

CASE 3660: Application of TENNECO
OIL CO. for waterflood project &
exception to RULE 104 C-I.

Case No.

3660

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

RE: APPLICATION OF TENNECO OIL COMPANY
FOR PERMISSION TO CONDUCT SECONDARY
RECOVERY OPERATIONS BY WATERFLOODING
THE UPPER SAND OF THE SOUTH HOSPAH
UPPER SAND OIL POOL UNDERLYING ITS
HOSPAH AND HOSPAH "A" LEASES LOCATED
IN SECTIONS 11 AND 12, TOWNSHIP 17
SOUTH, RANGE 9 WEST, MCKINLEY COUNTY,
NEW MEXICO, AND FURTHER FOR AN EXCEP-
TION TO RULE 104 C-1 TO PERMIT THE
DRILLING OF MORE THAN ONE WELL ON A
FORTY ACRE TRACT, SAID WELLS BEING
LOCATED CLOSER THAN 660 FEET TO EACH
OTHER ON TENNECO'S LEASES IN SECTION
11 AND 12, T 17 S, R. 9 W, MCKINLEY
COUNTY, NEW MEXICO

97 SEP 22 PM 2 51
No. 3660

APPLICATION

Comes now Tenneco Oil Company and for its application states:

1. It is the owner and operator of certain oil and gas leases within the above described area located in McKinley County, New Mexico.
2. Applicant seeks approval of the Commission to conduct secondary recovery operations by waterflooding the upper sand of the South Hospah Upper Sand Oil Pool underlying its Hospah and Hospah "A" leases located in Sections 11 and 12, Township 17 North, Range 9 West, McKinley County, New Mexico.
3. Applicant will inject water into the upper sand of the South Hospah Upper Sand Oil Pool at an average depth of 1,575 feet through five wells located in Units A, B, F, G and H of Section 12 and one well located in Unit L of said Section 12, all in Township 17 North, Range 9 West, McKinley County, New Mexico. An injection rate of 1,000 barrels per water per day is anticipated at approximately 1,000 pounds per square inch injection pressure.
4. Attached hereto and made a part hereof are the following exhibits:
 - A. Plat showing the Hospah Upper Sand Oil Pool and the location of all other wells within a radius of two miles from the proposed injection wells.
 - B. Typical log section of the proposed injection wells, said section being taken from Tenneco Oil Company's Hospah No. 8 located in the Northwest Quarter of Section 12.
 - C. Typical well bore diagram of the proposed injection wells.

WHITE, GILBERT, KOCH & KELLY
ATTORNEYS AT LAW
P. O. BOX 787
SANTA FE, NEW MEXICO 87501

WHITE, GILBERT, KOCH & KELLY
ATTORNEYS AT LAW
P. O. BOX 787
SANTA FE, NEW MEXICO 87501

1 5. Applicant believes the wells on the above referred to leases have
2 reached a stripper stage of depletion and that waterflooding the above mentioned
3 formation will economically recover substantial quantities of oil which cannot
4 be recovered by primary recovery methods. In the interest of conservation and
5 the prevention of waste and the protection of correlative rights, and to secure
6 the greatest ultimate recovery of oil from this zone, the application should
7 be granted.

8 6. A copy of this application complete with all attachments has been de-
9 livered to the State Engineer, Capitol Building, Santa Fe, New Mexico.

10 7. Applicant also plans as a part of its spacing program in order to more
11 efficiently and economically drain secondary reserves from the above mentioned
12 formation to drill additional wells. The drilling of these additional wells
13 requires an exception to Rule 104 C-1 of the Rules and Regulations of the New
14 Mexico Oil Conservation Commission. The exception is sought to permit the
15 drilling of more than one well on a forty acre tract, said wells being located
16 closer than 660 feet to each other and with each forty acre tract being subject
17 to a single forty acre allowable. The proposed wells would be drilled in Sec-
18 tions 11 and 12, Township 17 South, Range 9 West, McKinley County, New Mexico.

19 WHEREFORE Applicant prays that after public hearing as required by law this
20 application be granted in its entirety.

21 J. D. MOON and
22 WHITE, GILBERT, KOCH & KELLY

23
24 By MB Kelly
25 Attorneys for Tenneco Oil Company
26
27
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29
30
31
32

Case 3660

September 25, 1967

Mr. W. B. Kelly
Attorney at Law
P. O. Box 787
Santa Fe, New Mexico 87501

Dear Mr. Kelly:

Receipt of a copy of the application which you have submitted for Tenneco Oil Company seeking Oil Conservation Commission approval to conduct waterflood operations in the South Hospah Upper Sand Oil Pool in Sec. 12, T. 17 N., R. 9 W., is hereby acknowledged.

STATE OFFICE
SEP 26 AM 8

FEI/ma

Yours truly,

S. E. Reynolds
State Engineer

By:

Frank S. Irby
Chief
Water Rights Div.

Docket No. 30-67

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 27, 1967

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

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

CASE 3622: (Continued from the July 26, 1967 Examiner Hearing)

Application of Ryder Scott Management Company for a waterflood buffer zone, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the N/2 NE/4, SW/4 NE/4 of Section 20, Township 18 South, Range 28 East, Eddy County, New Mexico, as waterflood buffer zone in the Artesia Pool offsetting its waterflood project in Section 21 and Cima Capitan's waterflood project in Section 17 of the same township.

CASE 3658: Application of Continental Oil Company for a non-standard gas proration unit and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a 240-acre non-standard gas proration unit comprising the NE/4 NW/4, NW/4 NE/4, and E/2 E/2 of Section 10, Township 20 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, to be dedicated to its Sanderson B-1 Well No. 2 at a non-standard location 1650 feet from the North line and 330 feet from the East line of said Section 10.

CASE 3659: Application of Continental Oil Company for an amendment to Order No. R-3115, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3115 to substitute its SEMU Well No. 56 located in Unit I of Section 25, Township 20 South, Range 37 East, Eumont Pool, Lea County, New Mexico, as a water injection well in its Eumont Hardy Waterflood Project in lieu of SEMU Well No. 55 located in Unit J of said Section 25.

CASE 3660: Application of Tenneco Oil Company for a waterflood project and for an exception to Rule 104 C-I, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Upper Sand of the South Hospah Upper Sand Oil Pool on its Hospah Lease through five wells located in Units A, B, F, G, and H of Section 12, Township 17 North, Range 9 West, McKinley County, New Mexico, and on its Hospah "A" Lease through one well located in Unit L of said Section 12. Applicant, further seeks an exception to the well location requirements of Rule 104 C-I to permit the drilling of more than one well on a 40-acre tract, said wells being located closer than 660 to each other and with each 40-acre tract being subject to a single 40-acre allowable. The above exceptions, for the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool, would be applicable to Tenneco's leases comprising the SE/4 of Section 11 and all of Section 12, Township 17 South, Range 9 West.

September 27, 1967 Examiner Hearing
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Docket No. 30-67

CASE 3513: (Reopened)

Application of Midwest Oil Corporation for an amendment to Order No. R-3179, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3179 which order denied 160-acre spacing for the Vada-Pennsylvanian Pool, Lea County, New Mexico, and established 80-acre spacing on a temporary basis. Applicant seeks the reopening of Case 3513 on the basis of new information not available at the time of the original hearing and the promulgation of temporary rules for said pool, including a provision for 160-acre proration units.

3660

Heard 9-27-67

Rec. 9-27-67

1. Grant Tennessee permission to inject water for waterflooding of So. Hoopah upper Sand-oil pool in sections 12-17 N - 9 W.

Tennessee - Hoopah 5 B - 12 - 17 N - 9 W.
& 4 other wells to be drilled in units A, F, G & H, of sec. 12.

2. Grant Tennessee ~~permission~~ an exception to 10 & CI allowing more than one well on a 40 Ac. tract and not closer than 330' from 1/4th section line or closer than 200' from another well producing from upper or lower pool.

3. Water to be used in land but potable.

Christie R.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3601
Order No. R-3270

APPLICATION OF WALKER BROTHERS OIL
COMPANY AND TESORO PETROLEUM CORPO-
RATION FOR AN EXCEPTION TO RULE 104
C I, MCKINLEY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 28, 1967,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 10th day of July, 1967, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

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

(2) That the applicants, Walker Brothers Oil Company and
Tesoro Petroleum Corporation, seek an exception to Rule 104 C I
of the Commission Rules and Regulations to permit the drilling of
more than one well per 40-acre tract, said wells being located
closer than 660 feet to each other and each 40-acre tract subject
to a single 40-acre allowable.

(3) That the applicants request the above-described excep-
tion apply to both the South Hospah Upper Sand Oil Pool and the
South Hospah Lower Sand Oil Pool and be applicable to Walker's
Hansen Lease comprising the S/2 of Section 6, Walker's Santa Fe
Lease comprising the N/2 and SW/4 of Section 7, both in Township
17 North, Range 8 West, and to Tesoro's Santa Fe Lease comprising

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CASE No. 3601
Order No. R-3270

the SE/4 of Section 1, Township 17 North, Range 9 West, NMPM,
McKinley County, New Mexico.

(4) That production of one well per 40-acre tract in the South Hospah Lower Sand Oil Pool at a rate sufficient to produce its assigned allowable has caused water coning.

(5) That increasing the density of wells per 40-acre tract in the South Hospah Lower Sand Oil Pool will allow the applicants the opportunity to produce the 40-acre top unit allowable for said tracts and lessen the danger of water coning provided a 40-acre proration unit does not receive more than a single 40-acre allowable.

(6) That, due to the location of some wells presently producing from the South Hospah Lower Sand Oil Pool, increasing the density of wells per 40-acre tract on the aforesaid leases will require that some wells be located closer than 660 feet to another well drilling to or capable of producing from the same pool.

(7) That as wells producing from the South Hospah Lower Sand Oil Pool will also be utilized for the production of oil from the South Hospah Upper Sand Oil Pool as dual completions, an exception granted for the location of wells in the South Hospah Lower Sand Oil Pool should also apply to the South Hospah Upper Sand Oil Pool in order to prevent the drilling of unnecessary wells.

(8) That in order to allow the applicants the opportunity to produce their just and equitable share of the oil in the aforesaid pools without damage to the reservoirs and to prevent economic loss caused by the drilling of unnecessary wells, applicants should be authorized to develop the aforesaid leases by drilling more than one well per 40-acre tract with no well being nearer than 330 feet to the outer boundary of the unit and no nearer than 200 feet to another well drilling to or capable of producing from the same pool.

IT IS THEREFORE ORDERED:

(1) That the applicants, Walker Brothers Oil Company and Tesoro Petroleum Corporation, are hereby authorized to develop the Walker Hansen Lease comprising the S/2 of Section 6, the Walker Santa Fe Lease comprising the N/2 and SW/4 of Section 7, both in Township 17 North, Range 8 West, and the Tesoro Santa Fe

-3-
CASE No. 3601
Order No. R-3270

Lease comprising the SE/4 of Section 1, Township 17 North, Range 9 West, NMPM, South Hospah Lower Sand Oil Pool and South Hospah Upper Sand Oil Pool, McKinley County, New Mexico, to a density of more than one well per 40-acre tract;

PROVIDED HOWEVER, that no well shall be drilled nearer than 330 feet to the outer boundary of said tract and no nearer than 200 feet to another well drilling to or capable of producing from the same pool;

PROVIDED FURTHER, that a 40-acre proration unit in the South Hospah Lower Sand Oil Pool or the South Hospah Upper Sand Oil Pool shall not produce in excess of the 40-acre top unit allowable for wells in the South Hospah Lower Sand Oil Pool or South Hospah Upper Sand Oil Pool, whichever is applicable, regardless of the number of wells on the unit.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

GUYTON B. HAYS, Member

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

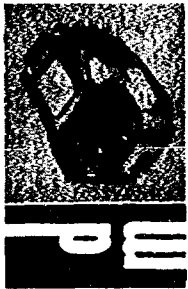
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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



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

September 27, 1967

EXAMINER HEARING

IN THE MATTER OF:)
)

Application of Tenneco Oil
Company for a waterflood project
and for an exception to Rule 104 C 1,
McKinley County, New Mexico.)

) Case 3660
)

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 3660

MR. HATCH: Application of Tenneco Oil Company
for a waterflood project and for an exception to Rule 104 C-1,
McKinley County, New Mexico.

MR. KELLY: Booker Kelly, of White, Gilbert Koch
and Kelly on behalf of the applicant. I have two witnesses.
We will probably have just have testimony from one but we
might as well swear them both.

(Witnesses sworn)

(Exhibits 1 through 4
marked for identification)

MR. UTZ: Do we have other appearances? You
may proceed.

JACK WILLOCK

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

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, position, and employer.

A My name is Jack Willock. I'm a petroleum engineer
employed by Tenneco Oil Company in Durango, Colorado.

Q You have previously qualified as an expert before
this commission?

A Yes, sir, I have.

Q Would you briefly state what Tenneco seeks by the application?

A Yes, sir. Tenneco has three objections in this application. (1) Tenneco requests an exception to Rule 104 C-1 for both the upper and lower Hospah Sand, that's a spacing exception in Section 12, Township 17 North, Range 9 West. (2) Tenneco requests that the commission allow them to inject water into the upper Hospah Sand in Section 12, Township 17 North, Range 9 West for waterflood purposes. (3) They ask the commission to declare waterflood allowables for additional wells drilled on the Hospah Sand.

Q Referring to what has been marked as Exhibit 1 would you identify the project area.

A We're changing the scope of the application that we originally sent in. We are cutting off the southeast quarter of Section 11, Township 17 North, Range 9 West of the application. The project area that we are asking for is Section 12, Township 17 North, Range 9 West, the yellow shaded area on Exhibit No. 1.

MR. KELLY: Mr. Examiner I move to formally amend our application to delete the southeast of 11.

MR. UTZ: We will so amend the application to

delete the southeast quarter of Section 11.

Q (By Mr. Kelly) Would you show the examiner the proposed injection wells and the proposed producing wells?

A The proposed injection wells are shown -- the proposed water injection wells are shown by a green circle with a slash through them, with the exception of one well and that's the Hospah Well No. 5 located in the northwest of the northeast of Section 12. We have five injectors. One is in the northeast of the northeast of 12, that's the green circle with the slash through it. One in the northwest of the northeast. One in the northeast -- pardon me.

MR. UTZ: Are they all marked with green circles?

THE WITNESS: All of them but No. 5 well there.

MR. UTZ: How many injection wells?

THE WITNESS: We have five injection wells planned, Mr. Examiner.

MR. UTZ: Beg your pardon?

THE WITNESS: We have five injection wells planned.

MR. UTZ: Okay.

A The red dots are proposed producing wells, wells that we intend to drill. The black dots with hexagons around them are the current producing wells in the upper Hospah Sand

that we intend to use in this waterflood.

Q Sir, how many injection wells and production wells will you end up with?

A Ultimately we intend to have five injection wells and twenty-one producing wells.

Q What sort of a flooding pattern have you designed?

A This is an inverted nine spot pattern.

Q Who are your offset operators?

A The only actual offset operators that we have are Tesoro Oil Company on the north and east of our lease.

Q Have you or representatives of Tenneco discuss this application with Tesoro Oil Company?

A Yes, sir, we have.

Q Do they have any objection?

A No, sir.

Q Going to that phase of the application which seeks the exception to the Rule of 104 C-1, why does Tenneco need the exception?

A Some of the wells in the waterflood will be located closer than 660' to another producer.

Q This is in order to sustain your spacing or flooding pattern, is that correct?

A Right.

Q Has a similar exception been previously granted to your offset operator Tesoro Oil Company?

A Yes, sir, an exception was granted on both the upper and lower Hospah Sand by Order No. R-3270.

Q Are you familiar with the rules that was set up in that order?

A Yes sir. Order No. R-3270 allowed wells to be drilled 200' from other producers and provided they were located 330 from an outer ^{most} east boundary.

Q Is that the same type of pattern that you are seeking?

A Yes, sir.

MR. KELLY: We would ask that the examiner take administrative notice of Case 3601 and the order entered which is R-3270.

MR. UTZ: The provisions of that order are satisfactory for your case. Is that my understanding?

MR. KELLY: Yes, sir.

Q Do you feel that this type of spacing will drain your offset operator?

A No, sir, a decline curve indicates that we are draining, let's say, an area less than 330' in diameter.

Q What is the drive mechanism of the reservoir?

A The drive mechanism is primarily solution gas.

If you will notice Exhibit No. 2 prepared decline curve for both Hospah Sand and the Hospah "A" leases shown in Exhibit No. 1. If you will notice that the production has declined rapidly from the original during 1965 in which rates up to 10,000 barrels a month were produced. Our latest month we were producing 2800 barrels. Our average is 2800 to 3000 barrels per month from the upper Hospah Sand. Rates from individual wells -- we have eight current producers. Rates from the individual eight wells which vary from two to 25 barrels of oil per day per well. We have no water drive. I have detected no water drive in this field. So there is no evidence of drainage across any boundaries.

Q Well, your testimony averaging two to 25 barrels a day on this well, do you feel that you have about reached your economic limit?

A Yes, sir. The average production rate out there is 12 barrels per day per well. So we're near the economic limit and we consider the wells as stripper stage now.

Q Going on to Exhibit No. 3 which is a log section, would you explain its significance to the examiner.

A Exhibit No. 3 is a section of the IES log taken from Hospah Well No. 8 which is located at 1650' from the

north line and 2051' from the east line in Section 12. If you will notice that's a lower Hospah completion in the center of the tract. We took this as a typical well. The upper and lower limits of the upper Hospah Sand are 1544' to 1586' subsurface.

Q And you feel that that sand is productive throughout the proposed project area, at least the top three quarters?

A Yes, sir.

Q Now going to Exhibit 4 of your diagrammatic sketch of the proposed injection well, will you explain the installation?

A Yes, sir. This is the way we intend to drill our injection wells. We intend to set at least two joints of 7 5/8" surface pipe and cement this to the surface. We will then drill our well down to approximately 1700 to 1800', depending upon the location, and set 4 1/2" casing and cement this to the surface; and then perforate our upper Hospah Sand Zone and we will run tubing, set it on a tension packer at 100', or less, above the Hospah Sand.

Q Are you going to have inhibited fluid in your annulus?

A Yes, sir. We intend to treat water.

Q What is the source of the water?

A We intend to recomplete our Hospah No. 9 Well.

It's in the northwest of the northeast of Section 12. We ^{intend} intend to complete this well in the Entrada Sand, which is a sand approximately 3900' in depth. Our maximum requirement of water total will be approximately 5,000 barrels per day from the Entrada, and if it is capable of producing this amount of water that will be the only source that we will want. But if it's not we will need to test some ~~Martian~~ ^{Martian} Martian Sands which are immediately above the Entrada, and use them and commingle the two zones to use as a water source.

Q What is your injection pressure going to be?

A A maximum of 1,000 PSI.

Q Do you expect to encounter any corrosion problems?

A The water from these zones is relatively fresh and we don't see any large amount of corrosion.

Q You previously testified that you had pretty well exhausted the primary that you could recover on an economic basis?

A Yes, sir.

Q What do you feel the success of this project

will be in relation to your primary production?

A We hope to produce approximately seven times the primary production by secondary.

Q That's a pretty unusual figure for secondary isn't it?

A Yes, sir.

Q Could you explain that to the examiner?

A The viscosity of this oil is unusually high. It's approximately 17 to 19 centipoise, and we intend to use Dow Chemical's Pusher as an additive to our injection water in order to improve our mobility ratio between oil and water-front from behind it.

Q I assume that explains the reason for the quick play out in this pool.

A Yes, sir. That and solution gas drive.

Q Now in your opinion will the granting of this application prevent waste by producing oil that would otherwise be left in place, and not adversely effect the correlative rights of offset operators?

A Yes, sir.

Q Do you have an opinion as to whether or not it would protect the correlative rights of Tenneco?

A Yes, sir, Tenneco and the lessor.

Q Were Exhibits 1 through 4 prepared by you or under your supervision?

A Yes, sir.

MR. KELLY: Mr. Examiner I move the introduction of the Exhibits at this time 1 through 4.

MR. UTZ: Without objection, Exhibits 1 through 4 will be entered into the records of this case.

(Applicant's Exhibits 1 through 4 were entered into evidence.)

MR. KELLY: I would like also to state to the examiner that I prepared the application on behalf of Tenneco. I hand-delivered a copy of the application to Mr. Irby, at the State Engineers Office and I have in my file a letter of receipt from Mr. Irby on this.

MR. UTZ: We have a copy of the same letter in our file.

MR. KELLY: That's all I have on direct.

CROSS EXAMINATION

BY MR. UTZ:

Q The withdrawal of the southeast quarter was a complete withdrawal from phases of this application was it not?

A Yes, sir.

Q How deep do you intend to this 7 5/8 surface pipe?

A Approximately 60'.

Q Is that below the fresh water in this area?

A Well, they are virtually all fresh in here.

Q Here on down?

A Yes, sir. We intend to cement our long string back to the surface which should protect water from anything that we do from being lost into any sand near the surface.

Q And the injection water, the disposal water?

A It's not good drinking water, but it's relatively fresh. After circulating some, I think animals probably could drink it but I don't believe that it would be good for human consumption.

Q How deep are the wells in this area that they use for stock and domestic use?

A I don't know.

Q Are there any windmills in this area?

A I have seen none. Stock in this area do drink the water from, produced water from our Hospah, the upper and lower Hospah Sand.

MR. KELLY: Do they survive the experience?

A Yes, they are pretty sturdy animals out there. You have to be pretty sturdy to live out in that area. Animals or human.

Q (By Mr. Utz) And you don't intend to use an internal coating on your tubing?

A No, sir, we hadn't planned on it.

Q You don't think it's necessary to treat the water?

A To treat the water that we inject?

Q Yes.

A No, sir.

Q This application is only for the upper Hospah zone, is that correct?

A So far as the waterflood is concerned. We would like the spacing rule exception to 104 C-1 to apply to both upper and lower Hospah Sand. That was the same as the previous order.

Q Is that included in your application?

A I believe so.

Q These eight wells shown on your Exhibit No. 2 are your upper zone, is that right?

A Yes, sir. The eight wells with hexagons around them, there are actually nine of them but A-2 is temporarily

abandoned in the southeast of the northeast of 12. I don't know what we will do with that well yet.

Q I'm not sure it has been mentioned, but you want this waterflooding to operate under Rule 702?

MR. KELLY: Yes.

A 701-C, I thought the allowable part --

MR. HATCH: 701-E.

MR. KELLY: You are speaking of the allowable provisions?

MR. UTZ: Yes, the general waterflood rule.

MR. KELLY: We do.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused.)

MR. UTZ: Statements? The case will be taken under advisement.

TENNECO OIL COMPANY A Major Component of Tenneco Inc.
SUITE 1200 • LINCOLN TOWER BUILDING • DENVER, COLORADO 80203



February 26, 1969

MAILED
FEB 27 1969

*File Case
3660*

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

Gentlemen:

Reference is made to Commission Order No. R-3325 approving the Tenneco South Upper Hospah Waterflood Project.

The following wells have been drilled in the project area and will be completed in the Upper Hospah during March:

- No. 24, NW NW NE Section 12, T17N, R9W
- No. 25, NW NE NE Section 12, T17N, R9W
- No. 26, NE NE NE Section 12, T17N, R9W
- No. 27, NE SE NE Section 12, T17N, R9W

These wells complete waterflood pattern III as shown on the enclosed map. Well No. 28, an authorized water injection well, has also been drilled in the SW/4, NE/4, NE/4 of Section 12, T17N, R9W. This well will be completed in March and be equipped with tubing and packer with the packer being set not more than 100 feet above the Upper Hospah pay. It is anticipated that 500 bbl/day will be injected into Well No. 28.

For your information concerning the progress of the project waterflood we have enclosed a production curve of the South Hospah Upper Sand showing it's response to the waterflood. Tabulated below are individual well responses for the waterflood.

TENNECO OIL COMPANY

Page 2

MAILED
'69 FEB 28 AM 0 42

Well	24 Hr. Well Test Production Rate January 1969		24 Hr. Well Test Production Rate Prior to Injection	
	BOPD	BWPD	BOPD	BWPD
1	33	0	2	1
2	162	0	14	0
3	11	0	10	3
4	28	0	19	0
5	28	0	21	1
12	110	0	9	0
15	48	0	18	0
16	20	0	3	0
18	29	0	7	1
19	44	17	6	3
20	1	3	Not on Production	
21	145	60	14	14
22	35	23	4	1
23	3	30	Not on Production	

We hope this information will be useful to the Commission.

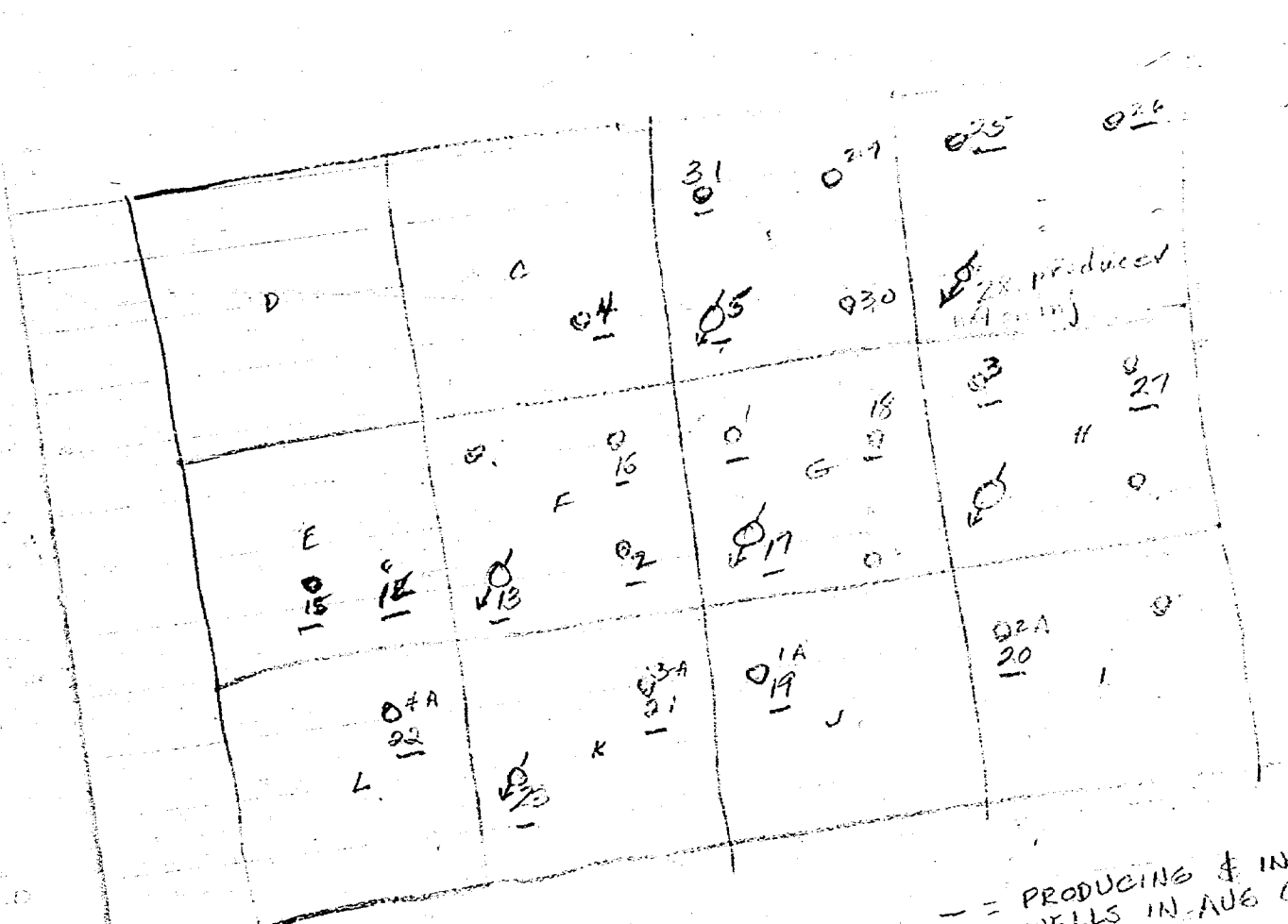
Yours very truly,

TENNECO OIL COMPANY

C. W. Nance

C. W. Nance
District Production Superintendent

JML/mae



○ = WELLS PROPOSED AT HEARING - 3660

A	70 + 70	140
B	70 + 70	140
C	70	70
D	0	0
E	70	70
F	70 + 70	140
G	70 + 70	140
H	70 + 70	140
I	70 + 24	94
J	70	70
K	70 + 24	94
L	70	70
		<u>1168</u>

- = PRODUCING & INJECTION WELLS IN AUG 67 PRODUCTION SKED.

A	70 + 48	118
B	70 + 24	94
C	70	70
D	0	0
E	70 + 24	94
F	70 + 48	118
G	70 + 48	118
H	70 + 24	94
I	70	70
J	70	70
K	70 + 24	94
L	70	70
		<u>1010</u>

Jennison Case 3660 - 3325

Map. Location on map to
200' with 330'
S. to point Upper Sand.

20' to edge of 40.

2280 N - 1620 W #13

1700 N, 1500 W, #14
~~see~~ 12.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

October 10, 1967

C
O
Y
Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Dear Sir:

P
Reference is made to Commission Order No. R-3325, recently entered in Case No. 3660, approving the Tenneco South Upper Hospah Water-flood Project.

Y
Injection is to be through the five authorized water injection wells, each of which shall be equipped with tubing and packer, said packers being set not more than 100 feet above the Upper Hospah pay.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1166 barrels per day when the Northwest New Mexico normal unit allowable is 70 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

-2-

Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

C

notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

O

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

P

A. L. PORTER, Jr.
Secretary-Director

Y

ALP/DSN/ir

cc: Oil Conservation Commission
Aztec, New Mexico

Mr. Frank Irby
State Engineer Office
Santa Fe, New Mexico

INTER-OFFICE COMMUNICATION
TENNOCO OIL COMPANY

Case 3660

DATE August 31, 1967

TO: SOUWENSHIGH DIVISION
FOR: MR. J. D. Moon
FROM: MR. R. E. Siverson
RE: UPPER HOSPAN SAND, SOUTH HOSPAN FIELD
12 KELLEY COURSEY, NEW MEXICO

*Planned production
27th Sept.
Siverson*

C

□

P

Y

Please prepare an application to the New Mexico Oil and Gas Conservation Commission to obtain approval for Tenneco Oil Company to waterflood the Upper Hospah Sand in South Hospah Field, McKinley County, New Mexico. The Upper Hospah Sand is defined as that zone located between the depths of 1544' and 1596' in Tenneco Hospah Well No. 8. Current plans are for Tenneco Oil Company to drill 21 wells to fully develop the Hospah, Hospah A, and Wigham Leases in Section 11 and 12, T. 17 N., R. 9 W., McKinley County, New Mexico, for waterflood purposes. Horizontal limits of the waterflood area are totally included in the SE/4 of Section 11 and all of Section 12, T. 17 N., R. 9 W.

The attached plat shows present producing wells in all horizons and the proposed additional Upper Hospah sand wells. Note that both proposed injectors and producers are shown. No well will be drilled nearer than 330' from an offset operator's lease line. Producers will be between injection wells and lease lines hence water injection will have no detrimental effects on offset producers.

Also, we are asking the Commission to extend the field rules in both Upper and Lower Hospah Sands that were promulgated by Order No. R-3270 which pertained to offset leases in Section 1, T. 17 N., R. 9 W., and Sections 6 and 7, T. 17 N., R. 8 W. These rules should include Tenneco leases in the SE/4 Section 11 and all of Section 12, T. 17 N., R. 9 W. The water source is to be the Morrison Sand at 2850' to 2870' IBS. Maximum water requirements from the Morrison are expected to be 4000 barrels per day. A copy of our application along with logs showing the Morrison and Hospah Sand should be mailed to the New Mexico State Engineer, Mr. Steve Reynolds, in Santa Fe, New Mexico.

It is requested that a waterflood allowable be granted the project and that transfer of allowables from injection wells to producing wells be granted.

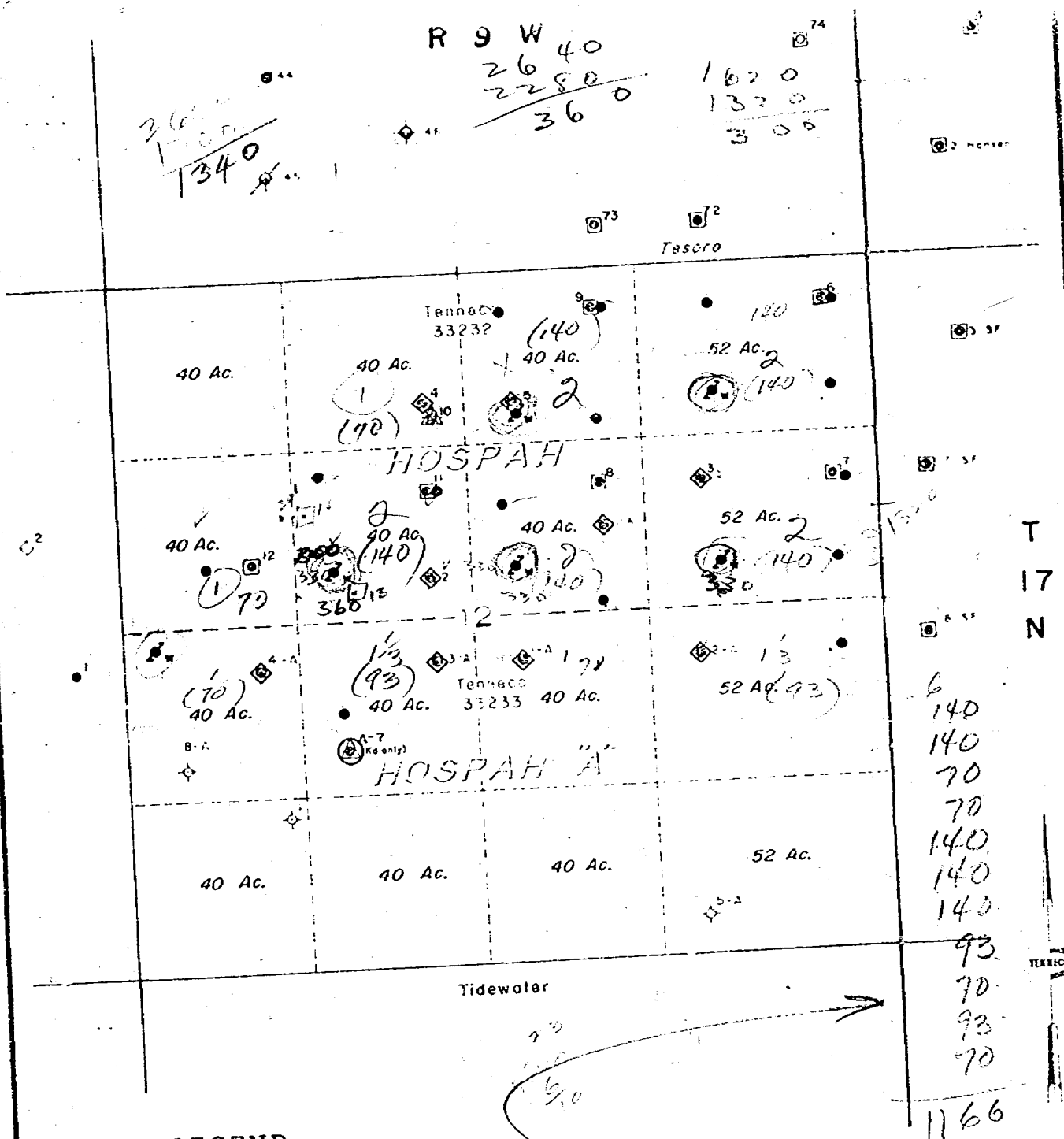
Respectfully,
R. E. Siverson

R. E. Siverson

JJM/ps
cc: Mr. R. H. Byers
bcc: Mr. W. B. Kelly ✓
Attachments

DOCKET MAILED

Date 9-14-67



LEGEND

- ◆ Proposed water injection wells.
- Proposed producing wells.
- ⊕ Dakota well to be converted to water source well.
- ◇ Hospah Upper sand wells.
- ▲ Hospah Lower sand/Dakota Duals.
- ⊠ Hospah Lower sand wells.

allowable

TENNECO OIL COMPANY
SUBSIDIARY OF TENNECO CORPORATION

SOUTH HOSPAN FIELD
Mc Kinley County, New Mexico

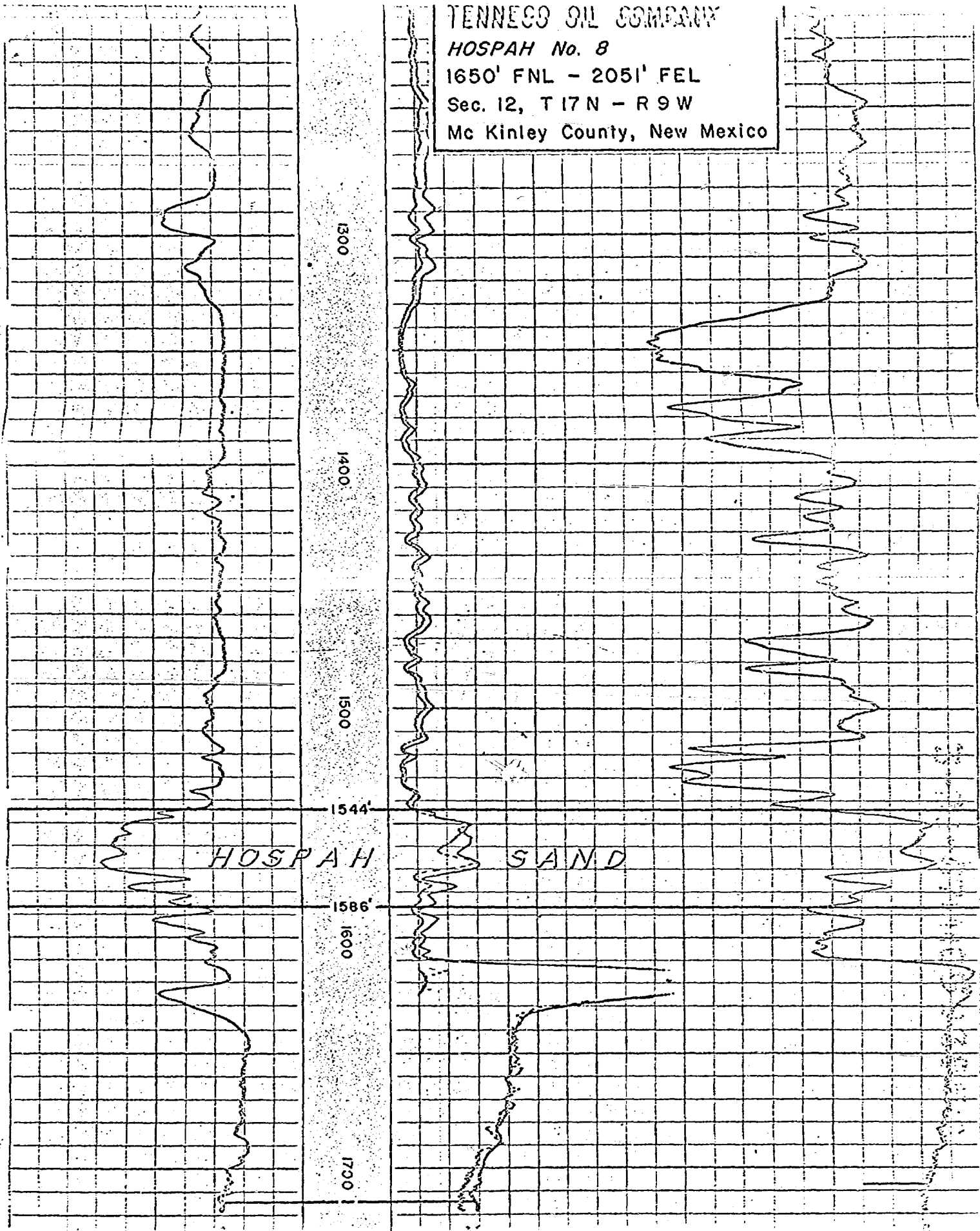
**PROPOSED WATERFLOOD
UPPER HOSPAN SAND**

© ac 3660

Scale: 5" = 1 Mile
DURANGO, COLORADO

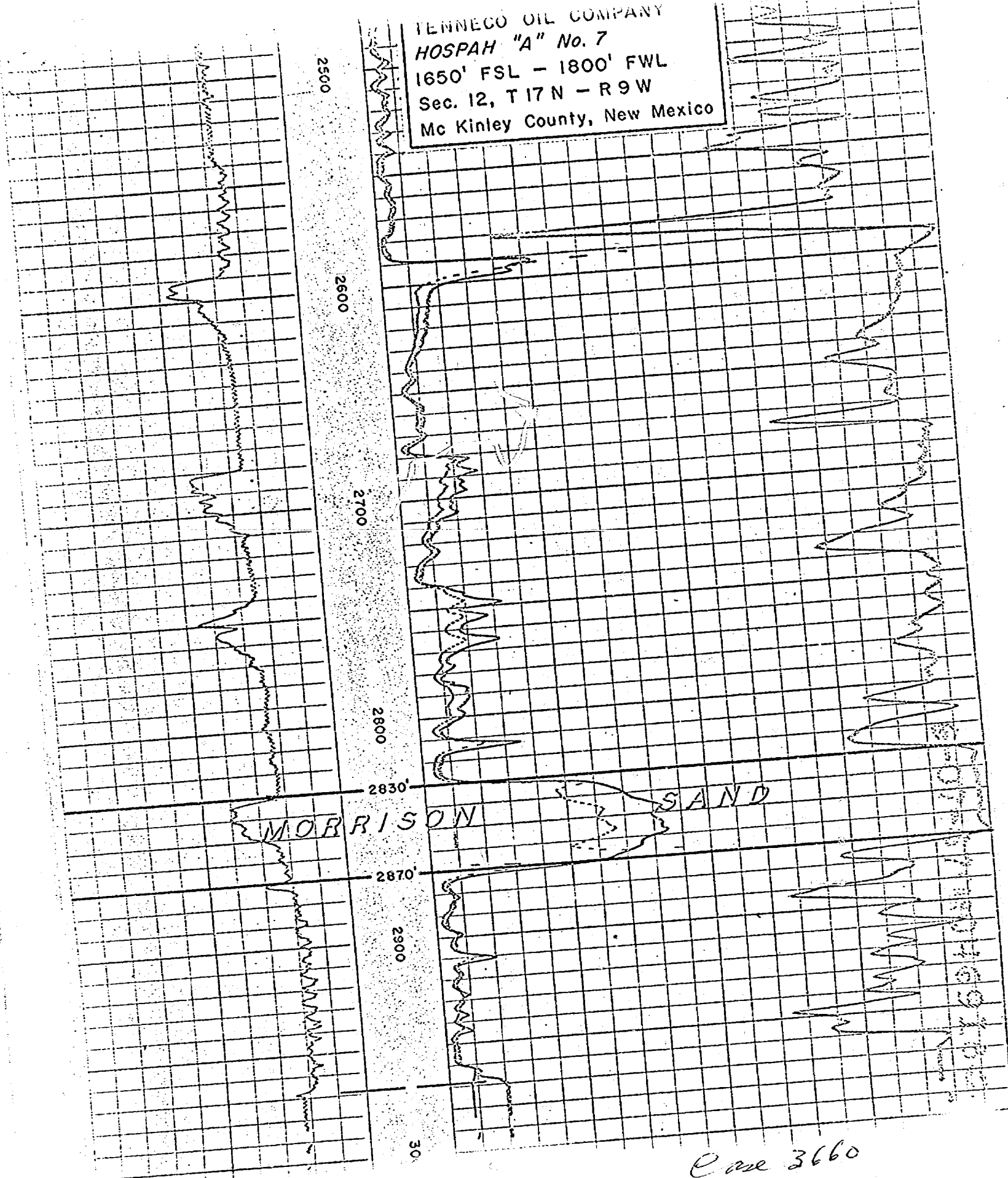
J. W. 8-67

TENNECO OIL COMPANY
HOSPAH No. 8
1650' FNL - 2051' FEL
Sec. 12, T 17 N - R 9 W
Mc Kinley County, New Mexico



Coel 3660

TENNECO OIL COMPANY
HOSPAH "A" No. 7
1650' FSL - 1800' FWL
Sec. 12, T 17 N - R 9 W
Mc Kinley County, New Mexico



Case 3660

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3660
Order No. R-3325

APPLICATION OF TENNECO OIL COMPANY
FOR A WATERFLOOD PROJECT AND FOR AN
EXCEPTION TO RULE 104 C I, MCKINLEY
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 27, 1967,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 4th day of October, 1967, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

- (1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.
- (2) That the applicant, Tenneco Oil Company, seeks an
exception to Rule 104 C I of the Commission Rules and Regulations
to permit the drilling of more than one well per 40-acre tract,
said wells being located closer than 660 feet to each other
and each 40-acre tract subject to a single 40-acre allowable.
- (3) That the applicant requests the above-described
exception apply to both the South Hospah Upper Sand Oil Pool
and the South Hospah Lower Sand Oil Pool and be applicable to
Tenneco's leases comprising all of Section 12, Township 17 North,
Range 9 West, NMPM, McKinley County, New Mexico.
- (4) That in order to allow Walker Brothers Oil Company and
Tesoro Petroleum Corporation, operators in the subject pools, the

-2-

CASE No. 3660
Order No. R-3325

opportunity to produce their just and equitable share of the oil in the aforesaid pools without damage to the reservoir through excessive water coning, Walker Brothers Oil Company and Tesoro Petroleum Corporation were authorized by Order No. R-3270 to develop the S/2 of Section 6, the N/2 and SW/4 of Section 7, both in Township 17 North, Range 8 West, and the SE/4 of Section 1, Township 17 North, Range 9 West, NMPM, South Hospah Lower Sand Oil Pool and South Hospah Upper Sand Oil Pool, McKinley County, New Mexico, to a density of more than one well per 40-acre tract.

(5) That in order to prevent waste and protect correlative rights, the applicant, Tenneco Oil Company, an operator in the subject pools, should be allowed the opportunity to develop its leases in the subject pools to the same density as the Walker Brothers Oil Company's and Tesoro Petroleum Corporation's leases.

(6) That the applicant also seeks permission to institute a waterflood project by the injection of water into the Upper Sand of the South Hospah Upper Sand Oil Pool on its Hospah and Hospah "A" Leases through five wells located in Units A, B, F, G, and H of Section 12, Township 17 North, Range 9 West, NMPM, McKinley County, New Mexico.

(7) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(8) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(9) That the subject waterflood project should be approved, and that the waterflood project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tenneco Oil Company, is hereby authorized to develop its Hospah and Hospah "A" Leases comprising all of Section 12, Township 17 North, Range 9 West, NMPM, South Hospah Upper Sand Oil Pool and South Hospah Lower Sand Oil Pool, McKinley County, New Mexico, to a density of more than one well per 40-acre tract;

PROVIDED HOWEVER, that no well shall be drilled nearer than 330 feet to the outer boundary of said tract and no nearer than

-3-

CASE No. 3660
Order No. R-3325

200 feet to another well drilling to or capable of producing from the same pool;

PROVIDED FURTHER, that a 40-acre proration unit in the South Hospah Upper Sand Oil Pool or the South Hospah Lower Sand Oil Pool shall be subject to a 40-acre unit allowable for wells in the South Hospah Upper Sand Oil Pool or South Hospah Lower Sand Oil Pool, whichever is applicable, regardless of the number of wells on the unit.

(2) That the applicant is hereby authorized to institute a waterflood project in the South Hospah Upper Sand Oil Pool on its Hospah and Hospah "A" Leases by the injection of water into the Upper Sand through the following-described wells in Section 12, Township 17 North, Range 9 West, NMPM, McKinley County, New Mexico:

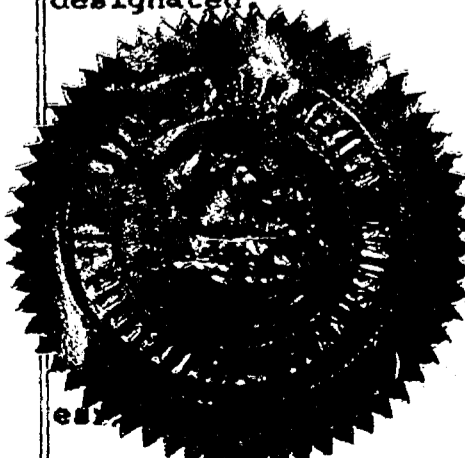
<u>OPERATOR</u>	<u>LEASE</u>	<u>WELL NO.</u>	<u>LOCATION</u>
Tenneco	Hospah	To be drilled	SW/4 NE/4 NE/4
Tenneco	Hospah	5	SW/4 NW/4 NE/4
Tenneco	Hospah	To be drilled	SW/4 SE/4 NW/4
Tenneco	Hospah	To be drilled	SW/4 SW/4 NE/4
Tenneco	Hospah	To be drilled	SW/4 SE/4 NE/4

(3) That the subject waterflood project is hereby designated the Tenneco South Upper Hospah Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(4) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

David F. Cargo
DAVID F. CARGO, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

August 4, 1967

Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Re: Case No. 3660
Order No. R-3325
Applicant:
Tenneco Oil Company

Dear Sir:

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

Very truly yours,

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

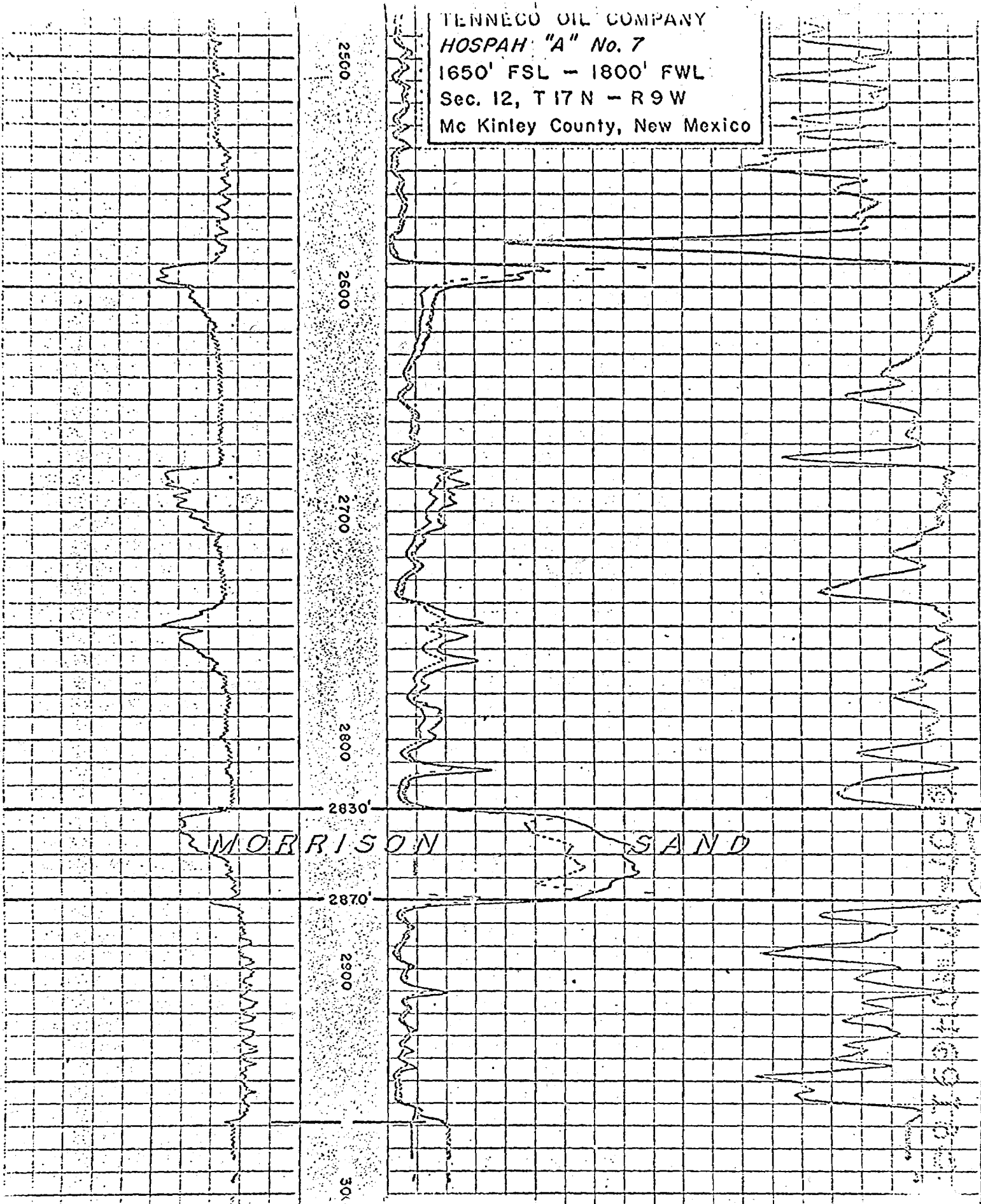
ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC x
State Engineer x

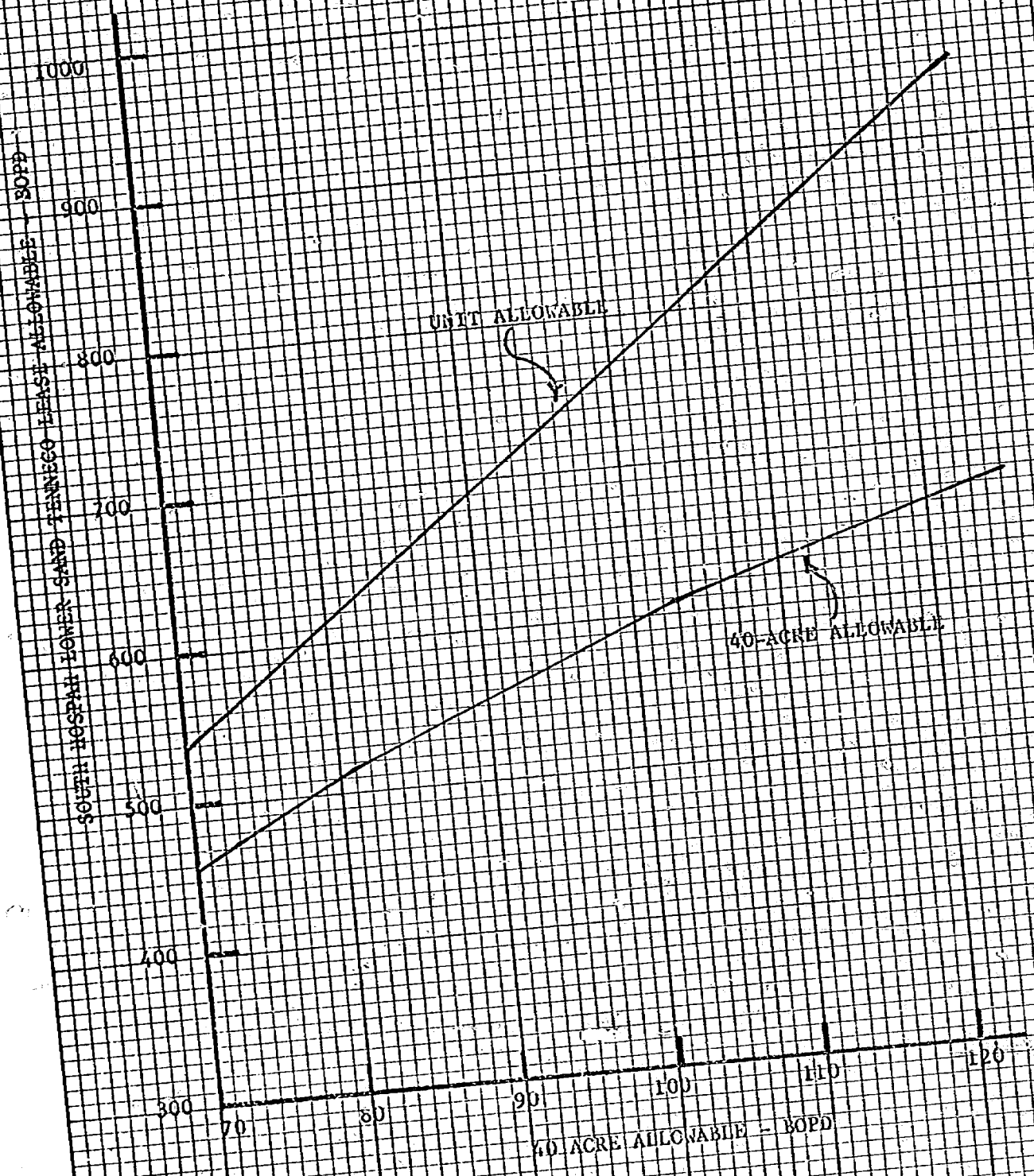
Other _____

TENNECO OIL COMPANY
HOSPAH "A" No. 7
1650' FSL - 1800' FWL
Sec. 12, T17N - R9W
Mc Kinley County, New Mexico



K-E 10 X 10 TO THE INCH 46 0703
7 X 10 INCHES
MADE IN U.S.A.
KEUFFEL & ESSER CO.

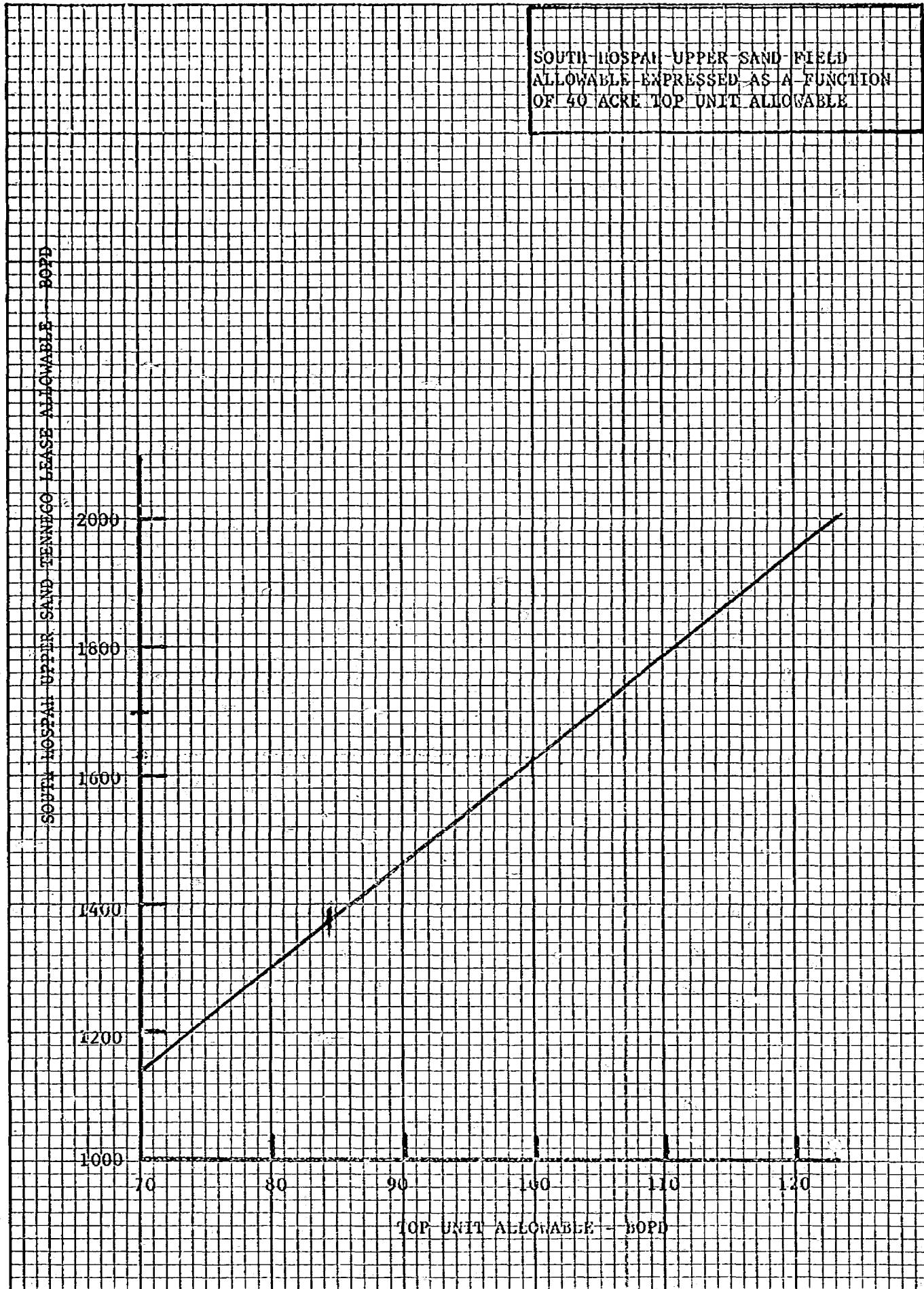
SOUTH HOSPITAL LOWER SAND FIELD
ALLOWABLE EXPRESSED AS A FUNCTION
OF 40 ACRE TOP UNIT ALLOWABLE



SOUTH HOSPAH LOWER

<u>UNIT</u>	<u>WELL NO.</u>	<u>CURRENT ALLOWABLE</u>	<u>CURRENT CAPACITY</u>	<u>CURRENT TEST</u>
A	6 <u>35</u> Unit Total	91	18 <u>116</u> 134	18 <u>116</u>
B	9 24 <u>36</u> Unit Total	70	80 222 <u>96</u> 398	76 222 <u>98</u>
C	10 <u>32</u> Unit Total	70	37 <u>158</u> 195	37 <u>112</u>
E	14 <u>Unit Total</u>	70	<u>73</u> 73	85
F	11 33 <u>34</u> Unit Total	70	31 156 <u>110</u> 297	34 156 <u>112</u>
G	8 <u>Unit Total</u>	70	<u>81</u> 81	81
H	7 <u>Unit Total</u>	12	<u>12</u> 12	12
<hr/>				
	Lease Total	453	1190	1159

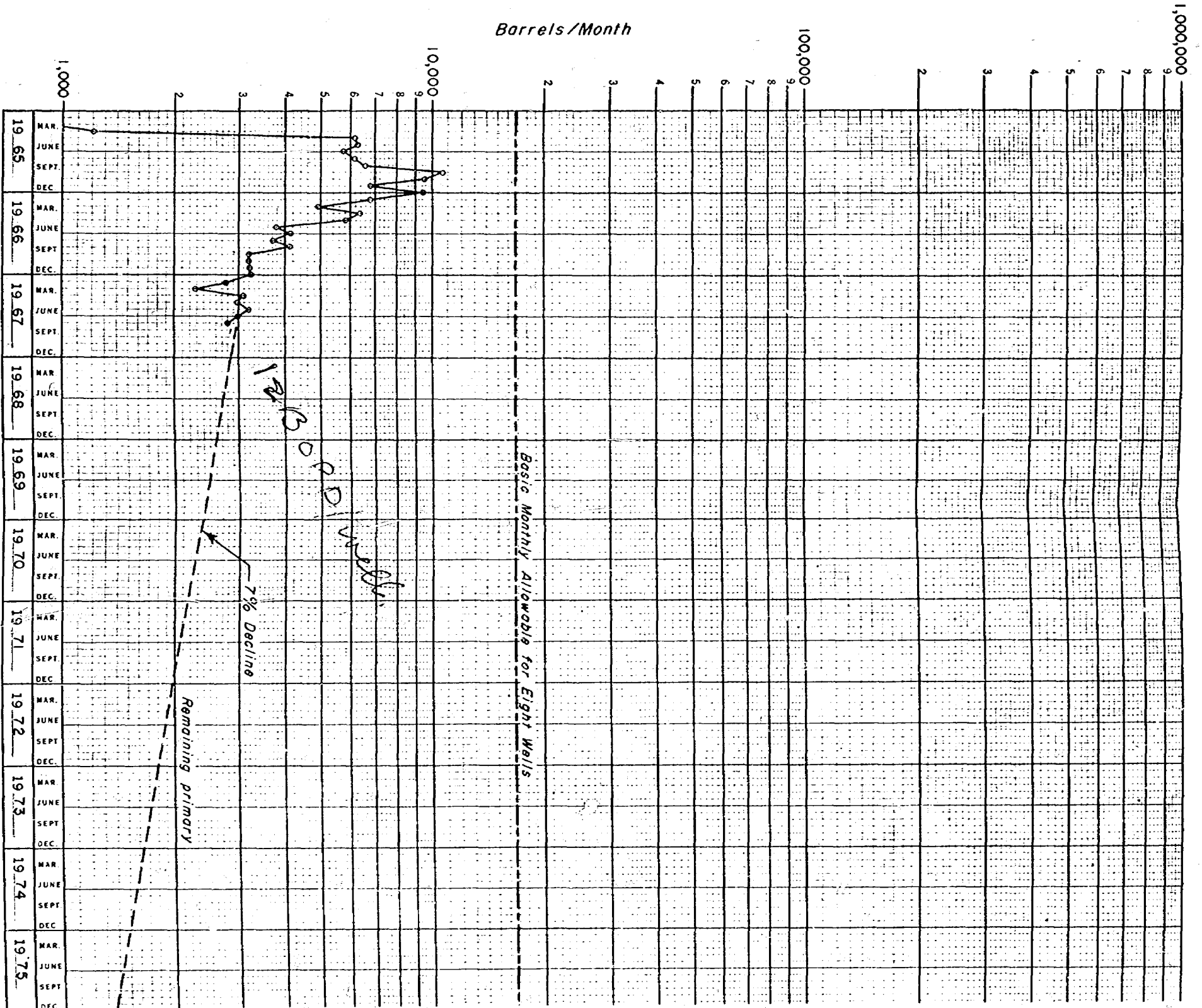
K&E 10 X 10 TO THE INCH 46 0703
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.



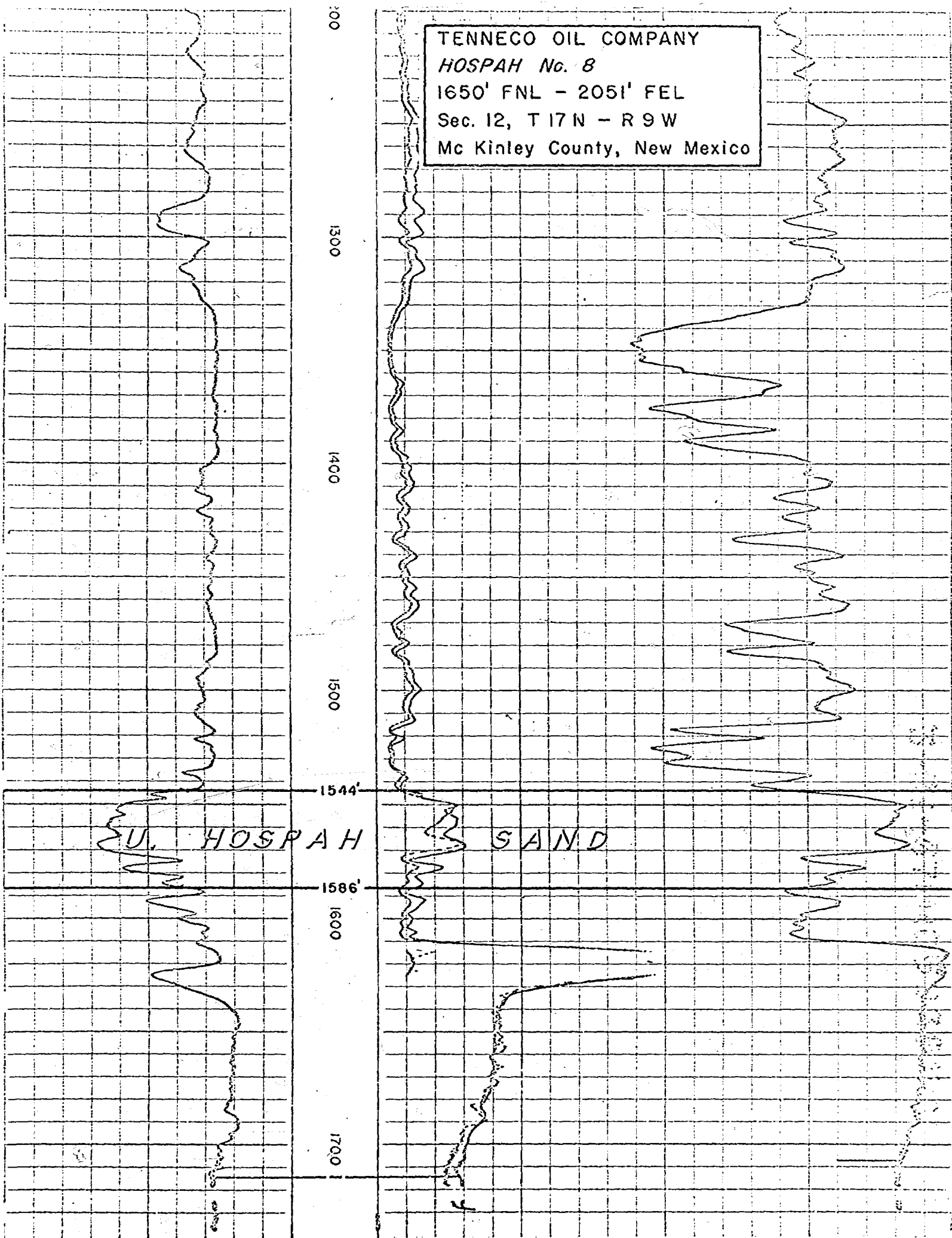
SOUTH HOSPAH UPPER

<u>UNIT</u>	<u>WELL NO.</u>	<u>CURRENT ALLOWABLE</u>	<u>CURRENT CAPACITY</u>	<u>CURRENT TEST</u>
A	25	91	2	2
	26	31	60	61
	28	30	10	6
B	5	70	INJ	INJ
	29	24	100	38
	30	23	100	52
	31	23	224	224
C	4	70	258	258
E	12	70	100	93
	13	24	INJ	INJ
	15	23	53	53
F	2	70	200	199
	16	24	30	28
G	1	70	50	47
	17	24	INJ	INJ
	18	23	80	77
H	3	91	10	10
	27	31	2	2
I	20	91	2	2
J	19	70	80	78
K	21	70	200	171
	23	24	INJ	INJ
L	22	70	70	57
TOTAL		1137	1631	1458

Barrels / Month



TENNECO OIL COMPANY
HOSPAH No. 8
1650' FNL - 2051' FEL
Sec. 12, T 17 N - R 9 W
Mc Kinley County, New Mexico



TENNECO OIL COMPANY
Durango District
PROPOSED INJECTION WELL
UPPER HOSPAH SAND
SOUTH HOSPAH FIELD
Section 12 - T 17 N - R 9 W
Mc Kinley County, New Mexico

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appl. EXHIBIT NO. 4
CASE NO. 3660

