placed on the basic data by professional specialists can be properly weighed and represented in the derivation of the final decision variable.

OLIVER, WILLIAM B., Humble Oil & Refining Co., Houston, Tex.

GEOLOGIST'S ROLE IN EVALUATION ECONOMICS

The geologist must interact in a continuous exchange of information and ideas with other functions in his company. The geologic function remains in the midst of the functional universe—from discovery to depletion.

The discovery of a potentially commercial deposit must be viewed with the objectives of (1) definition of the economic value of the prospect by geologic analysis of the data that are known or can be developed, (2) preparation of comparative prospect ratings, which implies multiple successes in the exploration program or, at least, alternative investment opportunities, and (3) identification of the competitive position of other operators.

The strategy required to pursue the objectives of prospect analysis is (1) preparation of a preliminary economic evaluation, including the assembly and interpretation of all the geologic data which came out of the exploration phase, (2) comparison with other prospects and establishment of priorities through a rating system, (3) preparation of pre-development evaluation based on priorities established and limited by availability of funds, and (4) communication of technical data to other functions on a continuing basis to insure the necessary flow of facts throughout the organization. The geologic function is the bridge between nature and technology.

OVERTON, HAROLD L., Univ. Houston, Houston, Tex.

SALINITY VARIATIONS AND ANOMALIES IN MARINE SANDSTONE

The writer has developed a new indicator which allows major local tectonic features to be determined from a single well. Only 1 measurement is required (in addition to Rw and temperature)—the SP log. The information which can be determined from this indicator includes locations of (1) fault zones, (2) compaction stress changes, (3) high pressure, and (4) permeable sandstone beds of significant extent.

The method is simple and may be cross-checked with the density or travel-time log. It involves several simple principles: (A) [water salinity] [shale porosity] = constant, and (B) [shale porosity] $\sim$ [overburden-hydraulic pressure]. Water salinity may be determined accurately from clean sandstones, but a complete well profile is needed to make an analysis. Several offshore analyses have been made, and, in those analyses, the various stresses have been confirmed.

PALLISTER, A. E., Pallister and Associates, Calgary, Alta.

OPERATION ARCTICQUEST—APPLICATION OF MULTIDISCIPLINE, MULTIPARTICIPANT EXPLORATION CONCEPT

The importance of coordinating geologic and geophysical data in predicting subsurface structure and stratigraphy has been emphasized repeatedly. Attainment of the ultimate in integration of the 2 sciences has become increasingly difficult, as a result of the requirement placed upon geologists and geophysicists of greater specialization within their own professions.

An accelerated, worldwide interest by oil companies in new basins has started. Because most of these potential areas are offshore, and with the advent of many new geophysical and oceanographic techniques, an even greater need for an integrated, multidiscipline exploration approach is imposed.

As an illustration, Operation Arcticquest was begun in 1969 to determine the nature of the geology in the vast unexplored area from Prudhoe Bay, Alaska, to Banks Island, Canada. The surveys indicated the presence of anticlines, diapirs, folds, faults, intrusives, and facies boundaries. Conclusions as to the origin and geology of the geophysically mapped features were derived from the interpretations of bathymetric, gravimetric, aeromagnetic, seismic, and geologic surveys. This successful application of the multidiscipline technique was made possible largely by the multiparticipant aspect. Because the operation was financed by 30 oil companies, it was possible to allocate expenditures to many disciplines in a manner which probably would not have been feasible in individual, uncoordinated operations.

PERKINS, BOB F., School of Geology, Louisiana State Univ., Baton Rouge, La.

GENETIC IMPLICATIONS OF RUDIST REEF ARCHITECTURE

Rudist reefs developed in a variety of paleogeographic settings in the shallow Cretaceous seas of the western Gulf of Mexico region. Some reefs were built along the shelf edge, others grew on the inner shelf relatively nearshore, and others were built on the broad, open shelf. Although these reefs vary in morphology, size, biologic and sedimentologic characteristics, and relation to associated facies, probably none grew in waters deeper than a few tens of feet. The most persistent feature of these reefs is the abundant evidence of repeated subaerial exposure, early diagenesis, and erosion during deposition.

Several exceptionally well-exposed reefs in the Albian and Cenomanian of Texas and northeastern Mexico provide models for interpreting the geologic history of rudist reefs elsewhere in the region. The core of each of these reefs is made of lenses, wedges, and layers of rudist-rich carbonate mudstone in which the rudists are preserved in mutually supporting, original-growth positions alternating with lenses, wedges, and layers of carbonate grainstone composed principally of rudist shell fragments. Laterally contiguous seaward deposits are carbonate grainstone, and backreef deposits are chiefly miliolid-rich carbonate mudstone. Peripheral grainstones originated as forereef debris or storm washover deposits during reef-growth stages, and as beach deposits during island stages. Backreef carbonate mudstone was deposited as tabular units in quiet-water lagoons, and locally small mounds of diagenetically fragmented rudists characterize the environment.

Truncation surfaces, weathered zones, layers of caliche, bored surfaces, zones of vadose sediment and cement, and other subaerially formed or related features and materials extend through the reef cores and in some places into the adjacent deposits as evidence of repeated exposure and resubmergence. In some reefs as many as 15 exposure periods are recorded vertically within 50 ft of reef core. Many exposure surfaces associated with these reefs are confined to the area of the