the proved plus prospective and 38.4% of the estimated.

The eastern China oil-bearing basins belong to the intracratonic basins of Mesozoic-Cenozoic age and can be separated into two basic types based on genetic and developing characteristics: depression (Songliao basin) and faulted depression (Bohai Gulf basin).

As a symmetrical, gentle syncline, the depressional basin occurred mainly in the Early Cretaceous, forming a unified vast deep-water lake and oil-generating center. Giant deltaic sandstone bodies wedged into the source rocks, constituting a sequence of oil and gas reservoirs. The faulted depressional basin occurred mainly in the Paleogene. The basin is composed of a series of uplifts and wedge-shaped faulted depressions with certain trends. The latter is an independent oil-bearing unit, in which very thick source rocks were deposited. The occurrence and distribution of oil and gas pools are controlled by structural framework and lithofacies zones in the faulted depression.

Geologic conditions were excellent for forming various types of subtle oil and gas pools. With the high potential of oil and gas reserves in eastern China, exploration for them will become increasingly important.

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Interactive Stratigraphic Well Log and Seismic Modeling

For many years, interpreters have attempted to further analyze seismic traces by studying their character and by trying to relate waveform variations to stratigraphic changes apparent on well logs, using synthetic seismograms to simulate possible responses. Because this method relies on the comparison of shapes on complex signals, it lacks accuracy and does not go beyond an empirical evaluation. However, direct modeling through interactive well log editing becomes a matter of simple modifications to the sonic and density logs to yield a better correlation between seismic data and acoustic impedance derived from edited logs.

Geologic boundaries can be more precisely interpreted from the resulting logs, and the final model can better match the seismic line with the possibility of varying porosity, inserting new logs, or modifying the depth model and/or variation of lithology to simulate onlap, erosional surfaces, or mixed type of sedimentation. In addition, the interactive package includes such features as wavelet processing and stratigraphic deconvolution to optimize the modeling result. This method of interactive interpretation is illustrated by an example with sandy reservoirs deposited in a deltaic environment.

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Geology and Uranium Deposits of Tallahassee Creek District, Fremont County, Colorado

Following discoveries of commercial uranium deposits near Tallahassee Creek in 1955 and 1956, field studies were undertaken to investigate the general geology of the area and its relation to uranium occurrences. The Tallahassee Creek district may serve as a type locality upon which to further evaluate uranium potential in adjacent areas with similar geology.

Rocks of the Tallahassee Creek district are Precambrian, Tertiary, and Quaternary in age. The Precambrian is composed of the Pikes Peak granite and metamorphic rocks of the Idaho Springs Formation which have complicated structural relations and form the basement to the study area. Approximately 100 to 300 ft (30 to 91 m) of relief existed on the Precambrian surface before deposition of the Tertiary sediments. The basal unit of the Eocene consists of residual arkoses which are restricted to the lows of the buried Precambrian topography. Sanidine rhyolites and augite andesites overlie the arkoses and also overstep the Precambrian relief. After an erosional period, Oligocene and Miocene volcanic conglomerates with interbedded lavas and tuffs were deposited unconformably over the Eocene augite andesites and the Precambrian basement. Overlying the conglomerates, thick deposits of volcanic rock, chiefly brecciated andesite flows, pyroclastics, and rhyolites, are considered to be Oligocene-Miocene in age by superposition only. A series of parallel, northwest-trending faults, apparently reflects pre-existing zones of weakness in the Precambrian basement. Movement occurred during early Oligocene-Miocene time and again in the late Miocene or Pliocene.

Two uranium deposits occur in the volcanic conglomerates, and a third in the arkosic sediments at the base of the Tertiary. Generally, the ore deposits are lenticular bodies in paleostream channels or basins. Physical and chemical characteristics of the enclosing sediments are believed to have influenced the localization of uranium. All ore bodies are related to faults, or linear features which reflect probable faults at depth. It is believed that the uranium originated in hypogene solutions which ascended along the fault zones.

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Capping Rock and Its Formation

Calcareous shales, called capping rocks, are found in the zone immediately above the deep undercompacted and geopressured intervals in the Gulf Coast district. The capping rocks are believed to have been formed by precipitation of minerals carried in aqueous solution by compaction water moving vertically upward and/or horizontally from the geopressured intervals.

Deep sandstones, in which significant secondary porosity has been developed by leached grains and cement, could have been the prime source of such precipitating minerals. Differences of physical and chemical environments (especially pressure, temperature, water salinity, and pH) between the geopressured and normally pressured zones may have been the principal cause of mineral leaching and precipitation.

It has been suggested that the generation of CO_2 gas associated with thermal maturation of organic matter and its solution in water, causing an acidic environment (low pH), are the prime causes for leached calcite and feldspar. Woody and herbaceous organic matter, which are commonly associated with deltaic sandstone deposition, seem to have produced more CO_2 gas than algal organic matter, facilitating dissolution of calcite and feldspar grains and cement. The acidic solution, which contains these mineral ions, would have moved to shallower intervals and mixed with more normal brines, thus increasing pH. The minerals would be precipitated there.

Differences of pressure, temperature, and concentration of other ions in water between the deep and hot geopressured interval and the shallow and cool hydropressured interval may also be an additional cause for mineral precipitation at the shallow interval.