

MONTGOMERY & ANDREWS

OF COUNSEL
William R. Federici

PROFESSIONAL ASSOCIATION
ATTORNEYS AND COUNSELORS AT LAW

J. O. Seth (1883-1963)
A. K. Montgomery (1903-1987)
Frank Andrews (1914-1981)

Seth D. Montgomery
Victor R. Ortega
Jeffrey R. Brannen
John B. Pound
Gary R. Kilpatrick
Thomas W. Olson
William C. Madison
Walter J. Melendres
Bruce Herr
Robert P. Worcester
James C. Compton
John B. Draper
Nancy Anderson King
Alison K. Schuler
Janet McL. McKay
Jean-Nikole Wells
Joseph E. Earnest
Stephen S. Hamilton
W. Perry Pearce
Brad V. Coryell
Michael H. Harbour
Robert J. Mroz
Sarah M. Singleton
Jay R. Hone
Charles W. N. Thompson, Jr.
John M. Hickey
Mack E. With
Galen M. Buller

Katherine W. Hall
Edmund H. Kendrick
Helen C. Sturm
Richard L. Puglisi
Arturo Rodriguez
Joan M. Waters
James C. Murphy
James R. Jurgens
Ann M. Maloney
Deborah J. Van Vleck
Anne B. Hemenway
Roger L. Prucino
Deborah S. Dungan
Helen L. Stirling
Rosalise Olson
William P. Slattery
Kenneth B. Baca
Daniel E. Gershon
Anne B. Tallmadge
Michael R. Roybal
Robert A. Bassett
Paula G. Maynes
Neils L. Thompson
Susan Andrews
Joseph E. Whitley
David L. Skinner
Elizabeth A. Glenn

August 24, 1988

HAND-DELIVERED

SANTA FE OFFICE
325 Paseo de Peralta
Post Office Box 2307
Santa Fe, New Mexico 87504-2307

Telephone (505) 982-3873
Telecopy (505) 982-4289

ALBUQUERQUE OFFICE
Suite 500
7 Broadway Place
707 Broadway, N.E.
Post Office Box 26927
Albuquerque, New Mexico 87125-6927

Telephone (505) 242-9677

LOS ALAMOS OFFICE
Suite 120
901 18th Street
Los Alamos, New Mexico 87544

Telephone (505) 662-0005

REPLY TO SANTA FE OFFICE

RECEIVED
AUG 24 1988
OIL CONSERVATION DIVISION

William J. LeMay, Director
Oil Conservation Division
Energy, Minerals & Natural
Resources Department
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

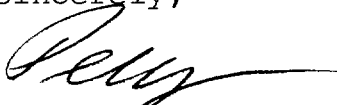
Re: OCD Case Nos. 9412, 7890, 8946, 8950, 9113, 9114

Dear Mr. LeMay:

Enclosed please find an original and 3 copies of Proponents' Request for Hearing in the above-referenced cases. For convenience, we have provided copies for Commissioners Brostuen and Humphries.

Thank you for your attention in this matter.

Sincerely,



W. Perry Pearce

WPP:mp
#9831-86-01
Enclosures

cc: Erling A. Brostuen (w/enclosure)
William R. Humphries (w/enclosure)

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

RECEIVED

AUG 21 1981

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION FOR THE PURPOSE OF
CONSIDERING:

CASES NOS. 7980, 8946, 9113,
9114, 8950 and 9412

CASE NO. 7980

IN THE MATTER OF CASE 7980 BEING REOPENED PURSUANT TO THE
PROVISIONS OF COMMISSION ORDER NO. R-7407, WHICH ORDER
PROMULGATED TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE
GAVILAN-MANCOS OIL POOL IN RIO ARRIBA COUNTY, INCLUDING A
PROVISION FOR 320-ACRE SPACING UNITS.

CASE NO. 8946

IN THE MATTER OF CASE 8946 BEING REOPENED PURSUANT TO THE
PROVISIONS OF COMMISSION ORDER NO. R-7407-D, WHICH ORDER
PROMULGATED A TEMPORARY LIMITING GAS-OIL RATIO AND DEPTH BRACKET
ALLOWABLE FOR THE GAVILAN-MANCOS OIL POOL IN RIO ARRIBA COUNTY.

CASE NO. 9113

APPLICATION OF BENSON-MONTIN-GREER DRILLING CORPORATION, JEROME
P. MCHUGH & ASSOCIATES, AND SUN EXPLORATION AND PRODUCTION
COMPANY TO ABOLISH THE GAVILAN-MANCOS OIL POOL, TO EXTEND THE
WEST PUERTO CHIQUITO-MANCOS OIL POOL, AND TO AMEND THE SPECIAL
RULES AND REGULATIONS FOR THE WEST PUERTO CHIQUITO-MANCOS OIL
POOL, RIO ARRIBA COUNTY, NEW MEXICO.

CASE NO. 9114

APPLICATION OF MESA GRANDE RESOURCES, INC. FOR THE EXTENSION OF
THE GAVILAN-MANCOS OIL POOL AND THE CONTRACTION OF THE WEST
PUERTO CHIQUITO-MANCOS OIL POOL, RIO ARRIBA COUNTY, NEW MEXICO.

CASE NO. 8950

IN THE MATTER OF CASE 8950 BEING REOPENED PURSUANT TO THE
PROVISIONS OF COMMISSION ORDERS NOS. R-6469-C AND R-3401-A, AS
AMENDED, WHICH ORDER PROMULGATED A TEMPORARY ALLOWABLE AND
LIMITING GAS-OIL RATIO FOR THE WEST PUERTO CHIQUITO-MANCOS OIL
POOL IN RIO ARRIBA COUNTY.

REQUEST FOR REHEARING

Mallon Oil Company, American Penn Energy, Inc., Hooper, Kimbell & Williams, Koch Exploration, Kodiak Petroleum, Inc., Mesa Grande, Ltd., Mesa Grande Resources, Inc., Mobil Production Texas-New Mexico, Inc. Reading and Bates Petroleum Company and Tenneco Oil Company state:

1. Applicants are pleased with the general trend of the Commission's Order No. R-7407-G that recognizes the need to increase the oil allowable and gas limits for the Gavilan-Mancos Oil Pool ("Gavilan") in order to increase the ultimate recovery of reserves from the pool and to protect the correlative rights of the mineral owners. Under order No. R-7407-G, the top oil allowable for the Gavilan is now 800 bopd for a well on 640 acres and one-half that amount for a well on 320 acres, with each having a 2000:1 gas limit. Of course, this allowable is still 37.5% below normal yardstick allowables. While Applicants believe even higher oil allowables are necessary to insure maximum recovery of reserves from the Gavilan, of more immediate concern to them is the need for a temporary removal of any gas limit so that Gavilan wells, which have been severely restricted or even shut-in under the Commission's prior orders, may be returned to their full producing capabilities.

In Order No. R-7407-G the Commissioners have agreed with Applicants that wells in the Gavilan Pool produce at considerably higher gas ratios during periods of low oil production. (Findings of Fact Nos. 15 and 17). Unfortunately, this fact is being repeatedly demonstrated as operators in the Gavilan Pool attempt to bring their wells back on line and up to the full producing capacity permitted by Order No. R-7407-G. The severe allowable restrictions placed on Gavilan wells by prior orders have caused many wells to load up with gas during the past "low rate test period." Gavilan operators have experienced high gas production as they have tried to bring restricted and shut-in wells back on line.

For example, many Mallon wells initially produced nothing but gas when they were returned to production following the Commissioners' approval of Order No. R-7407-G. Mallon has had to place pulling units on its wells, treat them numerous times with hot oil and undertaken other treating and reworking operations (at a cost of \$3000 - \$7000 per well) in order to reestablish normal oil production. In addition, Mallon has experienced numerous problems with compressors that have been virtually out of use during the past reduced rate period. Mallon has currently achieved a production rate of only 200 bopd from its wells, down from the 900 bopd it was making in November, 1987. However, Mallon wells are producing the same volume of gas as in 1987, with gas/oil ratios running as high as 70,000:1. Other Gavilan

operators are experiencing similar problems with high gas production, low oil production and high gas/oil ratios as they return their wells to production.

Therefore, in order to eliminate the build-up of gas that has occurred in the Gavilan and to achieve a stabilized producing rate which is in line with the new pool rules, Applicants respectfully request the Commission to amend their orders to temporarily remove the gas limit in the Gavilan for a 90 day period beginning September 1, 1988. This temporary order will allow operators in the Gavilan to stabilize production from their wells as they are returned to production. Applicants have no objection to an identical temporary removal of the gas limit for the West Puerto Chiquito pool as well.

If after 90 days the gas production in the Gavilan remains high while oil production is at a fraction of its prior rate, it will be clear that Gavilan has suffered permanent reservoir damage from the prior low rate and shut-in periods.

2. Applicants would further state they are parties of record adversely affected by the issuance of Orders Nos. R-8712, R-7407-G, R-6469-F and R-3401-B.

3. The Commission should reconsider its decision in these matters and should grant a rehearing because:

a. The Commission's failure to recognize the true boundary between the Gavilan and West Puerto Chiquito Pools, as defined by pressure differentials of at least 450 psi, is

arbitrary and capricious and not supported by substantial evidence;

b. The Commission's adoption of a top oil allowable of 800 bopd for the Gavilan, with a limiting gas-oil ratio of 2000:1 is arbitrary and capricious, not supported by substantial evidence, and contrary to the Commission's findings regarding the effect of oil rate on gas-oil ratios; and

c. The Commission's expansion of the West Puerto Chiquito Pressure Maintenance Project and the approval of a 1/2 injection credit for the expansion area is arbitrary and capricious, not supported by substantial evidence and detrimental to the correlative rights of the Gavilan owners.

4. Applicants submit that certain findings and orderings are not supported by the evidence presented at the hearing and are arbitrary and capricious and not supported by law. In particular, and without limitation, the following findings are incorrect for the reasons stated below:

As to Order R-8712:

a. Finding (4): Applicants proved by an overwhelming preponderance of the evidence that the Gavilan and West Puerto Chiquito Pools are separated by a permeability barrier located approximately two miles east of the present common boundary between the two pools. All pressure data from the two pools supports the conclusion that a permeability barrier exists between wells which in February 1988 had at least a 450 psi pressure differential. This pressure differential is probably

higher now as more production has occurred in the pools. no effective communication has been shown across this barrier: in fact, pressure history over the past 25 years conclusively proves lack of communication.

b. Finding (5): A change in the pool boundaries is mandated by the preponderance of evidence presented in this hearing and is necessary to protect the correlative rights of the parties, and would not impose substantial burdens on all parties.

As to Orders R-7407-G and R-6469-F:

a. Finding (7): As established by cross-examination, the study conducted by the Petroleum Recovery Research Center was not truly "independent". In fact, the study was built upon critical "facts" that were merely assumed by the researchers to be true and not supported by any objective evidence. For instance, rather than looking for objective data to support a theory of pressure interference between wells, the researchers assumed interference and then attempted to quantify the amount of interference.

b. Finding (8): Proponents advocated adoption of a capacity allowable for the Gavilan in order to prevent waste; or, at the very least, that the normal statewide allowable of 1280 bopd for 640-acre units be approved. Opponents have advocated restrictive special allowables for the Gavilan, which would maintain production below state-wide levels.

c. Finding (9): Proponents also presented testimony and exhibits to demonstrate:

1) The change to higher oil and gas allowables was accompanied by a period of time of several days/weeks in which higher oil rates were achieved. (Proponents' Exhibit 11). Prior to that time, the wells produced primarily gas.

2) Allowable restrictions below the approved statewide top allowables limited production of gas in a manner that severely reduced oil withdrawals. Reduced oil withdrawals in turn resulted in higher gas-oil ratios due to inverse rate sensitivity. The effect of higher gas-oil ratios further curtailed oil allowable. This problem affected the Gavilan Mancos Pool in, which gas production is continuously metered, more severely than the Proposed Expansion Area of the C.O.U., in which outlet gas volumes are not continuously measured. The final result is a disproportionate reduction in oil production from the Gavilan Mancos Pool, drainage to the C.O.U. Proposed Expansion Area and a violation of correlative rights. (Proponents' Exhibits 14 and 15)

3) Use of average trend pressures to describe the pressure drop occurring during the "low rate - high rate - low rate" Commission ordered testing period, rather than the 72 hour well pressures which were clearly not built up, indicates increased incremental oil production per psi pressure drop at the higher withdrawal rates. (Proponents' Exhibits 22 and 23)

4) Per acre oil recovery from the C.O.U. Pressure Maintenance Project has not been noticeably increased by gas injection in comparison to either Gavilan recovery or

recovery from other fractured Niobrara fields in the area (Exhibits 25 and 26). This is not surprising since there is no technical basis on which increased oil recovery in a dual-porosity reservoir can be achieved. The gas injection program in the C.O.U. Pressure Maintenance Area has simply extended dramatically the time to recover hydrocarbons that would otherwise be recoverable by primary depletion.

5) Significant physical and economic waste has occurred and will continue to occur in the future in the event production is restricted to less than capacity rates. This has and will affect revenues to State, Federal, Working Interest and other Royalty Owners. (Proponents' Exhibits 27 and 28)

d. Finding (11): Substantial evidence indicated, and all parties agreed, that 640 acres with the option to drill two wells is the appropriate size spacing and proration unit for Gavilan.

e. Finding (13): The preponderance of the evidence proves the existence of the permeability barrier. Eleven separate types of information provide proof of this barrier:

1. Lack of pressure interference between Gavilan area and C.O.U. Pressure Maintenance Area between 1962 and 1988. Exhibit 20: 25 Year Interference Test.
2. Lack of pressure response to fracture stimulation across the barrier. Exhibit 41.
3. Pressure buildups near the barrier (C.O.U. A-20, B-29, B-32) all indicate barrier at correct location. Exhibit 43.

4. Inconsistent isobaric behavior between Gavilan Area and C.O.U. Pressure Maintenance Area indicates barrier. Weiss exhibits plus Exhibits 48, 49, 50: Isobaric Maps.
5. Lack of performance response on C.O.U. Pressure Maintenance Area due to Gavilan increasing in production to as high as 8,000 BOPD. Exhibit 7.
6. All wells drilled in barrier area have been extremely low productivity even after fracture stimulation. Exhibit 5: Base Map and Exhibit 5 to March 17-18, 1988 hearing.
7. Lack of pressure gradient with distance on either side of barrier indicates discontinuity and presence of barrier. Exhibit 21: Cross-Section of Greer Rainbow Map.
8. Simulation study indicates observed performance can be simulated in Gavilan Mancos area without having any efflux out of or influx into Gavilan.
9. Second derivative of structure map indicates barrier is in "quiet" area where low level of natural fracturing would be expected. Prior Mesa Grande geological testimony.
10. Lack of any verifiable evidence that barrier is not present coupled with above items, indicates that barrier is present and prevents communication between Gavilan and C.O.U. Pressure Maintenance Area.
11. Recognition by BMG and its experts for as long as 20 years that there exists a "boundary" (Mr. Greer), "reduction in permeability" (Dr. Lee), "reduced Kh and damage zone" (Mr. Roe) and "tight streak and fuzzy boundary" (Mr. Greer).

* includes C.O.U. Proposed Expansion Area

As can be seen, pressure differentials; lack of response to interference testing and the presence of nonproductive wells, among other evidence, conclusively proves the existence of a permeability barrier between the Gavilan and the West Puerto Chiquito Pools and prevents them from being a common source of supply.

f. Finding (14): The Commission has misstated the evidence regarding the ability of wells to produce top oil allowables. While it is true that no well produced the top oil allowable during the period of normal rate testing, several wells did produce, and were limited by the gas limit of 1280 mcf/d on 320 acre units during that period. In addition, many wells could have produced the proposed top oil allowable of 800 bopd had they not been limited by the gas limit in effect.

g. Finding (16): The available pressure measurements are conclusive evidence of the existence of a boundary and permeability barrier between the Gavilan and West Puerto Chiquito pools. A preponderance of the evidence shows that wells on each side of the barrier exhibit a very high degree of communication in all directions EXCEPT across the barrier. There is no evidence to show directional permeabilities vary. Use of 72-hour shut-in pressures has not provided adequate information regarding reservoir pressure, most especially following high production rate periods. As a result, erroneous conclusions have been reached such as that stated in the second sentence of Finding 18.

h. Finding (19): Evidence shows that the most efficient rate of production in the Gavilan will be achieved by producing at capacity allowables. There is no justification to establish any top oil allowable or limiting gas-oil ratio other than state-wide allowable levels.

i. Ordering (2): The 800 bopd top oil allowable with a 2000:1 gas limit should be amended to reflect the most efficient producing rate for wells in the Gavilan: capacity allowables; or, at the very least, a return to normal statewide allowables. In the alternative, the Commission should temporarily remove the gas limit for a 90 day period, effective September 1, 1988, in order to achieve stabilized producing rates in the Gavilan.

As to Order R-3401-B

a. Finding (7): The unit area east of the proposed expansion area exhibits a significantly greater pressure than the proposed expansion area and the adjacent Gavilan area because of the existence of a permeability barrier which separates the proposed expansion area and the Gavilan from the West Puerto Chiquito Mancos Pool.

b. Finding (8): The pressure differential of greater than 450 psi in February 1988 (and is even greater today), which exists across the third row of sections east of the western boundary of the unit conclusively proves that there is no effective communication between the injection wells and the proposed expansion area. Over the last 25 years the magnitude

and direction of the pressure differential has not affected the performance of either the COU pressure maintenance area or the Gavilan Mancos Pool (including the COU proposed expansion area). See Gavilan Pool Member Ex. 20.

c. Finding (9): Frac pulse responses have been established only between wells on the same side of the permeability barrier. No pulse response has been established across the permeability barrier. There is insufficient data to support any conclusion that overinjection of gas in the pressure maintenance area has failed to increase average pressures because the operator of the pressure maintenance area has uniformly failed to keep or provide sufficient pressure records for his project. In addition, the operator has stated that even prior to the discovery of Gavilan, overinjection of gas did not maintain pressure in the pressure maintenance area. The lower gas-oil ratio of wells in the proposed expansion area is caused by either lower structural position. None of these facts support the idea of any transmissibility across the low permeability zone.

d. Finding (10): Although the theory behind gas credits for gas injection is admirable, the evidence in this case does not support any gas injection credit for the expansion area because there will be no effective communication between the expansion area and the injection wells, some located more than 7 miles away, all located across a permeability barrier and all in a different pool from the proposed expansion area.

e. Finding (11): The permeability restriction described in Finding No. (5) makes it clear that the proposed expansion area will receive no benefit from the pressure maintenance gas project.

f. Findings (13), (14), (15), (16), and (17): This series of findings must fall to the evidence which establishes a permeability barrier and reservoir boundary between the proposed expansion area and the pressure maintenance area as described in Gavilan Pool Member Exs. 20 and 21. Because no portion of the proposed expansion area is in effective communication with the injection wells in the pressure maintenance area and will receive no benefit from gas injection, there is no justification for extending the pressure maintenance to any part of the proposed expansion area or for granting any injection credit to the proposed expansion area. To do so will destroy the correlative rights of the adjacent Gavilan owners.

g. Finding (18): If additional bottom hole pressure data is necessary to establish gas injection credit, then the proper wells to test are those on either side of the permeability barrier. Evidence of drainage across the current boundary between Gavilan and West Puerto Chiquito Mancos is meaningless for adjusting gas injection credit in the expansion areas as the wells on either side of the current boundary are not in communication with the injection wells and don't produce from the same pool with the injection wells. Furthermore, because of the complexity of the Gavilan and West Puerto Chiquito Pools, the

magnitude of dispute between operators in each and the involvement of the highest levels of the OCC in making decisions regarding the pools, any testing program should be designed (with impute from the operators), monitored and reviewed by the OCC's senior reservoir and petroleum engineers in Santa Fe rather than in the district. Finally, in order to obtain meaningful assistance from the operators and senior staff, the Commission should more clearly define its goals in requesting additional test data so that all operators and staff members can design a testing program to provide meaningful data.

However, if such tests are required, they should be delayed until the Commission rules upon this request for rehearing and until the requested ninety (90) day period of increased production is completed.

h. Ordering (1) and (2): There is no credible evidence in the record to support extending the pressure maintenance area to any part of the proposed expansion area, or to grant any gas injection credit for wells in the expansion area. The Commission is acting arbitrarily and capriciously in granting any portion of this application.

i. Ordering (3): As noted above, the proposed testing is meaningless. If any tests are to be run, they should be designed to conclusively establish communication, or the lack thereof, across the permeability barrier. The testing currently proposed merely assumes communication contrary to the overwhelming preponderance of evidence in this case.

Furthermore, if additional testing is necessary, it should be designed, implemented and reviewed by senior staff reservoir and petroleum engineers in Santa Fe.

In support of this motion, Applicants rely on the record before this Commission and the Dissenting Opinion filed by Commissioner Erling A. Brostuen, a copy of which is attached hereto and incorporated herein as Exhibit "A".

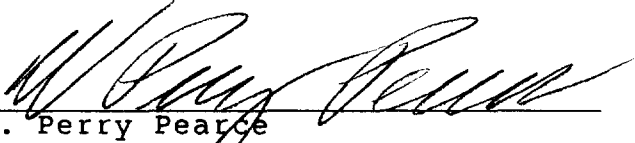
WHEREFORE, Applicants request the Commission grant this motion for rehearing and order the following:

1. Increase allowables in the Gavilan to capacity; or at least temporarily remove gas limits and set permanent allowables at state-wide rates;
2. Recognize the Gavilan and West Puerto Chiquito Mancos Pools as separate reservoirs;
3. Set pool boundaries at the permeability barrier;
4. Deny Opponents' pressure maintenance expansion request or, alternatively, deny any injection credit for expansion;
5. Defer or withdraw any additional testing requirements, or, alternatively, more clearly define the goals of such testing and order that the testing is to be designed, implemented and reviewed by senior staff reservoir and petroleum engineers, with input from operators.

Respectfully submitted,

MONTGOMERY & ANDREWS, P.A.

By


W. Perry Pearce
Post Office Box 2307
Santa Fe, New Mexico 87504-2307
(505) 982-3873

Attorneys for Mallon Oil Company
and Mobil Exploration & Producing
U.S. Inc.

SCOTT, DOUGLASS & LUTON

Frank Douglass
Twelfth Floor
First City Bank Building
Austin, Texas 78701
(512) 476-6337

Attorneys for Mallon Oil Company

HINKLE, COX, EATON, COFFIELD &
HENSLEY

Owen M. Lopez
Post Office Box 2068
Santa Fe, New Mexico 87504-2068
(505) 982-4554

Attorneys for Mesa Grande
Resources, Inc.

CERTIFICATE OF SERVICE

I hereby certify that I caused a true and correct copy of
the foregoing Request for Rehearing to be mailed to the following
persons this 24th day of August, 1988.

W. Thomas Kellahin
Kellahin, Kellahin & Aubrey
Post Office Box 2265
Santa Fe, New Mexico 87501

William F. Carr
Campbell & Black, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87501

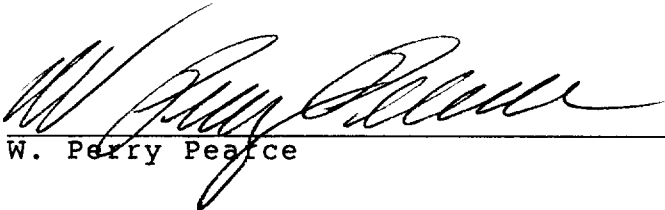
Robert G. Stovall
Dugan Production Company
Post Office Box 208
Farmington, New Mexico 87499

Kent Lund
Amoco Production Company
Post Office Box 800
Denver, Colorado 80201

Ernest L. Padilla
Padilla & Snyder
Post Office Box 2523
Santa Fe, New Mexico 87501

Robert D. Buettner
Koch Exploration Company
Post Office Box 2256
Wichita, Kansas 67201

Paul Cooter
Rodey, Dickason, Sloan,
Akin & Robb, P.A.
Post Office Box 1357
Santa Fe, New Mexico 87504



W. Perry Pearce

[WPP:139]