

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. 10971*  
*ORDER NO. R-10213*

**APPLICATION OF MERRION OIL & GAS CORPORATION FOR A HIGH  
ANGLE/HORIZONTAL DIRECTIONAL DRILLING PILOT PROJECT AND THE  
PROMULGATION OF SPECIAL OPERATING RULES THEREFOR, SANDOVAL  
COUNTY, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 12, 1994, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 30th day of September, 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 in this matter, Merrion Oil and Gas Corporation ("Merrion"), seeks authority to institute a short radius high angle/horizontal directional drilling pilot project, hereinafter referred to as the "project area", in the designated and Undesignated Eagle Mesa-Entrada Oil Pool on its Eagle Mesa Entrada Secondary (Federal) Unit comprising the following described 280 acres in Sandoval County, New Mexico:

**TOWNSHIP 19 NORTH, RANGE 4 WEST, NMPM**

Section 11:	SE/4 SE/4
Section 12:	SW/4 SW/4
Section 13:	W/2 NW/4
Section 14:	N/2 NE/4 and SE/4 NE/4.

(3) Within the project area the applicant seeks authority to:

- (a) utilize the existing wellbores on its Federal "12" Well No. 1 (API No. 30-043-20175), located 460 feet from the South line and 330 feet from the West line (Unit M), of said Section 12 and its Navajo 13 "C" Well No. 1 (API No. 30-043-20181), located 430 feet from the North line and 330 feet from the West line (Unit D), of said Section 13 to drill short radius horizontal drainholes a lateral distance of 800 to 1,000 feet;
- (b) the ability to traverse section, quarter section and quarter-quarter section lines within the project area in order to form non-standard oversized and irregular sized spacing and proration units to accommodate such wellbores;
- (c) drill the proposed horizontal wellbores to within 330 feet of the outer boundary of the project area; and,
- (d) the assignment of an allowable for a horizontally drilled well based upon the number of standard 40-acre proration units which are developed or traversed by a horizontal wellbore.

(4) The applicant further seeks the promulgation of special operating rules and procedures within the project area including provisions for administrative authorization of further horizontal wellbores, and the assignment of a special oil allowable or formula for the project area.

(5) The proposed project area is located within the governing limits of the Eagle Mesa-Entrada Oil Pool which is currently administered under the Statewide Rules and Regulations which require standard 40-acre spacing and proration units with wells to be located no closer than 330 feet from the outer boundary of the spacing unit. A special oil allowable of 750 barrels of oil per day and a limiting gas-oil ratio of 2,000 cubic feet of gas per barrel of oil exists for said pool, as promulgated by Division Order No. R-5118, as amended.

(6) The Entrada formation in this area was deposited as an eolian sand overlain by lacustrine limestones and anhydrites of the Todilto formation. The resulting "dune-like" structures, having porosity and permeability, act as the reservoir for trapping the accumulation of oil in the Entrada formation. The Eagle Mesa-Entrada Pool is in contact with a large aquifer and hydrodynamically active fresh ground water flowing to the southwest beneath the oil accumulation. This strong drive acts to tilt the oil-water contact in the direction of flow.

(7) According to the testimony presented by the applicant conventionally drilled (vertical) wells in this pool experience significant "water coning", whereby the water below the oil moves upward to the wellbore, a process that has left a significant amount of "attic" oil sidetracked or by-passed between wells. By drilling horizontally across the top of the structure, the applicant is attempting to drain this otherwise unrecoverable attic oil by alleviating this coning action. Such horizontal drainhole will act to create a small pressure drop along the large area found in a long horizontal drainhole instead of a large pressure drop through a small area available to a vertical wellbore.

(8) Evidence further indicates that once water breakthrough has occurred in a conventionally drilled vertical wellbore, water volume increases dramatically and oil production decreases substantially, resulting in high operating costs. With horizontal drainholes, the poolwide volume of produced water should decrease, thereby lowering operating costs.

(9) Approval of this application is in the best interest of conservation, exhibits sound engineering practices, will serve to prevent the waste of otherwise unrecoverable reserves, and with the formation of a Unit will further serve to protect correlative rights.

(10) Adoption of special procedures allowing for administrative approval of additional horizontal drainholes in the Entrada formation within the Eagle Mesa Entrada Secondary (Federal) Unit will serve to promote such supplemental drilling activity in fields nearing depletion and should aid in expediting any further request to drill drainholes in this Unit without the necessity for additional hearings.

(11) The allowable assigned to either a single proration unit or the project area should be assigned by the supervisor of the Aztec district office of the Division and should be based upon the number of standard 40-acre proration units within the project area which are developed or traversed by a horizontal wellbore.

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

(13) The applicant initially proposes to recomplete its Federal "12" Well No. 1 and Navajo 13 "C" Well No. 1 by plugging-back, milling a window in the existing production casing, kick-off from the vertical by milling a window in the existing production casing, drill a short radius curve hole to approximately 90 degrees so as to encounter the upper portion of the oil bearing Entrada sand and continue drilling horizontally a distance of 800 to 1,000 feet.

(14) Certain provisions should be included within this approval to assure orderly development and depletion of this reservoir with horizontal drainholes and the continued protection of correlative rights within the area of this Unit:

- (a) no portion of a wellbore, either vertical or horizontal should be closer than 330 feet to the outer boundary of the Eagle Mesa Entrada Secondary (Federal) Unit;
- (b) the applicant should be required to conduct a directional survey on the vertical portion of a 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;
- (c) the applicant should further be required to submit copies of said directional surveys to the Santa Fe and Aztec offices of the Division; and,
- (d) 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.

IT IS THEREFORE ORDERED THAT:

(1) The application of Merrion Oil and Gas Corporation ("Merrion") to institute a short radius high angle/horizontal directional drilling pilot project, hereinafter referred to as the "project area", in the designated and Undesignated Eagle Mesa-Entrada Oil Pool on its Eagle Mesa Entrada Secondary (Federal) Unit comprising the following described 280 acres in Sandoval County, New Mexico, is hereby approved:

**TOWNSHIP 19 NORTH, RANGE 4 WEST, NMPM**

Section 11:	SE/4 SE/4
Section 12:	SW/4 SW/4
Section 13:	W/2 NW/4
Section 14:	N/2 NE/4 and SE/4 NE/4.

(2) Merrion is further authorized to proceed with their initial plans to recomplete its existing Federal "12" Well No. 1 (API No. 30-043-20175), located 460 feet from the South line and 330 feet from the West line (Unit M), of said Section 12 and its Navajo 13 "C" Well No. 1 (API No. 30-043-20181), located 430 feet from the North line and 330 feet

from the West line (Unit D), of said Section 13 by plugging-back, milling a window in the existing production casing, kick-off from the vertical by milling a window in the existing production casing, drill a short radius curve hole to approximately 90 degrees so as to encounter the upper portion of the oil bearing Entrada sand and continue drilling horizontally a distance of 800 to 1,000 feet. Provided however that;

- (a) any drainhole drilled from either of said wellbores may traverse section, quarter section and quarter-quarter section lines within the project area provided that the horizontal or producing portion of any drainhole shall be located no closer than 330 feet from the outer boundary of the project area;
  - (b) the applicant shall determine the actual location of the kick-off points in each well prior to commencing directional drilling operations. Also, the applicant shall conduct a directional survey on the lateral portion of any horizontal wellbore during or after completion of drilling operations;
  - (c) the applicant shall notify the supervisor of the Aztec district office of the Division of the date and time of conductance of any directional surveys in order that the same may be witnessed;
  - (d) the applicant shall submit copies of all directional surveys conducted on the subject well to both the Santa Fe and Aztec offices of the Division; and,
  - (e) the allowable assigned to the proration units designated to each well in the Eagle Mesa-Entrada Oil Pool shall be assigned by the supervisor of the Division's Aztec district office and shall be equal to 750 barrels of oil per day times the number of standard 40-acre tracts within each designated proration unit that are developed/traversed by a horizontal drainhole.
- (3) Special operating provisions for additional horizontal/high angle wellbores within said Eagle Mesa Entrada Secondary (Federal) Unit are hereby promulgated as follows:

**SPECIAL OPERATING RULES AND REGULATIONS  
FOR THE  
EAGLE MESA ENTRADA SECONDARY (FEDERAL) UNIT**

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**RULE 1.** The surface location of any well within said Unit Area shall be located no closer than 330 feet to the outer boundary of the unitized area, nor closer than 10 feet to any section, quarter section, or quarter-quarter section lines or subdivision inner boundary.

**RULE 2.** The Director of the Division may grant an exception to the surface well location requirements of Rule 2 without notice and hearing when an application has been filed for an unorthodox surface well location necessitated by topographic conditions or the recompletion of a well previously drilled to a deeper horizon. All operators and/or owners of undrilled tracts or unleased mineral interests offsetting the proposed location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Director may approve the application upon receipt of written waivers from all operators and/or owners of undrilled tracts or unleased mineral interests offsetting the proposed surface location or if no objection to the unorthodox surface location has been entered within twenty days after the Director has received the application.

**RULE 3.**

(A). The Director of the Division is hereby authorized to administratively approve intentionally deviated wells in the Eagle Mesa Entrada Secondary (Federal) Unit for the purpose of penetrating the Entrada formation by means of a wellbore drilled horizontally, provided the following conditions are complied with:

- (1) the surface location of the proposed well is a standard location or the applicant has obtained approval of an unorthodox surface oil well location as provided for in Rule (2), above; and,
- (2) no producing portion of a horizontal wellbore shall enter or exit the Entrada formation outside of a "drilling window" which is not in accordance with the setback requirements of Rule (1), above, provided however, that the aforementioned 10 foot setback distance requirement from any internal subdivision boundary within said Unit Area shall not apply to horizontal drainholes.

- (B). To obtain administrative approval for additional deviated horizontal drainholes within the Unit, the applicant shall file such request in writing with the Aztec and Santa Fe offices of the Division and shall further provide a copy of such application to all operators and/or owners of undrilled tracts or unleased mineral interests offsetting the proposed proration unit for said well by registered or certified mail, and the application shall state that such notice has been furnished. The application shall include the following information:
  - (1) a copy of Division Form C-102 identifying the proposed proration unit to be dedicated to the well and any other wells within this proposed unit;
  - (2) a land plat that identifies the ownership of all offsetting tracts to the proposed proration unit; and,
  - (3) schematic drawings of the proposed well completion or recompletion which fully describe the casing, tubing, perforated or openhole interval, kick-off point, and proposed trajectory of the drainhole section.
- (C). The Division Director may approve the application upon receipt of written waivers from all parties described above or if no objection to the intentionally deviated horizontal wellbore has been entered within twenty days after the Director has received the application. If any objection to the proposed intentionally deviated horizontal well is received within the prescribed time limit as described above, the Director shall, at the applicant's request, set said application for public hearing before a Division Hearing Examiner.
- (D). During or upon completion of drilling operations the operator shall further be required to conduct an acceptable directional survey on the vertical and lateral portions of the wellbore and shall submit a copy of said survey to the Santa Fe and Aztec offices of the Division.
- (E). The operator 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.

- (F). The Director, at his discretion, may set any application for intentionally deviated horizontal wellbores for public hearing before a Division Hearing Examiner.

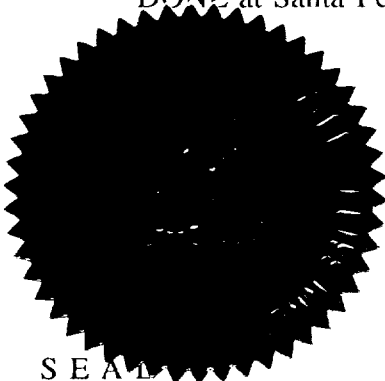
**RULE 4.** Allowables shall be assigned in the following manner

- (A). The allowable assigned to the proration units designated to the Eagle Mesa-Entrada Oil Pool within the Unit Area shall be assigned by the supervisor of the Division's Aztec district office and shall be equal to 750 barrels of oil per day times the number of standard 40-acre tracts within each designated proration unit that are developed/traversed by a horizontal drainhole; or,
- (B). The supervisor of the Division's Aztec district office may assign a "project allowable" based on the number of 40-acre tracts that are either developed by conventionally drilled wells or traversed by a horizontal drainhole. The operator may produce the assigned project allowable from the wells within the project area in any proportion.

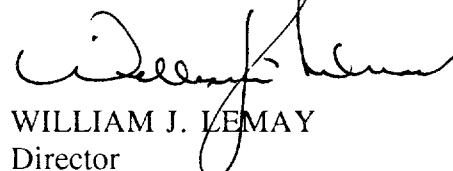
**RULE 5.** The Director of the Division may rescind the authority for any horizontal drainhole if the perforated or openhole portion of such wellbore is located closer to the Unit Area boundary than permitted by these rules or if it should appear that such rescission is necessary to prevent waste or protect correlative rights.

(4) 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

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