is based in part on comparison with criteria developed for Holocene sequences of the Atchafalaya flood plain.

Lacustrine deposits consist of highly organic, parallel-laminated clay with some silty laminations. Burrow structures are quite common and nodules of pyrite are present. Calcium carbonate is common along bedding planes. Lacustrine delta fills form coarsening-upward sequences which grade upward from lake deposits into interlaminated silts, clays, and sands with abundant ripple laminations, steeply dipping spill-over foresets, and loading features. Burrowing and pyrite nodules are present in the lower part and coarse organic debris and roots are common in the uppermost part. Poorly drained swamps are best recognized by their high content of organic fragments and root bioturbation that destroys most depositional structures. Pyrite and siderite are common as nodules. Well-drained swamps, in contrast, are relatively high in silt content and contain few organic fragments. Roots and root bioturbation structures are well preserved and stratification is only vaguely discernible. Iron oxide nodules are common, especially as crusts surrounding roots. Calcium carbonate nodules also are present in these deposits. Crevasse-splay deposits are similar to those of well-drained swamps except that stratification is better preserved and thin (less than 1 m) coarsening-upward sequences are common. These sequences contain ripple laminations, shallow scour-and-fill structures, and may be capped by rooted beds of sand. Natural levees are recognizable as fining-upward sequences with a well-stratified, burrowed, sandy lower part grading upward into a finer grained, root-bioturbated upper part with iron oxide and calcium carbonate nodules. Finally, abandoned channel-fill sequences consist of a complex interlayering of swamp, lacustrine, lacustrine-fill, and crevasse-splay deposits lying on, and often below, point-bar sequences.

JONES, EARL V., JR., Chevron U.S.A., Inc., Denver, Colo.

Painter Reservoir–Clear Creek–Ryckman Creek Nugget Sandstone Trend in Absaroka Thrust Plate, Uinta County, Wyoming

Nugget Sandstone reserves in the southwestern Wyoming part of the Thrust Belt province are rapidly being developed in the Painter Reservoir field, Ryckman Creek field, and the Clear Creek area. This series of northeast-trending fields is situated on the hanging wall of the Absaroka thrust.

Painter Reservoir field, discovered in 1977, is located 5 mi (8 km) northeast of Evanston, and is the most southerly of the three areas. Ryckman Creek field, discovered in 1976, lies 10 mi (16 km) farther northeast. Between the two fields, the most recent discovery on the trend is the Clear Creek area where Chevron tested 25 MMCFGD from the Nugget Sandstone in September 1978.

Each area is a separate, structurally controlled Nugget Sandstone reservoir. Field limits and structural details are not yet firmly established, but seismic and drilling data outline similar structure forms, each area appearing as an asymmetric overturned fold. The hydrocarbon columns range from an estimated 500 ft (150 m) in the Clear Creek area to over 1,000 ft (300 m) in the Painter Reservoir field. The column at Ryckman Creek is approximately 575 ft (175 m). A significant gas column is present in each area.

The Nugget Sandstone reservoir rock is cross-bedded and cross-laminated. This cross-stratification creates local variation in porosity and permeability. Along the trend, average Nugget Sandstone porosity and permeability appear to decrease somewhat from north to south. At Ryckman Creek field the Nugget Sandstone is more porous and homogeneous than in Painter Reservoir field. The Clear Creek area porosity and permeability data are limited with the field in an early stage of development.

JUDD, JAMES B., and WILLIAM R. SACRISON, Amoco Production Co., Denver, Colo.

Whitney Canyon Field—Potential Gas Giant in Wyoming Thrust Belt

Recent drilling in the Absaroka plate of the thrust belt has confirmed the presence of a major gas-condensate accumulation in the Whitney Canyon area of Uinta County, Wyoming. Reserves are primarily in porous and/or fractured Paleozoic carbonate formations. Triassic carbonate rocks also appear to be commercially productive.

The discovery well, which was scheduled as a 13,400-ft (4,020 m) test, was spudded in October 1976. Mechanical problems were encountered at a depth of 10, 691 ft (3,027 m) in the Permian Phosphoria Formation and the well was subsequently completed in the Triassic Thaynes Formation. Paleozoic gas production was established in 1978 by the Amoco-Chevron-Gulf 2. This well drilled a nearly normal stratigraphic section of Jurassic Twin Creek Limestone through Ordovician Big Horn Dolomite before crossing the Absaroka thrust at a true vertical depth of 15,516 ft (4,655 m). Cretaceous sandstones and shales were drilled to a total depth of 16,224 ft (4,867 m) or 15,894 ft (4,768 m) true vertical depth. A development well approximately 1 mi (1.6 km) north of the Amoco-Chevron-Gulf 2 drilled a similar stratigraphic sequence.

The Whitney Canyon structure is a north-south-trending geophysical anomaly with little or no surface expression; its general shape can be defined quite well with reflection seismic. At the Phosphoria level, the structure is approximately 10 mi (16 km) long and 2 mi (3.2 km) wide with 2,500 ft (750 m) of structural closure.

Gas tested from the Triassic Thaynes Formation is sweet, whereas the Paleozoic gas is sour with a hydrogen sulfide content of 18% or less. Environmental considerations and construction of a gas treatment plant probably will delay Paleozoic gas production until 1982.

Although reserve estimates are quite speculative, the Whitney Canyon structure appears to be in the giant field category.

KEIGHIN, C. WILLIAM, and THOMAS D. FOUCH, U.S. Geol. Survey, Denver, Colo.

Influence of Diagenetic Reactions on Nonmarine Up-