TECHNICAL PROGRAM SUMMARY

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ABSTRACTS OF PAPERS

(In order of presentation)

1. MICHEL T. HALBOUTY, President, The American Association of Petroleum Geologists, Houston, Tex.

ECONOMICS—THE ESSENTIAL REQUIREMENT IN EXPLORATION

The still-current problems of expensive exploration, increased imports, over-capacity in production and refining, and the continued loss of risk capital have not provided a proper return on domestic petroleum exploration investment and effort.

The meaning of economics can not be overemphasized in the every-day professional activities of the geologist. No exploration recommendation should be approved by the creative geologist without his first being fully aware of the relationship of risk to investment, thence to potential profit.

Every geologist must be thoroughly knowledgeable in the application of economics—the most essential requirement for successful exploration and profit.

2. MRS. MELBA W. MURRAY, Esso Production Research Co., Houston, Tex.

SOME INTERRELATIONSHIPS BETWEEN IDEAS, DOLLARS, AND GOOD DIALOGUE

Why not deliberately structure reports that perform a useful function as half a human dialogue? Perhaps such a fresh approach to writing could shorten the distance between ideas and dollars. The path between an idea and a dollar must coincide with some line of communication; how else could the idea be transformed from thought into action into profit? In conversation the line of communication is quite direct. Here we are prompted by questions and guided by visible and audible human responses. But written communications lack human contact and, as a result, are often misdirected. The lines are long, crooked, and ill-defined. En route along such lines, ideas become distorted, diffused, weak, perhaps entirely lost. Then why not apply to written communication the same approach that makes us forceful and dynamic—and clear and influential—in conversation? How to organize such a report is the subject of this paper. Examples demonstrate the role of reports patterned after "good dialogue" in shortening, straightening, and strengthening the ideas-to-dollars route.

3. BERNOLD M. HANSON, Hanson Exploration Co., Midland, Tex.

BAR-MAR FIELD, THE TRICKY DEVONIAN

What originated as the Fusselman play in southern Crane County developed into a 4-million-barrel oil field in the Devonian, an 8-billion-cubic-foot Clear Fork gas field, a 1-million-barrel Tubb field, and two Fusselman dry holes. The areal extent of this field has not been developed and is not fully known because of the large amount of acreage held by production and controlled by the major oil companies.

The original geological interpretation suggested possible oil production in the Fusselman updip from a dry hole that recovered 25 barrels of sulfur water per hour on a drill-stem test. The porosity and permeability indicated from this drill-stem test suggested a fairly sizable reservoir at a relatively shallow depth of 5,400 feet. This information, in conjunction with sufficient dry-hole money and a fairly sizable acreage position for Crane County, encouraged the writer and his partner to drill the prospect.

It took 1 month to sell the deal and 13 investors before sufficient funds were available to spud the well.

The Devonian tripolitic chert contains one of the highest recoverable oil reserves in the Permian basin. This chalky reservoir is difficult to explore and develop. The number of dry holes are many, but the recoverable oil justifies the risk involved.

The apparent trend in this wedge-edge, scarp, or "tight rope" can be noted along northern Crockett, southern Crane, and northern Pecos Counties. These fields which are productive from the Devonian appear to be related directly to the "Fort Stockton High." The numerous adjustment or radial faults that are present along the flanks of this major structural feature are believed to be the cause of this oil accumulation.

The many fields along this trend exhibit different modes of hydrocarbon accumulation. These fields in Devonian strata produce in re-entrants, grabens, and wedge-edges of tripolitic chert. The Bar-Mar field appears to be productive in a graben.

While developing this field, several additional oil and gas pays were discovered; however, the major part of the Devonian production eluded the discoverer

Although it is always the dream of the independent

to own an entire oil field, industry still needs the wildcatter and the independent to find the oil. This is exemplified further by the fact that, in order to find oil, one must drill wells. For several years it has been the writer's philosophy that the amount of oil discovered is directly proportional to the exposure or number of wells drilled, providing that the wells are drilled in oil country. The Bar-Mar field is a case in point.

4. GEORGE M. SPALDING, Cobra Oil and Gas Corp., Wichita Falls, Tex.

RECLASSIFICATION OF PETROLEUM SPECIALISTS

(No abstract submitted)

5. HOWARD R. GOULD, Esso Production Research Co., Houston, Tex.

SEDIMENTARY FACIES AND THEIR IMPORTANCE IN OIL FINDING

In today's search for oil, industry has become increasingly aware of its need for information that will permit more accurate prediction of porous and permeable facies. Such information is important in exploring for both structural and stratigraphic accumulations.

To obtain the data desired, research geologists have directed their efforts to modern ocean basins and contiguous land areas where both sedimentary facies and the environments that produced them can be studied in detail. Through investigations of Recent sediments in the Gulf of Mexico and elsewhere, it has been possible to define the major types of potential reservoir facies, including alluvial, deltaic, shoreline, shelf, and turbidite deposits in the deeper parts of modern basins. Each of these facies can be readily distinguished by a combination of features, including composition and lithology, sedimentary textures and structures, fauna and flora, lateral and vertical facies relations, and geometric form.

Knowledge of these characteristics, where applied to ancient rocks, provides information of value not only in recognizing facies but also in locating porous facies and in predicting their probable trends, shapes, and dimensions.

6. J. D. MUSSETT, Gulf Oil Corp., Hobbs, N.Mex.

THE MENTAL BLOCK

(No abstract submitted)

7. ROY E. FOSTER, New Mexico Inst. Mining and Technology, State Bur. Mines and Mineral Resources, Socorro, N.Mex.

GEOLOGY AND PETROLEUM POSSIBILITIES OF WEST-CENTRAL NEW MEXICO

Post-Precambrian rocks of this area include only strata of Mississippian and younger ages. Older Paleozoic rocks probably were deposited in west-central New Mexico, but were removed during various erosional cycles prior to Mississippian deposition. Thin remnants of Mississippian limestone occur in the Ladron, Lemitar, and Magdalena Mountains. Pennsylvanian sediments record a complex history of deposition and erosion, as they thin toward the west from almost 3,000 feet in the Ladron Mountains to zero over the buried ancestral Zuni Mountains. Permian evaporite, carbonate, and sandstone thicken southward from less than 1,000 feet in the Zuni Mountains to more than 2,600 feet in parts of Catron County. Triassic and Jurassic sediments also thin in this direction and are absent in southern Catron and adjacent parts of Socorro Counties. Sandstone and shale of Cretaceous age are exposed in large areas. Early Tertiary erosion caused thinning of these rocks toward the south and southwest. Thick sequences of Tertiary sediments and volcanics, rhyolitic to basaltic in composition, underlie considerable areas in Catron and Socorro Counties, and extensive Quaternary basalt flows cover large areas in central Valencia County.

The best possibility for petroleum accumulation appears to be in unconformity traps in the Pennsylvanian east of the late Paleozoic ancestral Zuni uplift. Cretaceous sandstone and Permian carbonate and sandstone are secondary objectives in this and other parts of west-central New Mexico. The possibility of helium accumulation in the upper part of the Permian is an additional incentive for exploration in this area.

8. WILLIAM H. DUNLAP, Champlin Petroleum, Co., Midland, Tex.

CHAVEROO REVISITED

The Chaveroo San Andres field is on the line separating Chaves and Roosevelt Counties, New Mexico. The field, located geologically on the south flank of the Matador arch on the Northwestern shelf, was discovered in March, 1965, with the completion of the Champlin Petroleum Company and Warren American Oil Company No. 1 Hondo State. This well was plugged back from a total depth of 9,100 feet to 4,400 feet. The field now has more than 250 wells. Production is a sour 24° A.P.I. gravity crude and the cumulative field production was 1,116,642 barrels of oil on August 1, 1966.

The discovery was made using a combination of subsurface geology and reflection-seismograph data. Oil production is from a gray to brown fine crystalline to granular anhydritic dolomite with fine vuggy intercrystalline and fracture-type porosity zones located 650 feet below the top of the San Andres of Guadalupian (Permian) age. A gross pay section of approximately 200 feet is in the field. The field structure consists primarily of a southward-plunging nose. Reservoir conditions are controlled by thin porosity zones which pinch out updip. Development in the field has slowed considerably and appears at present to be nearing completion.

Certain areas of the field have had water problems. It is hoped that different and improved completion techniques will cure these ills.

The Chaveroo field has rekindled interest and ideas about San Andres production on the Northwestern shelf. Another new field, Cato, has extended further the Levelland-Slaughter-Buckshot-Milnesand-Chaveroo trend toward the west. The future looks bright for further San Andres development in this area of New Mexico.

9. JOHN D. MOODY, Mobil Oil Company, New York, New York

RESTRAINTS ON EXPLORATION

(No abstract submitted)

10. KARL W. KLEMENT, Texas Technological College, Lubbock, Tex.

PRACTICAL CLASSIFICATION OF REEFS AND BANKS, BIOHERMS AND BIOSTROMES