

Entered October 28, 1982

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STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

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

CASE NO. 7689  
Order No. R-2807-C

APPLICATION OF TESORO PETROLEUM  
CORPORATION FOR AMENDMENT OF  
DIVISION ORDER NO. R-2807 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.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 29, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 28th day of October, 1982, 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, seeks the amendment of Division Order No. R-2807, to include the injection of polymer-augmented water in its previously authorized waterflood project in the Hospah Field, for conversion of existing injector wells to polymer-augmented water injector wells, and for the approval of the Tesoro Hospah Sand Unit as a qualified tertiary recovery project under the Crude Oil Windfall Profits Tax Act of 1980.

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

(4) That this oil field was discovered in 1927 and developed during the period from 1938 through 1946, with waterflooding being initiated in December, 1965.

(5) That the Tesoro Petroleum Corporation Hospah Sand Unit Waterflood Project consisting of approximately 1,225 acres was approved by said Division Order No. R-2807 on November 24, 1964, and water injection was commenced within said project during December, 1965.

(6) That the applicant now seeks approval for the injection of polymer-augmented water into seventeen (17) project wells as shown on Exhibit "A" attached to this order and the designation of its Hospah Sand Unit Project as a qualifying tertiary recovery project.

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

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM  
Section 1: NW/4; W/2 SW/4; NE/4 SW/4;  
W/2 NE/4; NE/4 NE/4;  
NW/4 NW/4 SE/4;  
NW/4 SE/4 SW/4;  
W/2 SE/4 NE/4;  
NE/4 SE/4 NE/4; and  
Lot 1 and N/2 Lot 6

TOWNSHIP 18 NORTH, RANGE 8 WEST, NMPM  
Section 31: SW/4 and SW/4 NW/4

TOWNSHIP 18 NORTH, RANGE 9 WEST, NMPM  
Section 36: S/2; S/2 N/2; NE/4 NW/4;  
and NW/4 NE/4

(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

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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 4.56 million barrels and that waterflooding secondary recovery operations will recover an additional 3.64 million barrels.

(12) That an estimated 200,000 to 906,000 barrels of additional oil 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 was October 15, 1982.

(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 designated in accordance with sound engineering principles.

(17) That the waterflood injection wells currently in use are injecting water at a surface pressure of 750 psig or less.

(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, Tesoro 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, which should be a maximum sufficient to fracture the formation.

(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 July 31, 1982, cumulative water injection into wells in said project totalled approximately 36.9 million

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barrels without apparent significant movement of injected fluid out of the injection interval.

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

(23) That to assure continued injection within said project without endangerment of underground sources of drinking water the applicant 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) establish wellhead injection pressures at approximately 50 pounds less than fracture pressure.

(24) That Hospah Sand Unit Well No. 69, a tubingless completion, should not be used as an injection well.

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

IT IS THEREFORE ORDERED:

(1) That effective October 15, 1982, the Qualifying Tertiary Recovery Project Area, described in Finding No. (7) of this Order, being the Tesoro Petroleum Corporation Hospah Sand Unit Project, Hospah Pool, 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, with the exception of Unit Well No. 69, the applicant, Tesoro Petroleum Corporation, is hereby authorized to inject polymer-augmented water into the wells listed on Exhibit "A" attached to this Order.

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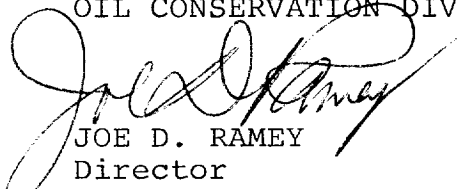
(3) That injection into the 16 remaining wells listed on said Exhibit "A" shall be authorized at a surface pressure of up to 750 psig subject to the following:

- (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 shall be repaired as required by the supervisor of the Division's district office at Aztec;
- (c) said supervisor shall approve an inspection plan designed 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 thereafter each such well shall be limited to a maximum surface injection pressure of 50 psig less than the fracture pressure of the formation; and,
- (e) the injection wells or system shall be equipped to assure that the pressure limits determined under (d) above are not exceeded.

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

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

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



JOE D. RAMEY  
Director

S E A L  
fd/

Hospah Sand  
Unit Well No.

Footage Location

Sec.-Twp.-Rng.

49	330'	FNL	1380'	FEL	1	17N	9W
58	30'	FSL	2350'	FEL	36	18N	9W
60	2310'	FSL	1050'	FWL	1	17N	9W
61	3640'	FSL	1000'	FWL	1	17N	9W
62	1900'	FSL	1140'	FWL	36	18N	9W
63	1980'	FNL	2310'	FWL	36	18N	9W
64	1650'	FNL	660'	FEL	36	18N	9W
65	990'	FSL	250'	FEL	36	18N	9W
69	2310'	FNL	940'	FWL°	36	18N	9W
70	800'	FSL	1800'	FWL	36	18N	9W
84	1475'	FNL	2600'	FWL	1	17N	9W
87	925'	FNL	2290'	FEL	1	17N	9W
90	2390'	FSL	1475'	FEL	36	18N	9W
91	1790'	FSL	2460'	FWL	36	18N	9W
92	700'	FSL	1850'	FEL	36	18N	9W
93	770'	FNL	2010'	FWL	1	17N	9W
94	2550'	FSL	2400'	FWL	1	17N	9W

Exhibit "A"  
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