

TO: DIRECTOR, UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

FROM: HUMBLE OIL & REFINING COMPANY, EXPLORATION DEPARTMENT,
ROSWELL, NEW MEXICO

SUBJECT: REPORT ON THE GEOLOGY OF THE RAILROAD MOUNTAIN AREA,
CHAVES COUNTY, NEW MEXICO

PURPOSE: THIS REPORT IS SUBMITTED TO SHOW THE SUBSURFACE GEOLOGY OF
THE RAILROAD MOUNTAIN AREA AND TO DEMONSTRATE THE NEED OF
FORMING A FEDERAL EXPLORATION UNIT TO TEST THE AREA. IT
IS BELIEVED THAT THE GEOLOGIC CONDITIONS ARE SUCH THAT THE
MOST REASONABLE METHOD OF EXPLORATION AND DEVELOPMENT IS
BY MEANS OF AN APPROVED FEDERAL UNIT.

DATE: MAY, 1956

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 7
CASE 1118



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

JUN 1 1956

Humble Oil and Refining Company
c/o Mr. Clarence E. Hinkle
Post Office Box 614
Roswell, New Mexico

Gentlemen:

Reference is made to your application filed May 28, 1956, with the Oil and Gas Supervisor, Roswell, New Mexico, requesting designation of 4,217.48 acres in Chaves County, New Mexico, as an area logically subject to exploration and development under the unitization provisions of the Mineral Leasing Act, as amended.

Pursuant to the regulations of December 22, 1950, 30 C.F.R., section 226.3, the following land is designated as a logical unit to be known as the Railroad Mountain unit area:

New Mexico Principal Meridian, New Mexico

	Acres
T. 7 S., R. 31 E. sec. 31, lots 3, 4, $E\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}$	328.64
T. 8 S., R. 31 E.	
sec. 5, lots 1,2,3,4, $E\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}$ (all)	641.68
sec. 6, lots 1 through 7, $SW\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}$, $SW\frac{1}{4}$ (all)	657.60
sec. 7, lots 1,2,3,4, $E\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}$ (all)	655.74
sec. 8, 17(all)	1,280.00
sec. 18, lots 1,2,3,4, $E\frac{1}{2}NE\frac{1}{4}$, $SE\frac{1}{4}$ (all)	653.82
Total	4,217.48

The proposed test well to the Siluro-Devonian formation or to a depth of 10,000 feet is deemed acceptable.

The application states that you will use the same form of agreement as used in connection with the Chalk Bluff Draw unit area, New Mexico, No. 1A-08-001-2477, approved December 29, 1955, except

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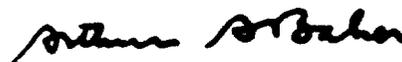
EXHIBIT "A"

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
JMP EXHIBIT NO. B
DATE 1/11/58

that all formations will be unitized. Said form substantially follows the standard form including modifications necessary to meet the requirements of the State of New Mexico and to conform with Public Law 555 (68 Stat. 585) and Executive Order No. 10557 (19 F.R. 5655). Nevertheless, except for unitization of all formations and use of the standard time intervals in sec. 2(e), it is believed the form approved June 8 for the Little Hddy unit, New Mexico, should be used instead of the Chalk Bluff Draw unit.

In the absence of any objections not now apparent, a duly executed agreement in the form indicated above will be approved if submitted within a reasonable period of time. However, notice is hereby given that the right is reserved to deny approval of any executed agreement submitted which, in my opinion, does not have the full commitment of sufficient lands to afford effective control of unit operations. When the executed agreement is transmitted to the Supervisor for approval, include the latest status of all acreage, showing the current record owner of all leases and the current status of all lease applications, if any.

Very truly yours,



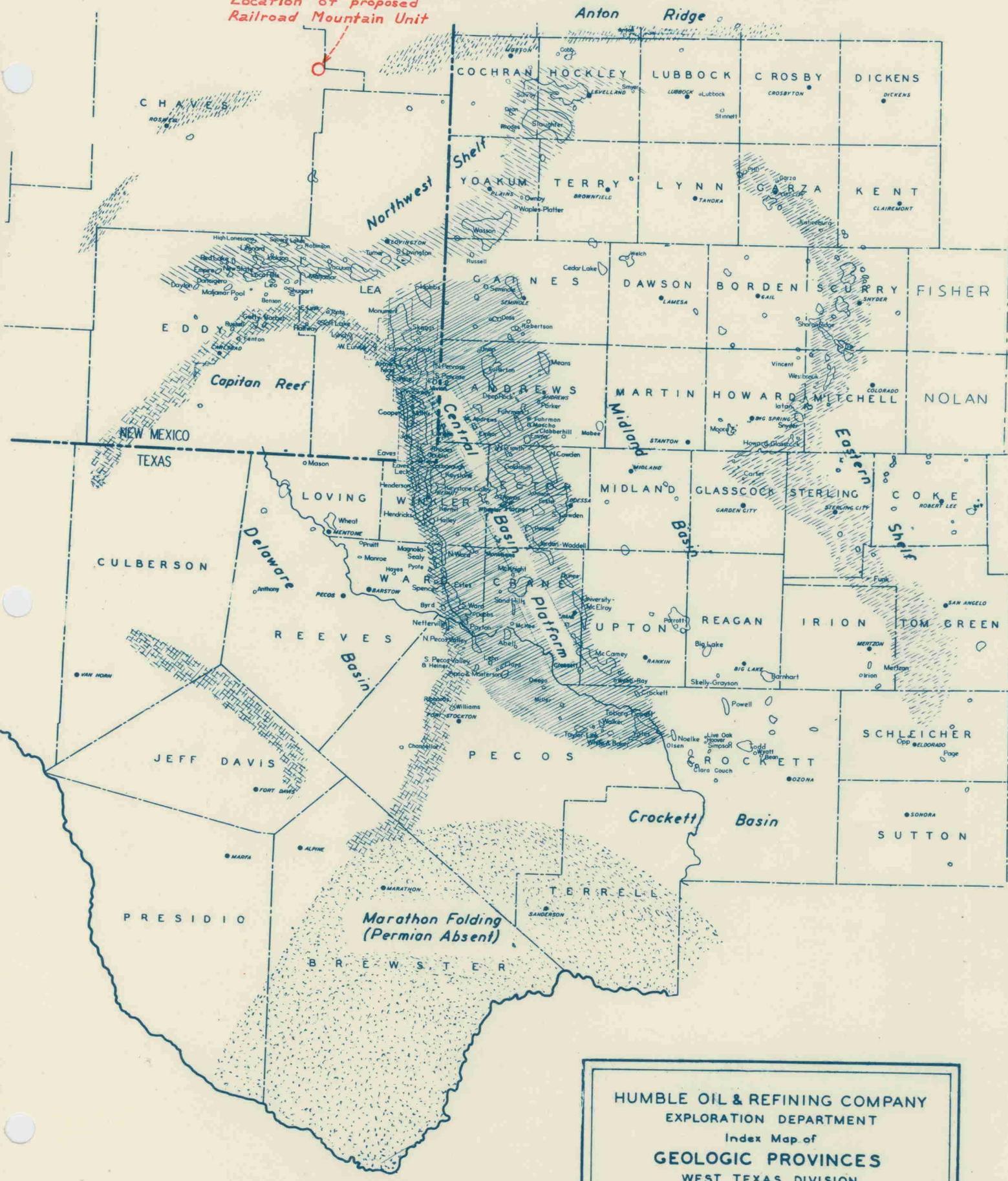
Acting Director

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REPORT ON THE RAILROAD MOUNTAIN AREA

CHAVES COUNTY, NEW MEXICO

Location of proposed
Railroad Mountain Unit



HUMBLE OIL & REFINING COMPANY
EXPLORATION DEPARTMENT
Index Map of
GEOLOGIC PROVINCES
WEST TEXAS DIVISION

REPORT ON THE RAILROAD MOUNTAIN AREA

CHAVES COUNTY, NEW MEXICO

INTRODUCTION

Humble Oil & Refining Company proposes the formation of a Federal exploratory unit to be known as the Railroad Mountain Unit for the exploration and development of oil and gas and associated mineral deposits within a 4217.48-acre area located in Townships 7 and 8 South, Range 31 East, Chaves County, New Mexico. This unit area covers a low relief, north-south trending anticlinal feature delineated by reflection seismograph. The best possibilities for production are believed to be from Lower Permian, Pennsylvanian and Devonian sediments, with the reservoirs being both stratigraphic and structural traps. The proposed unit consists of a total of 3645.19 acres of Federal land and 572.29 acres of fee land.

Immediately north and northwest of the proposed unit is located a well known geologic and physiographic feature known as the Railroad Mountain. This igneous dike, which extends in an east-west direction for approximately 24 miles across northern Chaves County, forms a long, sharp ridge that rises from 10 to 40 feet above the surrounding rolling plains. The proposed unit derives its name from this feature.

SUBSURFACE STRATIGRAPHY

The general stratigraphy of the Railroad Mountain Unit area can best be described from the section encountered by Forest Oil Corporation's No. 1 Federal-General American wildcat in Section 7, Township 7 South, Range 31 East, about six miles to the north of the proposed unit area.

The No. 1 Federal-General American from total depth at 9298 feet to surface at 4314 feet above sea level encountered the following section:

ORDOVICIAN:

ELLENBURGER: 70 feet thick. Brown, sugary dolomite. Crystallinity medium-to-coarse. Some coarse-grained glauconitic sands at the base. This zone has never proven productive on the Northwest Shelf, although it is a prolific producer on the Central Basin Platform to the southeast.

MONTOYA: 205 feet thick. White, tan, brown, sandy dolomite. Interval normally finely crystalline to dense and argillaceous, with scattered chert.

SILURO-DEVONIAN: 55 feet thick. White, cream, tan dolomite with scattered chert. Crystallinity, fine-to-medium. This interval is usually fractured and develops excellent reservoirs when related to closed structures.

MISSISSIPPIAN: 35 feet of Woodford gray-brown pyritic shale, and 470 feet of dense, white, tan and brown limestone; very silicious throughout.

PENNSYLVANIAN:

BEND (Derryan or Atokan): 125 feet thick. Gray soft silty shales and coarse quartz sands. This interval will be absent if the well is structurally high.

STRAWN (Desmoinesian): 70 feet thick. Light colored, dense to finely crystalline limestones. Zone may be missing.

CANYON (Missourian): 320 feet thick. White, tan, dense-to-finely crystalline shaly limestone. Lower portion contains arkosic, glauconitic sands.

CISCO (Virgilian): 200 feet thick. White, tan, brown limestone. Shaly in upper portion. This zone produces from stratigraphic traps in wells to the south and in this well.

PERMIAN:

HUECO: 540 feet thick. White, tan, brown finely crystalline limestone. Upper 60 feet often tan to brown finely crystalline dolomite. This stratigraphic interval has proven productive in wells to the south and east of the unit area and is a likely reservoir.

ABC: 770 feet thick. Consists of red and gray shales with thin beds of pink dolomite; lower 150 feet of the formation is composed primarily of gray to brown finely crystalline dolomite and would offer petroleum possibilities if porosity were developed.

YESO: 2250 feet thick. Upper 700 feet consists of red sands, finely crystalline oolitic dolomites and anhydrites; interbedded tan and brown limestones and dolomites occur along with anhydrite in the middle 700-foot interval; lower zone contains red sands, tan and brown dolomites and anhydrite. Although a prolific producer to the south in Lea County, this lower part of the formation is not expected to be productive in the area.

GLORIETA: 50 feet thick. White, medium-to-coarsely granular sandstone.

SAN ANDRES: 1230 feet thick. Predominantly a tan to brown finely crystalline dolomite section with the upper zone anhydritic and with several hundred feet of brown limestone near the base. This zone will offer petroleum accumulation possibilities where the porosity is found sufficiently developed on structure.

WHITEHORSE: 1110 feet thick. Consists of sandstones, dolomites and evaporites which have produced considerable amounts of oil in southeastern New Mexico.

The following are the expected stratigraphic markers and their estimated depths in the proposed Humble No. 1 Railroad Mountain Unit wildcat:

The well will be spudded near the top of the Whitehorse Group. Estimated elevation 4212 feet.

Top of the San Andres at 2860 feet
Top of the Yeso at 4150 feet
Top of the Abo at 6400 feet
Top of the Hueco at 7150 feet
Top of the Pennsylvanian at 7650 feet
Top of the Mississippian at 8350 feet
Top of the Siluro-Devonian at 8830 feet

Present plans call for the drilling of a wildcat well, after unitization has been accomplished, to test formation fluid in the Siluro-Devonian. The presently recommended location for the test well is 990 feet from the north line and 660 feet from the west line of Section 8, Township 8 South, Range 31 East.

STRUCTURE

The Railroad Mountain Unit is proposed to cover a low relief reflection seismograph anomaly as shown on the attached map. The deep-seated anticlinal fold mapped by reflection seismograph persists in several shallower reflecting horizons. Good to fair seismograph records were obtained in the area and the unit outline should cover adequately the prospect. The unit outline was made somewhat larger than the lowest closed Devonian contour since it is a well known fact that in nearby producing areas in Lea County, Permian and Pennsylvanian production often extend beyond the limits of the underlying Devonian structure.

ECONOMIC CONSIDERATIONS

The possibilities of commercial oil and gas accumulations within the proposed unit area are numerous and varied.

Those zones with the best possibilities of production are as follows:

- (1) The San Andres dolomite section might produce if porosity and a proper trap were developed.
- (2) The dolomites of the Yeso interval produce to the south, and it will be a zone to consider for oil accumulation in this area.
- (3) The porous limestones occurring in the Lower Permian Hueco interval will be a definite zone to be thoroughly tested. This stratigraphic type accumulation produces large quantities of oil where porosity and permeability are developed.
- (4) The upper Pennsylvanian limestones are considered to have good chances of producing from either stratigraphic or structural traps.
- (5) The Pennsylvanian Bend offers production possibilities if present. If the test well should run quite high structurally, the lower Pennsylvanian Strawn and Bend may be absent.
- (6) The goal of an exploratory well drilled on the proposed unit outline will be the porous fractured dolomites of Siluro-Devonian age. This reservoir produces great quantities of oil in southeastern New Mexico, when found structurally high.

PROPOSED DEVELOPMENT

If the Railroad Mountain Unit is approved, and unitization can be accomplished, Humble Oil & Refining Company, as Unit Operator, will drill a wildcat well to thoroughly test for oil and gas all formations down to and including the Siluro-Devonian (but in no case to a depth greater than 10,000 feet.) Should a commercial discovery of oil or gas be made, Humble will further develop and produce the unit area consistent with proper modern techniques.

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It is believed that the Federal unit plan of development would be in the best interest of conservation, orderly development, production and secondary recovery of the oil and gas that may be present in the area.

It is therefore recommended that the Railroad Mountain Unit be approved as requested.

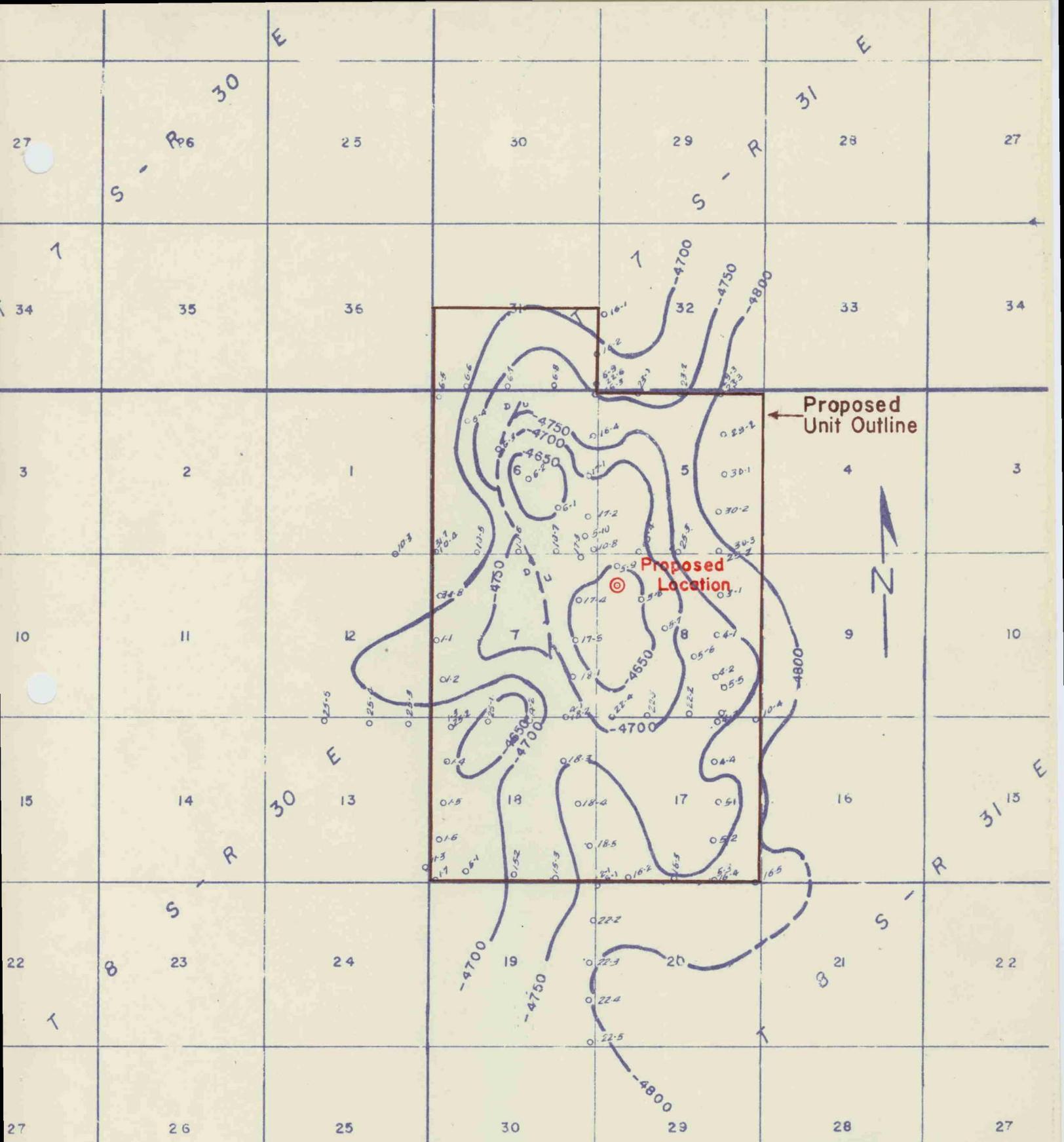
Respectfully submitted,

HUMBLE OIL & REFINING COMPANY

By



A. A. Phillips



HUMBLE OIL & REFINING COMPANY
 WESTERN DIVISION EXPLORATION DEPARTMENT
 SEISMIC MAP OF
 PROPOSED RAILROAD MOUNTAIN UNIT
 CHAVES COUNTY, NEW MEXICO
 CORRELATED NEAR TOP OF DEVONIAN
 CONTOUR INTERVAL: 50 FEET
 SCALE: 1" = 4000'
 DATE: MAY 1953

TO: DIRECTOR, UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

FROM: HUMBLE OIL & REFINING COMPANY, EXPLORATION DEPARTMENT,
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DATE: MAY, 1956

EX # A

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, PRESIDENT

SYMBOLS

DL=Day Letter

NL=Night Letter

LT=International Letter Telegram

1220 (R 11-54)

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

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NEW MEXICO OIL CONSERVATION COMMISSION=

CAPITOL BLDG SANTA FE NMEX=

ATTENTION: WARREN MANKIN PLEASE PUBLISH NOTICE FOR HEARING FOR AUGUST 6 ON APPLICATION OF HUMBLE OIL & REFINING COMPANY FOR APPROVAL RAILROAD MOUNTAIN UNIT AGREEMENT EMBRACING 4217.48 ACRES, CHAVES COUNTY, N.M., WITHIN TOWNSHIPS 7 AND 8 SOUTH, RANGE 31 EAST, N.M.P.. THIS UNIT CONSISTS OF FEE AND FEDERAL LANDS AND DESIGNATION OF UNIT AND FORM OF AGREEMENT HERETOFORE APPROVED BY U.S.G.S. FORMAL APPLICATION WILL BE FILED AS SOON AS POSSIBLE=

HERVEY DOW AND HINKLE P O BOX 547 ROSWELL NEW MEXICO=

*S/2 Sec 31 = 75 3 1E
all Sec 5, 6, 7, 8, 17, 18
75 3 1E*

1956 JUL 19 PM 1:10

MAIN OFFICE OCC

6 4217.48 7 8 31 547=

Case # 1118

LAW OFFICES

HERVEY, DOW & HINKLE

FIRST NATIONAL BANK BUILDING

ROSWELL, NEW MEXICO

TELEPHONE MAIN 2-6510

J. M. HERVEY 1874-1953

HIRAM M. DOW

CLARENCE E. HINKLE

W. E. BONDURANT, JR.

GEORGE H. HUNKER, JR.

HOWARD C. BRATTON

S. B. CHRISTY IV

J. PENROD TOLES

LEWIS C. COX, JR.

July 20, 1956

*Sent copy
7/20/56
to Clarence Hinkle
E Bot Survey
on 7/30/56*

New Mexico Oil Conservation Commission
Capitol Building
Santa Fe, New Mexico

Gentlemen:

We enclose herewith in triplicate application of Humble Oil & Refining Company for approval of the Railroad Mountain Unit Agreement embracing lands in Chaves County, New Mexico.

I telegraphed you yesterday requesting that the hearing be set for August 6 before Warren Mankin, examiner, and this application is filed as a follow-up of the telegram.

We also enclose three copies of the form of unit agreement which is proposed to be used in this case. You will note from the application that this area has heretofore been designated as an area suitable and proper for unitization by the United States Geological Survey.

Yours very truly,

HERVEY, DOW & HINKLE

BY: *Clarence Hinkle*

CEH: jy
Encls.