

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. 10392
ORDER NO. R-9613*

**APPLICATION OF MERIDIAN OIL, INC. FOR A
HIGH ANGLE/HORIZONTAL DIRECTIONAL DRILLING
PILOT PROJECT, SPECIAL OPERATING RULES THEREFOR,
A NON-STANDARD OIL PRORATION UNIT AND A SPECIAL
PROJECT OIL ALLOWABLE, SANDOVAL COUNTY, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 3, 1991, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 18th 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) The applicant, Meridian Oil, Inc., seeks an exception to the statewide spacing rules for oil authorizing a 640-acre non-standard spacing and proration unit comprising all of Section 22, Township 19 North, Range 2 West, NMPM, Sandoval County, New Mexico, for the purpose of initiating a high angle/horizontal directional drilling pilot project in the Mancos formation.

(3) The applicant proposes to drill its Piedra Lumbre Well No. 1 from a tentative unorthodox surface oil well location 2005 feet from the South line and 1775 feet from the East line (Unit J) of said Section 22, then drill vertically to a depth of approximately 2000 feet, kick-off in a northwesterly direction, build angle up to approximately 80 degrees and drill horizontally for approximately 3860 feet.

(4) The applicant further requests that special operating provisions and rules be established for said project area including a special project oil allowable of 640 barrels of oil per day and the designation of a prescribed drilling window limiting the horizontal displacement of the wellbore such that its producing interval can be no closer than 660 feet to the outer boundary of said proration unit.

(5) The proposed high angle/horizontal pilot project is neither within the boundaries of nor within one mile of any existing Mancos pool and is therefore subject to statewide rules and regulations.

(6) The Niobrara intervals of the Mancos formation are the potential productive zones in said 640-acre spacing and proration unit. The Niobrara is characterized by tight, low matrix permeability sandstones, siltstones and silt shales that are naturally fractured.

(7) Past experience in Mancos producing areas has shown that unless a conventionally drilled (vertical) well intersects natural fractures, the chance of obtaining commercial production is severely curtailed.

(8) By drilling a horizontally deviated wellbore, the applicant is attempting to increase the probability of encountering these fractures, which may ultimately result in the recovery of a greater amount of oil, thereby preventing waste.

(9) The area which the applicant seeks to develop with this special pilot project is situated at the near-eastern edge of the Niobrara outcrop and is approximately six miles south of the Rio Puerco-Mancos Oil Pool, a portion of which is being developed with high-angle wells pursuant to Division Order R-9330, as amended.

(10) The Niobrara member of the Mancos ("Gallup") formation is informally subdivided into "A", "B" and "C" stratigraphic zones all of which are correlative to the producing intervals of the nearby Verde-Gallup Oil Pool, Boulder-Mancos Oil Pool, East and West Puerto Chiquito-Mancos Oil Pools, Gavilan-Mancos Oil Pool and Rio Puerco-Mancos Oil Pool.

(11) The Niobrara "A", "B", and "C" zones of the Mancos formation in the subject area consist of thinly interbedded fine-grained sandstones, siltstones and silty shales deposited in deep-water environments of the "Cretaceous Interior Seaway."

(12) The applicant's Piedra Lumbre Well No. 1 will be drilled in an area which geologically correlates to the Niobrara formation being developed in the pools identified in Finding Paragraph (10) above.

(13) The Niobrara in this area is interpreted to be naturally fractured because of its position relative to the eastern structural margin of the San Juan Basin. The proposed well location is near the basin-marginal synclinal flexure, where relatively steep basin-flank dip changes to relative gentle basin-floor dip. In the immediate area this dip change is from approximately five degrees to approximately two degrees. Structural strike also changes in this area and the combined affects of changing dip direction and dip cause natural fracturing in the Niobrara formation.

(14) Drilling the subject well at a high angle in a northwesterly direction, perpendicular to the main fracture system and strike of the structure is expected to result in the penetration of numerous fractures providing for good drainage.

(15) Applicant testified that this area cannot be economically developed with conventional vertical wellbore technology.

(16) At no point in its traverse of the Mancos formation does the proposed highly-deviated wellbore encroach upon the 660 foot set back to the outer boundary of the spacing and proration unit.

(17) No offset operator appeared and objected to the proposed pilot project.

(18) Pursuant to Division General Rule 505, a conventional vertical oil well in the Mancos formation to which 40 acres were assigned would be entitled to a top oil allowable of 80 barrels of oil per day.

(19) The proposed high angle/horizontal well will only actually penetrate seven 40-acre tracts, however, due to the nature of the Mancos formation (as described in Finding Paragraph Nos. (7) through (14)), the well is expected to influence a greater area. Therefore the applicant should be afforded the opportunity to produce the well at the requested allowable assigned to the subject spacing and proration unit in order to encourage the development of an area of potential Mancos production that might not be developed as efficiently if conventional vertical wells were drilled.

(20) For record keeping purposes and continuity, this well should appear on the "Monthly Oil Proration Schedule" as producing from the wildcat Mancos formation with no special provisions thereon other than carrying an acreage factor of "8".

(21) All of said Section 22 is within one single Federal Lease (NM 86448) with common mineral interest throughout. Therefore, correlative rights should be adequately protected.

(22) The aforementioned prescribed area limiting the horizontal displacement of the wellbore so that it is no closer than 660 feet to any outer boundary of the spacing unit would allow for flexibility, serve to minimize risk and maximize the success of such a completion.

(23) In the interest of conservation, the application of Meridian Oil Inc. for this high angle/horizontal well project should be approved.

(24) The applicant should be required to determine the actual location of the kick-off point prior to commencement of directional drilling operations. Also, the applicant should notify the supervisor of the Aztec District Office of the Division of the proposed azimuth and inclination of the deviated hole and of the date and time of the commencement of directional drilling in order that the same may be witnessed.

(25) The applicant should be required to conduct a directional survey on the lateral portion of the wellbore during or after completion of the drilling operations on the well and submit a copy of said survey to both the Santa Fe and Aztec Offices of the Division.

IT IS THEREFORE ORDERED THAT:

(1) The application of Meridian Oil Inc. for a high angle/horizontal directional drilling pilot project in the Mancos formation underlying all of Section 22, Township 19 North, Range 2 West, NMPM, Sandoval County, New Mexico is hereby approved forming a non-standard 640-acre oil spacing and proration unit.

(2) The applicant is further authorized to drill its Piedra Lumbre Well No. 1 at an unorthodox surface oil well location 2005 feet from the South line and 1775 feet from the East line (Unit J) of said Section 22 in the unconventional manner as described in Finding Paragraph No. (3) of this order.

(3) The lateral extent of the high angle/horizontal wellbore shall be such that the producing interval be limited to an area which extends no closer than 660 feet to the outer boundary of the spacing and proration unit.

(4) The aforementioned 640-acre oil spacing and proration unit shall be dedicated to the proposed horizontal well and shall be assigned an acreage factor of "8" to be assessed toward the depth bracket allowable for said Mancos formation.

(5) The geographic location of the kick-off point for the proposed high angle/horizontal well shall be determined prior to directional drilling. Also, the operator shall notify the supervisor of the Aztec District of the Division of the proposed direction (azimuth and inclination) of the deviated hole and of the date and time of the directional drilling in order that the same may be witnessed.

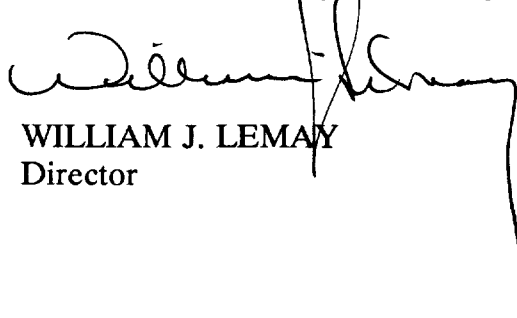
(6) The applicant shall conduct a directional drilling survey on the well during or after completion of high angle/horizontal drilling operations.

(7) Upon completion of the high angle/horizontal drilling operations on the well, the applicant shall file a copy of said directional drilling survey along with a final report specifying the depth and location of the terminus of said high angle/horizontal wellbore to both the Santa Fe and Aztec Offices of the Division.

(8) 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

S E A L