

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 6967
Order No. R-6446-B

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR APPROVAL OF THE BRAVO
DOME CARBON DIOXIDE GAS UNIT AGREEMENT,
UNION, HARDING, AND QUAY COUNTIES,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for rehearing at 9 a.m. on October 9, 1980, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 23rd day of January, 1981, the Commission, a quorum being present, having considered the testimony, the record, and the exhibits, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof with respect to prevention of waste and protection of correlative rights.
- (2) That the applicant, Amoco Production Company, seeks approval of the Bravo Dome Carbon Dioxide Gas Unit Agreement (Unit) covering 1,174,225.43 acres, more or less, of State, Federal and Fee lands described in Exhibit A attached hereto and incorporated herein by reference.
- (3) That this matter originally came on for hearing before the Commission on July 21, 1980.
- (4) That on August 14, 1980, the Commission entered its Order No. R-6446 approving said Bravo Dome Carbon Dioxide Unit Agreement.

(5) That the Commission received a timely application for rehearing of Case No. 6967 from Abe Casados, et al (petitioners).

(6) That petitioners alleged, among other things, that the application was premature, that the Commission's findings and conclusions were based on insufficient evidence, and that additional findings concerning prevention of waste and protection of correlative rights should be made by the Commission.

(7) That on October 9, 1980, a rehearing was held in Case No. 6967 for the purpose of permitting all interested parties to appear and present evidence relating to this matter, including the following particulars:

- (a) prevention of waste within the unit area,
- (b) protection of correlative rights within the unit area as afforded by the unit agreement, its plan and participation formula, and
- (c) whether the unit agreement and its plan are premature.

(8) That the unitized operation and management of the proposed unit has the following advantages over development of this area on a lease by lease basis:

- (a) more efficient, orderly and economic exploration of the unit area; and
- (b) more economical production, field gathering, and treatment of carbon dioxide gas within the unit area

(9) That said advantages will reduce average well costs within the unit area, provide for longer economic well life, result in the greater ultimate recovery of carbon dioxide gas thereby preventing waste.

(10) That the unit area is a large area with carbon dioxide gas potential.

(11) That at the time of the hearing and the rehearing some areas within the unit boundary had experienced a long history of production.

(12) That at the time of the hearing and the rehearing a number of exploratory wells had been completed in scattered parts of the unit.

(13) That the developed acreage within the proposed unit is very small when compared to the total unit area and when viewed as a whole, the unit must be considered to be an exploratory unit.

(14) That the evidence presented demonstrated that there are two methods of participation which would protect the correlative rights of the owners within exploratory units through the distribution of production or proceeds therefrom from the unit; these methods are as follows:

- (a) a formula which provides that each owner in the unit shall share in production from any well(s) within the unit in the same proportion as each owner's acreage interest in the unit bears to the total unit acreage, and
- (b) a method which provides for the establishment of participating areas within the unit based upon completion of commercial wells and geologic and engineering interpretation of presumed productive acreage with only those parties of interest within designated participating areas sharing in production. Such participation would be based upon the proportion of such owner's acreage interest within the participating area as compared to the total acreage within the participating area.

(15) That each of the methods described in Finding No. (14) above was demonstrated to have certain advantages and limitations.

(16) That there was no evidence upon which to base a finding that either method was clearly superior upon its own merits in this case at this time.

(17) That the method of sharing the income from production from the unit as provided in the Unit Agreement is reasonable and appropriate at this time.

(18) That the evidence presented at the rehearing demonstrated a clear need for the carbon dioxide gas projected to be available from the unit for purposes of injection for the enhanced recovery of crude oil from depleted reservoirs.

(19) That approval of the unit and development of the unit area at this time will not result in the premature availability or excess capacity of carbon dioxide gas for injection for enhanced recovery purposes.

(20) That the Commissioner of Public Lands and the United States Geological Survey have approved the proposed unit with respect to state and federal lands committed to the unit.

(21) That the application is not premature.

(22) That this is the largest unit ever proposed in the State of New Mexico, and perhaps the United States.

(23) That there is no other carbon dioxide gas unit in the State.

(24) That the Commission has no experience with the long term operation of either a unit of this size or of a unit for the development and production of carbon dioxide gas.

(25) That the evidence presented in this case establishes that the unit agreement at least initially provides for development of the unit area in a method that will serve to prevent waste and which is fair to the owners of interests therein.

(26) That the current availability of reservoir data in this large exploratory unit does not now permit the presentation of evidence or the finding that the unit agreement provides for the long term development of the unit area in a method which will prevent waste and which is fair to the owners of interests therein.

(27) That further development within the unit area should provide the data upon which such determinations could, from time to time, be made.

(28) That the Commission is empowered and has the duty with respect to unit agreements to do whatever may be reasonably necessary to prevent waste and protect correlative rights.

(29) That the Commission may and should exercise continuing jurisdiction over the unit relative to all matters given it by law and take such actions as may, in the future, be required to prevent waste and protect correlative rights therein.

(30) That those matters or actions contemplated by Finding No. (29) above may include but are not limited to: well spacing, requiring wells to be drilled, requiring elimination of undeveloped or dry acreage from the unit area, and modification of the unit agreement.

(31) That the unit operator should be required to periodically demonstrate to the Commission that its operations within the unit are resulting in prevention of waste and protection of correlative rights on a continuing basis.

(32) That such a demonstration should take place at a public hearing at least every four years following the effective date of the unit or at such lesser intervals as may be required by the Commission.

(33) That all plans of development and operation and all expansions or contractions of the unit area should be submitted to the Commission for approval.

(34) That in addition to the submittal of plans of development and operation called for under Finding No. (33) above, the operator should file with the Commission tentative four-year plans for unitized operations within the unit.

(35) That said four-year plan of operations should be for informational purposes only, but may be considered by the Commission during its quadrennial review of unit operations.

(36) That the initial four-year plan should be filed with the Commission within 60 days following the entry of this order, and that subsequent plans should be filed every four years within 60 days before the anniversary date of the entry of this order.

(37) That approval of the proposed unit agreement with the safeguards provided above should promote the prevention of waste and the protection of correlative rights within the unit area.

IT IS THEREFORE ORDERED:

(1) That the Bravo Dome Carbon Dioxide Gas Unit Agreement is hereby approved.

(2) That the plan contained in said unit agreement for the development and operation of the unit area is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Commission to supervise and control operations for the exploration and development of any lands committed to the unit and production of carbon dioxide gas therefrom, including the prevention of waste, and the protection of correlative rights.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof; that in the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That the operator of said unit shall be required to periodically demonstrate to the Commission that its operations within the unit are resulting in the prevention of waste and protection of correlative rights on a continuing basis.

(5) That such demonstration shall take place at a public hearing held at least every four years following the effective date of the unit or at such lesser intervals as the Commission may require.

(6) That all plans of development and operation and all expansions or contractions of the unit area shall be submitted to the Commission for approval.

(7) That in addition to the submittal of plans of development and operation required under Order No. (4) above, the operator shall file with the Commission tentative four-year plans for unitized operations within the Bravo Dome Unit.

(8) That said four-year plan of operations shall be for informational purposes only, but may be considered by the Commission during its quadrennial review of unit operations.

(9) That the initial four-year plan shall be filed with the Commission within 60 days following the entry of this order, and

that subsequent such plans shall be filed every four years within 60 days before the anniversary date of the entry of this order.

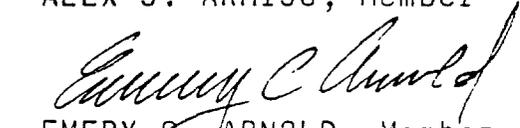
(10) That this order shall become effective 60 days after the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey; that this order shall terminate ipso facto upon the termination of said unit agreement; and that the last unit operator shall notify the Commission immediately in writing of such termination.

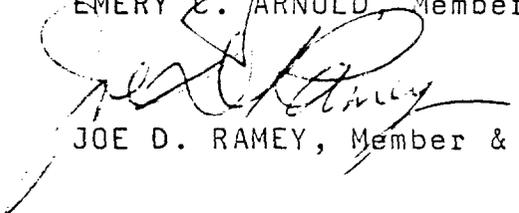
(11) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

ALEX J. ARMIJO, Member


EMERY C. ARNOLD, Member


JOE D. RAMEY, Member & Secretary

S E A L

fd/

UNION COUNTY, NEW MEXICO

TOWNSHIP 18 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 35 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 36 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 37 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 35 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 36 EAST, NMPM
Section 16: All
Section 18: S/2
Sections 19 and 20: All
Section 21: W/2, W/2 NE/4 and SE/4 NE/4
Section 26: S/2 S/2
Section 28: W/2 and SW/4 SE/4
Sections 29 through 36: All

TOWNSHIP 20 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 20 NORTH, RANGE 35 EAST, NMPM
Section 3: W/2
Sections 4 through 10: All
Section 11: SW/4
Section 14: NW/4
Sections 15 through 22: All
Section 23: NW/4
Sections 27 through 34: All

TOWNSHIP 21 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 21 NORTH, RANGE 35 EAST, NMPM
Sections 1 through 24: All
Section 25: N/2 and SW/4
Section 26: All
Section 27: NE/4 and N/2-NW/4
Sections 28 through 33: All

TOWNSHIP 22 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 22 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 22 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 22 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 22 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 22 NORTH, RANGE 35 EAST, NMPM
Section 5: S/2
Sections 6 through 8: All
Section 9: W/2 and SE/4
Section 10: S/2 S/2
Sections 15 through 21: All
Section 22: N/2
Section 27: SW/4
Sections 28 through 33: All
Section 34: W/2
Section 36: All

TOWNSHIP 23 NORTH, RANGE 30 EAST, NMPM
Section 36: All

TOWNSHIP 23 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 23 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 23 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 23 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 23 NORTH, RANGE 35 EAST, NMPM
Section 31: All

TOWNSHIP 24 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 24 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 24 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 24 NORTH, RANGE 34 EAST, NMPM
Sections 1 through 36: All

HARDING COUNTY, NEW MEXICO

TOWNSHIP 17 NORTH, RANGE 29 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 29 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 18 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWN OF YAUW

TOWNSHIP 19 NORTH, RANGE 29 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 19 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 20 NORTH, RANGE 29 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 20 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 20 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 20 NORTH, RANGE 32 EAST, NMPM
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TOWNSHIP 20 NORTH, RANGE 33 EAST, NMPM
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TOWNSHIP 21 NORTH, RANGE 29 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 21 NORTH, RANGE 30 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 21 NORTH, RANGE 31 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 21 NORTH, RANGE 32 EAST, NMPM
Sections 1 through 36: All

TOWNSHIP 21 NORTH, RANGE 33 EAST, NMPM
Sections 1 through 36: All

QUAY COUNTY, NEW MEXICO

NEW MEXICO DEPARTMENT OF REVENUE

TOWNSHIP 16 NORTH, RANGE 34 EAST, NMPM

Section 3: Lots 3 through 6, 11 and 12

Section 4: Lots 1, 2, 5 through 12,
N/2 SE/4 and SW/4

TOWNSHIP 16 NORTH, RANGE 35 EAST, NMPM

Section 1: Lots 1 through 8, NW/4 SW/4
and S/2 SW/4

Sections 2 through 6: All

Section 7: Lots 1, 2, E/2 NW/4 and E/2

Sections 8 through 10: All

Section 11: NW/4, N/2 SW/4 and N/2 S/2
SW/4, and N/2 S/2 S/2 SW/4

TOWNSHIP 16 NORTH, RANGE 36 EAST, NMPM

Section 5: Lots 4 and 5

Section 6: Lots 1 through 8 and 10

TOWNSHIP 17 NORTH, RANGE 34 EAST, NMPM

Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 35 EAST, NMPM

Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 36 EAST, NMPM

Sections 1 through 36: All

TOWNSHIP 17 NORTH, RANGE 37 EAST, NMPM

Sections 1 through 36: All

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 8289
Order No. R-6446-C

IN THE MATTER OF CASE 8289 BEING
CALLED BY THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION PUR-
SUANT TO THE PROVISIONS OF DIVISION
ORDER R-6446-B WHICH APPROVED THE
BRAVO DOME CARBON DIOXIDE GAS UNIT
AGREEMENT, TO PERMIT AMOCO PRODUCTION
COMPANY, THE OPERATOR OF SAID UNIT,
TO REVIEW OPERATIONS AND DEMONSTRATE
TO THE COMMISSION THAT ITS OPERATIONS
WITHIN THE UNIT ARE RESULTING IN THE
PREVENTION OF WASTE AND THE PROTECTION
OF CORRELATIVE RIGHTS ON A CONTINUING
BASIS, HARDING, UNION AND QUAY COUNTIES,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 3, 1984, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 13th day of September, 1984, the Commission, a quorum being present, having considered the testimony, the record, and the exhibits, and being fully advised in the premises,

FINDS:

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

(2) That on January 23, 1981, the Commission entered Order No. R-6446-B which granted the application of Amoco Production Company, hereinafter referred to as "Amoco", for approval of the Bravo Dome Carbon Dioxide Gas Unit, hereinafter referred to as "the unit", located in Union, Harding and Quay Counties, New Mexico.

- (3) That Order R-6446-B provided, among other things:
 - (a) "That the operator of said unit shall be required to periodically demonstrate to the Commission that its operations within the unit are resulting in the prevention of waste and the protection of correlative rights on a continuing basis."
 - (b) "That such demonstration shall take place at a public hearing held at least every four years following the effective date of the unit or at such lesser intervals as the Commission may require."
- (4) That the unit became effective on November 1, 1980.
- (5) That since the effective date of the unit, Amoco, as unit operator, has:
 - (a) drilled 269 additional wells within the unit area;
 - (b) located the new wells which it has drilled throughout the unit area; and
 - (c) conducted additional flow tests to assist in determining the optimum methods of developing the unit;
 - (d) has constructed a dehydration and compression facility;
 - (e) installed gathering lines; and
 - (f) drilled salt water disposal wells within the unit area.
- (6) The evidence showed that at the time of the hearing, Amoco had:
 - (a) commenced the installation of additional dehydration and compression facilities;
 - (b) commenced the installation of additional gathering lines;

(c) commenced drilling of 31 additional wells;
and

(d) a capital outlay in the project in excess
of \$150 million dollars.

(7) That the evidence showed production commenced from the unit to the Rosebud Pipeline on April 2, 1984 and that Bravo Pipeline System, a common carrier line, had commenced constructing an additional pipeline to transport additional carbon dioxide to markets in the Permian Basin in Southeast New Mexico and West Texas.

(8) That the evidence showed that unit operations have:

(a) reduced the number of surface facilities required to produce carbon dioxide in the unit;

(b) resulted in efficient central facilities design and gathering system location;

(c) reduced well operating costs which should result in a longer economic well life for the wells in the unit thereby maximizing recovery of carbon dioxide from the unit area.

(9) That unit operations have resulted in efficient, orderly and economical exploration of the unit area and economical production, field gathering and treatment of carbon dioxide within the unit thereby preventing surface and underground waste of carbon dioxide.

(10) That Order No. R-6446-B found the method of sharing the income from production from the unit to be reasonable and appropriate at that time and further found that approval of the proposed unit should promote the protection of correlative rights within the unit area.

(11) That for the interest owners in the unit area to derive the benefits of unitization and for their correlative rights to be protected, Amoco, as unit operator, must develop the carbon dioxide throughout the unit area in a prudent and expeditious manner.

(12) That the evidence established that since unitization became effective, numerous wells have been drilled

Case No. 8289
Order No. R-6446-C

throughout the unit area and that the present plans for development included drilling of additional wells.

(13) That in addition to the drilling done since unitization, Amoco has performed substantial amounts of seismic work and that 500 miles of additional seismic lines have been authorized within the unit area.

(14) That as the additional drilling, seismic work and core analysis is performed by Amoco, the interpretation of the Tubo reservoir in this area continues to change.

(15) That Amoco is carrying out its duties as unit operator of the Bravo Dome Carbon Dioxide Gas Unit in a prudent and expeditious manner and that its actions within the unit area are resulting in the protection of the correlative rights of interest owners within the unit on a continuing basis.

(16) That in accordance with ordering paragraphs (4) and (5) of said Order No. R-6446-B, this case should be reopened for additional testimony at a hearing during or before August, 1988.

IT IS THEREFORE ORDERED:

(1) That the operations of Amoco Production Company, as unit operator of the Bravo Dome Carbon Dioxide Gas Unit located in Harding, Union and Quay Counties, New Mexico, are hereby found to be resulting in the prevention of waste of carbon dioxide gas and the protection of correlative rights of interest owners within the unit on a continuing basis.

(2) That this case shall be reopened for additional testimony at a hearing during or before August, 1988.

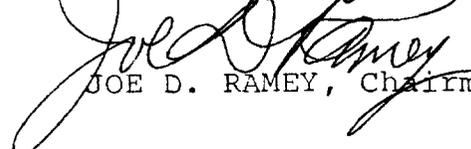
(3) That jurisdiction of this case is retained for the entry of such further orders as the Commission may deem necessary.

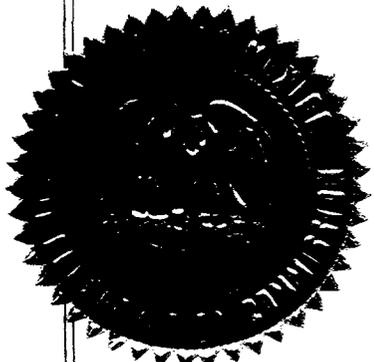
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JIM BACA, Member


ED KELLEY, Member


JOE D. RAMEY, Chairman and Secretary



S E A L
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