

EXHIBIT "D"

March 10, 1964

GEOLOGICAL MEMORANDUM

CONCERNING

PROPOSED LONG DRAW UNIT
T-20-S, R-23-&-24-E
EDDY COUNTY, NEW MEXICO

The proposed unit is located approximately 24 miles west northwest of the city of Carlsbad, New Mexico, in the area of the origination of both the north and south prongs of Long Draw, including the S/2 of Section 24, all of Section 25, N/2 of Section 36, Township 20 south, Range 23 east, all Section 19, W/2 Section 20, and all of Sections 30 and 31, Township 20 south, Range 24 east, Eddy County, New Mexico. Since a high percentage of the acreage within this outline is Federal land, we believe it would be in the public interest to join them in a unit agreement before drilling a test well for oil and gas. It is recommended that the unitized substance include all horizons from the surface to the basement complex.

The primary objective within the recommended outline is dolomitized Abo age reefing. The attached isopachus map, Exhibit No. 1, shows an interpretation of the distribution of the gross reef interval in the area and within the proposed unit. The general trend of the reef is established by sparse but adequate well control in the area. This trend is further refined by using a shallow residual gravity map. It is well known that the Abo reef is not continuous around the rim of the Delaware Basin as it is interrupted or breached in many local areas. In western Eddy County an interruption can possibly be predicted by a gravity minimum and a possible commercial reef buildup might be portrayed by a gravity maximum. The unit is

bounded on the northeast by a breach in the reef which is established by well control (Carper #1 "MA" in Section 21, Township 20 south, Range 24 east) and a gravity minimum. The unit is bounded on the southwest by another similar breach as indicated by a gravity minimum. The proposed unit includes gravity maxima interpreted as reef buildup. The trapping of oil and gas would be caused by the probable breaching at the southwest edge of the unit.

The attached structural contour map, Exhibit No. 2, contoured on the top of the Lower Cisco illustrates the Upper Cisco possibilities of the unit. The Upper Cisco shelf-edge carbonates which produces in the Tom Brown #1 Antelope Sink in Section 18, Township 19 south, Range 24 east, probably trends southward through the proposed unit due to the influence of the strong structural nosing as indicated on the exhibit. Production similar to the recent Morrow sand discovery, the Tom Brown #1 Kewanee State in Section 2, Township 20 south, Range 23 east, is also a good possibility in the proposed unit. Therefore, the unit outline embraces acreage where three possible pay horizons are stacked.

The following is a tabulation of the geological formations anticipated in this area as interpolated from nearby subsurface well control:

<u>Age</u>	<u>Formation</u>	<u>Approximate Depth</u>
Permian	San Andres	250'
	Yeso	2400'
	Abo	3950'
	Wolfcamp	5150'

<u>Age</u>	<u>Formation</u>	<u>Approximate Depth</u>
Pennsylvanian	Lower Cisco	6450'
	Canyon	7350'
	Strawn	7806'
	Atoka	8500'
Mississippian	Barnett	9100'

As possible pay zones include almost all of the formations through the Pennsylvanian, a test well is proposed in the SE/4 of Section 25, Township 20 south, Range 23 east, to an approximate total depth of 9300 feet in the Mississippian so that the entire prospective section can be penetrated and tested.

It is requested that the information contained herein and the exhibits attached hereto, be kept strictly confidential.

Very truly yours,



B. F. Baldwin
Division Geologist for
Pan American Petroleum Corporation

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3025
Order No. R-2690

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR APPROVAL OF THE LONG
DRAW UNIT AGREEMENT, EDDY COUNTY, NEW
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
April 8, 1964, at Santa Fe, New Mexico, before Examiner
Daniel S. Nutter.

NOW, on this 13th day of April, 1964, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Pan American Petroleum Corporation,
seeks approval of the Long Draw Unit Agreement covering 3,514
acres, more or less, of State and Federal lands in Township 20
South, Ranges 23 and 24 East, NMPM, Eddy County, New Mexico.

(3) That approval of the proposed Long Draw Unit Agreement
will in principle tend to promote the conservation of oil and gas
and the prevention of waste.

IT IS THEREFORE ORDERED:

(1) That the Long Draw Unit Agreement is hereby approved.

(2) That the plan under which the unit area shall be oper-
ated shall be embraced in the form of a unit agreement for the
development and operation of the Long Draw Unit Area, and such
plan shall be known as the Long Draw Unit Agreement Plan.

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(3) That the Long Draw Unit Agreement Plan is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Oil Conservation Commission of New Mexico by law relative to the supervision and control of operations for the exploration and development of any lands committed to the Long Draw Unit, or relative to the production of oil or gas therefrom.

(4) (a) That the unit area shall be:

NEW MEXICO PRINCIPAL MERIDIAN

EDDY COUNTY, NEW MEXICO

TOWNSHIP 20 SOUTH, RANGE 23 EAST

Section 24: S/2
Section 25: All
Section 36: N/2

TOWNSHIP 20 SOUTH, RANGE 24 EAST

Section 19: All
Section 20: W/2
Section 30: All
Section 31: All

containing 3,514.52 acres, more or less.

(b) That the unit area may be enlarged or contracted as provided in said plan; provided, however, that administrative approval for expansion or contraction of the unit area must also be obtained from the secretary-Director of the Commission.

(5) That the unit operator shall file with the Commission an executed original or executed counterpart of the Long Draw Unit Agreement within 30 days after the effective date thereof. In the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(6) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey, and shall terminate ipso facto upon the termination of

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said unit agreement. The last unit operator shall notify the Commission immediately in writing of such termination.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


JACK M. CAMPBELL, Chairman


E. S. WALKER, Member


A. L. PORTER, Jr., Member & Secretary

