THE DESMOINESIAN SERIES, EDMOND AREA, CENTRAL OKLAHOMA

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INTRODUCTION

Subject and Area of Interest

The area studied for this paper is located in northwest Oklahoma County and a two-mile wide strip in northeast Canadian County, Oklahoma. It includes a portion of the West Edmond oil field (see Figure 1).

Statement of Problem

The purpose of this research was to study the Desmoinesian series (Pennsylvanian) and establish the correlation of the sandstone lenses this series contains.

Method of Approach

All available electrical logs of wells in the area were studied to determine formation tops and the development of the sandstone lenses. Some criteria for evaluating the sandstone lenses were needed. Since any increase in the value of the spontaneous potential diagram indicates porosity, it is believed that 20 millivolts of departure from the shale line on this diagram is indicative of a porous zone; therefore only zones having an anomaly of 20 millivolts or more were considered in making the maps included in this paper. It is noted that zones of less than three feet in thickness may have been omitted because the anomaly is not fully developed for thin beds.

A structure contour map has been prepared on the top of the Oswego limestone, isopachous maps were prepared for the Prue and Skinner sandstones, and a combination paleotopographic and pre-Pennsylvanian areal geologic map was constructed. Several electric log cross sections are also presented.

History of Field Development

There are several oil fields in the area under study. These are: Edmond, Northwest Edmond, West Edmond, and the Northwest Higbee fields.

The oldest of these is the Edmond field, discovered September 15, 1930, by Marathon Oil Company No. 1 Agnes Messer, SW SW SW section 32, T. 14 N., R. 3 W.

It lies on the Nemaha ridge and is similar to the Oklahoma City structure although it is much smaller. The principal producing horizon is the Second Wilcox sandstone. The discovery well, although a good producer, was shut in for four years before an offset was drilled. After the second well was completed, development of the field progressed in an orderly fashion. The Edmond field has produced a total of 25,979,014 barrels of oil up to January 1, 1957 (1).

West Edmond is an interesting field; although it was discovered in relatively recent times, modern methods of oil discovery cannot be given credit. Ace Gutowsky credits the discovery of this field to a "Doodle-bug." The field was discovered by Ace Gutowsky No. 1 Wagner, NW NW NW section 32, T. 14 N., R. 4 W., on April 12, 1943, and developed rapidly but in an orderly fashion during World War II. A more detailed account of the discovery has been written by Dean McGee (2).

The West Edmond field was unitized early in its history, and Sohio Petroleum Company became the unit operator on October 1, 1947. Total production to January 1, 1957, was 105,935,061 barrels of oil (1).

It was not until April, 1952, that the next field was discovered in the area, the Northwest Higbee field. This field consists of four wells producing from the Simpson dolomite. The cumulative production to January 1, 1957, was 123,996 barrels of oil (1).

The Northwest Edmond, which was discovered in July, was the last field to be found in the area. It is also located on the crest of the Nemaha ridge, and produces from both the Simpson dolomite and the Second Wilcox sandstone. The total production to January 1, 1957, was 341,418 barrels of oil (1).

*These numbers refer to items in the Bibliography.