BEFORE EXAMINER STOGNER
OIL CONSERVATION DIVISION
AMOCO EXHIBIT NO. 9
CASE NO. 8470

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no

II. Operator: Amoco Production Company

Address: P. O. Box 3092, Houston, Texas 77253

Contact party: S. P. Scheffler Phone: 713-556-3929

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☒ yes ☐ no R-7518
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: S. P. Scheffler Title Sr. Staff Pet. Engr.

Signature: S. P. Scheffler Date: January 30, 1985

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. 4/25/84 NMOCD Examiner Hearing - Case No. 8167. Application of Amoco Production Company for SWD in St. "FU" #3 Airstrip (Bone Spring) Pool.

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

OPERATIONAL & GEOLOGICAL DATA

REQUIRED UNDER SECTIONS VII, VIII, IX

FORM C-108

Disposal Well Operational Data
(Required under Section VII & IX, Form C-108)

Average daily injection rate - 600 BWPD
Maximum daily injection rate - 1000 BWPD

Discussion: Additional capacity above 600 BWPD may be required if water production increases from current Airstrip Field producers and/or additional water production is encountered in new Airstrip field wells.

Type of injection system - closed
Average injection pressure - 900 psi
Injection pressure limit requested for approval -1800 psi

Discussion: This pressure limit will not exceed a gradient of .2 psi/ft. of depth to the top of the additional injection interval at 10,574'.

Producing Formation - Bone Springs, Wolfcamp
Receiving Formation - Bone Springs, Wolfcamp

Discussion: The produced water to be injected is currently from the Bone Spring and Wolfcamp Horizons. Wolfcamp water is currently being produced in the State HQ #7 Well and the State FU #1 Well. The FU #1 Well is currently downhole commingled with the Bone Spring formation. The Wolfcamp and Bone Spring waters have been shown to be compatible and nothing to the contrary has been observed since downhole commingling. Therefore, produced waters from the Bone Spring and Wolfcamp wells will be compatible with the receiving formations.

Proposed Stimulation

Discussion: The proposed Wolfcamp injection interval will be stimulated with approximately 7000 gallons of 15% HCl acid.

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Geological Data
(Required under Section VIII, Form C-108)

Injection zone - Wolfcamp

Discussion: Wolfcamp is primarily a vugular dolomite with some shale and limestone. The Wolfcamp is approximately 1500' thick; however, the State FU #3 only penetrates the upper 300' of the Wolfcamp. Top of Wolfcamp is -6501' subsea.

Underground sources of drinking water - Ogalla, Triassic

Discussion: Underground sources of drinking water in the area overlying the injection zone are the Ogalla (approximately 3795' above sea level to 3800' above sea level) and the Triassic (bottom at 2895' above sea level to 3795' above sea level).

SS/gg
OP15ER089

Amoco Operated Airstrip Field Area
Increased Reserve Recovery
With Proposed Expansion of SWD
Injection Interval

Airstrip Field Summary of Pertinent Data
(Bone-Spring & Wolfcamp Pools)

Percentage of total water production trucked	- 96%
Economic limit with continued trucking of produced water	- 9 6 BOPD
Maximum reduction in monthly operating expense with proposed SWD injection interval	- $19,638/Mo
Economic limit with proposed SWDW injection interval	- 67 BOPD

*Amoco operated incremental reserves for Airstrip Field resulting from reduction of the Economic limit to 67 BOPD - 21,170 BO

*Assumes average combined Bone Spring/Wolfcamp decline of 50%/yr.

$$\text{Reserves} = \frac{Q1-Q2}{D}(365)$$

$$= \frac{96-67}{.50}(365)$$

$$= 21{,}170 \text{ BO}$$

SS/gg
0P15ER090/2
01/22/85

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Amoco EXHIBIT NO. 10
CASE NO. 8470