PART II
PRESENTATIONS BEFORE THE SOCIETY (AUTHORS' ABSTRACTS)

FUTURE PETROLEUM PROVINCES OF THE MID-CONTINENT

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On May 29, 1967 the Assistant Secretary of the Interior of the United States requested that the National Petroleum Council prepare a report on the future provinces of the United States. A coordinating subcommittee was organized under the chairmanship of Ira Cram who divided the country into 11 regions and appointed a regional coordinator for each region. Region 7 covered the Northern Mid-Continent.

The purpose of this study was to evaluate, as completely as possible, the future recoverable petroleum potential of this region. This was to be done primarily on the basis of considered geologic opinion and only secondarily on a quantitative basis.

One aspect of this study was to take a regional view of the Mid-Continent; one that would relate to the surrounding provinces, Illinois basin, Williston basin, Rocky Mountains and Texas. A series of 27 isopach and paleogeologic maps and 12 diagrammatic cross sections were prepared. Eighteen of these maps and all the cross sections are used to illustrate the stratigraphic and structural evolution of the Mid-Continent. Areas of present production are shown on each map.

Finally a series of charts indicate the future oil and gas potential which is estimated to be 1.7 billion barrels of recoverable oil and 44.5 trillion cubic feet of gas.

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GENETIC UNITS IN DELTA PROSPECTING

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Deltas generally are formed at river mouths during stillstands of sea level under conditions of either cyclic transgression or regression. Consequently, they are seldom isolated phenomena but, rather, occur in multiples in a predictable fashion. Reservoir facies consist of both continuous and discontinuous, bifurcating channel sandstones which thicken downward at the expense of the underlying pro-delta clays.

All of the lithologic components of a deltaic complex are related to each other and are collectively referred to as one type of **Genetic Increment of Strata** (G.I.S.). The G.I.S. is a sequence of strata in which each lithologic component is genetically related to all the others. It is defined at the top by a time-lithologic marker bed (such as a thin limestone or bentonite) and at the base by either a time-lithologic marker bed or a facies change from marine to non-marine beds. It generally consists of the sum total of all marginal marine sediments deposited during one stillstand stage of a shoreline, or it may be a wedge of sediments deposited during a series of cyclic subsidences or emergences. An isopachous map of a G.I.S. clearly shows the bifurcating trends of the individual distributaries and the shape of the delta, regardless of the variable lithology of the channel fills.

A **Genetic Sequence of Strata** (G.S.S.) consists of two or more G.I.S.'s and, when isopached, clearly defines the shelf, hingeline, and less stable portion of a depositional basin. An isopachous map of the McAlester Formation of the Arkoma basin is a good example of a G.S.S. The oil-productive Booch Sandstone is a good example of a deltaic complex occurring within a G.I.S. of this G.S.S. The upper Tonkawa, Endicott, and Red Fork Sandstones of the Anadarko basin are identified as deltaic accumulations within different G.I.S.'s.

A hypothetical model serves as a basis for establishing the criteria for: (1) recognizing successive stillstand positions of a shoreline; (2) predicting paleo-drainage courses; (3) predicting positions of a series of deltaic reservoirs; (4) locating isolated channel sandstone reservoirs; and (5) tracing related beach sandstone reservoirs.

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BUFFALO WALLOW FIELD

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Buffalo Wallow is located on the south flank of the western Anadarko basin, 15