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STATE OF NEW MEXICO  
ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

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

CASE NO. 10954  
Order No. R-10113

APPLICATION OF AMOCO PRODUCTION  
COMPANY FOR A NITROGEN INJECTION  
PILOT PROJECT, RIO ARriba COUNTY,  
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on April 14, 1994, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 9th day of May, 1994, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

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

(2) The applicant, Amoco Production Company, seeks authority to institute a pilot nitrogen injection project in the Basin-Fruitland Coal Gas Pool underlying the following described area within its San Juan 28-7 Unit in Rio Arriba County, New Mexico, by the injection of nitrogen into the coal seams through its San Juan 28-7 Unit Well Nos. 414, 427 and 428 located, respectively, in Unit M of Section 14, Unit G of Section 22, and Unit A of Section 23, all in Township 28 North, Range 7 West, NMPM, and as further described on Exhibit "A" attached hereto:

TOWNSHIP 28 NORTH, RANGE 7 WEST, NMPM

Section 13: W/2  
Section 14: All  
Section 15: E/2  
Section 22: E/2  
Section 23: All  
Section 24: W/2  
Section 27: All

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- (3) According to applicant's evidence and testimony, laboratory research and actual field testing have indicated that injection of nitrogen into coal formations aids and enhances the methane desorption process which should result in the recovery of a significantly greater amount of gas from the Basin-Fruitland Coal Gas Pool than would normally be recovered by pressure depletion.
- (4) Further evidence indicates that the applicant has recently conducted a similar nitrogen injection project in Colorado which proved to be very successful.
- (5) According to applicant's engineering evidence and testimony, the proposed nitrogen pilot injection project is an attempt to test the effectiveness of nitrogen as a displacing agent within the Basin-Fruitland Coal Gas Pool.
- (6) The applicant proposes to inject into two distinct coal seam intervals which are relatively thick and laterally continuous across the proposed project area and which are located within the gross interval from approximately 2,970 feet to 3,500 feet.
- (7) Applicant further proposes to inject approximately 1.5 MMCFG per day per well at a surface injection pressure of approximately 2,000 psi.
- (8) The applicant's plan of operation includes utilizing the existing San Juan 28-7 Unit Well Nos. 403, 404, 407, 408, 409, 417 and 420 as producing wells within the project area and drilling the three proposed injection wells as described in Finding No. (2) above.
- (9) Applicant anticipates that a response to nitrogen injection should occur within a relatively short period of time.
- (10) The proposed pilot project is located within the San Juan 28-7 Unit which is a Federal exploratory unit currently operated by the applicant. The area encompassed by the proposed pilot project is all Federal acreage.
- (11) According to applicant's testimony, the Basin-Fruitland Coal Gas Pool Participating Area (BFCPA) within the San Juan 28-7 Unit does not contain all of the area encompassed by the proposed injection project. As a result, the interest ownership within the proposed project area is not common.
- (12) The applicant has requested that the United States Bureau of Land Management (BLM) expand the BFCPA within the San Juan 28-7 Unit, however, as of the date of the hearing, such expansion has not been granted by BLM.

(13) In order to assure that the correlative rights of all interest owners within the proposed project area are protected, the applicant should be required to demonstrate, prior to commencing injection operations, that the interests within the project area have been consolidated either by virtue of the expansion of the BFCPA or by some other means acceptable to the Division.

(14) No offset operator and/or interest owner appeared at the hearing in opposition to the application.

(15) Approval of the proposed pilot nitrogen injection project will allow the applicant the opportunity to test a new process and technology which may ultimately result in the recovery of otherwise unrecoverable gas from the Basin-Fruitland Coal Gas Pool, thereby preventing waste, and will not violate correlative rights.

(16) The applicant should take all steps necessary to ensure that the injected nitrogen enters only the coal seam intervals and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(17) Injection into the wells shown on Exhibit "A" should be accomplished through 2 3/8-inch internally plastic-lined tubing installed in a packer set within 100 feet of the uppermost injection perforation; an approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(18) In its presentation, the applicant identified two wells within the "area of review" which are not adequately cemented so as to confine the injected fluid to the proposed injection interval.

(19) Prior to commencing injection operations, the applicant should be required to perform remedial cement operations on the San Juan 28-7 Unit Well Nos. 9 and 50, located, respectively, 890 feet from the South line and 1090 feet from the West line (Unit M) of Section 14, and 990 feet from the North and East lines (Unit A) of Section 23, in a manner acceptable to the supervisor of the Division's Aztec district office.

(20) Prior to commencing injection operations into the wells shown on Exhibit "A", the casing in each well should be pressure tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(21) The injection wells or pressurization system should be initially equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 2,000 psi.

(22) The Division Director should have the authority to administratively authorize a pressure limitation in excess of the pressure limitation described in Finding No. (21) above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(23) The operator should give advance notification to the supervisor of the Aztec District Office of the Division of the date and time of the installation of injection equipment, the conductance of mechanical integrity pressure tests and the conductance of remedial cement operations in order that the same may be witnessed.

(24) The proposed nitrogen injection pilot project should be approved and the project should be governed by the provisions of Rule Nos. 701 through 708 of the Oil Conservation Division Rules and Regulations.

(25) Expansion of the pilot project should be approved only after notice and hearing.

(26) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

**IT IS THEREFORE ORDERED THAT:**

(1) The applicant, Amoco Production Company, is hereby authorized to institute a pilot nitrogen injection project in the Basin-Fruitland Coal Gas Pool underlying the following described area within its San Juan 28-7 Unit in Rio Arriba County, New Mexico, by the injection of nitrogen into the coal seams through its San Juan 28-7 Unit Well Nos. 414, 427 and 428 located, respectively, in Unit M of Section 14, Unit G of Section 22, and Unit A of Section 23, all in Township 28 North, Range 7 West, NMPM, and as further described on Exhibit "A" attached hereto:

**TOWNSHIP 28 NORTH, RANGE 7 WEST, NMPM**

Section 13: W/2  
Section 14: All  
Section 15: E/2  
Section 22: E/2  
Section 23: All  
Section 24: W/2  
Section 27: All

PROVIDED HOWEVER THAT, in order to assure that the correlative rights of all interest owners within the project area are protected, the applicant shall demonstrate, prior to commencing injection operations, that the interests within the project area have been consolidated either by virtue of the expansion of the Basin Fruitland Coal Participating Area or by some other means acceptable to the Division.

(2) The applicant shall take all steps necessary to ensure that the injected nitrogen enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(3) Injection into the wells shown on Exhibit "A" shall be accomplished through 2 3/8-inch plastic-lined tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation; an approved leak detection device shall be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(4) The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 2,000 psi.

(5) The Division Director shall have the authority to administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(6) Prior to commencing injection operations, the applicant shall perform remedial cement operations on the San Juan 28-7 Unit Well Nos. 9 and 50, located, respectively, 890 feet from the South line and 1090 feet from the West line (Unit M) of Section 14, and 990 feet from the North and East lines (Unit A) of Section 23, in a manner acceptable to the supervisor of the Division's Aztec district office.

(7) Prior to commencing injection operations into the wells shown on Exhibit "A", the casing in each well shall be pressure-tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(8) The operator shall give advance notification to the supervisor of the Aztec District Office of the Division of the date and time of the installation of injection equipment, the conductance of mechanical integrity pressure tests and the conductance of remedial cement operations in order that the same may be witnessed.

(9) The applicant shall immediately notify the supervisor of the Aztec District Office of the Division of the failure of the tubing, casing or packer in any injection well, the leakage of gas from or around any producing well, or the leakage of gas from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(10) The subject project is hereby designated the Basin Fruitland Coal Nitrogen Pilot Project, and the applicant shall conduct injection operations in accordance with Division Rule Nos. 701 through 708 and shall submit monthly progress reports in accordance with Division Rule Nos. 706 and 1115.

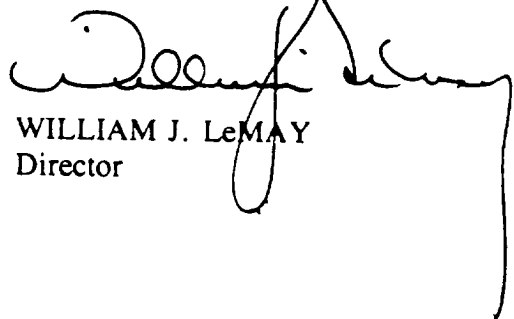
(11) Expansion of the pilot project shall be approved only after notice and hearing.

(12) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(13) 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

  
WILLIAM J. LeMAY  
Director

S E A L

**EXHIBIT "A"**

**DIVISION ORDER NO. R-10113**

**CASE NO. 10954**

**BASIN FRUITLAND COAL NITROGEN PILOT PROJECT  
APPROVED INJECTION WELLS**

<u>WELL NAME</u>	<u>WELL NO.</u>	<u>LOCATION</u>	<u>UNIT</u>	<u>S-T-R</u>	<u>INJECTION PERFORATIONS</u>	<u>PACKER DEPTH</u>	<u>TUBING SIZE</u>
San Juan 28-7 Unit	414	910' FSL & 820' FWL	M	14-28N-7W	2982'-3235'	2900'	2 3/8"
San Juan 28-7 Unit	427	2070' FNL & 1440' FEL	G	22-28N-7W	3267'-3511'	3200'	2 3/8"
San Juan 28-7 Unit	428	1060' FNL & 820' FEL	A	23-28N-7W	3163'-3412'	3100'	2 3/8"