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New Mexico
OIL CONSERVATION COMMISSION

Box 2045
HOBBS, NEW MEXICO.

December 7, 1954

Mr. W. B. Macey, Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Mr. Macey:

The enclosed report, which is entitled "Geological Report No.1", is the first of a series to be written on all investigations that warrant recommendations, or those investigations which will be of value at a later date.

Yours sincerely,

OIL CONSERVATION COMMISSION

Randall F. Montgomery

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Geologist

RFM/hs

GEOLOGICAL REPORT NUMBER ONE

Teas Pool
Lea County, New Mexico

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ENCLOSURES: Enclosure No. 1, Yates Structure Contour Map of the Teas Pool
Enclosure No.2 , Cross-section of the Teas Pool.

PURPOSE: To outline the geology of the Teas Pool and to make certain recommendations as to the vertical limits.

LOCATION: The Teas Pool lies about 30 miles southwest of Hobbs, just south of U.S.Highway 62-180 connecting Hobbs and Carlsbad, in Sections 11, 13, 14, 15 and 24, Township 20 South, Range 33 East and Section 18, Township 20 South, Range 34 East, Lea County, New Mexico.

STRATIGRAPHY:

The section penetrated in the Teas Pool is a typical back-reef section, relatively close to the Tansill Reef and underlaid by the Seven Rivers Reef, as indicated by the sedimentology of the Tansill-Yates-Seven Rivers section.

Red Beds:

The underlying red-bed section is some 1300-1400 feet thick and is Triassic and Permian in age.

Rustler:

An average thickness of 125 feet and is a white anhydrite with sandstone stringers containing ferro-magnesium sands.

Salado:

The Salado formation, 1400-1500 feet thick, is a salt and anhydrite section consisting, in the main, of salt. The section shows the greatest variation in the lower 500 feet, where the section has probably eroded.

Tansill:

Dolomite and anhydrite about 175 feet thick.

Yates:

Dolomite and sandstone, sandstone is very fine-grained to fine-grained gray and red sandstone with some rounded frosted coarse-grained sand which is found throughout

Yates, cont'd

the Yates section. Dolomite is laminated to medium bedded and characteristically light gray to medium gray in the upper 30 feet, then becoming light gray to pink and shaly dolomite, often with a thin bed of dark gray micacous shale overlying the light gray to pink dolomite. About 100 feet below the first sand the dolomite is light gray to white, with a thickness of some 300 feet.

Seven Rivers:

The upper 80 feet is alternating sandstone and dolomite, passing into a "reefoid" section. The Seven Rivers has not been completely penetrated in this area.

STRUCTURE:

Enclosure No. 1 is a structure map contoured on top of the Yates formation, which illustrates that the accumulation is controlled primarily by an anticlinal structure, in part closed. Lithological traps are unidentified, but undoubtedly contributing as indicated by a rapid lithological change from the top of the structure to the Hudgens well (Enclosure No.2).

RESERVOIR STRATA:

The fourteen wells in the area are completed in one of three zones. This is designated on Enclosure No. 1 as first pay, second pay, and third pay. The upper two pays produce from a sand within the Yates and the third a dolomite within the Yates. The nature of the different types of reservoir rock probably effects the large range of gravity which the wells produce. The gravity of the crude is indicated on Enclosure No. 1. The Gas-Oil ratios are apparently very low, as is the bottom-hole pressure, although no data are available at this time.

The J. Don Hudgens Federal No. 1, NW SE 18-20-34, tested 20 bbls. water in 30 minutes at 3790(-166). The Cities Service McDonald AA-1, SW SW 17-20-34, had three bailers of sulphur water per hour at 3630(-8). At the Cities Service McDonald No. 1, SE SE 18-20-34, the hole filled with sulphur water at 3613(+18), and produced 6 bbls. water from 3545-49(+86).

Most wells have logged shows of oil which correlate with the three zones presently producing.

DEVELOPMENT:

The Cities Service Jewett-McDonald No. 1, SE SE 18-20-34, was the discovery well completed in June 1929 with an initial potential of 60 bopd. This well was offset to the east in March, 1942, but the offset was plugged and abandoned. Other wells were drilled in and around the area but the next production was obtained from the Paul C. Teas Dinnin No. 1, completed March 14, 1951. Eight of the fourteen producing wells have been completed in 1954.

Cable tools are used from the surface to total depth, most operators have run 13-3/8" casing at about 80 feet, 10-3/4" to some 550 feet, 8-5/8" at about 1000 feet, setting all the above and cementing 7" or 5-1/2" above the pay, then the other strings are pulled.

The area looks very favorable for continued development, particularly Sections 13, 14, 15 and 23.

CONCLUSION:

The Teas Pool production is entirely in the Yates formation. The three isolated pays are separated by impermeable strata. Due to apparent low pressure and completion practices (isolation of each zone), the reservoir is not being harmed. It is the unusual reservoir which does not have isolated zones of production.

RECOMMENDATIONS:

That the top of the Seven Rivers be designated as that point in the J. Don Hudgens Federal No. 1, NW SE 18-20-34, encountered at 3610 feet, thereby making all production in the Teas Pool Yates.

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