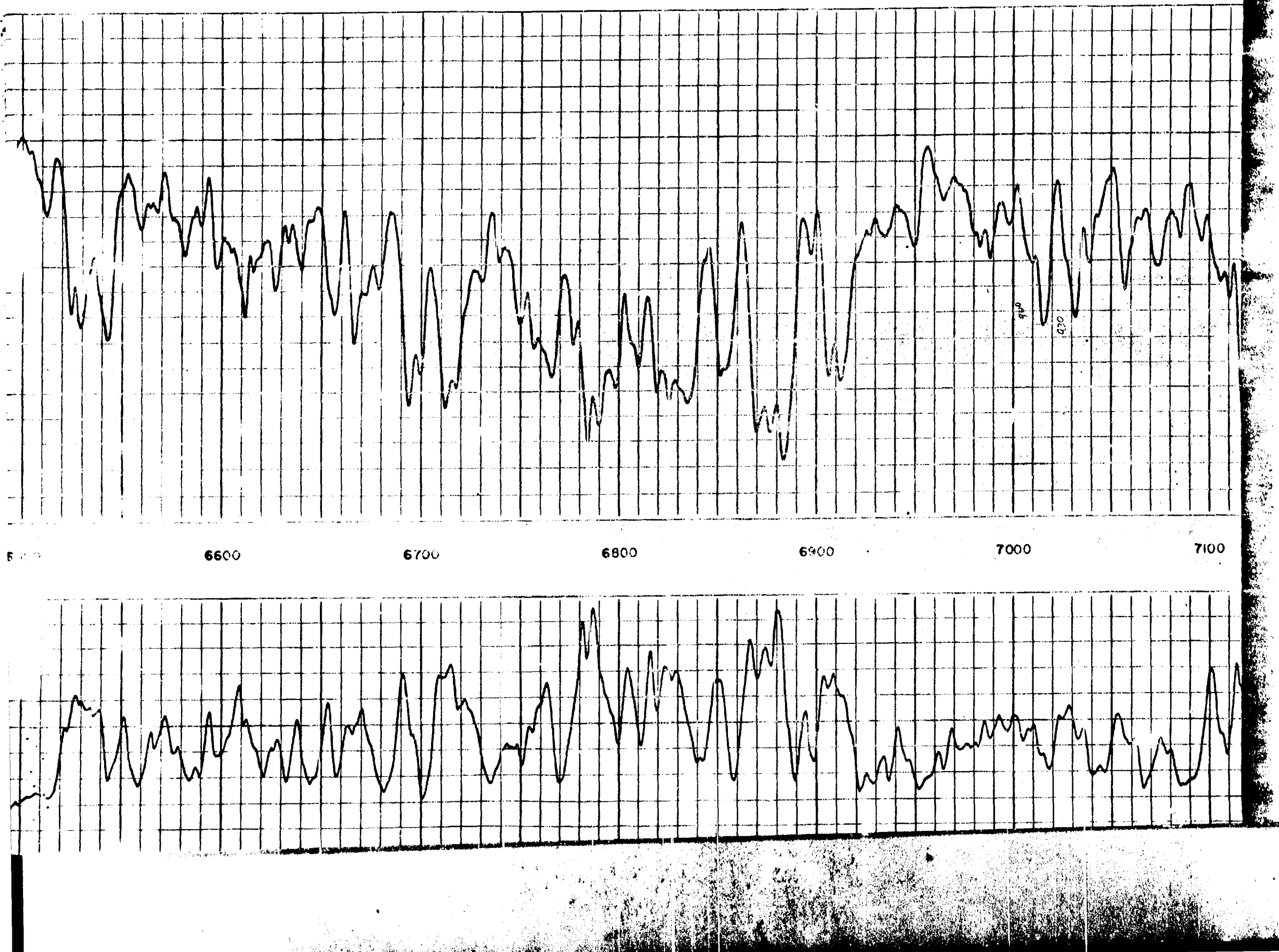
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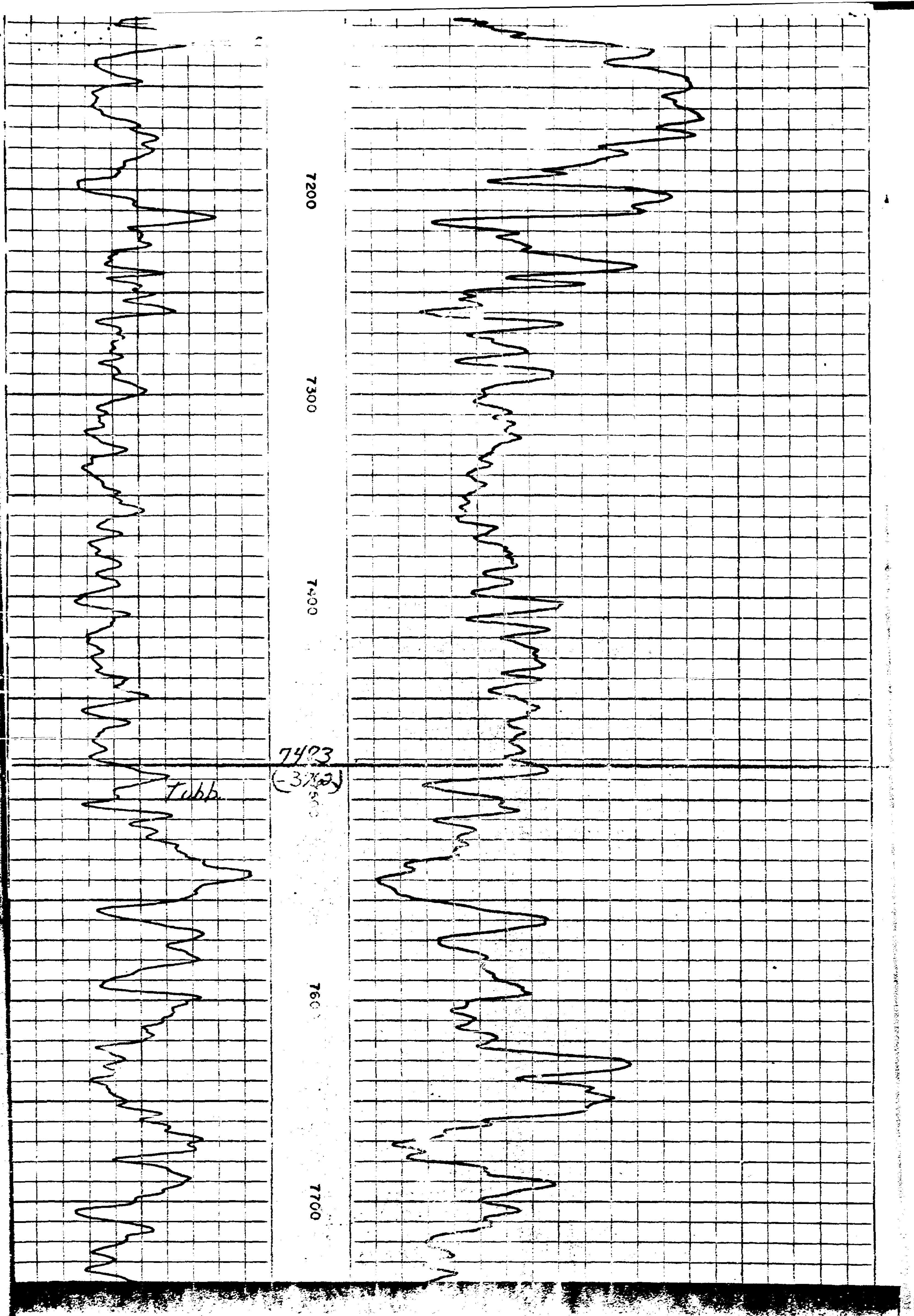
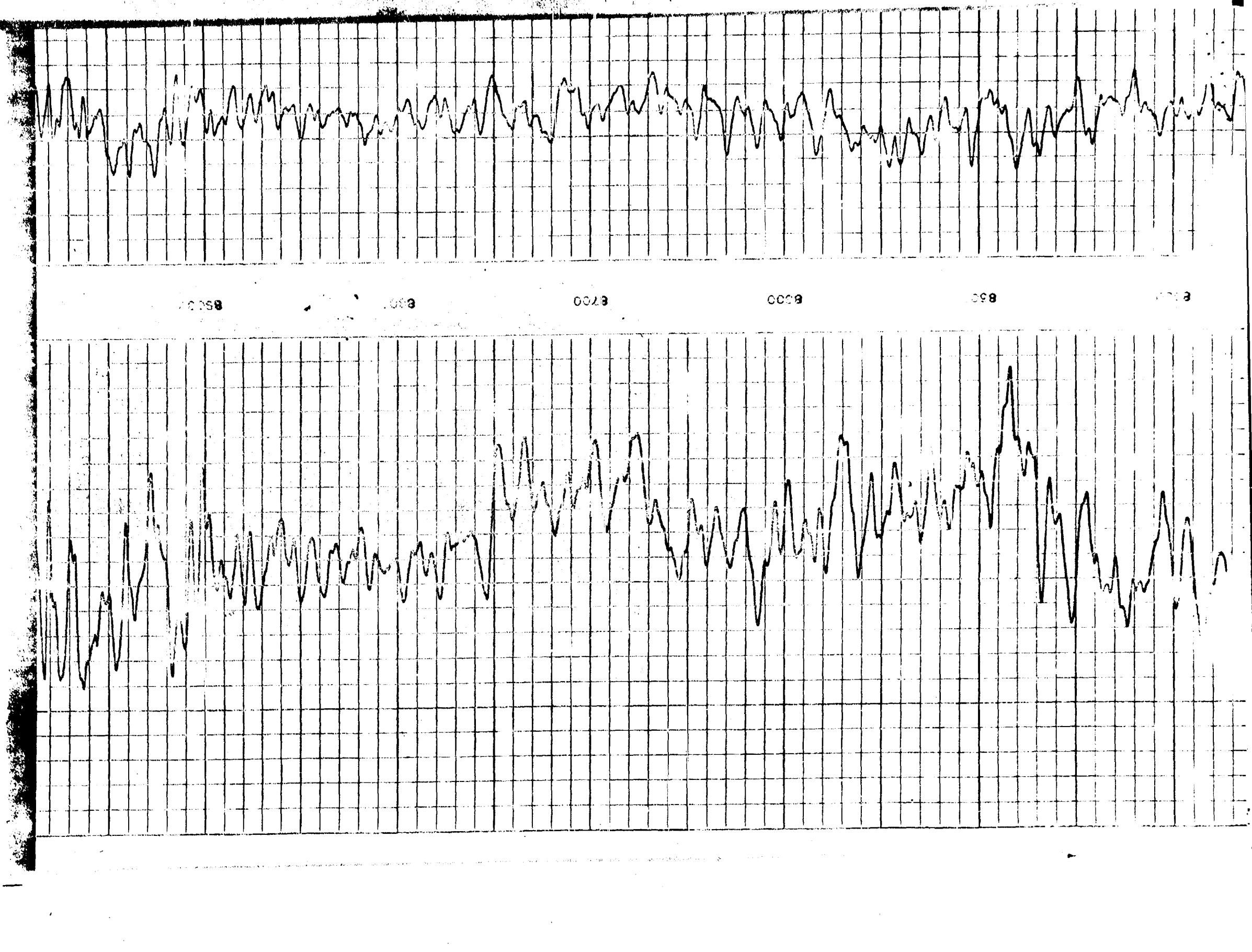
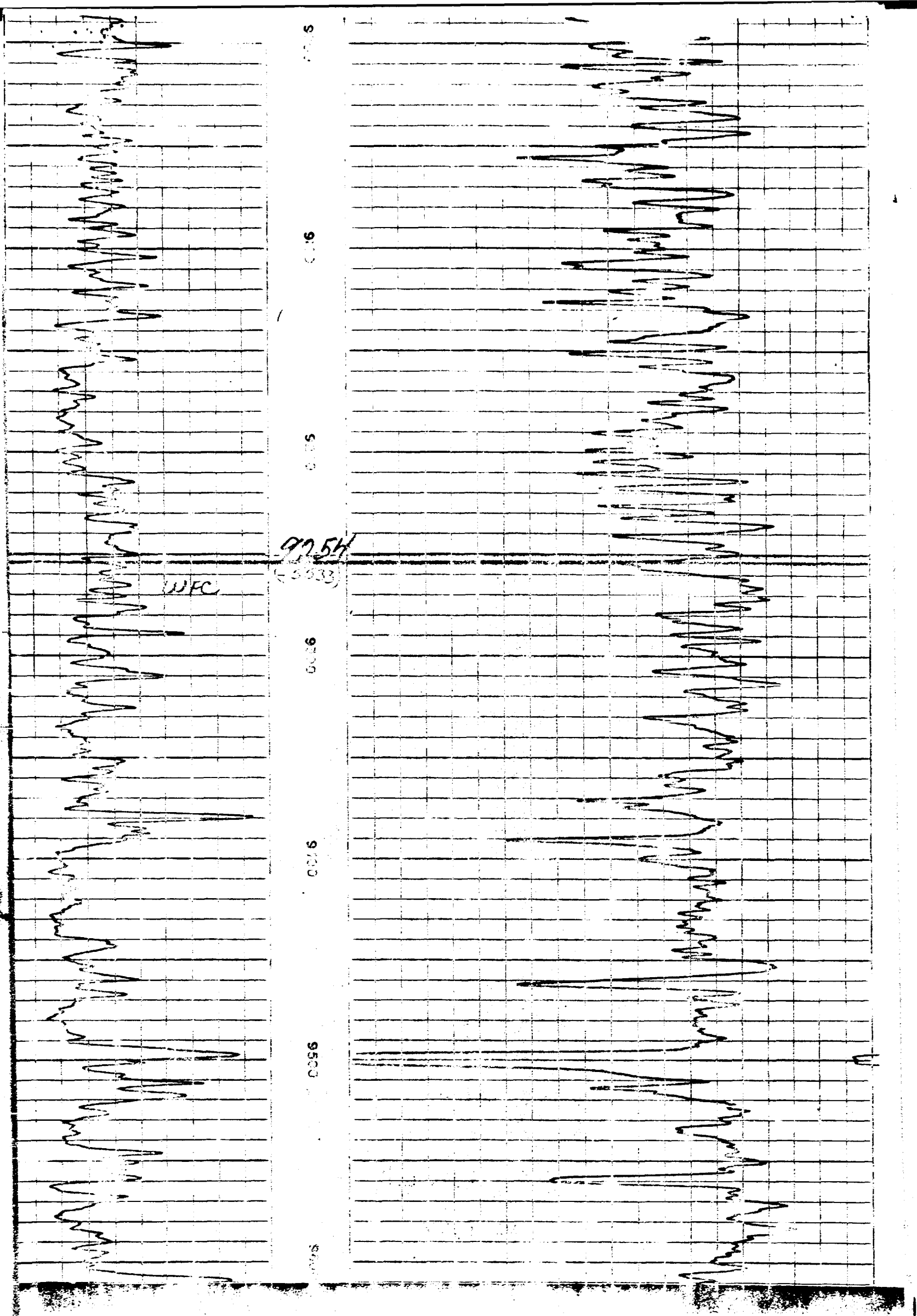


7200
7300
7400
Tubb
7700

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WFC
9150
9155
9160

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
200 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-8344

May 30, 1979

State Of New Mexico
Oil Conservation Commission
Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey

Re: Dyco-Stone #3 SWD Well
Medicine Rock Field
Sec. 22, T15S, R38E
Lea County, New Mexico

Gentlemen:

Attached please find information supporting Dyco's C-108 Form to convert the above SWD well to SWD in another formation. Order No. SWD-41 was approved December 13, 1963, permitting Sinclair Oil & Gas to dispose of salt water in the above well in the Wolfcamp-Pennsylvanian interval from 9990' to 11,000'.

As the attached C-103 indicates, the 2 7/8" tubing was fished to 8726', leaving 1300' + of 2 7/8" tubing in the hole as a fish along with the 5 1/2" Model "N" packer. During casing cleaning operations to fish the tubing, the tubing-fish is now plugged inside and outside with iron-sulphide and scale or collapsed preventing injection into the Wolfcamp. In addition, the 5 1/2" casing may have failed as deep as 8720', the last 5 1/2" packer setting depth.

Form C-108 indicates the 13 3/8" casing and 9 5/8" casing strings are cemented to surface; therefore, we propose to cement the 5 1/2" casing - 9 5/8" casing annulus w/200 sx from 4894' to permit disposal into the Permian open hole section from 4894' to 8725' through tubing set on a 5 1/2" packer @ 4890. There is no nearby oil or gas production in these zones to my knowledge and no shows were encountered originally when drilling this interval.

Dyco's Stone #1 well on the same lease produces from the Devonian @ 12,630-12,670' at 27 BOPD and 390 BWPD on artificial lift. The produced water is disposed into the Stone #3 SWD system. This well will have to be shut down until SWD can resume in the Stone #3 well because it would not be economic to produce if water has to be trucked to a commercial disposal system. Disposal cost would be about $10,000 per month while net income would be about $7,000 per month under normal DOC. About $30,000 has already been spent on the remedial work to this point.

Thank you for your early attention to this matter.
Yours very truly,

Tom L Sprinkle
Vice President

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OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

7. Unit Agreement Name

OIL WELL ☐ GAS WELL ☐ OTHER- Salt Water Disposal Well

2. Name of Operator
Dyco Petroleum Corporation

8. Farm or Lease Name
C. S. Stone

3. Address of Operator
905 Western United Life Bldg, Midland, Texas 79701

9. Well No.
3

4. Location of Well
UNIT LETTER F , 1980 FEET FROM THE North LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat
Medicine Rock Wolfcamp SWD

15. Elevation (Show whether DF, RT, GR, etc.)
3721 GR

12. County
Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☒	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Change SWD injection Zone ☒		OTHER ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work.*) SEE RULE 1103.

May 3, 1979 to May 19, 1979 — Started pulling tubing to repair tubing leak(s). Had pressure on 5 1/2" casing annulus and 9 5/8" casing annulus (see attached schematic). Tubing string weakened by corrosion(external) that only 10 to 20 joints could be recovered per run as it would part in the collars before reaching full string weight. In 14 days fishing with tubing spear and overshot recovered 8726' (328 1/2 jts). Cut tubing internally at 8726, PBTD inside tubing; attempts to fish remaining string with spear was not successful, could not get good bite, could not release from packer @ 9997'. Went in hole with 5 1/2" packer and 2 7/8", N-80 tubing to 8720', set packer, pressured to 4,000#, no injection; spotted 168 gallons 15% HCL, pressured to 3700#, casing failed, had communication on 5 1/2" & 9 5/8" casing; pulled up 300', closed casing valves and BOP injected down tubing at 1.5 BPM at 1800#; fluid apparently going into open hole through 5 1/2" casing from 4894'-8725'(Permian-San Andres, Glorietta,Tubb). Laid down 2 7/8", N-80 tubing workstring, shut well in to apply for new SWD permit

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Ramsey TITLE Vice Pres & Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☐ OTHER- SWD Well

7. Unit Agreement Name: F

2. Name of Operator: Dyco Petroleum Corporation

8. Farm or Lease Name: C. S. Stone

3. Address of Operator: 905 Western United Life Bldg, Midland, Texas 79701

9. Well No.: 3

4. Location of Well: UNIT LETTER F, 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Medicine Rock (Dev)

15. Elevation (Show whether DF, RT, GR, etc.): 3721 GR

12. County: Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☒	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER ☐		OTHER ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

In support of Form C-108 for the above well, Dyco proposes the following work to convert from salt water disposal in the Wolfcamp Formation to injection in the Permian Formation.

1) Run 5 1/2" casing inspection log. Dump 30' cement inside 5 1/2" casing from 8729' to 8699' to permanently plug Wolfcamp injection zone.
2) Cement 5 1/2" casing from 4894' w/200 sx or to good 5 1/2" casing whichever is higher. Drill out cement, perforate 5 1/2" casing in San Andres from 5462-5500 and 5615-5650 w/1 SPF.
3) Run 5 1/2" injection packer to 4890' and 4890'-2 3/8", fiberglass tubing with 2000 psi working pressure rating.
4) Inject into Permian- San Andres formation through fiberglass tubing string at 400 BWPD.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Hoffmeister TITLE Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR	ADDRESS
Dyco Petroleum Corporation	Midland, Texas 79701 905 Western United Life Bldg.

LEASE NAME	WELL NO.	FIELD	COUNTY
C. S. Stone	3	Medicine Rock (Devonian)	Lea

LOCATION

UNIT LETTER F ; WELL IS LOCATED 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13 3/8"	364	400	surface	circulation
INTERMEDIATE	9 5/8"	4894	2100	surface	Circulation
LONG STRING	5 1/2"	12815	730	8725'	Temperature Survey
TUBING	2 3/8"	4890'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Lockset 4890'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Permian-San Andres, Glorietta, Tubb	4841	9254

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Open hole Perforations &	4894'-8725'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Devonian Oil Production	Wolfcamp, Devonian

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

12738-58' sqzd 100 sks; perf 12687-708', retainer @ 12625', sqzd w/70 sks

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
310	none	12676

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSIG
380 350	400	open	pressure	1500

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE —	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
unfit	yes	yes	yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Troy C. Fort, P. O. Box 998, Lovington, New Mexico 88260

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Polaris Production Corp., First Nat'l Bnk Bldg. 303 W. Wall, Midland, Texas 79701

Perf Wolfcamp 10320-336-, 10274-308', 10'01'-10122', 10050',60', will dump 30' cmt on top of fish @ 8725'

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	
	yes	yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	yes	yes	yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Tom A. Sprinkle (Signature) Area Manager (Title) 5-29-79 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

Ownership Map

R37E | R38E | R39E

N

TO DENVER CITY

Dyco PETROLEUM CORP
500 WESTERN UNITED LIFE
500 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco producer
Equipment Station

Dickinson Road

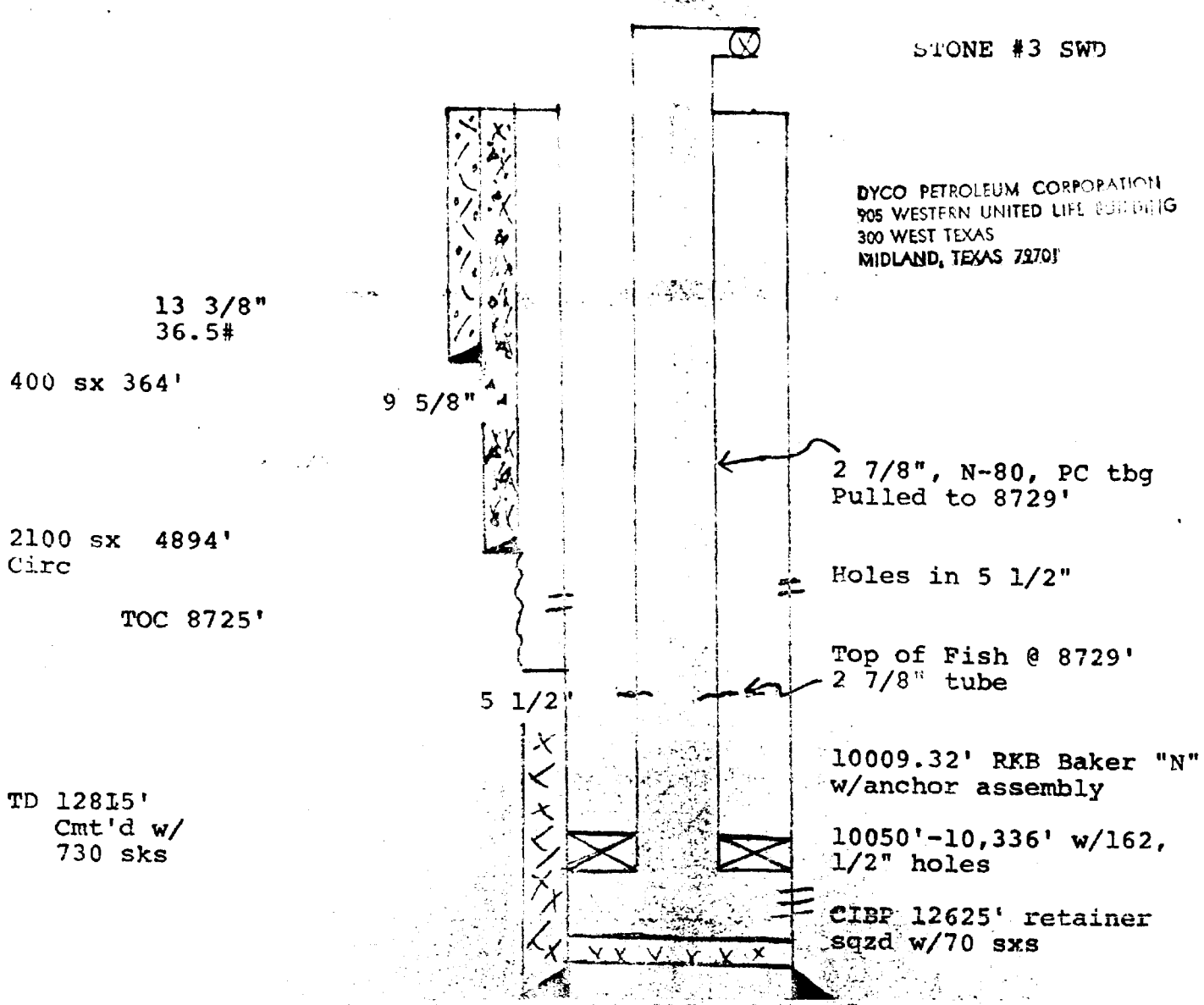
33°00'

MEDICINE ROCK

SO DENTON

STONE #3 SWD

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701



Open Hole Section is 8725
-4894
3831'

1st Inj. 9-12-64

Status: Holes(s) in tbg; Hole (s) in 5 1/2" csg,
Have pressure on 5 1/2" annulus & 9 5/8" annulus

... IONIC

LEPHONE HOBBS 393 ...
AREA CODE 505

UN... D CHEMI... L CORPORATION

601 NORTH LEECH P. O. BOX 1499
HOBBS, NEW MEXICO 88240

Company: Dyco ...roleum Corporation

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701

Field: Medicine Rock Devon...an

Lease: C. S. Stone #1 Sampling Date 5-12-78

Type of Sample: Wellhead - Devonian Formation

WATER ANALYSIS

IONIC FORM	me/l*	mg/l*
Calcium (Ca++)	105.20	2,104
Magnesium (Mg++)	43.98	528
Sodium (Na+) (CALCULATED)	1,045.89	2[illegible],045
Iron (Total)		[illegible]50

Disposal Water Analysis
C.S. Stone #3 - SWD Well

Bicarbonate	14.00	854
Carbonate	Not	found
Hydroxide	Not	found
Sulphate (SO4)	64.35	3,091
Chloride (Cl)	1,116.72	39,600
Total Dissolved Solids		70,222
[illegible]	149.18	7,459
...ness as CaCO3 (temporary)	14.00	700
...rdness as CaCO3 (permanent)	135.18	6,759
[illegible]	14.00	700

.65 ... 68 F

Specific gravity ... 68 F: 1.050

... milligrams per Liter
... ...lents per Liter

CaCO3 Scaling Index slightly positive @ 86°F (0.14)

CaSO4 Scaling Index negative (0.63)

Makes Water Work

SCHLUMBERGER

GAMMA RAY - NEUTRON

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY LEA
FIELD or LOCATION MEDICINE ROCK
WELL C. S. STONE #3
COMPANY SINCLAIR OIL & GAS COMPANY

COMPANY SINCLAIR OIL & GAS COMPANY
DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
~~300 WEST TEXAS~~ MIDLAND, TEXAS 79701
WELL C. S. STONE #3
FIELD MEDICINE ROCK
COUNTY LEA STATE NEW MEXICO
Location: 1980' FNL 1980' FWL
Sec. 22 Twp. 15S Rge. 38E

Other Services:
21L-LL8
ML-CDM

Permanent Datum: GROUND LEVEL Elev.: 3721
Log Measured From G.L. Ft. Above Perm. Datum
Drilling Measured From GROUND LEVEL

Elev.: K.B.
D.F.
G.L. 3721

Date	4-7-62	
Run No.	1	
Type Log	GRN	
Depth-Driller	12815	
Depth-Logger	12801	
Bottom logged interval	12800	
Top logged interval	0	
Type fluid in hole	CHEM-GEL	
Salinity, PPM Cl.	3600	
Density	8.9	
Level	FULL	
Max rec. temp., deg F.	146	
Operating rig time	6 HOURS	
Recorded by	EASLEY-MILLER	
Witnessed by	ANDREWS	

BORE-HOLE RECORD

RUN No.	Bit	From	To
1	8 3/4	4888	12815

CASING RECORD

Size	Wgt.	From	To
5 5/8		0	4888

FOLD HERE — THIS HEADING AND LOG CONFORMS TO API RP 33-1

EQUIPMENT DATA

Gamma Ray	
Run No.	1
Tool Model No.	GNT-G
Diameter	3 7/8
Det'r Model No.	SGD-F
Type	SCINT.
Length	8"
Dist. to N. Source	87"

General	
Hoist Truck No.	1582
Inst. Truck No.	1582
Tool Serial No.	20
Location	KERMIT

Neutron	
Run No.	1
Log Type	N-G+N-N THERM
Tool Model No.	GNT-G
Diameter	3 7/8
Det'r Model No.	NLD-D
Type	G.M.
Length	6"
Source Model No.	NLS-B
Serial No.	20
Spacing	15.5 C-C
Type	RA BE
Strength	10 N/SEC

LOGGING DATA

Run No.	General: Depths From	To	Speed Ft/Min.	Gamma Ray: T.C. Sec.	Sens. Settings	Zero Div. L or R	API G.R. Units per Log Div.	Neutron: T.C. Sec.	Sens. Settings	Zero Div. L or R	API N. Units per Log Div.
1	0	12800	30/60	2	400	0	10	2	400	8L	80
			60	2	300	0	7.5	2	300	8L	60

Reference Literature:

Remarks: GR CAL: B 80 - 410 - 12.5 - 800
N CAL: B 5 - 1220/320 - 13.6/4.5 - 500

GAMMA RAY API UNITS			DEPTHS	NEUTRON API UNITS		
0		75		480	1080	1680

Stone #3

Casing Coll.

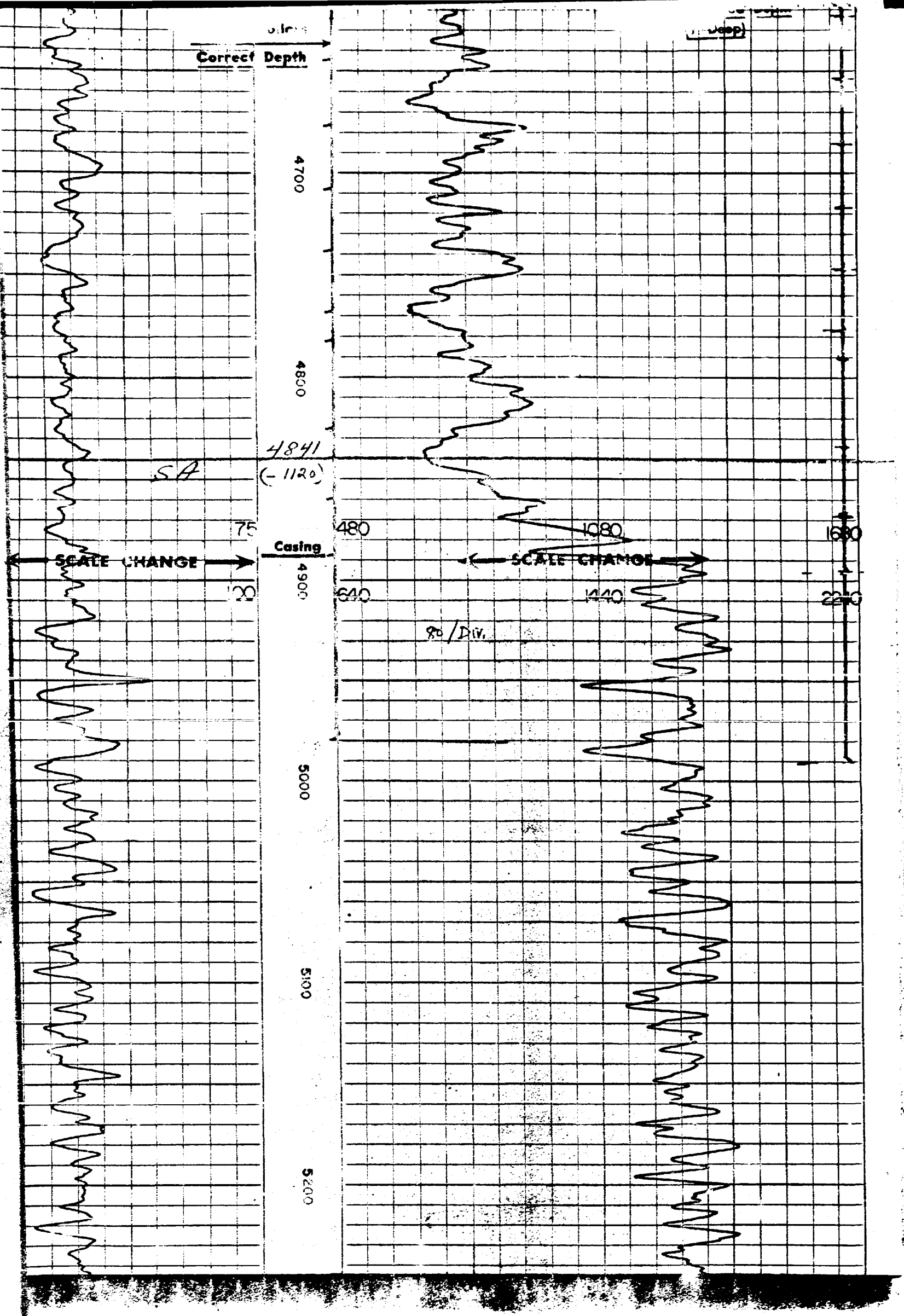
Correct Depth

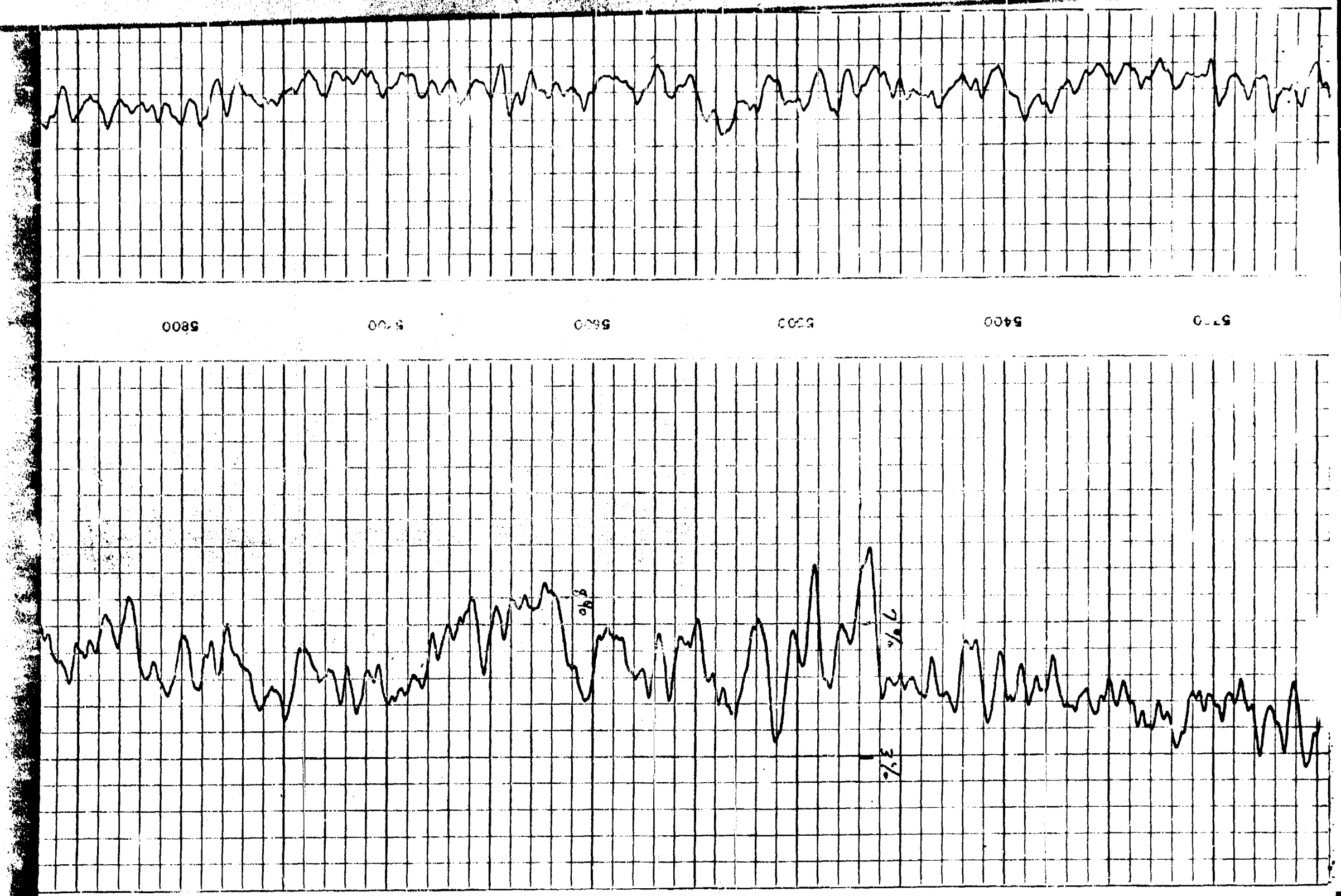
Casing Collar

Recorded Depth

(9 Depth)

Red Scale


Correct Depth
4700
4800
4841
SA
(-1120)
75
SCALE CHANGE
20
Casing
4900
5000
5100
5200
480
1080
1680
640
1440
2240
80/Div.
SCALE CHANGE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5400
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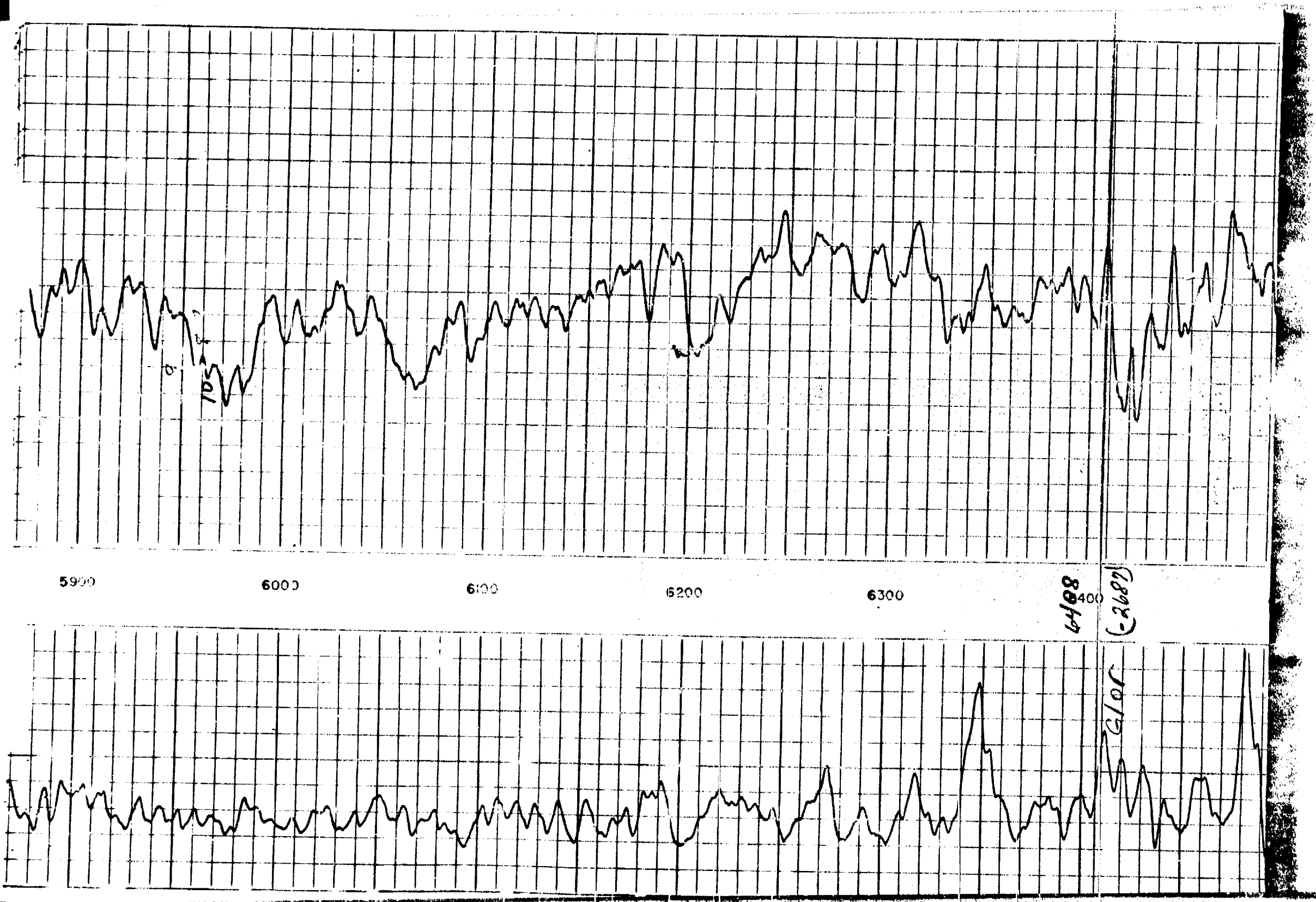
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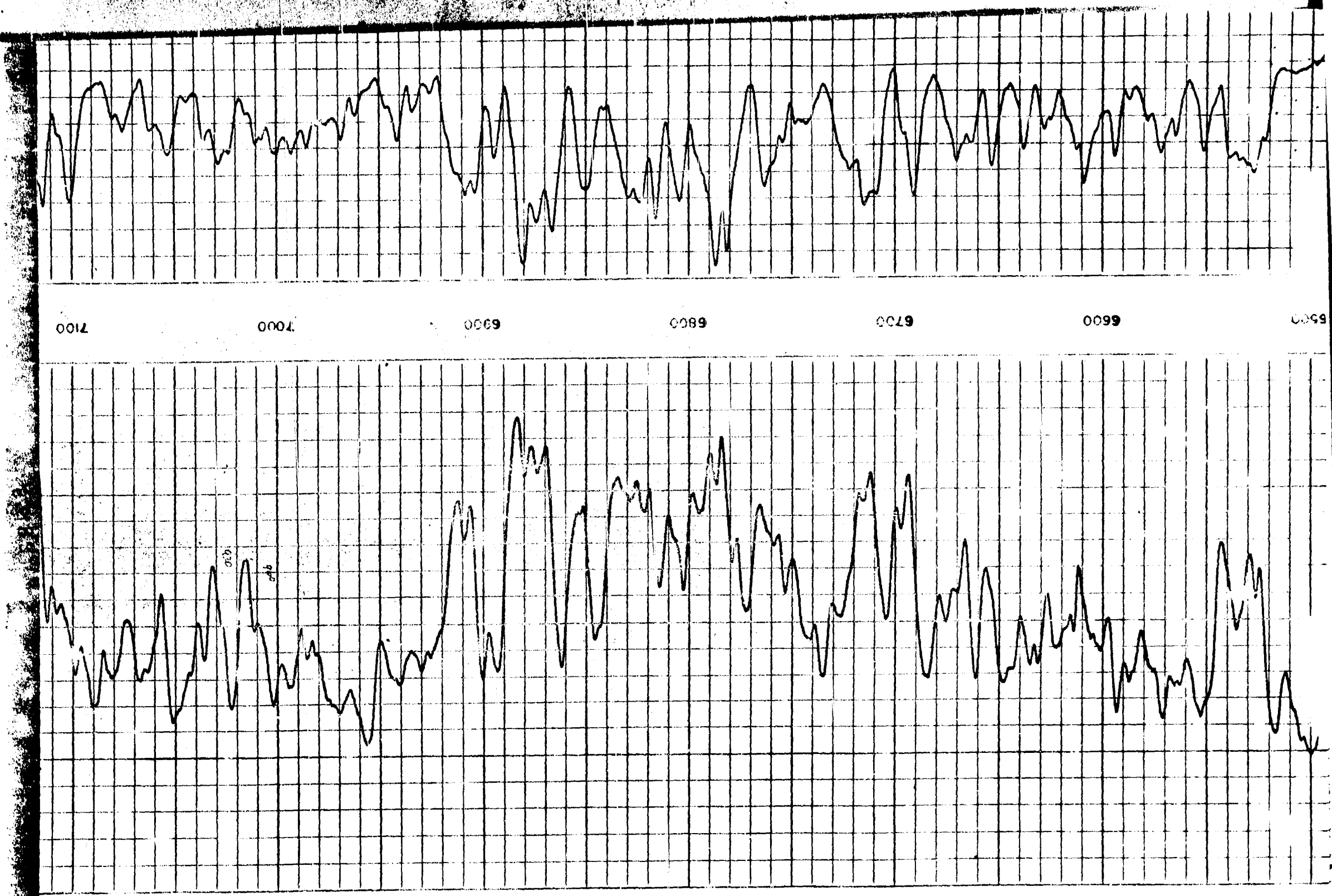
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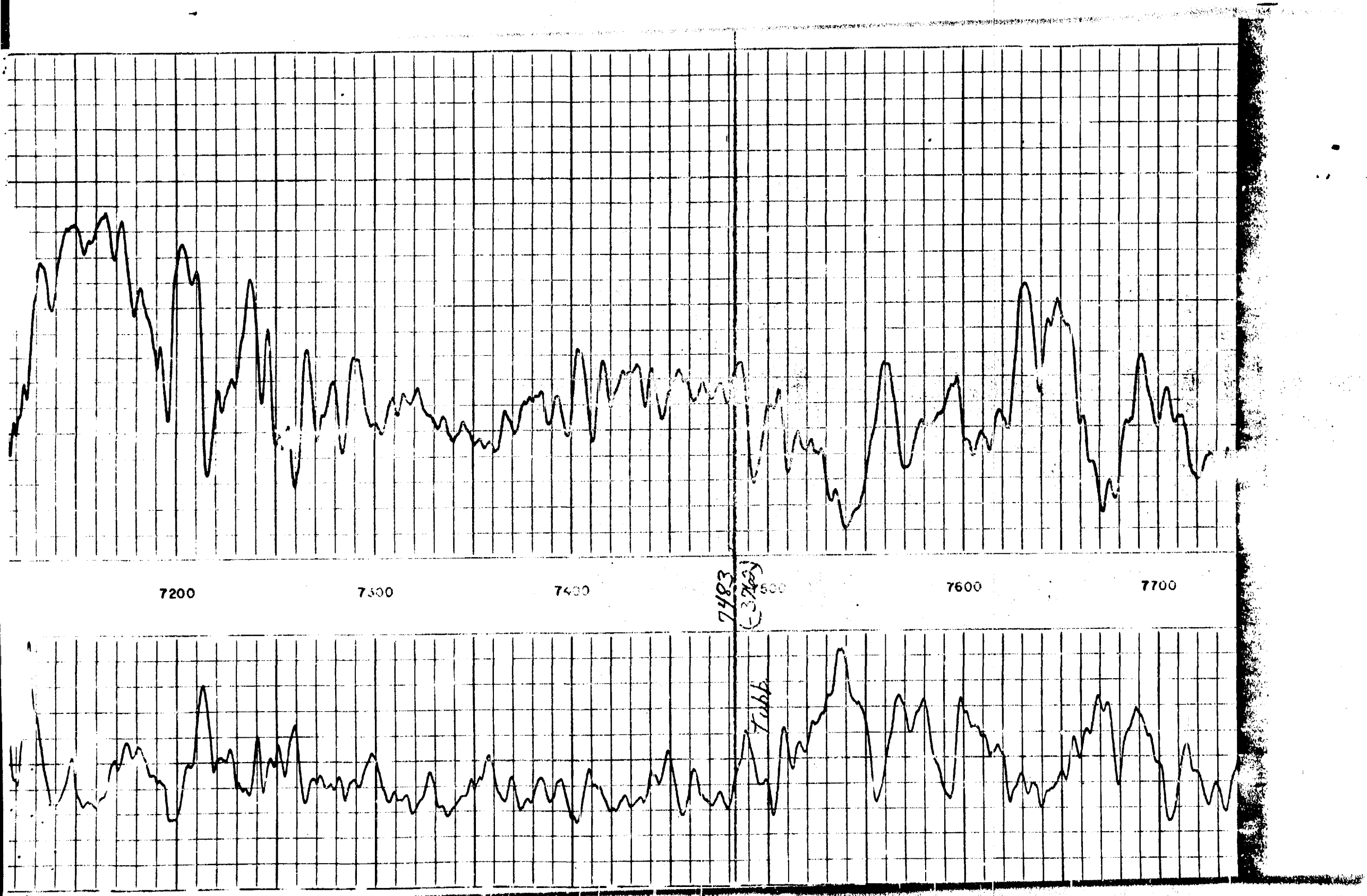
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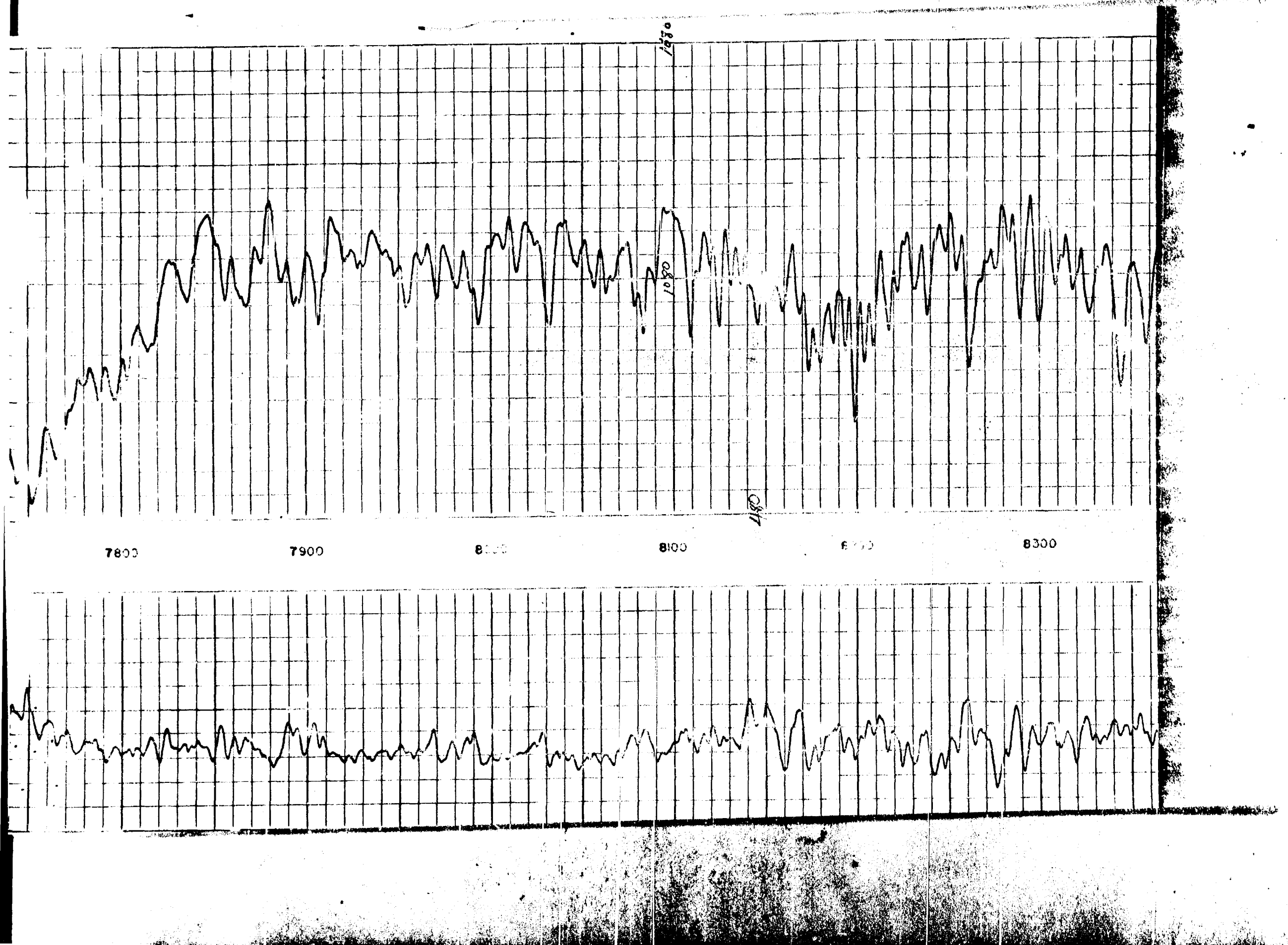
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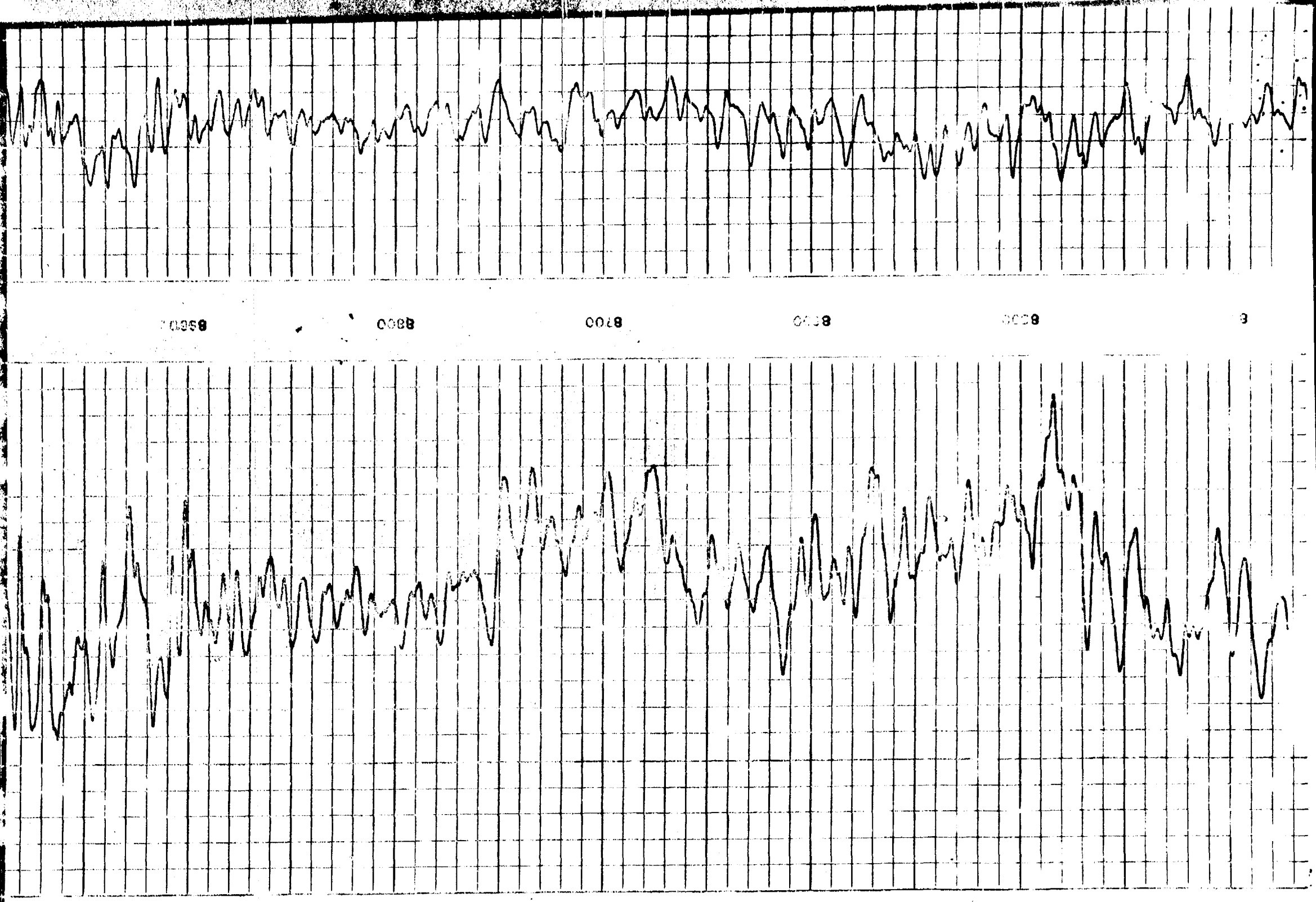

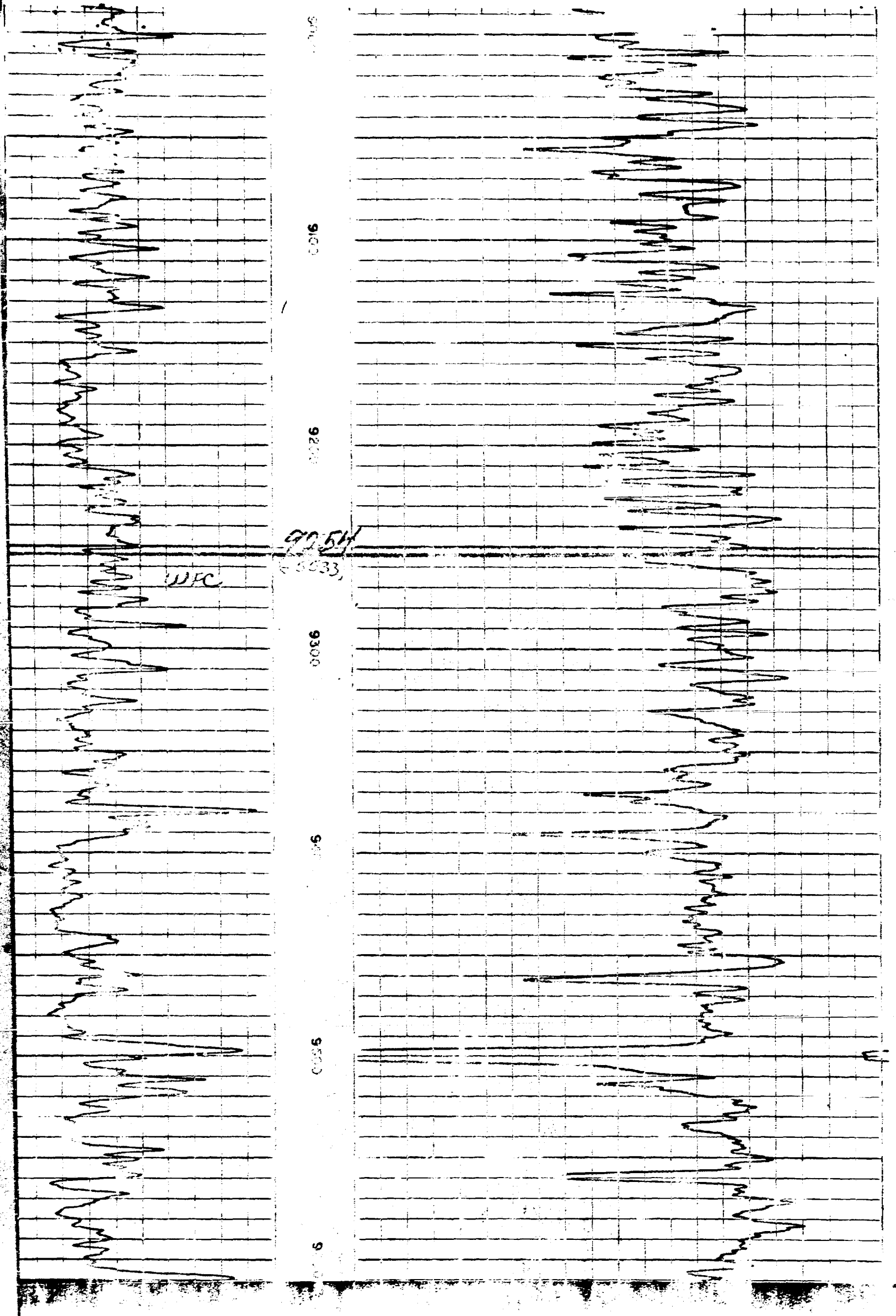
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Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Case 6593

Polaris Production Company
First Nat'l Bank Bldg.
303 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for ycur file.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this _________day of ________, 1979 by the undersigned.

____
Troy C. Fort

POLARIS PRODUCTION CORP.
BY: ____________________

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR	ADDRESS
Dyco Petroleum Corporation	Midland, Texas 79701 905 Western United Life Bldg.

LEASE NAME	WELL NO.	FIELD	COUNTY
C. S. Stone	3	Medicine Rock (Devonian)	Lea

LOCATION

UNIT LETTER F ; WELL IS LOCATED 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13 3/8"	364	400	surface	circulation
INTERMEDIATE	9 5/8"	4894	2100	surface	Circulation
LONG STRING	5 1/2"	12815	730	8725'	Temperature Survey
TUBING	2 3/8"	4890'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Lockset 4890'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Permian-San Andres, Glorietta, Tubb	4841	9254

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Open Hole Perforations &	4894'-8725'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Devonian Oil Production	Wolfcamp, Devonian

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

12738-58' sqzd 100 sks; perf 12687-708', retainer @ 12625', sqzd w/70 sks

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
310	none	12676

ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSIG)
380	350	400	open	pressure	1500

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
unfit	yes	yes	yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Troy C. Fort, P. O. Box 998, Lovington, New Mexico 88260

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

79701

Polaris Production Corp., First Nat'l Bnk Bldg, 303 W. Wall, Midland, Texas

Perf Wolfcamp 10320-336-, 10274-308', 10101'-10122', 10050',60', will dump 30' cmt on top of fish @ 8725'

RECEIVED
JUN 1 - 1979
OIL CONSERVATION DIVISION
SANTA FE

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL
	yes	yes

ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	yes	yes	yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Tom L. Sprinkle (Signature) Area Manager (Title) 5-29-79 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

NO. OF COPIES RECEIVED		
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FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

7. Unit Agreement Name

OIL WELL ☐ GAS WELL ☐ OTHER- Salt Water Disposal Well

2. Name of Operator
Dyco Petroleum Corporation

8. Farm or Lease Name
C. S. Stone

3. Address of Operator
905 Western United Life Bldg, Midland, Texas 79701

9. Well No.
3

4. Location of Well
UNIT LETTER F , 1980 FEET FROM THE North LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat
Medicine Rock Wolfcamp SWD

15. Elevation (Show whether DF, RT, GR, etc.)
3721 GR

12. County
Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☒	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER Change SWD injection Zone ☒		OTHER ☐	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

May 3, 1979 to May 19, 1979 Started pulling tubing to repair tubing leak(s). Had pressure on 5 1/2" casing annulus and 9 5/8" casing annulus (see attached schematic). Tubing string weakened by corrosion(external) that only 10 to 20 joints could be recovered per run as it would part in the collars before reaching full string weight. In 14 days fishing with tubing spear and overshot recovered 8726' (328 1/2 jts). Cut tubing internally at 8726, PBTD inside tubing; attempts to fish remaining string with spear was not successful, could not get good bite, could not release from packer @ 9997'. Went in hole with 5 1/2" packer and 2 7/8", N-80 tubing to 8720', set packer, pressured to 4,000#, no injection; spotted 168 gallons 15% HCL, pressured to 3700#, casing failed, had communication on 5 1/2" & 9 5/8" casing; pulled up 300', closed casing valves and BOP injected down tubing at 1.5 BPM at 1800#; fluid apparently going into open hole through 5 1/2" casing from 4894'-8725'(Permian-San Andres, Glorieta,Tubb). Laid down 2 7/8", N-80 tubing workstring, shut well in to apply for new SWD permit

RECEIVED JUN 1 1979 OIL CONSERVATION DIVISION HOBBS, NEW MEXICO

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Ingram TITLE Vice Pres & Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☐ OTHER- SWD Well

7. Unit Agreement Name: F

2. Name of Operator: Dyco Petroleum Corporation

8. Farm or Lease Name: C. S. Stone

3. Address of Operator: 905 Western United Life Bldg, Midland, Texas 79701

9. Well No.: 3

4. Location of Well: UNIT LETTER F, 1980 FEET FROM THE N LINE AND 1980 FEET FROM THE West LINE, SECTION 22 TOWNSHIP 15S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Medicine Rock (Dev)

15. Elevation (Show whether DF, RT, GR, etc.): 3721 GR

12. County: Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☒	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐			COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐	CHANGE PLANS	☐	CASING TEST AND CEMENT JOB	☐		
OTHER	☐			OTHER	☐		

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

In support of Form C-108 for the above well, Dyco proposes the following work to convert from salt water disposal in the Wolfcamp Formation to injection in the Permian Formation.

1) Run 5 1/2" casing inspection log. Dump 30' cement inside 5 1/2" casing from 8729' to 8699' to permanently plug Wolfcamp injection zone.
2) Cement 5 1/2" casing from 4894' w/200 sx or to good 5 1/2" casing whichever is higher. Drill out cement, perforate 5 1/2" casing in San Andres from 5462-5500 and 5615-5650 w/1 SPF.
3) Run 5 1/2" injection packer to 4890' and 4890'-2 3/8", fiberglass tubing with 2000 psi working pressure rating.
4) Inject into Permian- San Andres formation through fiberglass tubing strin g at 400 BWPD.

RECEIVED
JUN 4 1979
OIL CONSERVATION DIVISION
SANTA FE

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Tom L. Griffin TITLE Area Manager DATE 5-29-79

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

DYCO PETROLEUM CORPORATION
905 WESTERN UNITED LIFE BUILDING
200 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Polaris Production Company
First Nat'l Bank Bldg.
303 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-103 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 99[illegible]-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this 5th day of June, 1979 by the undersigned.

Troy C. Fort

POLARIS PRODUCTION CORP.

BY: [signature]

DYCO PETROLEUM CORPORATION
595 WESTERN UNITED LIFE BUILDING
300 WEST TEXAS
MIDLAND, TEXAS 79701

Dyco Petroleum Corporation

1703 WILCO BUILDING
415 WEST WALL STREET
MIDLAND, TEXAS 79701
AREA 915/683-6344

May 29, 1979

Case 6593

Polaris Production Company
First Nat'l Bank Bldg.
303 West Wall
Midland, Texas 79701

Troy C. Fort
P. O. Box 998
Lovington, New Mexico 88260

Re: Medicine Rock (Devonian) Field
Section 22, T15S, R38E
C. S. Stone #3 SWD System Permit

Gentlemen:

You have received Dyco's Form C-108 submitted to the New Mexico Conservation Commission for a change in salt water disposal formation in the above well.

As indicated, the well has been approved for salt water disposal into the Wolfcamp-Pennsylvanian Formations from 9990'-11000'. We are now applying to dispose of produced water from Dyco's C. S. Stone #1 Well (Devonian producer) into the Permian Formation from 4894' to 8725' because of high cost to attempt to restore the Wolfcamp interval to accept disposal water.

Therefore, in order to expedite approval of our application so the C. S. Stone #1 Well can get back on production (now shut in) it is requested that you approve of the proposed disposal plan by signing in the space provided below. Return one (1) executed copy to the NMCC in the stamped addressed envelope provided and one (1) executed copy to Dyco Petroleum for our files and retain one copy for your file.

Yours very truly,

Tom L. Sprinkle

Tom L. Sprinkle
Area Manager

The above request for modification of the C. S. Stone #3 SWD system is agreed to this _____ day of _____, 1979 by the undersigned.

Troy C. Fort

Troy C. Fort

POLARIS PRODUCTION CORP.

BY: _____

Revised 3-1-66

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

Dyco Petroleum Corporation — 505 Western United Life Bldg. — Midland, Texas 79701

C. S. Stone — Medicine Rock (Devonian) — Lea

Unit letter F — well is located 1980 feet from the N line and 1980 feet from the West line, section 22, township 15S, range 38E

Name of string	Size	Setting depth	Sacks cement	Top of cement	Top determined by
Surface casing	12 3/8"	364	400	surface	circulation
Intermediate	9 5/8"	4896	2100	surface	Circulation
Long string	5 1/2"	12313	725	8725'	Temperature Survey
Tubing	2 3/8"	4890'	Baker Lockset 4890'		

Permian-San Andres, Glorietta, Tubb — 4941 — 9254

Tubing — Perforations & Open Hole — 4894'-8725'

No — Devonian Oil Production — Wolfcamp, Devonian

12738-58' sqzd 100 sks; perf 12687-708', retainer @ 12625', sqzd w/70 sks

210 — none — 12676

380 — 350 — 400 — open — pressure — 1500

unfit — yes — yes — yes

Troy C. Fort, P. O. Box 333, Lovington, New Mexico 88260

Polaris Production Corp., First Nat'l Bnk Bldg, 303 W. Wall, Midland, Texas 79701

Perf Wolfcamp 10220-32', 10250-30', 10101'-10122', 10050',60', will

dump 20' cmt on top of CIBP @ 972

yes — yes

yes — yes — yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

[signature] — Area Manager — 5-29-79

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests.

ROUGH

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6593

Order No. R- 6082

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

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 11, 19 79, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this _____ day of July, 19 79, the Division Director, having considered the testimony, the record, and the recomendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Dyco Petroleum Corporation, is the owner and operator of the C. S. Stone Well No. 3, located in Unit F of Section 22, Township 15 South, Range 38 East, NMPM, Medicine Rock-Devonian Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the San Andres, Glorieta and Tubb formations, with injection into the open-hole interval from approximately 4894 feet to 8725 feet.

(4) That the applicant expects essentially all of the injected water to enter ~~the~~ porous zones within the San Andres formation from a depth of approximately 4894 feet to 6100 feet.

(5) That said C.S. Stone Well No 3 ~~shall~~ should be plugged back to an approximate depth of 6100 feet prior to initiation of injection.

(6) That the 5½-inch ~~casing~~ ~~annulus~~ should be cemented across the 9⅝-inch ~~casing~~ casing shoe in order to isolate the casing-casing ~~annulus~~ annulus from the injected fluid.

(7) That the injection should be accomplished through 2 7/8-inch ~~plastic lined~~ fiber gloss tubing installed in a packer set at approximately 4850 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order

to determine leakage in the casing, tubing, or packer.

(8) That the injection well or system should be equipped with a ~~pop-off valve~~ pressure limiting device or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 980 psi.

(9) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(10) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(11) ~~(12)~~ 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, Dyco Petroleum Corporation, is hereby authorized to utilize its C. S. Stone Well No. 3, located in Unit F of Section 22, Township 15 South, Range 38 East, NMPM, Medicine Rock-Devonian Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres, ~~Glorieta and Tubb~~ formation, injection to be accomplished through 2 7/8 -inch fiberglass tubing installed in a packer set at approximately 4850 feet, with injection into the open-hole interval from approximately 4894 feet to ~~8725~~ 6100 feet;

PROVIDED HOWEVER, that the ~~tubing shall be plastic lined; 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 shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

Provided Further, ~~That~~ That prior to said initiation of injection ~~said~~ the applicant shall plug back C. S. Stone Well No 3 ~~shall be plugged back~~ to an approximate depth of 6100 feet and shall cement the 5½-inch casing across the 9 5/8-inch casing shoe both in accordance with ~~the~~ Division-approved programs.

(2) That the injection well or system shall be equipped with a ~~pop-off valve~~ pressure limiting device or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 980 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

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

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

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