

**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. 10719  
Order No. R-9925**

**APPLICATION OF ANADARKO PETROLEUM  
CORPORATION FOR DIRECTIONAL DRILLING  
AND AN UNORTHODOX BOTTOMHOLE GAS WELL  
LOCATION, EDDY COUNTY, NEW MEXICO.**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This cause came on for hearing at 8:15 a.m. on June 17, 1993, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 22nd day of July, 1993, 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, Anadarko Petroleum Corporation (Anadarko), seeks authority to directionally drill its proposed Power Federal Com Well No. 2 from an unorthodox surface location 1400 feet from the South line and 660 feet from the East line (Unit I) of Section 26, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, in such a manner so as to bottom said wellbore in the Cedar Lake-Morrow Gas Pool at an unorthodox bottomhole location within 75 feet of a point 660 feet from the South and East lines (Unit P) of said Section 26. The E/2 of Section 26 is to be dedicated to the subject well forming a standard 320-acre gas spacing and proration unit for said pool.

(3) Enron Oil and Gas Company (Enron), operator of the Cedar Lake "35" Federal Com Well No. 1 located 1240 feet from the North line and 1980 feet from the East line (Unit B) of Section 35, Township 17 South, Range 30 East, NMPM, which is currently producing from the Cedar Lake-Morrow Gas Pool, appeared at the hearing in opposition to the application.

(4) The subject well has been staked at the proposed surface location due to surface obstructions, namely the presence of a dry lake bed and archaeological sites, however, the applicant proposes to directionally drill the subject well to the proposed unorthodox bottomhole location for geologic reasons.

(5) The primary target in the subject well is what the applicant has referred to as the "Arnold Sand" which occurs in the lower portion of the Morrow formation. The "Arnold Sand" is currently being produced in the above-described Cedar Lake "35" Federal Com Well No. 1.

(6) Both Anadarko and Enron presented geologic and engineering evidence and testimony in this case.

(7) In 1978 the applicant drilled its Power Federal Com Well No. 1-Y at a standard gas well location 2135 feet from the South line and 1650 feet from the East line (Unit J) of Section 26. The evidence and Division records indicate that this well was completed in the Cedar Lake-Morrow Gas Pool and produced from said pool until 1981 at which time it was recompleted up hole. Cumulative gas production from this well in the Morrow was approximately 137 MMCFG prior to abandonment.

(8) The geologic evidence presented by Anadarko and Enron in this case is generally in agreement that:

- a) the "Arnold Sand" is a northeast to southwest trending sand member which traverses a portion of the SE/4 of Section 26, the entire N/2 of Section 35, a portion of Section 25 and a small portion of Section 34;
- b) the subject reservoir is bounded on the west by a fault which traverses Sections 2 and 34 in a north-south direction;
- c) the subject reservoir is relatively small in size comprising some 17,000 acre-feet, more or less; and,
- d) a well at the proposed unorthodox bottomhole location should encounter a greater amount of net sand in the "Arnold Sand" member than a well drilled at a standard well location thereon.

(9) There is general disagreement between the two parties regarding the amount of productive acreage within the SE/4 of Section 26. The applicant's geologic evidence indicates 123 acres (2,631 acre-feet) to be productive while Enron's geologic evidence indicates 74.3 acres (2,215 acre-feet) to be productive.

(10) The geologic evidence presented does indicate that a well at the proposed unorthodox bottomhole location is geologically justified and approval of such location will afford the applicant the opportunity to produce its just and equitable share of the gas in the Cedar Lake-Morrow Gas Pool underlying the E/2 of Section 26.

(11) Anadarko requested that no production penalty be imposed on the Power Federal Com Well No. 2.

(12) Anadarko based its request on the contention that gas reserves have been drained from its tract by the Cedar Lake "35" Federal Com Well No. 1, and that to protect its correlative rights, it should be permitted to produce its proposed Power Federal Com Well No. 2 at an unrestricted rate.

(13) The Cedar Lake "35" Federal Com Well No. 1 is located at a standard gas well location in Section 35. The well has been drilled and produced in accordance with Division Rules and Regulations.

(14) Up until this time, the applicant has not availed itself of the opportunity to recover its share of the gas reserves in the subject pool, thereby protecting its correlative rights.

(15) By drilling the Power Federal Com Well No. 2 at the proposed unorthodox gas well location, the applicant is gaining an advantage over Enron. In order to offset the advantage gained by the applicant, the subject well should be assigned a production penalty.

(16) Enron proposed that a production penalty of 85 percent or a maximum producing rate of 2,550 MCF per day be imposed on the subject well. Enron based its penalty recommendation on its estimated reservoir volume, in acre feet, underlying the SE/4 of Section 26 relative to total reservoir volume, or 2,215 acre feet/17,677 acre feet. This calculation results in a penalty of 87.47 percent; however, at the hearing, Enron testified it would agree to an 85 percent production penalty.

(17) Anadarko's engineering evidence and testimony show that:

- a) the N/2 of Section 35 and the E/2 of Section 26 initially contained some 6.3 BCFG and 2.2 BCFG, respectively, of recoverable gas reserves;
- b) if produced at an unrestricted rate, the subject well should ultimately recover approximately 1.6 BCFG.

(18) Enron's engineering evidence and testimony show that:

- a) the N/2 of Section 35 and the E/2 of Section 26 initially contained some 11.9 BCFG and 2.0 BCFG, respectively, of recoverable gas reserves;
- b) as of May, 1993, the Cedar Lake "35" Federal Well No. 1 has cumulatively produced approximately 3.3 BCFG; and,
- c) the Power Federal Com Well No. 2, if produced at a rate or allowable as proposed by Enron, should ultimately recover some 1.8 BCFG.

(19) Anadarko expects the initial producing rate of the Power Federal Com Well No. 2 to be approximately 8.9 MMCFG per day. The Cedar Lake "35" Federal Com Well No. 1 is, according to Enron's testimony, currently capable of producing approximately 17 MMCFG per day.

(20) Although the geologic interpretations vary somewhat, both of the parties are in close agreement that the E/2 of Section 26 initially contained between 2.0 and 2.2 BCF of recoverable gas reserves, and that the subject well should be allowed to recover between 1.6 and 1.8 BCFG.

(21) There is considerable difference, however, between Anadarko's and Enron's engineering evidence regarding the proper rate the subject well should be allowed to produce at in order to recover this amount of gas reserves.

(22) The engineering evidence is insufficient to establish an allowable producing rate based solely upon projected ultimate gas recovery.

(23) The Division has historically utilized various factors in calculating producing penalties including encroachment distances from a standard well location, productive acreage, drainage data, etc.

(24) The production allowable for the Power Federal Com Well No. 2 should be based upon the average of two factors: 1) deviation from a standard well location in the north/south direction; and 2) productive acreage underlying the E/2 of Section 26 (based upon average of Anadarko's and Enron's projection) relative to productive acreage underlying the N/2 of Section 35, all as shown as follows:

$$\text{Factor 1} = 660 \text{ feet} / 1980 \text{ feet} = 0.333$$

$$\text{Factor 2} = 97 \text{ acres} / 300 \text{ acres} = 0.3233$$

$$\text{Average of Factors} = (.3233 + .333) / 2 = .328 \text{ or}$$

**33 PERCENT ALLOWABLE FACTOR**

(25) The production allowable factor should be applied to the Power Federal Com Well No. 2's ability to produce as determined by deliverability tests conducted on the well on a bi-annual basis. Said test should be conducted only after notice has been provided to the supervisor of the Artesia district office of the Division and to Enron Oil and Gas Company and a reasonable opportunity is provided to each to witness such test.

(26) Approval of the proposed directional drilling and unorthodox bottomhole location, subject to a producing allowable factor of 33 percent, will afford the applicant the opportunity to recover its just and equitable share of the gas in the Cedar Lake-Morrow Gas Pool underlying the E/2 of Section 26, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

(27) The applicant should be required to determine the subsurface location of the kick-off point in the wellbore prior to directional drilling and should be required to conduct a directional survey during or upon completion of directional drilling operations in order to determine the bottomhole location.

(28) The applicant should be required to submit copies of the directional surveys conducted on the subject well to the Santa Fe and Artesia offices of the Division.

(29) The applicant should notify the supervisor of the Artesia district office of the Division of the date and time of commencement of directional drilling operations and of the conductance of any directional surveys on the subject well in order that these operations may be witnessed.

**IT IS THEREFORE ORDERED THAT:**

(1) The applicant, Anadarko Petroleum Corporation, is hereby authorized to directionally drill its Power Federal Com Well No. 2 from an unorthodox surface location 1400 feet from the South line and 660 feet from the East line (Unit I) of Section 26, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, in such a manner so as to bottom said wellbore in the Cedar Lake-Morrow Gas Pool at an unorthodox bottomhole location within 75 feet of a point 660 feet from the South and East lines (Unit P) of said Section 26.

(2) The E/2 of Section 26 shall be dedicated to the subject well forming a standard 320-acre gas spacing and proration unit for said pool.

(3) The applicant shall determine the subsurface location of the kick-off point in the wellbore prior to directional drilling and shall conduct a directional survey during or upon completion of directional drilling operations in order to determine the bottomhole location.

(4) The applicant shall submit copies of the directional surveys conducted on the subject well to the Santa Fe and Artesia offices of the Division.

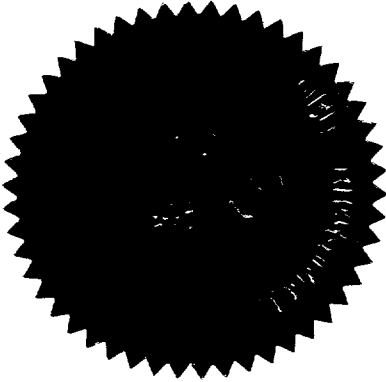
(5) The applicant shall notify the supervisor of the Artesia district office of the Division of the date and time of commencement of directional drilling operations and of the conductance of any directional surveys on the subject well in order that these operations may be witnessed.

(6) Subsequent to completing directional drilling operations, the applicant shall submit a Division Form C-102 (Acreage Dedication Plat) to the Artesia office of the Division showing the surface and bottomhole location of the Power Federal Com Well No. 2.

(7) The Power Federal Com Well No. 2 is hereby assigned a production limitation factor of 33 percent (67 percent penalty factor). This production limitation factor shall be applied against the well's ability to produce as determined by deliverability tests conducted on the well on a bi-annual basis. The deliverability tests shall be conducted after notice has been provided to the supervisor of the Artesia district office of the Division and to Enron Oil and Gas Company, and a reasonable opportunity is provided to each to witness such test.

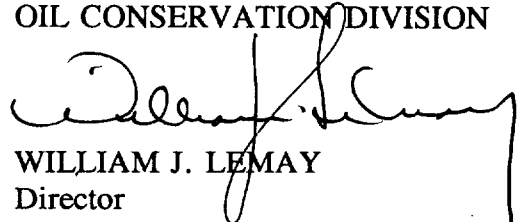
(8) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

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



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STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
WILLIAM J. LEMAY  
Director

**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:**

**CASE NO. 10719  
Order No. R-9925-A**

**APPLICATION OF ANADARKO PETROLEUM  
CORPORATION FOR DIRECTIONAL DRILLING  
AND AN UNORTHODOX BOTTOMHOLE GAS WELL  
LOCATION, EDDY COUNTY, NEW MEXICO.**

**ORDER OF THE COMMISSION**

**BY THE COMMISSION:**

This cause came on for hearing at 9 o'clock a.m. on January 13, 1994, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 7<sup>th</sup> day of February, 1994, the Commission, a quorum being present, having considered the stipulation of counsel of record for the applicant and for Enron Oil & Gas Company,

**FINDS THAT:**

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

(2) That the Division approved the applicant's request in this case subject to a penalized allowable of 33% for production from the Morrow formation.

(3) While awaiting a Commission hearing in this matter, Applicant elected to commence drilling the subject well which has proven to be non-commercial in the Morrow formation. Since then the well has been recompleted as a Strawn oil well and is located at a standard oil well location for Strawn production.

(4) Applicant, with the consent of the opposition, requests that the Division Order in this case be amended to allow this directionally drilled well to be approved for Strawn oil production pursuant to Division Rule 111.

(5) Applicant, with the consent of the opposition, requests that those findings and ordering paragraphs of Division Order No. R-9925 dealing with the disputed issue of penalty formula for Morrow production be vacated.

(6) Approval of this request should be granted.



**IT IS THEREFORE ORDERED THAT:**

(1) The finding paragraphs of Division Order No. R-9925 which deal with the penalty formula issue are hereby vacated.

(2) The ordering paragraphs of Division Order No. R-9925 are hereby vacated and the following new ordering paragraphs adopted:

(1) The applicant, Anadarko Petroleum Corporation, is hereby authorized to directionally drill its Power Federal Com Well No. 2 from an unorthodox surface location 1400 feet from the South line and 660 feet from the East line (Unit I) of Section 26, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, in such a manner so as to complete said wellbore in the Undesignated Cedar Lake-Strawn Pool at a standard bottomhole location not closer than 330 feet to the side boundaries of Unit P of said Section 26.

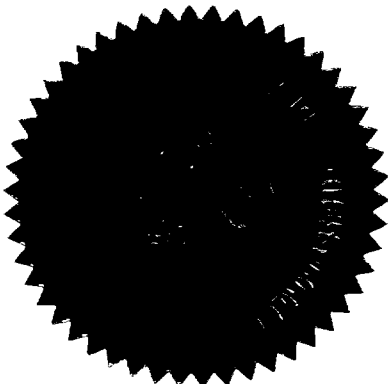
(2) The SE/4 SE/4 (Unit P) of Section 26 shall be dedicated to the subject well forming a standard 40-acre oil spacing and proration unit for said pool.

(3) The applicant shall submit copies of the directional surveys conducted on the subject well to the Santa Fe and Artesia offices of the Division.

(4) Subsequent to completing directional drilling operations, the applicant shall submit a Division Form C-102 (Acreage Dedication Plat) to the Artesia office of the Division showing the surface and bottomhole locations of the Power Federal Com Well No. 2.

(3) Jurisdiction of this cause is hereby 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.

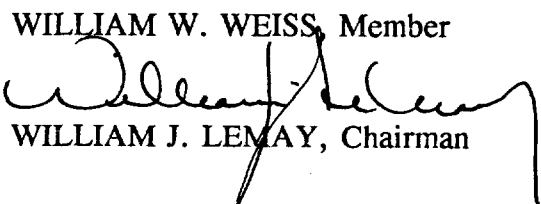


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STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

  
JAMI BAILEY, Member

  
WILLIAM W. WEISS, Member

  
WILLIAM J. LEMAY, Chairman