

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

AMERICAN EXP. CO.
SANTA FE PACIFIC
RAILROAD #23
C-07-17N-8W

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

CASE NO. 7923
Order No. R-4558-A

APPLICATION OF TESORO PETROLEUM
CORPORATION FOR AMENDMENT OF
DIVISION ORDER NO. R-4558 TO
INCLUDE A POLYMER-AUGMENTED
WATERFLOOD AND FOR APPROVAL OF A
QUALIFIED TERTIARY OIL RECOVERY
PROJECT UNDER THE CRUDE OIL
WINDFALL PROFITS TAX ACT OF 1980,
McKINLEY COUNTY, NEW MEXICO.

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ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 9 a.m. on July 20, 1983,
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 30th day of August, 1983, the Division
Director, having considered the testimony, the record, and the
recommendations of the Examiner, and being fully advised in the
premises,

FINDS:

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

(2) That the applicant, Tesoro Petroleum Corporation,
(hereinafter called Tesoro) seeks the amendment of Division
Order No. R-4558 to expand the project area of its previously
authorized secondary recovery project in the South Hospah Lower
Sand Oil Pool for the conversion of existing water injection
wells to polymer-augmented water injection wells, for the
injection of polymer augmented water into said injection wells,
and for the approval of the Tesoro South Hospah Lower Sand Oil
Pool Project as a qualified tertiary recovery project under the
Crude Oil Windfall Profits Tax Act of 1980.

(3) That the waterflood project lies within the South
Hospah Lower Sand Oil Pool, McKinley County, New Mexico.

(4) That this pool was discovered in March, 1965, with development continuing until the present time, and that water injection into lease-line wells of the Tesoro South Hospah Lower Sand Oil Pool Project consisting of approximately 1055 acres was approved by said Division Order No. R-4558 on June 25, 1973, and water injection was commenced in September, 1973, and that further expansion of the pressure maintenance project occurred in November, 1980.

(5) That the pressure maintenance project was subsequently administratively converted to a waterflood project.

(6) That Tesoro now seeks approval for the injection of polymer-augmented water into 10 project wells as shown on Exhibit "A" attached to this order, and that the applicant seeks to obtain administrative approval in accordance with Rules 701, 702, and 703 of the Division Rules and Regulations for the drilling of new injection wells or the conversion of existing wells to be used for polymer-augmented water injection within the Project Area and the designation of its South Hospah Lower Sand Oil Pool Project as a qualified tertiary recovery project.

(7) The proposed Qualifying Tertiary Project Area (QTP Area) lies wholly within the South Hospah Lower Sand Oil Pool and consists of the following described acreage:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM

Section 6: Lot 6 (NW/4 SW/4)
Lot 7 (SW/4 SW/4)
E/2 SW/4
SE/4
S/2 NE/4
Section 7: Lot 1 (NW/4 NW/4)
Lot 2 (SW/4 NW/4)
Lot 3 (NW/4 SW/4)
E/2 NW/4
W/2 NE/4
NE/4 NE/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM

Section 1: S/2 SE/4
NE/4 SE/4
Lot 9
Lot 10

(8) That the QTP Area is adequately delineated and that the entire area will be affected.

(9) That the New Mexico Oil Conservation Division has been designated by the Governor of the State of New Mexico as the appropriate agency to approve qualified tertiary recovery projects in New Mexico for purposes of the Crude Oil Windfall Profits Tax Act of 1980.

(10) That the tertiary oil recovery method used in the Tesoro QTP Area is a polymer-augmented waterflood method which is a recognized tertiary oil recovery method described in Section 212.78 (c) of the Department of Energy Regulations in effect in June, 1979.

(11) That the actual primary production from the Tesoro QTP Area prior to waterflooding was 752,675 barrels and as of March, 1983, secondary recovery operations had recovered an additional 266,156 barrels.

(12) That an estimated 531,800 STB of additional oil or 3% of the original oil in place will be recovered as a result of the tertiary recovery operations, which is more than an insignificant increase in the amount of crude oil which will ultimately be recovered.

(13) That the QTP Area tertiary recovery operations beginning date will be October 1, 1983.

(14) That the QTP Area tertiary recovery operations beginning date is after May, 1979.

(15) That the proposed tertiary recovery operations within the QTP Area meet all requirements of Section 4993 of the Internal Revenue Code.

(16) That the Tesoro QTP Area project is designed in accordance with sound engineering principles.

(17) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 320 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(18) That Tesoro should survey all injection wells that exhibit injection pressures significantly less than 320 psig.

(19) That within 180 days of this order, applicant should conduct step-rate tests on those wells with injection pressures greater than 320 psig in order to establish the fracture gradient for those wells.

(20) That the project area contains producing wells and plugged and abandoned wells for which insufficient data is available upon which to make a determination that such wells are not capable of serving as conduits for fluid migration from the injection zone.

(21) That as of March, 1983, cumulative water injection into wells in said project totalled approximately 3.381 million barrels without apparent significant movement of injected fluid out of the injection interval.

(22) That based upon this injection history, it appears that there may be no urgent need to institute repairs or replugging of any such wells.

(23) That to assure continued injection within said project without endangerment to underground sources of drinking water, Tesoro should consult with the supervisor of the Division's district office at Aztec to:

- (a) formulate an inspection plan to facilitate detection of injection well failure and/or out-of-zone injection fluid;
- (b) repair any injection wellbore showing evidence of fluid channeling or failure of tubular goods or packer;
- (c) assure that all injection is through tubing under a packer; and
- (d) formulate a plan for the repair, plugging, or replugging of any well in the project area as necessary to continue to assure that injection fluids do not migrate from the injection interval.

(24) That the special rules and regulations for operation of the pressure maintenance project as contained in Order No. R-4558 should be rescinded and the project should be operated under the provisions of Rule 701 through 708 and other Division rules governing oil and gas operations in the State.

(25) That the approval of this application will prevent waste, protect correlative rights and promote conservation.

IT IS THEREFORE ORDERED:

(1) That effective October 1, 1983, the Qualifying Tertiary Recovery Project Area, described in Finding No. (7) of

this Order, being the Tesoro South Hospah Lower Sand Oil Pool Project, McKinley County, New Mexico, is hereby certified as a Qualified Tertiary Recovery Project under the Crude Oil Windfall Profits Tax Act of 1980.

(2) That the applicant, Tesoro, is hereby authorized to inject polymer-augmented water into the wells listed on Exhibit "A" attached to this Order.

(3) That injection into the 10 wells listed on said Exhibit "A" shall be authorized at a surface pressure of up to 320 psig subject to the following:

- (a) Tesoro shall survey all injection wells with injection pressure significantly less than 320 psig;
- (b) all injection wells which indicate channeling, failure of tubular goods, or packer failure should be repaired as required by the supervisor of the Division's district office at Aztec;
- (c) said supervisor shall approve an inspection plan designated to facilitate the detection of injection well failure and/or out-of-zone injection fluid;
- (d) within 180 days of this Order, Tesoro shall conduct step-rate tests on those wells which exhibit injection pressures greater than 320 psig in order to establish a fracture gradient for each such well; and
- (e) the injection wells or systems shall be equipped to assure that the pressure limits determined under (d) above are not exceeded.

(4) That except as provided under Order 3(d) above, the injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 320 psi, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) That the special rules and regulations for operation of the pressure maintenance project as contained in Order No. R-4558 are hereby rescinded and the project shall now be

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operated under the Division's general oil and gas rules including Rules 701 through 708.

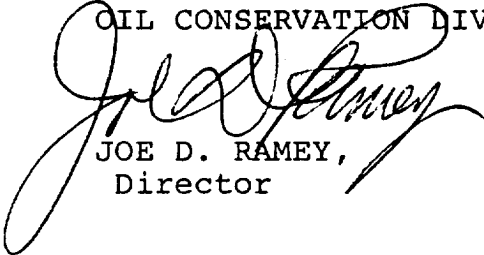
(6) That the drilling of new injection wells or the conversion of existing wells to be used for polymer-augmented water injection shall be approved administratively under provisions of Division Rule 701.

(7) That the operator shall consult with the supervisor of the Division's district office at Aztec to formulate a plan for the repair, plugging, replugging, or taking of other corrective action on any well in the project area as may be necessary to continue to assure that injected fluids do not migrate from the injection interval.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


JOE D. RAMEY,
Director

S E A L

EXHIBIT "A"

1. Tenneco South Hospah Sand Unit Well No. 54
1319' FNL and 5' FEL of Sec. 12, T-17-N, R-9-W
2. Tesoro Hanson Federal Well No. 19
1335' FSL and 1325' FWL of Sec. 6, T-17-N, R-8-W
3. Tesoro Hanson Federal Well No. 28
2310' FSL and 2310' FEL of Sec. 6, T-17-N, R-8-W
4. Tesoro Hanson Federal Well No. 34
990' FSL and 2310' FEL of Sec. 6, T-17-N, R-8-W
5. Tesoro Santa Fe Well No. 10
330' FNL and 2310' FEL of Sec. 7, T-17-N, R-8-W
6. Tesoro Santa Fe Well No. 23
5' FNL and 1330' FWL of Sec. 7, T-17-N, R-8-W
7. Tesoro Santa Fe Well No. 24
1335' FNL and 1325' FWL of Sec. 7, T-17-N, R-8-W
8. Tesoro Santa Fe Well No. 25
1220' FNL and 2600' FWL of Sec. 7, T-17-N, R-8-W
9. Tesoro Santa Fe "A" Well No. 84
5' FSL and 2900' FEL of Sec. 1, T-17-N, R-9-W
10. Tesoro Santa Fe "A" Well No. 87
5' FSL and 50' FEL of Sec. 1, T-17-N, R-9-W

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