

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. 10286  
Order No. R-9536

APPLICATION OF AMERICAN HUNTER  
EXPLORATION, LTD. FOR A HORIZONTAL  
WELL AND AN UNORTHODOX WELL LOCATION,  
RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 30, 1991, at Santa Fe, New Mexico, before Examiner Jim Morrow.

NOW, on this 27th day of June, 1991, 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) Division Cases Nos. 10285, 10286, 10300 and 10302 were consolidated at the time of the hearing for purposes of testimony. Applicant requested that the portion of Case No. 10286 involving a well in Section 6, Township 27 North, Range 1 West, NMPM, Rio Arriba County, New Mexico, be dismissed.

(3) American Hunter proposes to drill its Jicarilla 4-A Well No. 1 from an unorthodox oil well location 330 feet from the North and East lines (Unit A) of Section 4, Township 27 North, Range 1 West, NMPM, Rio Arriba County, New Mexico. The well would be drilled vertically to a depth of approximately 7,100 feet to evaluate the pay zone. It would then be plugged back to approximately 6,300 feet, deviated from the vertical in a westerly direction with the angle being increased so as to reach an angle of approximately 80 degrees from the vertical at the top of the Niobrara formation (about 6,800 feet TVD). Drilling would continue in the Niobrara at an angle of approximately 80 degrees for a lateral

distance of approximately 2,500 feet. American Hunter submitted the following additional information through exhibits and the testimony of witnesses to support its request for approval to drill the horizontal well.

- (a) Both the vertical and horizontal (80 degree) portions of the wellbore would be kept inside a target window described as a rectangle 330 to 1,830 feet from the North line and 330 to 3,230 feet from the East line of Section 4.
- (b) A cross-section and a structure map show that the Niobrara A and B zones of the Mancos Formation are productive in the area. These formations dip to the West at approximately 5 degrees (from horizontal) in Section 4. The horizontal portion of the well would follow this dip so as to penetrate both the A and B zones.
- (c) The Niobrara Formation in this area contains numerous fractures with orientation in a north-south direction and good porosity and permeability associated with the fractures. Drilling in a westerly direction, perpendicular to the fracture system, is expected to result in the penetration of numerous fractures providing for good drainage.
- (d) The well is expected to cost between \$800,000 and \$1,000,000, 1-1/2 to 2 times the cost of a vertical well and recover up to 300,000 barrels of oil.
- (e) 13 3/8-inch casing would be set and cemented at 350 feet. 9 5/8-inch casing would be set and cemented through the Point Lookout formation into the Mancos formation. All fresh water strata would be protected by this casing. A 5 1/2-inch liner, slotted through the pay zones, would be set to total depth following the completion of drilling and hung from the 9 5/8-inch casing.
- (f) The weight of the drilling fluid would be controlled to keep the fluid column bottomhole pressure equal to or slightly below the formation pressure, however the well would be kept under control at all times and not allowed to produce formation fluids while drilling.

(4) The proposed well is located in the West Puerto Chiquito-Mancos Oil Pool where pool rules provide for 640-acre spacing and proration units, wells located no nearer than 1,650 feet from the outer boundary of the proration unit nor closer than 330 feet to a quarter-quarter section line. The applicant requests an exception to the well location requirements because of road locations and other

surface considerations. All of Section 4 would be dedicated to the well to form a standard 651.76-acre oil proration unit.

(5) Benson-Montin-Greer Drilling Corporation entered an appearance at the hearing and questioned American Hunter's witness, but did not object to the application. No other operator or interest owner objected.

(6) The proposed well will recover additional oil reserves and will not harm correlative rights. The application should be approved as requested.

IT IS THEREFORE ORDERED THAT:

(1) The application of American Hunter Exploration, Ltd. for approval to drill a horizontal well from an unorthodox location in the West Puerto Chiquito-Mancos Oil Pool is hereby approved.

(2) The applicant is authorized to drill its Jicarilla 4-A Well No. 1 from an unorthodox oil well location 330 feet from the North and East lines (Unit A) of Section 4, Township 27 North, Range 1 West, NMPM, Rio Arriba County, New Mexico, in conformance with the drilling program submitted as evidence and to complete such well as a horizontal (80 degree) producer in the Niobrara formation.

(3) From the surface location to total depth, the Jicarilla 4-A Well No. 1 shall be kept inside a target window described as a rectangle 330 to 1,830 feet from the North line and 330 to 3,230 feet from the East line of said Section 4.

(4) The applicant shall contact the supervisor of the Aztec district office of the Division to obtain prior approval for the casing and cementing program for the well.

(5) The applicant shall conduct directional drilling surveys during drilling operations and shall notify the supervisor of the Aztec district office of the Division of the progress of the deviated well so that operations may be witnessed.

(6) Upon completion of the horizontal drilling operations, the applicant shall file a copy of a directional drilling survey of the entire wellbore with both the Santa Fe and the Aztec offices of the Division.

(7) That portion of Case No. 10286 involving a well in Section 6, Township 27 North, Range 1 West, NMPM, Rio Arriba County, New Mexico, is hereby dismissed.

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

Case 10286  
Order No. R-9536  
Page 4

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

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'William J. Lemay', written over the printed name below.

WILLIAM J. LEMAY  
Director

dr/

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. 10403*  
*Order No. R-9606*

APPLICATION OF AMERICAN HUNTER EXPLORATION,  
LTD. FOR A HIGH ANGLE/HORIZONTAL DIRECTIONAL  
DRILLING PILOT PROJECT, SPECIAL OPERATING  
RULES THEREFOR, A NON-STANDARD OIL PRORATION  
UNIT, AN UNORTHODOX OIL WELL LOCATION, AND  
TO RESCIND DIVISION ORDER NO. R-9536, RIO  
ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 17, 1991, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 1st day of November, 1991, 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) By Order No. R-9536 issued in Case No. 10286 on June 27, 1991, American Hunter Exploration, Ltd. was authorized to drill its Jicarilla 4-A Well No. 1 at an unorthodox surface location 330 feet from the North and East lines (Unit A) of Section 4, Township 27 North, Range 1 West, NMPM, West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico, in the following unconventional manner:

Drill vertically to a depth of approximately 7,100 feet to evaluate the pay zone. Plug back to approximately 6,300 feet, deviate from the vertical in a westerly direction with the angle being increased so as to reach an angle of approximately 80 degrees from the vertical at the top of Niobrara formation (about 6,800 feet TVD). Continue drilling in the Niobrara formation at an angle of approximately 80 degrees for a lateral distance of approximately 2,500 feet.

(3) All of said Section 4 was to be dedicated to the subject well forming a standard 651.76-acre oil spacing and proration unit. In addition, both the vertical and horizontal (80 degree) portions of the wellbore would be kept inside a target window described as a rectangle 330 to 1,830 feet from the North line and 330 to 3,230 feet from the East line of said Section 4.

(4) In lieu of drilling the Jicarilla 4-A Well No. 1, the applicant, American Hunter Exploration, Ltd., seeks the formation of a 650.05-acre non-standard oil spacing and proration unit in the West Puerto Chiquito-Mancos Oil Pool comprising Lots 3 and 4, S/2 NW/4, and SW/4 (W/2 equivalent) of Section 3 and Lots 1 and 2, S/2 NE/4, and SE/4 (E/2 equivalent) of Section 4, both in Township 27 North, Range 1 West, NMPM, Rio Arriba County, New Mexico, for the purpose of initiating a high angle/horizontal directional drilling pilot project.

(5) The applicant proposes to drill its Jicarilla 3-F Well No. 1 at an unorthodox surface location 1650 feet from the North line and 2000 feet from the West line (Unit F) of said Section 3 in the following unconventional manner:

Drill vertical to a depth of approximately 6,084 feet, kick off from vertical in a westerly direction building angle to approximately 76 degrees so as to encounter the top of the Niobrara formation at approximately 6,640 feet TVD. Continue drilling a high angle hole in the Mancos formation a lateral distance of approximately 3400 feet.

(6) The applicant further requests that special operating provisions be established for said project including the designation of a prescribed area limiting the horizontal extent of said wellbore to a target window described as a rectangle 330 feet to 2330 feet from the North line of Sections 3 and 4 with the eastern side of the drilling window 2000 feet from the West line of Section 3, and the western side 2000 feet from the East line of Section 4.

(7) According to applicant's testimony, subsequent to the issuance of Division Order No. R-9536, additional seismic data within the subject area was obtained. The results of the seismic data indicate that the newly proposed location should penetrate the Niobrara formation in an area of greater natural fracturing than would a well located at the previously approved location (described in Finding No. (2) above).

(8) Further testimony indicates that as per joint venture agreement with the Jicarilla Tribe, this well location must be approved by the Jicarilla Tribal Council. As of the date of the hearing, the applicant did not know if the newly proposed location would be approved by said body.

(9) Applicant testified that if the newly proposed location is not approved by the Jicarilla Tribal Council, it will seek Division approval to reverse the surface and bottomhole locations of the previously approved Jicarilla 4-A Well No. 1, said reversal being necessary to encounter a greater number of natural fractures within the Niobrara formation as per the geophysical data recently obtained.

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

(11) The evidence presented in this case indicates that the newly proposed location is justified by geologic conditions and that a well at the proposed location should adequately drain and develop the proposed non-standard proration unit, should recover additional oil reserves, and will not violate correlative rights.

(12) The proposed bottomhole target window (described in Finding No. (6) above) is reasonable and should be approved.

(13) The applicant should be required to conduct a directional survey on the vertical portion of the wellbore prior to commencing directional drilling operations, and on the horizontal portion of the wellbore during or subsequent to completion of directional drilling operations in order that direction, extent and terminus of said wellbore may be determined to be in compliance with the terms of this order.

(14) The applicant should further be required to submit copies of said directional surveys to the Santa Fe and Aztec offices of the Division.

(15) The applicant should notify the supervisor of the Aztec 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 proposed well in order that these operations may be witnessed.

(16) Applicant's request to rescind Division Order No. R-9536 should be dismissed.

(17) Should the newly proposed location not be approved by the Jicarilla Tribal Council, this order should terminate and therefore be of no further effect.

IT IS THEREFORE ORDERED THAT:

(1) The application of American Hunter Exploration, Ltd. for a high angle/horizontal directional drilling pilot project within a 650.05-acre non-standard oil spacing and proration unit comprising Lots 3 and 4, S/2 NW/4, and SW/4 (W/2 equivalent) of Section 3 and Lots 1 and 2, S/2 NE/4, and SE/4 (E/2 equivalent) of Section 4, both in Township 27 North, Range 1 West, NMPM, West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico, is hereby approved.

(2) The applicant is further authorized to drill its Jicarilla 3-F Well No. 1 at an unorthodox surface location 1650 feet from the North line and 2000 feet from the West line (Unit F) of said Section 3 in the following unconventional manner:

Drill vertical to a depth of approximately 6,084 feet, kick off from vertical in a westerly direction building angle to approximately 76 degrees so as to encounter the top of the Niobrara formation at approximately 6,640 feet TVD. Continue drilling a high angle hole in the Mancos formation a lateral distance of approximately 3400 feet.

(3) From the surface location to total depth, the Jicarilla 3-F Well No. 1 shall be kept inside a target window described as a rectangle 330 feet to 2330 feet from the North line of Sections 3 and 4 with the eastern side of the drilling window 2000 feet from the West line of Section 3, and the western side 2000 feet from the East line of Section 4.

(4) The applicant shall conduct a directional survey on the vertical portion of the wellbore prior to commencing directional drilling operations, and on the horizontal portion of the wellbore during or subsequent to completion of directional drilling operations in order that direction, extent and terminus of said wellbore may be determined to be in compliance with the terms of this order.

(5) The applicant shall submit copies of said directional surveys to the Santa Fe and Aztec offices of the Division.

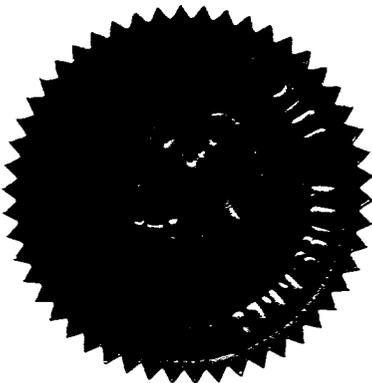
(6) The applicant shall notify the supervisor of the Aztec district office of the Division of the date and time of commencement of directional drilling operations and of the conductance of any directional surveys on the proposed well in order that these operations may be witnessed.

(7) Applicant's request to rescind Division Order No. R-9536 is hereby dismissed.

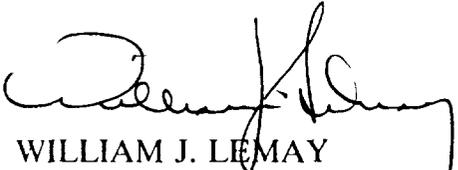
(8) Should the proposed horizontal directional drilling pilot project and well location not be approved by the Jicarilla Tribal Council, this order shall terminate and therefore be of no further effect.

(9) 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

  
WILLIAM J. LEMAY  
Director