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PEORIA FIELD, ARAPAHOE COUNTY, COLORADO

The Peoria field, approximately 40 mi east of Denver in Arapahoe County, Colorado, is in the south-central part of the Denver-Julesburg basin. The field was discovered in July 1970 by Tom Vessels in partnership with Amoco Production Company (Pan American Petroleum Corporation). The discovery was drilled in an attempt to extend the prolific production developed in the 1950s in Washington County southwestward into Arapahoe County. As of March 1, 1971, the field had 53 wells producing from the Lower Cretaceous "J" sandstone. Cumulative production was 742,000 bbl of oil. Development drilling is still being conducted.

Production in Peoria is from a Lower Cretaceous Muddy "J" channel sandstone, with a maximum thickness of 45 ft. Average porosity values are 14.7% with permeabilities averaging 200 md and ranging as high as 1,400 md.

Relatively shallow drilling depths (top of pay at 6,500 ft), inexpensive drilling costs, and high yield wells have been the stimulus for extensive drilling activity in the south-central Denver-Julesburg basin.

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PALEOENVIRONMENTS OF PHOSPHORIA FORMATION, COTTONWOOD-NO WATER CREEK FIELDS, WASHAKIE COUNTY, WYOMING

The Cottonwood and No Water Creek fields produce from a common carbonate reservoir formed by a facies change from shelf carbonates on the west to continental redbeds on the east. Production is from the Ervay Member of the Permian Phosphoria Formation.

Carbonate sediments of the Ervay are analogous to carbonate sediments of the Persian Gulf suggesting similar depositional environments. Paleoenvironments in the study area were determined by thin-section analyses and include salt flats, mud banks, mud flats, lagoons, and green algal banks. Carbonate sediments were deposited in an embayment on a broad stable shelf bordered by low continental areas on the east and the miogeosyncline on the west. Arid and warm climatic conditions prevailed over most of the area allowing for rapid evaporation in the nearshore areas. Green algal banks developed along sub-hinge lines (or topographic highs) on the shelf. These banks provide the best reservoir conditions and possibly the best production at No Water Creek field.

The Ervay throughout the subject area is dolomitized. Dolomitization was penecontemporaneous with deposition and anhydrite precipitation. Chert and colophane are common accessory minerals and increase in percentage westward. Anhydrite increases in percentage eastward.

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PLANKTONIC FORAMINIFERAL TEST POROSITY AS PALEOTEMPERATURE INDICATOR

Five species of Holocene planktonic Foraminiferida (*Globigerinella siphonifera*, *Globigerinoides sacculifer*, *Globorotalia menardii*, *Globorotalia tumida*, and *Neogloboquadrina dutertrei*) from cores in the Indian Ocean were selected for study of intraspecific latitudinal variations in test porosity and pore density. Each species exhibits a change in test porosity with latitude, with greater test porosities characteristic of the loca-

tion nearer the equator. Pore density results are inconclusive. It was assumed originally that test porosity might be dependent on pore density, but indications are that porosity is controlled by pore diameter and is essentially independent of pore density. We suggest that test porosity may be a buoyancy adaptation of planktonic Foraminiferida, with greater test porosities characteristic of less dense surface water. The density of the surface water in turn is related directly to surface water temperature; test porosity, therefore, might prove to be a useful tool in paleotemperature determinations, a tool which would not require knowledge of the distribution of extant species.

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EARLY PERMIAN UNCONFORMITY IN SOUTHEASTERN WYOMING AND NORTH-CENTRAL COLORADO

An unconformity is present in southeastern Wyoming and north-central Colorado between the Goose Egg Formation, the Owl Canyon Formation or Lyons Sandstone, and the Casper or Ingleside Formation. Evidence for its existence is provided by reworked basal sandy zones and conglomerates, truncation of underlying cross-strata, local relief, possible "duricrust" or caliche zones in subjacent rocks, and an isopach description of the configuration of the erosion surface.

Subjacent strata range from Wolfcampian to pre-Desmoinesian age. The subcrop becomes older from east to west. Superjacent strata belong to 3 units ranging from early to late Leonardian age. In the southern and central Laramie Range and most of the Laramie basin, the Owl Canyon Formation forms the supercrop. It thins to a zero edge northward and westward by depositional onlap and fills in relief on the underlying unconformity. The Opeche Shale Member of the Goose Egg Formation constitutes the supercrop in the Shirley basin, the northern Laramie Range, and probably most of the western part of the study area. It thins northward slightly in the Shirley basin and the northern Laramie Range and fills in relief on the underlying erosion surface. The Lyons Sandstone forms the supercrop on the southwest margin of the Laramie basin.

Stratigraphic relations in southeastern Wyoming are in accord with an interpretation of the growth of an extensive land area and its transgression in the Rocky Mountain and western Mid-Continent areas in Early Permian time.

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STRATIGRAPHY OF FRONTIER SANDSTONE MEMBER OF MANCOS SHALE (UPPER CRETACEOUS) ON SOUTH FLANK OF EASTERN UINTA MOUNTAINS

The stratigraphy of the Frontier Sandstone Member of the Mancos Shale (Upper Cretaceous) was studied on the south flank of the eastern Uinta Mountains (northwest Colorado and northeast Utah). The Frontier Sandstone Member (about 275 ft thick) is divided into 5 depositional units, A through E, which are identified on outcrop by their stratigraphic position, lithology, and inorganic and organic structures. These depositional units are distinct local stages of a full cycle of deltaic sedimentation in the study area.

Units A and B represent sedimentation under an encroaching shoreline from the west with a gradual vertical grain-size increase from black shale and siltstone to very fine-grained, fossiliferous sandstone. Unit C represents a further regression of the shoreline with the development of a littoral zone in and near the study area. Unit D, representing the height of the constructional