

MEETINGS

DINNER MEETING—OCTOBER 10, 1988 MORAD MALEK-ASLANI—Biographical Sketch



Morad (Mo) Malek-Aslani was born in Iran and received a BS degree in mining engineering from Tehran University. He received his MS (1950) and PhD (1952) from the Colorado School of Mines. Mo then joined the Texas Gulf Sulphur Company as an exploration geologist and spent the next six years exploring for sulphur, oil, and gas in various regions of the world.

In 1958 Mo joined Tennessee Gas (now Tenneco) as a senior geologist and worked for the Geological Research Department for 28 years. On July 1, 1986 he took an early retirement from Tenneco Oil Company Exploration/Production. During the last three years with Tenneco he was a senior geological consultant, the highest non-managerial ranking within Tenneco. Currently, he is a consulting geologist specializing in exploration problems related to carbonate systems.

During his 28 years of association with Tenneco, Mo was involved in exploration for oil and gas in carbonate rocks of the Rocky Mountains, the Permian Basin, the Mid-Continent Region, the Gulf Coast (onshore and offshore), the Appalachian Basin, the Atlantic OCS, Bahamas, the North Sea, Tunisia, Ethiopia, the Middle East, and Indonesia. Since retirement he has worked on consulting projects in the Permian Basin, Eastern Gulf, Bahamas, and West Africa. His principal interest is applications of new geological, geophysical, and geochemical concepts to exploration in carbonate rocks.

Mo has authored many papers on various aspects of petroleum accumulation in carbonate rocks. He is a contributor to the recently-published book *Carbonate Petroleum Reservoirs* (Springer-Verlag, 1985).

A COMPUTER-AIDED PETROGRAPHIC LOGGING TECHNIQUE FOR CARBONATES

Current economic conditions are forcing exploration managers to reduce acquisition costs of geological and geophysical data. Well-cuttings provide a virtually untapped source of inexpensive geological information.

A computer-aided system for the study of petrographic data from well-cutting thin sections, developed by the author in the early 1970s, provides a practical methodology for creating a digital data base. A choice of 77 attributes which include lithology, depositional fabrics, diagenetic fabrics, fossil content, nonskeletal grain types, fractures, porosity, and porosity types can be digitally encoded.

The method is very cost effective and can generate reports and interpretations in real time. The digitally captured data is saved to a floppy disk, and a program was developed which reads the file, generates an alpha/numeric log, and displays histograms of all the observed attributes on a single line. The symbols used are mnemonic and easy to

remember. The advantage of the single-line display is that the log can be pasted next to a geophysical log, and comparison of the two can provide a basis for interpretation of environments of deposition and diagenetic over-prints. The log is a data matrix displaying interesting patterns which can help in recognizing shoaling-upward cycles, regressive/transgressive sequences, and unconformities.

About 40-50 thin sections representing 400-500 feet (assuming 10-foot sampling intervals) can be processed per day. Over 200,000 feet of cuttings from wells in many of the petroliferous and prospective basins worldwide have been logged by the author. These include the Permian Basin, Anadarko Basin, Gulf Coast Mesozoic, Eastern Gulf of Mexico, Williston Basin, Paradox Basin, Michigan Basin, Appalachian Basin, Atlantic OCS, Bahamas, North Sea, Persian Gulf, South China Sea, Ethiopia, and Tunisia.

Applications of this type of log to exploration problems are numerous and include:

- Generation of paleoenvironmental maps
- Interpretation of geophysical logs in context of depositional environments and diagenesis
- Recognition of reservoir facies
- Calibration of seismic stratigraphic interpretations

Several examples will be shown from the Permian Basin, the Gulf Coast, Atlantic OCS, South China Sea, and Tunisia. In summary, the system developed is unique and, at a very low cost, can provide the explorationist with a wealth of geological information which heretofore has been grossly underutilized.