The stratigraphic sequence between the Paleozoic-Cretaceous unconformity and the first occurrence of the Foraminifera *Orbitolina* was studied in the areas of the Solitario, Shafter, Pinto Canyon, and the Van Horn Mountains of southwest Texas. Due to the scarcity of environmentally indicative fossils in these sections, most environmental interpretations are based on physical structures such as cross-bedding and ripple marks, geochemistry, and the petrology of the sandstones and carbonates.

As the sea transgressed into the area during the late Neocomian, it eroded a topographically high Paleozoic terrane into a gently sloping surface. A basal conglomerate, the initial deposit in the sequence, is gradational upward into lagoonal, tidal flat, and beach facies, characteristic of a low-relief shoreline. During deposition, terrigenous clastic input was influential in sedimentation, and perhaps created turbid water, prohibiting development of a filter-feeding community. The stratigraphic sequence grades into the sequential development of milliolid biosparite and oosparite facies, followed by *Exogyra* banks and intrasparites, and finally a rudistid-bearing biosparite facies, indicating a gradual increase in water depth.

These facies patterns are recognizable in all four study localities, but were probably not synchronously deposited. The absence of correlatable biostratigraphic units makes time equivalency extremely speculative for this part of the Cretaceous section.

ROPER, MICHAEL W., Placer Amex Inc., McDermitt, NV, and ANDY B. WALLACE, Cordex Exploration Co., Reno NV

Geology of Aurora Uranium Prospect, Malheur County, Oregon

The Placer Amex Aurora uranium prospect is located 2,000 ft (610 m) southwest of the old Bretz mercury mine and adjacent to the Cordex Syndicate Bretz uranium prospect, within the northern rim of the McDermitt caldera complex. Drilling has defined 17 million tons (Mg) of mineralization at a grade of 0.05% U_3O_8. The shallow mineralized zone is 500 by 1,500 ft (152 by 457 m) in area and up to several hundred feet thick. The long axis of the deposit is subparallel with the northwest-trending caldera rim fracture passing through the Bretz open pits.

Uranium mineralization occurs dominantly as very fine-grained uraninite and coffinite localized in highly altered vesicular to scoriaceous flow tops and breccia layers within a complex, intermediate lava sequence. Volcanic rocks are locally covered by several hundred feet of tuffaceous lacustrine sediments. Rhyolitic rocks beneath the Aurora lavas possess an asymmetric, anticlinal upper surface, the axis of which coincides with the trend of mineralization.

Associated alteration minerals include montmorillonite, leucoxene, opal, clinoptilolite, and framboidal pyrite. Mineralization was apparently introduced by an epithermal mechanism which added altering fluids and uranium-bearing solutions along a complex, steeply dipping fracture system coincident with the axis of the mineralized zone. A supergene mechanism may then have spread the altering and mineralizing solutions laterally along the more permeable layers within the lava sequence. Mineralization may have occurred during the time of deposition of 50 to 70 ft (15 to 21 m) of uranium-enriched tuffaceous sediments which directly overlie the Aurora lavas.

RYTUBA, JAMES J., U.S. Geol. Survey, Menlo Park, CA

Petrochemical Characteristics of Volcanic Rocks Associated with Uranium Deposits in McDermitt Caldera, Nevada-Oregon

Rhyolitic volcanism within the McDermitt caldera complex in northern Nevada and southern Oregon occurred during four episodes in a 5-m.y. time span from 18.5 to 13.7 m.y. ago. The first three episodes were characterized by eruption of large-volume ash-flow tuffs which led to caldera collapse. Each episode began with eruption of comendite ash-flow tuff with a SiO_2 content of 75% and Al_2O_3 content of 11.2% and each ended with ash flows lower in SiO_2 content (70 to 62%) and higher in Al_2O_3 (13 to 15%). The early high-silica rhyolites show large enrichments of F, Th, U, Zr, and depletions of Ba, Ca, Mg, P, Sr, and Ti relative to the last tuffs erupted. The systematic change in chemistry of the ash-flow tuffs during each episode is believed to reflect venting from progressively lower levels of a zoned magma chamber. The fourth episode of volcanism consisted of the emplacement of small intrusives and domes with composition similar to the early high-silica rhyolite erupted in each of the previous three episodes. The last rhyolites erupted tapped only an upper part of a similarly zoned magma chamber.

Uranium ore deposits are associated with the emplacement of the last phase of comendite magma in the complex. Although these rocks are not distinct chemically from the older high-silica rhyolites, their emplacement in a nonexplosive manner resulted in the formation of the ore bodies by localizing magma and vapor in a small chamber rather than dispersing it in ash-flow sheets.

SANDLIN, GARY L., C & K Petroleum, Midland, TX, and FRANK L. SCHATZ, Koch Exploration Co., Midland, TX

Peterson and South Peterson Multipay Fields, Roosevelt County, New Mexico

The Peterson and South Peterson fields, located on the northside of the generally east-west-trending Matador arch in southern Roosevelt County, New Mexico, are on relatively small structural features separated by dry holes. Both fields produce from the Middle Silurian Fusselman carbonate and from bedded Upper Pennsylvanian limestone. Production from the Fusselman in the Peterson field is limited to one well whereas production in the South Peterson field covers a wider area. The Peterson field produces from the Fusselman because of structure whereas the South Peterson field produces as the result of combination structure and pinch-out of Fusselman against the granite high on the south. The field was found using common depth point (CDP) seismic data.

SCOTT, GEORGE L., Consulting Geologist, Roswell, NM

Tom-Tom and Tomahawk San Andres Oil Fields, Chaves and Roosevelt Counties, New Mexico

The Tom-Tom field was discovered by Amoco in 1967 and the nearby Tomahawk field was discovered by Sundance Oil Co. in 1977. As of September 1, 1979, there were 49 wells producing at Tom-Tom and 22 wells at Tomahawk. Cumulative oil production to August 1, 1979, is 913,725 bbl at Tom-Tom and 331,917 bbl at Tomahawk. Geologic studies indicate no separation between the two fields and at the present rate of drilling activity, the fields should link up in early 1980. Both fields are stratigraphic traps in the P-2 zone of the San Andres formation. The P-3 zone is also productive from a small