and Wyoming have received the most attention by both the Survey and prospective developers. Widespread Survey optimism on oil shale's viable future was emphasized by increased funding in 1981 for Conservation Division's enlarged monitoring and regulatory office in Grand Junction, an expanded research and resource appraisal program for Geologic Division, and for Water Resources Division's hydrologic studies. Deep drilling, coring, and hydrologic testing in the east-central Uinta basin, supported by Geologic, Conservation, and Water Resources Divisions, is currently under way. Environmental investigations related to oil-shale development and production are concentrated in Water Resources and Conservation Divisions along with associated regulatory responsibilities and interagency coordination. In Geologic Division, we are (1) providing basic geologic data to support the government's prototype oil-shale and by-product saline mineral leasing program; (2) continuing stratigraphic, mineralogic, geochemical, and resource appraisal studies; and (3) expanding the computer data base for oil-shale resources and the associated software for more flexible and varied information retrieval and display. We are convinced the enormity of the resource, its occurrence in a relatively small geographic area, and its potential national and international impact require comprehensive basinwide planning and development to achieve maximum recovery of the resource with minimum loss and degradation.

BOURGEOIS, JOANNE, Univ. Washington, Seattle, WA

Deposition and Penecontemporaneous Deformation of Sediments on a Faulted Submarine Slope, Hunters Cove Formation (Campanian-?Maestrichtian), Southwest Oregon

The Hunters Cove Formation is a 300-m thick, fining-upward sequence deposited above and perhaps also contemporaneously with Cape Sebastian Sandstone, a transgressive shelf sequence. Overall, the formation is fine-grained (sand:shale $< 1:3$) and consists of thin, T(a)bc(de) turbidites, siltstone, and shale. Distinctive, thick sandstone beds exhibit varied sedimentary structures indicative of rapid sedimentation, soft-sediment deformation, and fluid-escape processes. These sandstones were probably deposited at a break-in-slope or canyon mouth, resulting in unstable-grain-framework sands susceptible to hydroplastic deformation, liquefaction, and fluidization.

The Hunters Cove Formation also contains small-scale slump zones and a thick slump breccia containing clasts of basal Cape Sebastian Sandstone, indicating that Hunters Cove deposition was contemporaneous with, and may have been initiated by, active faulting. This faulting is also suggested by small-scale penecontemporaneous faults and sheet and web structures. Hunters Cove deposition probably occurred on the edge of a small, fault-bounded, borderland-type basin. In particular, submarine-canyon and fan processes in the California Borderland, as described by Shepard, Dill, and others, may be modern analogies for it.

BOYCE, ROBERT L., Sohio Petroleum Co., Denver, CO

Depositional Systems in Naknek Formation, Late Jurassic, Lower Cook Inlet, Alaska

The Naknek Formation is a thick wedge-shaped unit of Late Jurassic age. It accumulated along the western edge of a Jurassic fore-arc basin. The formation was examined by BP Alaska geologists along the western shore of Lower Cook Inlet between Chisik Island and Cape Douglas.

Correlation of stratigraphic sections has identified three sandstone/conglomerate sequences separated by two siltstone units. The conglomerate units are thick, lenticular, and occur as both organized and disorganized conglomerate facies. The sandstone units exhibit the following sedimentary structures and bedding types: (1) massive, graded, and amalgamated beds; (2) thickening and coarsening-upward sequences; (3) slump structures; (4) load and flute casts; (5) soft-sediment faulting; (6) rip-up clasts; (7) ripple lamination; and (8) minor cross-bedding. The siltstone units are parallel laminated and have thin sandstone beds with partial and complete density current sequences. Bioturbation is not common although some grazing burrows are present. Ammonites, belemnites, plant debris, and radiolarians are the most common fossils, although forams, gastropods, and pelecypods (dominantly *Buchia* sp.) are also present.

Previous workers have described the Naknet Formation as a shallow-marine deposit, but did not identify specific sedimentary facies. This study indicates that the Naknek Formation was deposited in moderate to deep water as a submarine fan complex.

BOYD, RICHARD W., Natural Gas Corp. of California, San Francisco, CA

East Brentwood Gas Field: A Paleotopographic Trap

The East Brentwood gas field is located about 45 mi (72 km) east of San Francisco, California. The discovery well was drilled in 1978 by Depco, Inc. and completed in the Upper Cretaceous Third Massive sand at a depth of 8,050 ft (2,454 m). The Third Massive sand is a progradational sequence of sands with thin shale interbeds, interpreted to have been deposited in a near-shore, open-sea environment. The reservoir sand is dramatically truncated by the Meganos Gorge, a shale-filled fossil channel of Paleocene age. Faunal assemblages indicate that the cutting and filling of the gorge were submarine rather than subaerial.

The East Brentwood gas field is primarily controlled by the truncation of the basal part of the Third Massive sand by the Meganos Gorge shale fill with lateral closure afforded by several normal faults which divide the field into at least four separate producing blocks. Exploration mapping techniques, including seismic and well control, concentrate on the relation of the Massive sands to the basal Meganos Gorge configuration, the intersection of which essentially represents a buried paleotopographic surface. Exploration for updip sand termination against the shale-filled erosional gorge feature should result in the discovery of additional natural gas accumulations. Nine wells are presently completed in the gas field in which the better wells have over 250 ft (76 m) of net gas sand. The field has produced 19 bcf of 1,080 Btu gas and 50,000 bbl of 46° API gravity condensate since discovery. Field ultimates are expected to be in excess of 40 bcf and 100,000 bbls of condensate.

BOYLES, J. MICHAEL, Cities Service Exploration and Production Research Co., Tulsa, OK, and ALAN J. SCOTT, Univ. Texas at Austin, Austin, TX

Comparison of Wave-Dominated Deltaic Deposits and Associated Sand-Rich Strand Plains, Mesaverde Group, Northwest Colorado

The Mesaverde Group (Campanian) in northwestern Colorado is a thick (>700 m) clastic wedge that prograded eastward into the Western Interior seaway. Models of the main depositional systems in this group were constructed through the study of rock textures and physical and biogenic structures. The geometry of lithofacies was determined from outcrops and