A RECENT LOG EVALUATION TECHNIQUE —SYNERGETIC SYSTEMS

K. G. KEMP

A recent log evaluation technique has been made possible by the use of Compatible Logging. The Dual Induction Log measures the formation resistivities as they actually exist. While logging a Formation Density, Sonic or Epithermal Neutron Log, we simultaneously measure a different parameter to use with the Dual Induction Log. With the use of a computer device, we will change the readings of the porosity tool into an equivalent resistivity reading. This computer curve will show what the formation would read if all the pore space were filled with water. By having the computer curve on a similar scale as the Dual Induction Log, we can make a comparison of the curves by overlaying them on top of each other. Then, in the clean zones where the curves are matching will be water and the anomalies that separate will be oil or gas.

Another technique allows the Formation Density, Sonic and Epithermal Neutron Logs to be recorded on identical apparent limestone porosity scales. Overlay of one on the other provides, at a glance, a continuous interpretation of lithology, complex or variable lithology is readily solved and the formation porosity is determined with greater accuracy and reliability than before.

Synergetic Log Systems are engineered to complement one another and to give more information about formations and their fluid content than the sum of information obtained from the individual logs.

ATHABASCA OIL SAND EVALUATION USING GEOLOGICAL DATA PROCESSING METHODS

RICHARD W. FETZNER

The Athabasca oil sand deposit covers 5½ million acres in northeastern Alberta and contains approximately 600 billion barrels of oil. The first commercial program to produce the fabulous Athabasca oil is underway. Sun Oil Ltd. is operating a 4,000 acre mining lease 20 miles north of Fort McMurray, Alberta, along the Athabasca River. This operation is scheduled to mine 120,000 tons of oil sand and to produce 45,000 barrels of synthetic crude oil per day. Two-hundred and forty million dollars will have been invested when this project goes on stream in September 1967.

This talk is primarily concerned with the geology of the Athabasca oil sands, with particular emphasis on the commercial evaluation of the Sun Oil mining lease. Computer applications and geological data processing methods have been used throughout the project. Three specific areas of computer application will be covered: (1) formation evaluation, (2) geological analysis, and (3) logistics planning for the mining operation. In addition, the oil extraction process will be covered.