BENSON-MONTIN-GREER DRILLING CORP. EXHIBITS IN CASE NO. 8950 BEFORE THE OIL CONSERVATION DIVISION OF THE NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

AUGUST 7, 1986

BEFORE THE
OIL CONSERMATION COMMISSION
Saxto to, No. 14 disc.
Case No. 8750 Edditat No. 1
Submitted by Esuson-Morton-Greek
Hearing Date 8-7-86

BENSON-MONTIN-GREER DRILLING CORP. EXHIBITS IN CASE NO. 8950

BEFORE THE OIL CONSERVATION DIVISION OF THE NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

AUGUST 7, 1986

INDEX

- SECTION A. Application.
- SECTION B. Orientation maps.
 - Item 1. Plat showing well spacing and drilled density of pools in the vicinity of the Gavilan pool as of November, 1983 (time of spacing hearing for Gavilan).
 - Item 2. Plat showing for Boulder, West Puerto Chiquito and Lindrith Gallup-Dakota the per-acre effective hydrocarbon pore space volumes for the Mancos formation.
- SECTION C. Structural contour map.
- SECTION D. A comparison of the permeability/porosity relation for reservoirs of sandstone matrix porosity with those of fracture porosity only.
 - Item 1. Relation of permeability to porosity for sandstone reservoirs as evidenced by Bulnes and Fittings, AIME Transactions 1945, Volume 160 (2 pages gold).
 - Item 2. Graph showing relation of permeability to porosity for sandstone reservoirs and fracture reservoirs.
 - Item 3. Graph of Item 2 above with arbitrarily selected "A", "B" and "C" characteristics.
 - Item 4. Graph of Item 3 above with data extended to higher permeabilities and porosities.
 - Item 5. Graph of per acre oil in place as dependent on transmissibility and calculated from the number of feet shown and "A", "B" and "C" characteristics identified on Item 3 above (yellow).
 - Item 6. Fracture permeability described by Muskat (2 pages white).

INDEX - PAGE 2

SECTION D. Continued.

- Item 7. Schedule showing calculated values of permeability and porosity for fracture systems of horizontal flow and a fixed number of equal-width fractures per foot. (Calculated from Muskat's basic formula and law of parallel flow assuming an impermeable matrix.) (1 page white).
- Item 8. Sample calculation by Craft and Hawkins of fracture permeability for fracture .005" wide and for one fracture per foot in formation of very low matrix permeability. (2 pages pink, note calculated value about the same as red point plotted on graph under Item 2 above.)
- Item 9. Sample calculation by Aguilera of fracture permeability for fracture .01" wide and for one fracture per foot in formation of very low matrix permeability. (2 pages blue, note calculated value about the same as blue point plotted on graph under item 2 above.)
- SECTION E. Lithology of reservoir rock.
 - Page 1. General description.
 - Page 2. Results of interference tests evidence the fact that the reservoir pore space consists of fracture porosity only, with no contribution from a "matrix" porosity (green).
- SECTION F. Solution gas drive recovery for fractured reservoirs.
 - Item 1. Relative permeability of fractured formations (blue).
 - Item 2. Comparison of oil recoveries from fractured reservoir and typical sand reservoir.
- SECTION G. Comparison of depletion rates: Canada Ojitos Unit with Gavilan.
- SECTION H. Opposition arguments identified and refuted.
 - Page 1. Introduction (yellow).
 - Page 2. Opposition argument: A change in allowables during development of a field is an improper regulation since it adversely impacts industry's plans made at an earlier time (pink).

INDEX - PAGE 3

SECTION H. Continued.

- Page 3. Opposition argument: Allowable change will cause economic hardship (blue).
- Page 4. Opposition argument: Reduction in production rates from current levels, if undertaken, should be proportional to current rates of production (green).

SECTION I. Proposed order.

BEFORE THE OIL CONSERVATION DIVISION NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION OF BENSON-MONTIN-GREER DRILLING CORP. FOR AMENDMENT TO THE SPECIAL RULES AND REGULATIONS OF THE WEST PUERTO CHIQUITO-MANCOS OIL POOL AS PROMULGATED BY DIVISION ORDER R-3401, AND TO ESTABLISH TEMPORARY SPECIAL PRODUCTION ALLOWABLE LIMITATIONS AND GAS-OIL RATIO LIMITATIONS, RIO ARRIBA COUNTY, NEW MEXICO.

Case	8950	
		_

APPLICATION

Comes now, BENSON-MONTIN-GREER DRILLING CORP., by and through its undersigned attorneys, and hereby applies to the New Mexico Oil Conservation Division for the establishment of a Temporary Gas-Oil Ratio limitation of not more than 1000 cubic feet of gas for each barrel of oil produced and an allowable of not more than 400 barrels of oil per day per 640-acre spacing and proration unit for the West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico, OR IN THE ALTERNATIVE, a similar production limitation formula that will preserve reservoir energy and prevent waste, and in support thereof would show:

- 1. Applicant is the operator of the Canada Ojitos Unit from which oil is produced from the West Puerto Chiquito-Mancos Oil Pool, Rio Arriba County, New Mexico.
- 2. At the request of the applicant, the Oil Conservation Division entered Division Order R-3401 creating and adopting Special Rules and Regulations for the West Puerto Chiquito-Mancos Oil Pool (BMG West Puerto Chiquito-Mancos Pressure Maintenance

Project), Rio Arriba County, New Mexico.

- 3. Currently available geologic and engineering data demonstrates that the statewide GOR and allowables applied to the West Puerto Chiquito-Mancos Oil Pool are resulting in the inefficient use of the reservoir energy and are causing waste to occur.
- 4. That the reservoir characteristics of the subject pool justify the establishment of a temporary gas-oil limitation of 1,000 cubic feet of gas per barrel of oil and a production limitation on allowables of not more than 400 barrels of oil per day per 640-acre spacing unit.
- 5. That applicant believes that a gas-oil ratio of not more than 1,000 and a daily allowable of not more than 400 barrels a day per well is necessary in order to prevent waste, increase ultimate oil recovery, and to preserve reservoir energy.
- 6. That in order to prevent waste and protect correlative rights immediate action needs to be taken to reduce the GOR and the production rates on pool wells for a period of not less than 90 days.

WHEREFORE, applicant requests that the Division set this matter for hearing and that after notice and hearing the Division establish a temporary special 1,000 to 1 GOR and a maximum allowable of 400 barrels of oil per day per 640-acre spacing unit, for the West Puerto Chiquito-Mancos Oil Pool, OR IN THE ALTERNATIVE, a similar production limitation formula that will preserve reservoir energy and prevent waste.

Respectfully submitted,

CAMPBELL & BLACK, P.A.

William F. Carr Post Office Box 2208

Santa Fe, New Mexico 87501 (505) 988-4421

ATTORNEYS FOR BENSON-MONTIN-GREER DRILLING CORP.



