CASE 3505: Application of TENNECO for creation of two oil pools, McKinley County, New Mexico.

CASE NO. 3505

Application,
Transcripts,
Small Exhibits
ETC.

TENNECO OIL COMPANY • P. O. BOX 1714 • 835 SECOND AVENUE • DURANGO, COLORADO 81302

January 17, 1967

New Mexico Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Gentlemen:

Tenneco Oil Company as offset operator has no objection to the application of Walker Brothers for an extension of time necessary to accomplish the segregation of the Hospah Upper Sand production from Hospah Lower Sand production on their leases in the two Hospah fields. This segregation is required by New Mexico Oil Conservation Commission Order No. R-3170.

Very truly yours,

TENNECO OIL COMPANY

Original Signed By
R. E. Siverson

Robert E. Siverson
District Production Superintendent

LBP:hes

CC: New Mexico Oil Conservation Commission ✓
Santa Fe, New Mexico

Walker Brothers Oil Company
Oklahoma City, Oklahoma

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

February 6, 1967

C

Mr. Robert E. Lauth
P. O. Box 776
Durango, Colorado

O

Dear Mr. Lauth:

P

Reference is made to your letter dated January 31, 1967, wherein you request a 90-day extension to the provisions of Commission Order No. R-3170 which requires segregation in the well bore of wells in the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool by January 31, 1967.

Y

Inasmuch as inclement weather has been a factor in completing work on five Walker Bros. Oil Company wells, and inasmuch as you are expecting to start immediately on the work, you are hereby authorized until April 30, 1967, to effect the necessary segregation as required by the subject order.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/DSN/esr

cc: Mr. Emery C. Arnold
Supervisor, District 3
Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Walker Bros. Oil Company
P. O. Box 18715
Oklahoma City, Oklahoma

209 CENTURY BLDG.

OFFICE 247-0025
RESIDENCE 247-3190

ROBERT E. LAUTH
GEOLOGICAL CONSULTANT
P. O. BOX 776
DURANGO, COLORADO

January 31, 1967

Mr. A. L. Porter, Jr.
New Mexico Oil and Gas
Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Dear Mr. Porter:

This letter is in regards to New Mexico Oil Conservation Commission Order No. R-3170 on segregation of the Hospah Upper Sand production from Hospah Lower Sand production on five of Walker Bros. Oil Company wells. The wells are:

Walker Bros. Santa Fe No. 3 - D - Sec. 7 - T17N - R8W
Walker Bros. Santa Fe No. 4 - C - Sec. 7 - T17N - R8W
Walker Bros. Santa Fe No. 7 - E - Sec. 7 - T17N - R8W
Walker Bros. Santa Fe No. 8 - L - Sec. 7 - T17N - R8W
Walker Bros. Hanson No. 2 - M - Sec. 6 - T17N - R8W

Your order states that segregation has to be accomplished by January 31, 1967.

We have filed with the NMOCC Aztec office all necessary forms (C-103) and have talked with Mr. Emery Arnold concerning the procedure to be followed.

We wish at this time to request a ninety day extension in which to complete this work. Tenneco Oil Company has sent a letter to your office stating that they have no objections to a time extension.

The reason we are requesting an extension is pressure of drilling commitments on obligation wells, availability of rigs in the area and much inclement weather. The thaw is leaving the ground in a condition where movement and travel of rigs is extremely expensive and time consuming. It is possible we will not need the full ninety days because we are starting immediately. I would like to request ninety days to allow for any unforseen contingency.

Very truly yours,

R. E. Lauth

Robert E. Lauth

cc: Mr. Emery Arnold, NMOCC, 1000 Rio Brazos Road, Aztec, New Mex.
Walker Bros. Oil Company, P.O. Box 18715, Oklahoma City, Okla.

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. 3505
Order No. R-3170
NOMENCLATURE

APPLICATION OF TENNECO OIL COMPANY
FOR THE CREATION OF TWO OIL POOLS,
McKINLEY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on December 20, 1966, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 28th day of December, 1966, 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 the contraction of the horizontal limits of the Hospah Pool, McKinley County, New Mexico, by deleting the following area:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: N[illegible]/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: S/2 SE/4
Section 11: NE/4
Section 12: N/2

(3) That the applicant also seeks the creation of the South Hospah Upper Sand Oil Pool with vertical limits comprising the

Gallup formation above the marker encountered at 1612 feet on the log of the Tenneco Hospah Well No. 5, located 990 feet from the North line and 2712 feet from the East line of Section 12, Township 17 North, Range 9 West, NMPM, McKinley County, New Mexico, and the creation of the South Hospah Lower Sand Oil Pool with vertical limits comprising the Gallup formation below the marker encountered at 1612 feet on the log of said Well No. 5, and horizontal limits of each pool to be as follows:

McKINLEY COUNTY, NEW MEXICO
TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4 and E/2
Section 7: All

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: S/2 SE/4
Section 11: E/2 E/2
Section 12: All

(4) That reservoir information presently available establishes that the Hospah Pool, McKinley County, New Mexico, as presently designated, encompasses more than one separate common source of supply and the horizontal limits of said pool should, in order to prevent waste and protect correlative rights, be contracted by deleting the following:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 5: SW/4
Section 7: NW/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: S/2 SE/4
Section 11: NE/4
Section 12: N/2

(5) That reservoir information presently available establishes that each of the proposed new pools encompasses a separate common source of supply and in order to prevent waste and protect correlative rights, the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool should be created with vertical limits as proposed by the applicant and horizontal limits as follows:

SOUTH HOSPAH UPPER SAND OIL POOL
McKINLEY COUNTY, NEW MEXICO
TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: NW/4 and NW/4 SW/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: SE/4 SE/4
Section 11: NE/4 SE/4
Section 12: NE/4, E/2 NW/4, and N/2 S/2

SOUTH HOSPAH LOWER SAND OIL POOL

McKINLEY COUNTY, NEW MEXICO

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: NW/4

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and otherwise prevent waste and protect correlative rights, authority should be granted to dually complete those wells presently open to both the South Hospah Upper Sand formation and the South Hospah Lower Sand formation in the area encompassed by the proposed new pools.

(7) That any well which is open to both the South Hospah Upper Sand formation and the South Hospah Lower Sand formation in the area encompassed by the proposed new pools and which has not been dually completed by January 31, 1967, should, on that date, be shut in and the allowable cancelled.

IT IS THEREFORE ORDERED:

(1) That the horizontal limits of the Hospah Pool, McKinley County, New Mexico, are hereby contracted by the deletion therefrom of the following-described area:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: NW/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: S/2 SE/4
Section 11: NE/4
Section 12: N/2

(2) That a new pool in McKinley County, New Mexico, classified as an oil pool for Gallup production, is hereby created and designated the South Hospah Upper Sand Oil Pool, with vertical

limits comprising the Gallup formation above the marker encountered at 1612 feet on the log of the Tenneco Hospah Well No. 5, located 990 feet from the North line and 2712 feet from the East line of Section 12, Township 17 North, Range 9 West, NMPM, McKinley County, New Mexico, and horizontal limits as follows:

McKINLEY COUNTY, NEW MEXICO
TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: NW/4 and NW/4 SW/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM
Section 1: SE/4 SE/4
Section 11: NE/4 SE/4
Section 12: NE/4, E/2 NW/4, and N/2 S/2

(3) That a new pool in McKinley County, New Mexico, classified as an oil pool for Gallup production, is hereby created and designated the South Hospah Lower Sand Oil Pool, with vertical limits comprising the Gallup formation below the marker encountered at 1612 feet on the log of the Tenneco Hospah Well No. 5, located 990 feet from the North line and 2712 feet from the East line of Section 12, Township 17 North, Range 9 West, NMPM, McKinley County, New Mexico, and horizontal limits as follows:

McKINLEY COUNTY, NEW MEXICO
TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM
Section 6: SW/4
Section 7: NW/4

(4) That each well presently open to both the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool, as created by this order, is hereby authorized for dual completion provided the operator furnishes the items required by Rules 112-A IV (a) and (d) of the Commission Rules and Regulations to the Secretary-Director of the Commission and obtains his approval for said dual completion. No waiting period or offset waivers will be required.

(5) That any well which is open to both the South Hospah Upper Sand Oil Pool and the South Hospah Lower Sand Oil Pool, as created by this order, and which has not been dually completed and Commission Form C-103, Subsequent Report of Dual Completion, and Commission Form C-104, Request for Allowable for each pool, received by the Commission by January 31, 1967, shall be ordered

shut in and the allowable cancelled until such dual completion has been effected and notice of connection received; provided, however, that the Secretary-Director of the Commission, upon proper application, may approve extensions of said time when the necessity therefor is caused by weather conditions preventing said dual completions by January 31, 1967.

(6) That to obtain administrative approval for an extension of time in which to dually complete the subject wells, the operator shall submit in triplicate a request for such authority, detailing the progress made to date and fully describing the conditions rendering dual completions incomplete.

(7) 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

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

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

esr/

GOVERNOR
JACK M. CAMPBELL
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

December 28, 1966

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

Re: Case No. ~~R-3170~~ 3505
Order No.
Applicant:
TENNECO OIL COMPANY

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC x
OTHER

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 12/23/66

CASE 3505 Hearing Date 9 am 12/20/66
DSN SE

My recommendations for an order in the above numbered cases are as follows:

Enter an order in Case No 3505 as follows:

(1) Contract the horizontal limits of the Hospah Oil Pool in McKinley County by deletion of the following area

T 17 N, R 8 W

Sec 6: SW/4
Sec 7: NW/4

T 17 N, R 9W

Sec 1: S/2 SE/4
Sec 11: NE/4
Sec 12: N/2

(2) Create the South Hospah Upper Sand Oil Pool comprising the following area:

T 17 N, R 8W

Sec 6: SW/4
Sec 7: NW/4 and NW/4 SW/4

T 17 N, R 9W

Sec 1: SE/4 SE/4
~~Sec 12: E/2, E/2 NW/4, and SW/4~~
Sec 11: NE/4 SE/4
Sec 12: NE/4, E/2 NW/4, and N/2 S/2

over

(3) Create the South Hospah Lower Sand Oil Pool comprising the following area:

T 17 N R 8 W

Sec 6: SW/4
Sec 7: NW/4

Vertical limits for said pool shall be the Gallup formation between the marker encountered at 1612 feet on the log of Tennco Oil Company's Hospah Well No 5, located 990' FNL and 2712' FEL of Sec 12, T 17 N, R 9 W, ~~San Juan County~~ McKinley County, NMPM

2 (cont) Vertical limits for said pool shall be the Gallup formation above the marker encountered at 1612 feet on the log of the Tennco Oil Company's Hospah Well No 5, located 990' FNL & 2712' FEL of Sec 12, T 17 N, R 9 W, ~~San Juan~~ McKinley County.

(4) ~~Reserved~~ Include findings similar to #13 and #16 of R-3153 and Orders similar to Further Ordered #3 and #6, effective date to be January 31, 1967.

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

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

3505

IN THE MATTER OF THE APPLICATION)
OF TENNECO OIL COMPANY FOR THE)
CREATION OF TWO OIL POOLS IN Mc) Case # 3500
KINLEY COUNTY, NEW MEXICO)

APPLICATION

Comes now Tenneco Oil Company and hereby seeks approval for the creation of two oil pools in McKinley County, New Mexico and respectfully states:

1. Applicant seeks the contraction of the horizontal limits of the presently known Hospah-Gallup Pool within McKinley County, New Mexico, and the creation of two new pools to be created South of the East-West fault which traverses Section 1, T 17 N, R 9 W, and Section 6, T 17 N, R 8 W.

2. Applicant proposes the creation of the South Hospah-Hospah Sand Pool with vertical limits from 1532 feet to 1612 feet as depicted on the log of applicants Hospah Well # 5, located in Unit B of Section 12, T 17 N, R 9 W.

3. Applicant further propses the creation of the South Hospah-Massive Gallup Sand Pool with vertical limits from 1612 feet to approximately 1737 feet as depicted on the aforesaid Well # 5.

4. Applicant recommends this horizontal limits of both proposed pools be defined as the $SE\frac{1}{4}$ of Section 1, the $E\frac{1}{2}E\frac{1}{2}$ of Section 11 and all of Section 12, T 17 N, R 9 W; and the $SW\frac{1}{4}$ and the $E\frac{1}{2}$ of Section 6, and all of Section 7, T 17 N, R 8 W.

5. Applicant at this time does not seek the promulgation of any special pool rules or regulations.

WHEREFORE Applicant prays that the Commission set this application for a public hearing before an examiner in Santa Fe, New Mexico; that notice

be issued according to law and that this application be garnted.

TENNECO OIL COMPANY
J. D. Moon, Division Attorney
201 Wall Building
Midland, Texas

WHITE, GILBERT, KOCH & KELLY
P. O. Box 787
Santa Fe, New Mexico

By _____
Attorneys for Tenneco Oil Company

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

Ex Hrg 12-20 DSN

Send newspaper invoice to Tenneco, Durango

Ada - Send bill for 1st appearance fee to Tenneco Durango

11

Case —

Application of Tenneco Oil Company for the creation of two oil pools, McKinley County, New Mexico.

Applicant, in the above-styled cause, seeks the contraction of the horizontal limits of the Hospah-Gallup Pool, McKinley County, New Mexico, and the creation of two new oil pools south of the East-West fault which traverses Section 1, Township 17 North, Range 9 West, and Section 6, Township 17 North, Range 8 West. Applicant proposes the creation of the South Hospah-Hospah Sand Pool with vertical limits being from 1532 feet to 1612 feet on the log of the Tenneco Hospah Well No 5, located in Unit B of Section 12, Township 17 North, Range 9 West, and the creation of the South Hospah-Massive Gallup Sand Pool with vertical limits being from 1612 feet to approximately 1737 feet on the log of said Well No. 5. Horizontal limits of both of the proposed pools would be the SE/4 of Section 1, the E/2 E/2 of Section 11, and all of Section 12, Township 17 North, Range 9 West, and the SW/4 and E/2 of Section 6 and all of Section 7, Township 17 North Range 8 West.

2712 FEL
990 FNL

Docket No. 33-66

DOCKET: EXAMINER HEARING - TUESDAY - DECEMBER 20, 1966

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

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

CASE 3505: Application of Tenneco Oil Company for the creation of two oil pools, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the contraction of the horizontal limits of the Hospah-Gallup Pool, McKinley County, New Mexico, and the creation of two new oil pools south of the east-west fault which traverses Section 1, Township 17 North, Range 9 West, and Section 6, Township 17 North, Range 8 West. Applicant proposes the creation of the South Hospah-Hospah Sand Pool with vertical limits being from 1532 feet to 1612 feet on the log of the Tenneco Hospah Well No. 5, located in Unit B of Section 12, Township 17 North, Range 9 West, and the creation of the South Hospah-Massive Gallup Sand Pool with vertical limits being from 1612 feet to approximately 1737 feet on the log of said Well No. 5. Horizontal limits of both of the proposed pools would be the SE/4 of Section 1, the E/2 E/2 of Section 11, and all of Section 12, Township 17 North, Range 9 West, and the SW/4 and E/2 of Section 6 and all of Section 7, Township 17 North, Range 8 West.

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BEFORE THE NEW MEXICO
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 20, 1966

EXAMINER HEARING

In the Matter of: Application of Tenneco Oil Company for the creation of two oil pools, McKinley County, New Mexico.	CASE NUMBER 3505

BEFORE:

DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE DECEMBER 20, 1966 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
[illegible]	[illegible]	S F
JACK WILLOCK	TENNECO OIL CO	DURANGO, COLORADO
[illegible]	[illegible]	[illegible]

MR. NUTTER: The hearing will come to order, please. The first case on the docket this morning will be Case 3505.

MR. HATCH: Case 3505, application of Tenneco Oil Company for the creation of two oil pools, McKinley County, New Mexico.

MR. KELLY: Booker Kelly of White, Gilbert, Koke and Kelly, on behalf of the applicant. I have one witness and ask that he be sworn.

(Witness sworn.)

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

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, position and employer, please?

A Jack Willock, petroleum engineer with Tenneco Oil Company.

Q Have you previously qualified as an expert witness before this Commission?

A No, I have not.

Q Would you give the Examiner a run-down of your professional experience and education.

A I graduated from the University of Texas, in June

of 1957 with a Bachelor's Degree in petroleum engineering. Since that time, I have been employed by Carter Oil Company, Humble Oil and Refining Company, and now Tenneco Oil Company, in several States as a petroleum engineer. I am a registered professional engineer and have previously testified before other Commissions.

Q Now, has part of your professional duties included work on the subject pool?

A They have.

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

MR. NUTTER: Yes, they are.

(Whereupon, Applicant's Exhibits 1 through 3 were marked for identification.)

Q (By Mr. Kelly) Referring to what has been marked Exhibit 1, would you state briefly what Tenneco seeks by this application?

A At the present time, the entire area as shown on our Exhibit 1, which is a structure map on the top of the Hospah Sand, the entire area is considered Hospah Field. This is Section 36, Township 18 North, Range 9 West; Section 1, Township 17 North, Range 9 West, parts of Section 11 and Section 12, 17 North, 9 West and parts of Section 6 and 7, 17 North, and 8 West. Our application seeks to contract the

horizontal limits to form a new field covering the area bounded to the south of the old Hospah Field, by this fault to the north, a fault on the south side of the new field, a fault on the east -- pardon me, water level on the east and water level on the south.

Q Now, your overlay actually shows the area, does it not?

A That's correct. Let me turn it down, briefly -- I'll put it back up. The actual area that we are asking for -- I might add at this point that we made an error in making the call, it being that we would like to eliminate the north half of the Southeast quarter of Section 1, Township 17 North, Range 9 West from the application. We found out that the north half of the Southeast quarter has a well on it, that is in the old Hospah Field.

MR. NUTTER: In other words, it would just be the south half of the Southeast of 1 --

THE WITNESS: That's correct.

MR. NUTTER: instead of all of the Southeast of 1?

THE WITNESS: Yes, sir, that's correct. Would you like for me to go over the other area here?

Q (By Mr. Kelly) Well, would you tell the Examiner the existing status of the old Hospah Field?

A The old Hospah Field is being water flooded.

Q How long has that been under water flood?

A A year and a half, approximately.

Q That is the old Hospah Field producing exclusively from the Hospah Sands, is that correct?

A Correct.

Q Go ahead and explain the relevance of Exhibit Number 1, as far as the application is concerned.

A My first two exhibits are presented as evidence to show separation between the old Hospah and the new South Hospah Field. Exhibit 1 shows the productive limits of both the old Hospah and the South Hospah Field. If you will notice, the old Hospah Field is delineated by oil-water contact which is shown in blue. Three wells, the McMillan White Well in the Northwest of the Northwest of Section 2, 17 North, 9 West and Tosoro-Hospah, Units 45 and 46, in the south half of Section 1, 17 North, 9 West; three noncommercial wells that define the water-oil contact. We have estimated the water-oil contact to be approximately plus 5345 feet above sea level. The South Hospah Field is a horse type fault block trap, its productive acreage delineated on the north by faulting, on the south by faulting, on the east by water-oil contact. The oil-water contact is on the south, on the southwest by oil-water contact. The fault on the north strikes Southwest Northeast and dips to the north and is virtually vertical. This fault cuts three

wells, the Wiggum Number 1 in Section 11, 17 North, 9 West; the Hospah Number 4 Well, Tenneco-Hospah Number 4 Well in Section 12, 17 North, 9 West and the Walker Bros. Hansen 4 in the Southeast quarter of Section 6.

MR. NUTTER: Southwest quarter.

THE WITNESS: Southwest quarter, pardon me, of Section 6, 17 North, 8 West.

The amount of flow for these three wells is the Wiggum Number 1, 240 feet; the Hospah Number 4, 140 feet; and the Hansen 4, 90 feet. Rotational movement in the fault is indicated by the diminishing amount of throw to the northeast and the fault appears to be dying out toward the northeast. Also, at this point I would like to state that we join our contours across the fault. You can see that these agree with the amount of throw on the fault previously described at the 5450 foot contour on the south edge, or approximately 5320 which has 120 feet of flow. Now, this has a water contact up against oil production right here, and isn't readily explainable by the structural change alone.

Also, another point -- I'll talk more about this later, but I would like to point out the difference of water level on the south edge field compared with the old Hospah Field. The south edge of the field is 5409 feet and on the old Hospah, the water-oil contact is 5345. Now, that is a

difference of approximately 60 feet in water levels.

The southern fault on the South Hospah structure is cut in only one well, the Santa Fe Number 8 which is in the southwest corner of Section 7, 17 North, 8 West. This fault is drawn parallel to the north fault. We don't have the exact location of this fault but the way it is drawn here with the one cut that we have, it fits the picture.

If you will notice there is a difference of from plus 5426 at the top of the sand in Santa Fe Number 8 to a plus 5245 at the top of the sand in Santa Fe Number 11. That is a change of approximately 108 feet in a quarter of a mile which doesn't agree with the general tip of structure.

Also, we notice a difference in structural tops between the Hospah 2A and the Hospah 5A which is believed to be across the fault, and in approximately a third of a mile there is a change from 5431 to -- plus 5431 to plus 5268 and that is approximately 170 feet of change in structural top in a third of a mile.

Before proceeding to the next exhibit I would like to show you this overlay. We have prepared this isopac map, generally, to show the quality and how this sand was deposited. It appears as if the Hospah sand was deposited on a north-south, in a north-south direction. As you can see, the center of Section 12 is thick and consistent -- this will be pointed out

better on another cross section we have -- and the sand grades to thin shaley stringers as we proceed from west to east across the South Hospah structure. As I way, this will be discussed in our cross section. Okay, my next exhibit --

Q Just a moment, before you leave that one. In your opinion is the faulting a permial barrier to prevent migration of fluids from the old Hospah to the newer Hospah Field?

A Yes, sir, it is.

Q Have you noticed any effect from the water flood on your wells in the lower Hospah?

A No, sir, we have not.

Q All right, go on to what has been marked as Exhibit Number 2 and explain that.

A Our next exhibit is Cross Section BB. We labeled it Exhibit 2. It shows a log section on the briefly described faulting. This is a Northwest, Southeast Section coming across the field showing seven wells. The Tosoro-Hospah sand Unit 71 in Section 36, 18 North, 9 West. Up here, Great Western-Santa Fe 7, 8 and 11 in Section 7, 17 North, 8 West. This cross section shows the amount of throw on both faults. Both the north and south fault is sufficient to effect the sea both north and south on the South Hospah structure.

Note the location of the fault near Tosoro-Santa Fe Number 72. As we saw on the structure map, this fault is

directly north of the Hospah Sand Unit 72. It shows approximately 120 feet of displacement from the top of the Hospah Sands, to the top of the Hospah Sand across the fault. Santa Fe Number 8 was faulted and there is approximately 120 feet of displacement between the two sands, in here and here between it and the Santa Fe 11.

We believe that these two exhibits show conclusive evidence of separation of the old Hospah area from the new Hospah Field. Faulting, Number 1, faulting shows sufficient displacement to separate fields and the water level in the Hospah field at 5845 and the water level on the western edge of the South Hospah Field of 5409 supports this theory.

Q Now, you have an exhibit that shows the existence of two separate pools in the lower new Hospah --

A Yes, sir.

Q -- area?

A Yes, sir. I do. Our next exhibit Cross Section AA and, I believe, labeled as Exhibit Number 3, is a Southwest Northeast cross section which shows log strips on seven wells. Again, if you will note that it is immediately south of the north fault in the South Hospah Field. The seven wells that we have drawn on the cross section is the Wiggum Number 1 in Section 11, the Hospah 4A, 2 and 5 in Section 12 of Township 17 North, 9 West. The Tosoro-Santa Fe 72 in the Southeast

quarter of Section 1, 17 North, 9 West and the Hansen 4 and 1X in the Southwest quarter of Section 6, 17 North, 8 West.

The Wiggum Number 1 -- the Wiggum Number 1, as you will notice, is producing oil from the Hospah Sand with the performation above 1700 feet. Now, this well was cored in the Hospah Sand with oil-base mud as the drilling fluid. The technician who analyzed these cores cut a cross section of the cores and stated that there was no oil present in the center of the core below 1699 feet. We have taken this as the water-oil contact on the west side of the field. This is the contact that we have been, previously talked about.

Now, I might add at this time that this agrees with our log interpretation, also. The water-oil contact -- the oil-water contact on the east edge of the field is interpreted from the log and estimated to be at approximately 5317 feet above sea level. Note from the cross section here that the Hospah Sand is thick and relatively consistent in the center of Section 12 and grades over into the shalier zones. This water-oil contact over here isn't firmly established, but taken from log analyses alone. Also, on this cross section we show two wells, the Hansen 1X in the Hansen Number 4, Walker Bros. They are producing oil from the Massive Gallup Sand.

Before we go any further, let me say that this Massive Gallup Sand is 175 to 200 feet thick and that we have

only shown the top portion of it.

The sand exhibits very little SP characteristics as the resistivity of the water is similar to the resistivity of the mud. The oil-water contact in these two wells is defined by the abrupt change in the bottom of the sand here and resistivity. You can see out here a thick zone at the top portion of production. In addition to these Hansen wells, one other well, the Tenneco-Hospah 4A tested the Gallup Sand. Although the log shows four or five feet of productive sand, the well swabbed water from the Gallup. I might also add that this sand has permeability in two directions both horizontal and vertical. Most places the vertical permeability is about as high as the horizontal.

Now, we have taken these three wells, drawn across the field, and defined the water-oil, oil-water contact on the bottom of the productive interval in the Gallup Sand. From these three points the Gallup water table is constructed and is believed to tilt at approximately 40 feet per mile to the Northeast. I have now established two water tables. One west of the field in the Hospah Sand by core analysis, the other not so far in the Hospah Sand on the east edge of the field, and the water table, tilted water table on the bottom of the Massive Gallup. Then these two water tables, combined with the fact that the wells were completed in both the

Hospah and Massive Gallup, and the fact that both wells completed in both zones have produced water, establishes separation between the two sands.

Q How about the characteristics of the oil in the two zones, are they different?

A The two zones have several different varying qualities. The zones have different rock characteristics; first of all, the Hospah Sand grades from a thick to a stringy sand as we have discussed previously, while the Massive Gallup is a blanket sand. The Gallup is relatively consistent and of good quality across the field. The core analysis shows the Hospah and Gallup Sands to have varying permeability. The productive Hospah Sand usually has permeability in a hundred to three hundred millidarcy range; while permeability in the productive areas in the Massive Gallup average 700 to 1000 millidarcies. Porosity for the Hospah Sand is generally in the 24 per cent range. Porosity in the Massive Gallup is usually in the 26 per cent range. Oil properties, the Hospah Sand produces 34 degree gravity oil with a viscosity of 19 centipose and 81 fahrenheit. The poor point is approximately 28 degrees.

The Massive Gallup produced a 24 degree gravity oil. Its viscosity is 46 centipose at 80 fahrenheit and has a poor point below zero. These qualities are extremely

different from the gravity of the Hospah at 34 degrees. The gravity of the Massive Gallup is 24 degrees, a 10 degree gravity difference. The viscosity of the Hospah is 19 centipose. The viscosity of the Massive Gallup is 46 centipose; that is 27 centipose difference. The poor point of the Hospah is 28 degrees. The poor point of the Massive Gallup is below zero.

MR. NUTTER: How about the old Hospah Pool to the north, what are the characteristics of the liquids?

Q (By Mr. Kelly) Would you identify what you are referring to?

A This is the proceedings of the Four Corners Geological Society I am taking this from. If I can find it for you here. They are not -- the gravity of the oil from a sample taken in 1952 is 30.2 degrees A.P.I., the poor point is 20 degrees fahrenheit. The viscosity in Sabo's Universal Seconds at a 100 degree fahrenheit is 67. I don't know the conversion right offhand.

MR. NUTTER: This is Sabo Second?

THE WITNESS: Yes, sir.

MR. NUTTER: Thank you.

THE WITNESS: Does that answer your question?

MR. NUTTER: Yes.

A In addition to these physical factors, it's my

opinion that the Hospah Sand in the South Hospah Field will produce by depletion drive with possibly some assistance of gravity. To my knowledge, this had been the case in the old Hospah Field until the water flood was started. The Massive Gallup appears to be in contact with a large aquifer. In other holes drilled considerable distances away from them, the South Hospah Field encounters sand.

The apparent tilt of the water table adds some evidence to this theory. Additional drilling and production will tell us what our actual drive mechanism out there is, but we think now it is probably water drive.

As a summary, I have pointed out the South Hospah Field is separated from the Hospah Field by faulting and difference in water level in the sands. To substantiate this separation, I presented a structure map and a Northwest Southeast cross section. I have also shown separation between the Hospah and Massive Gallup Sands by differences in water level and water level sand characteristics and oil characteristics and probable drive mechanism.

Q (By Mr. Kelly) Now, you indicated also on your cross section AA Prime, Exhibit Number 3, that there is a barrier between the two zones. Would you explain that to the Examiner?

A Yes, sir. From the visual analysis of cores in

the Massive Gallup a four or five foot section of coal, interbedded coal and shale have been found on the top of the Massive Gallup Sand. This is a -- you can see this on the density log, also. I have indicated this in red here where we have had core analysis showing this, those that have been visually analyzed to have had this and I believe this barrier would be impervious.

CROSS EXAMINATION

BY MR. NUTTER:

Q What is that layer, take your Hospah 4A there, and starting right there at about where your oil contact is on the Hospah Sand --

A Yes, sir. Right --

Q Your resistivity curve comes all the way in, is that a layer of shale right in there?

A Right here?

Q No. Above that.

A Right here?

Q No. Come on up to your oil-water contact in your Hospah Sand, your dotted line across there.

A Okay.

Q Where your resistivity curve pinches in.

A Right in here.

Q Right there. You've got about an inch there.

A I would say offhand that that is sand and shale in there. You can see that your S.P. comes back in denoting an increase in shale. You can see variations in the resistivity down here indicating sandy conditions and shaly conditions if you have --

Q Has that section been cored?

A I have some cores here we can check.

Q I just wonder if that area there constitutes any kind of an impermeable barrier between the Hospah Sand and the Massive Gallup Sand.

A Well, I will have to check to give a firm answer on that. In my opinion, it does. You can see it gets shaly in these other wells, too, down here on the bottom.

Q Shows up the best on that 4A, the well on your cross section.

A Yes, sir, it does. Now, the Wiggum well, of course, we don't have the Gallup in there but the Wiggum gets shaly on the bottom. In fact, all the wells do, somewhat.

Q Yes.

A Across there.

REDIRECT EXAMINATION

BY MR. KELLY:

Q Is it your opinion that this impermeable coal and shale barrier goes through the whole pool? Is that correct?

A That is correct. It's been found in the wells that have been cored and analyzed to date. Although we have drilled no Massive Gallup well on Section 12.

Q Now, the wells that are completed in the two zones in the lower Hospah, is there any gas production?

A No. All the tests we have received show too small a measure for the amount of gas produced.

Q Now, assuming that these two pools are created, what are Tenneco's plans?

A Approval of separation between field and producing zones will allow us to do the following: We intend to, in early 1967 when weather conditions permit access to location, drill and complete several wells in the Massive Gallup Sand on Tenneco leases in Section 12. We are currently planning to initiate water floods in the Hospah Sand in Section 12 at various possible dates. At this time, we are not asking for establishment of field rules for Gallup or Hospah Sands, but if necessary, we will request a hearing for this purpose at a later date.

Q Now, what wells currently in the, what we call the lower Hospah are producing from both the Hospah and the Gallup Sands?

A There are four wells designated by triangles on the structure map. They are the Hansen 2 -- the Hansen 4, excuse

me. The Santa Fe 4, the Santa Fe 3 and the Santa Fe 7, all operated by Walker Brothers in Sections 6 and 7.

Q Now, these would have to be fully completed if the two pools were created and packers set to prevent migration, is that right?

A Yes.

Q And you are not asking for any pool rules at this time?

A No.

Q Now, in your opinion, would a granting of this application for the creation of the two pools prevent waste and protect the correlative rights of the operators involved?

A Yes, sir.

Q Were Exhibits 1, 2 and 3 prepared by you or under your direction or supervision?

A Yes, sir.

MR. KELLY: I offer into evidence the three exhibits.

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

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

MR. KELLY: And we want to amend the application to cut the north half of the Southeast quarter of Section 1.

MR. NUTTER: This is narrowing the scope of the application and this certainly is acceptable, Mr. Kelly.

MR. KELLY: Yes.

MR. NUTTER: Are there any questions of Mr. Willock?

RECROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Willock, I presume from your application that you are asking that the old Hospah be contracted and that two new pools be created south of this fault, is this correct?

A Two new pools be created, the old Hospah Field up to the north being called Hospah and --

Q Yes, and it would be contracted?

A Yes, sir, and the area to the south of this North side East, Southwest-Northeast trending fault would be called Hospah Field.

Q Didn't you ask the horizontal limit of both the pools be the same area as the gradiated area on your overlay, is that it?

A No, sir. That would be the limits of the South Hospah.

Q That's what I said, this would be the horizontal limits of the two proposed pools?

A Yes, sir.

Q Well, actually you haven't even proven the lower

sand to be productive in the west half of your proposed pool, for the lower sand, have you? Is there any production out there in Section 12?

A No, sir. We have log characteristics in Hospah 2 and 5 that are similar to those over in 1X 4, Hansen 1X and 4 over in Section 6.

Q And by the time you get to the east end, your upper sand is no longer productive, is it?

A Yes, sir, it is productive. There are wells singly completed in this.

Q Well, now, we have this Number 2 Hansen, the Number 4 Santa Fe, the 3 Santa Fe, and the 7 Santa Fe which are completed in the upper and lower, correct?

A Completed in both the Hospah and the Gallup.

Q Right. And then you have this Number 3 Hansen which is completed in the lower only.

A Yes, sir.

Q And the Number 1X which is completed on the lower only?

A Yes, sir.

Q So is there actually any well in Section 6 or 7 which is completed in the upper sand only?

A I believe this well, 8 Santa Fe, is -- I'm not positive of it.

Q Yes, evidently it is.

A Thank you.

Q But it just appears to me that your limits extend a little too far to the west for the lower zone and a little too far east for the upper zone, your proposed horizontal limits.

A Well -- it doesn't show it on this cross section well here, I can pull some logs and show you about the general interpretations as to both of these limits within the oil-water contact here. All of this area is productive in the Hospah Sand. It has resistivity, although it fingers out in stringers from west to east, it is our feeling that it is productive completely within this outline.

Q This is the Hospah Sand?

A Yes, that's the upper sand.

Q Well, hasn't it shaled out by the time you get to the east end of your AA Prime cross section, hasn't the upper sand shaled out?

A It isn't too good up in there, but I --

Q It isn't perforated in there, is it?

A This is Walker Brothers, this is not our operation, but in my opinion it is productive.

Q But it's not perforated in those wells?

A No, sir. Not those that are shown on the cross

section.

MR. MOON: Do you have a log of those wells that were drilled up there?

THE WITNESS: I think I do.

MR. MOON: I am with Tenneco, also.

MR. NUTTER: Yes.

A 3 Santa Fe was perforated in the Gallup alone, wasn't it?

MR. KELLY: Mr. Examiner, as I understand the rule, if these two pools were created with some shrinkage from what they have shown if any production was found, it could be included within one mile.

MR. NUTTER: Well, the pool could be extended any time either zone was proven productive. It just appeared on the face of it that the proposed limits may be a little broad for the proven productivity of either of these two zones.

(Whereupon, an off the record discussion was held.)

Q (By Mr. Nutter) How deep did that one go before they lost it, do you know?

A It produced for awhile from the Hospah.

Q Maybe you have got a log on that one.

A Yes, sir. I think I do have the Hansen 1X. I think they had mechanical trouble out there. I'm not positive.

Q It would be the 1A, I believe. The 1X is in the lower, only. The 1A was apparently, according to the legend on here, the 1A was an upper sand well.

A I believe this wasn't one we used in the cross section, I don't have that log here.

Q Could you obtain a log on the Hansen Well Number 1A and furnish it to the Commission?

A Yes, sir. That we can do.

Q We've got the 1X on the cross section so we know what it looks like, but if we could get a log on the 1A. Mr. Willock --

A Let me enter one other statement, if you will, please. I have some actual production from that well. The Number 1 Hansen produced from the Hospah for one, two, three, four, five, six, seven months and made a total of 1173 barrels of oil and 217 barrels of water.

Q Do you happen to have the gravity of the oil which was produced from that well on that sheet?

A No, sir. Not on this sheet. This information was given to me by Mr. Bob Lauth, probably, from Walker Brothers.

Q And that is when this well was producing from the upper sand, the Hospah Sand?

A Yes, sir, it was. It was, the last production was December of 1965 from the Hospah Sand.

Q What was the production month by month during that period? Would you read that in the record, please?

A The month of June, 1965, 153 barrels of oil, no water. July, 193 barrels of oil, 46 barrels of water. August, 237 barrels of oil, two barrels of water. September, 156 barrels of oil, 11 barrels of water. October, 224 barrels of oil and 100 barrels of water. November was 130 barrels of oil and 50 barrels of water. December was 80 barrels of oil and eight barrels of water.

Q And then I presume they abandoned this well and drilled the 1X?

A Yes, sir. I don't know the exact reason for that, but I know they did.

MR. MOON: We can get you the gravity and poor points and things on that oil.

THE WITNESS: I'm sure it was commingled.

MR. MOON: Was it?

THE WITNESS: Right. I don't know about their testing. I feel it was commingled.

Q (By Mr. Nutter) With the other production?

A With the other Hospah production from the leaks, yes, sir.

Q Which was from the lower sand?

A Well, not in the earlier stage, that has only been

recently. We have wells producing as far over as the Wiggum in the Hospah Sand. This well produces as far over, oh, a quarter of a mile where we have our estimated oil-water contacts. The Massive Gallup has produced over to our lease line and the Gallup has resistivity at two of our wells shown in this cross section.

Q Mr. Willock, Tenneco operates the lease in Section 12?

A Both leases, there are two leases in Section 12.

Q You don't operate this Walker Brothers property in Section 6?

A No, sir. That's another owner.

Q Is that owner aware of this application?

A Yes, sir.

Q Is he aware that with the separation of the pool into two zones, he would have to dually complete those wells?

A Yes, sir, dually complete or shut off one of the zones or the other.

Q What size casing does he have in his wells, do you know?

A No, sir. It may be in some of these files here.

Q Tenneco has no wells which are completed in both zones, has it?

A No, sir. All of our production is from the Hospah.

Q But you indicated that early in 1967 you plan to go into the lower Gallup Sand in Section 12.

A If this application is approved where we can produce these wells, we intend to drill more wells. Five and a half inch in the Number 4 Santa Fe, I would presume that most of their wells are five and a half inch --

Q I see.

A -- completion.

Q Which would permit the installation of strings of tubing?

A Yes, sir.

MR. NUTTER: Are there any other questions of Mr. Willock? You may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kelly?

MR. KELLY: I'm just wondering about the mechanics of this dual completion. This is pretty isolated production over there. I don't know whether it's going to require another hearing for Walker Brothers or not. Do you have any thoughts on that, George?

MR. HATCH: On Walker Brother?

MR. KELLY: Apparently they have got two or three wells they might have to dually complete or shut in of their

zones.

MR. NUTTER: I think in our hearing here, we could authorize administrative procedure for the dual completion of the well similar to what we did with Todd.

MR. KELLY: I would recommend it. The only trouble is, do you have any authority for recommendation from Walker Brothers on how much time they would need or what the condition is?

THE WITNESS: I have none. I think surely they should be allowed enough time for the weather conditions to improve before they are required to shut a well in, or shut off one of the zones, or dually complete it -- I would think that the Commission could. We have no -- if the application is approved, we have -- I don't think we would have any disagreement with allowing them a satisfactory amount of time to accomplish this work without putting them in a bind.

MR. KELLY: How did we have it in the San Andres, was that by just giving them one allowable until they got it dually completed?

MR. NUTTER: That was a real complicated thing in Todd.

MR. KELLY: Well, we would like to do whatever we could on their behalf, and would like to amend our application to ask this administrative approval be put into the order.

MR. NUTTER: The Commission will consider the establishment of some sort of procedure in the event that the pools are separated into two vertical pools, some procedure whereby further hearing for dual completions would not be necessary.

MR. KELLY: That's all we have.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3505? We will take the case under advisement and the hearing is adjourned.

(Whereupon, the hearing was adjourned.)

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JERRY POTTS, NOTARY PUBLIC in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

NOTARY PUBLIC

My Commission Expires:

July 10, 1970

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3505 heard by me on 12/20, 19..., Examiner
New Mexico Oil Conservation Commission

TENNECO OIL COMPANY • P. O. BOX 1714 • 835 SECOND AVENUE • DURANGO, COLORADO 81302

December 22, 1966

Case 3505

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

ATTENTION: Mr. Daniel S. Nutter

Gentlemen:

Attached is (1) an Induction-Electrical Log on Walker Bros. Hansen Federal #1-A Well located in Section 6, T17N, R8W, McKinley County, New Mexico, and (2) a sheet showing Drill Stem Test data on the Hospah zone of the same well.

This information was requested by Mr. Nutter during Case 3505, A Commission Hearing regarding Hospah Field on December 20, 1966. Mr. Nutter was primarily concerned with the capability of the Hospah sand to produce and the gravity of the oil recovered from the Hospah sand.

Very truly yours,

TENNECO OIL COMPANY

for R. E. Siverson
District Production Superintendent

JW:sg

cc: J. D. Moon
Booker Kelly
White, Gilbert, Koch & Kelly

DRILL STEM TEST DATA

WALKER BROS. HANSEN FEDERAL #1-A
NE SW SECTION 6, T17N, R8W
HOSPAH FIELD
McKINLEY COUNTY, NEW MEXICO

Sand Tested	Hospah
Depth	1497'-1527'
IFP	19 PSI
FFP	60 PSI
ISIP	568 PSI/30 Minutes
FSIP	515 PSI/30 Minutes
Recovery	100' Oil 60' Oil Cut Mud
Oil Gravity	34.5° API
Source of Data	Petroleum Information Service Denver, Colorado

12/22/66

JW:sg