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July 2, 1990

Michael E. Stogner
Hearing Examiner
Oil Conservation Division
New Mexico Department of Energy,
Minerals and Natural Resources
State Land Office Building
Santa Fe, New Mexico 87501

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OIL CONSERVATION DIVISION

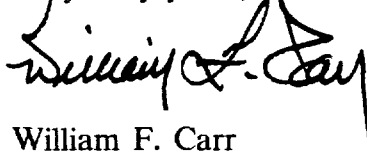
Re: **Case No. 9931:** Application of ARCO Oil & Gas Company for
Pressure Maintenance Expansion and an Unorthodox Gas
Injection Well Location, Eddy County, New Mexico

Dear Mr. Stogner:

Pursuant to your request of June 13, 1990, enclosed please find ARCO Oil & Gas Company's proposed order of the Division in the above-referenced case.

If you need anything further from ARCO to proceed with your consideration of this application, please advise.

Very truly yours,



William F. Carr

WFC:mtb

Enclosure

cc: W. Thomas Kellahin, Esq. (w/enclosure)
Gary Smallwood (w/enclosure)

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

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

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OIL CONSERVATION DIVISION

CASE NO. 9931
ORDER NO. R-

APPLICATION OF ARCO OIL & GAS COMPANY
FOR PRESSURE MAINTENANCE EXPANSION AND
AN UNORTHODOX GAS INJECTION WELL LOCATION,
EDDY COUNTY, NEW MEXICO.

**ARCO OIL & GAS COMPANY'S
PROPOSED
ORDER OF THE DIVISION**

BY THE DIVISION:

This cause came on for hearing at 9:00 a.m. on June 13, 1990, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 2nd day of July, 1990, 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, ARCO Oil & Gas Company ("ARCO"), operates the Empire-Abo Pressure Maintenance Project, Empire-Abo Unit Area, in the Empire-Abo Pool pursuant to Commission Order R-4549, as amended, for the production of natural gas liquids ("NGL's") by stripping NGL's from gas produced from the Empire-Abo Unit Area and reinjecting all produced gas back into the pool.

(3) As part of an effort to convert a number of additional wells to injection and thereby more efficiently recover NGL's from the Empire-Abo Pool, ARCO seeks authority to expand its Empire-Abo Unit Pressure Maintenance Project by converting its Empire-Abo Unit "J" Well No. 10, located 2310 feet from the North and West lines from producing oil wells to gas injection wells (Unit F) of Section 3 and its Empire-Abo Unit "J" Well No. 13, located 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 2, both in Township 18 South, Range 27 East, Empire-Abo Pool, Empire-Abo Unit Area.

(4) ARCO also seeks an exception to Rule 7A of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project, as promulgated by Order No. R-4549, as amended, for the "J" Well No. 13 which is located at an unorthodox gas injection well location because it is located less than 1650 feet from a tract not committed to the Unit on which is located a well producing from the same common source of supply.

(5) The evidence presented by ARCO demonstrated that injection of natural gas in the subject wells through perforations located lower in the structure than had been previously been utilized resulted in a more efficient sweep of the NGL's from the reservoir and this improved stripping pattern increased the recovery of hydrocarbons from the pool.

(6) OXY, U.S.A., Inc. ("OXY"), operates the offsetting Citgo Empire-Abo Unit which, although producing from the Empire-Abo Pool, includes lands that have not been included in the Empire-Abo Pressure Maintenance Project. All oil, gas and NGL's produced from the two remaining wells in the Citgo Empire-Abo Unit is sold by OXY who ceased the reinjection of gas in 1988.

(7) OXY appeared in opposition to ARCO's application for conversion of the Empire-Abo Unit "J" Well No. 13 to gas injection asserting that said injection would cause its Citgo Empire-Abo Unit Well No. 5 to produce natural gas at higher rates thereby causing a loss of production of oil and other liquid hydrocarbons. OXY raised no objection to the conversion to injection of the Empire-Abo Unit "J" Well No. 10.

(8) Although the parties agree that this reservoir is highly fractured, OXY contends that the fractures are oriented in a S/W-N/E direction and that the gas injected into the ARCO Empire-Abo Unit "J" Well No. 13 would migrate to the northeast through these fractures and cause their offsetting Citgo Empire-Abo Unit Well No. 5 to gas out, thereby losing the four barrels of oil per day it is currently producing and reducing the recovery of NGL's from the well.

(9) ARCO (testimony of Mr. Smallwood) and OXY (testimony of Mr. Schmuhl) agreed that acreage offsetting the OXY Unit to the south had experienced higher recoveries of NGL's than other portions of either OXY's Citgo Empire-Abo Unit or

ARCO's Empire-Abo Unit and that this recovery was the result of injection of gas into the Empire-Abo Pool by ARCO through the Empire-Abo Unit "J" Well No. 12 at a lower structural position than in other injection wells in the Unit. This area of higher NGL recovery is located perpendicular to the fracture orientations suggested by OXY.

(10) The use of the Empire-Abo Unit "J" Well No. 13 for conversion to injection is appropriate for it is the only well in the immediate area which is not currently producing gas from this pool.

(11) The conversion of the Empire-Abo Unit Well Nos. 10 and 13 to injection as proposed by ARCO will result in increased efficiency of the Empire-Abo Unit Pressure Maintenance Project, will result in the increased recovery of NGL's from the Pool which will more than offset the loss of oil production from the Pool, if any, (*see* ARCO Exhibits 7 and 9) thereby preventing the waste of hydrocarbons and protecting the correlative rights of all interest owners in the Pool.

(12) The Empire-Abo Unit "J" Well No. 13 is 975 feet from the ARCO tract and, is therefore 40% closer to the outer boundary of the Empire-Abo Unit Pressure Maintenance Project than authorized by Rule 7 of the Special Rules and Regulations for said project.

(13) The proposed injection rate for the Empire-Abo Unit "J" Well No. 13 should be limited to 60% of the 6,000 mcf per day injection volume proposed by ARCO or to an injection volume of 3,600 mcf per day.

(14) The application of ARCO Oil & Gas Company, subject to the limitation on injection rates set forth in findings 12 and 13, should be approved.

IT IS THEREFORE ORDERED THAT:

(1) The application of ARCO Oil & Gas Company to expand its Empire-Abo Unit Pressure Maintenance Project, by converting its Empire-Abo Unit "J" Well No. 10, located 2310 feet from the North and West lines (Unit F) of Section 3 and its Empire-Abo Unit "J" Well No. 13 located 1980 feet from the North line and 660 feet from the West line (Unit E) of Section 2, both in Township 18 South, Range 27 East, Empire-Abo Pool, Empire-Abo Unit Area, from producing wells to gas injection wells and an exception to Rule 7A of the Special Rules and Regulations for the Empire-Abo Unit Pressure Maintenance Project for its Empire-Abo Unit "J" Well No. 13 it hereby granted.

PROVIDED HOWEVER,

(2) The injection rate for the Empire-Abo Unit "J" Well No. 13 shall be limited to an amount not to exceed 3,600 mcf per day.

(3) 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 COMMISSION

WILLIAM J. LEMAY
Director

CAMPBELL & BLACK, P.A.

LAWYERS

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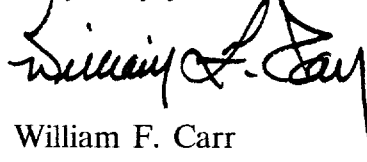
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Director