Island topographic high in the center of the bank. This Holocene sandbody is interpreted as having formed from reworking by marine transgression of the underlying Pleistocene glacial and glaciofluvial sediments. During transgression, a subaerial barrier system migrated northward across the bank, leaving behind an extensive set of shoreface-detached ridges. At the margin of the barrier system, longshore transport produced a submarine spit complex that migrated northward with the barrier system but did not produce significant ridge-type shelf sands. Sable Island Bank illustrates the importance of sea level transgression as a major mechanism for supplying sand-sized sediments to the shelf environment. In this case, the sediments have been transported over 100 km to the outer shelf by glacial and fluvial processes during low sea level stands. In addition, Sable Island Bank illustrates the importance of paleotopography in generating potential stratigraphic traps in shelf sandbodies. Topographic relief is likely to be generated on continental shelves exposed during low sea levels. During subsequent transgressions, sand-sized sediments are produced by reworking and are stranded on isolated topographic highs.

BRAKENRIDGE, G. ROBERT, and TAO VUONG*, Wright State Univ., Dayton, OH

Bagnold's Log Hyperbolic Approach to Sand Grain-Size Analysis as Adapted to a Large Sedimentation Tower

Recent criticism of sand grain-size analysis as a useful tool in sedimentary petrology is directed at popular techniques of data analysis that do not rest on a correct theoretical basis. Several decades ago, R. A. Bagnold pioneered a new approach that deserves attention before grain-size analysis is discarded for environmental discrimination. Bagnold wrote that transportational sorting and winnowing are independent processes involved in sediment deposition. As a result, grain-size distributions of sand deposits follow log-hyperbolic and not log-normal distributions, and the coarse and fine tails of grain distributions are independent. More recently, D. Love showed that grain-size studies assuming log normality are prone to specific errors, one of which is the false inference of two log-normal populations when a log hyperbolic-population is analyzed. A difficulty, up to now, in the practical application of Bagnold's approach has been the requirement that sieve-opening diameters be measured accurately. This problem can be eliminated by the use of sedimentation tower techniques. We are using a 2-m tall, 40-cm wide, water-filled sedimentation tower and a sensitive electronic balance coupled to a microprocessor to collect sediment-weight and settling-time data for sand samples. Bagnold's log differential plots can be plotted directly from such data by the computer and offer the potential to interpret sand grain-size distributions on a sound theoretical basis.

BRANDT VELBEL, DANITA, Yale Univ., New Haven, CT

Preservation of "Event Beds" Through Time

"Event beds"—strata attributed to rapid, episodic sedimentation—are recognizable throughout the geologic column. Although these beds range widely in age and depositional setting (deep-sea turbidites to shelf "tempestites"), a few diagnostic features are common to all event beds (erosional base grading up to a "pelagic" top). Few morphological features of these beds have changed through time; however, recent theories of increased infaunalization through time predict that fewer event beds would be preserved after the infaunal explosion of the Jurassic and suggest that the conditions under which post-Jurassic event beds are preserved must differ in some way from preservation of pre-Jurassic beds. A survey of recent literature on event beds, ranging in age from Precambrian to Holocene, reveals no shift in major patterns of preservation, although documentation of Tertiary to Holocene strata is sparse, probably because of artifact effects (e. g., relatively small volume of outcrop). Preservation of event beds is not so dependent on depositional setting as it is on the frequency and intensity of the event and the presence of infaunal burrowers.

BRECKON, CURTIS E., and CHARLES F. MANSFIELD, Univ. Tulsa, Tulsa, OK

Lateral Continuity of Turbidite Lithofacies Within Pennsylvanian Jackfork Group Near DeGray Lake, Clark County, Central Arkansas

A 23-km long, 2.5-km wide area with excellent exposures of the Jackfork Group occurs on and near the southern shore of DeGray Lake. This area, despite moderate to heavy vegetative cover, offers an opportunity to study the lateral extent of turbidite and associated submarine-fan lithofacies and to develop a model for estimating the extent of subsurface turbidite reservoirs using data from one or more wells. The extent of arenaceous lithofacies in the study area is also important to the local stone-quarrying industry.

Over 1,000 m of published and newly measured stratigraphic sections were studied to determine lithofacies present using the 1978 classification system of E. Mutti and F. Ricci-Lucchi. Lithofacies were then correlated along strike (which is generally within 20° of paleocurrent heading) using stratigraphic correlations, aerial photographs, field checking, and field tracing of nearly continuous outcrops.

Sandy sequences in which lithofacies B or C predominate, but which may contain lithofacies A, form ridges. These ridges are especially prominent where arenaceous intervals reach 10-30 m in thickness. Individual beds within these intervals are nearly all less than 1.2 m thick and are difficult to trace laterally. The arenaceous intervals, however, can be traced as units for up to 6 km and correlated for up to 8 km or more along strike. Shaly stratigraphic sequences of lithofacies G, D, E, and, rarely, F are poorly exposed, but can be correlated along strike for up to 6.5 km, with topographic expression and vertical lithofacies sequence being important guides.

BROOKS, GREGG R., Univ. South Florida, St. Petersburg, FL, and CHARLES W. HOLMES, Minerals Management Service USGS, Corpus Christi, TX

Offbank Transport of Carbonate Sands in Northern Straits of Florida—a Function of Sea Level

The southwest Florida continental slope, bordering the northern Straits of Florida, consists of a thick accumulation of carbonate sediments. High-resolution seismic data show oblique prograding clinoforms oriented offbank indicating large amounts of shelf-derived material are being transported off the shelf and deposited on the slope. No evidence of mass wasting was found, suggesting deposition occurred by a continuous influx from the adjacent shelf.

Sediment cores show an upward gradation from medium to coarse carbonate sands and granules to fine muds. The sand and granule fraction, dominated by coralline algae, mollusks, and benthic foraminifera, is typical of sediments found on the adjacent shelf. The fine fraction, however, is a foram or pteropod ooze containing only minor amounts of shelf-derived material.

The fining-upward sequence indicated the greatest input of shelf material occurred during lowered sea level. During these periods, large quantities of shelf sediments were funneled through breaks in the shallow banks to the north and deposited on the slope. As sea level continued to rise, less shelf sediment was transported offbank. Under current conditions of high sea level, very little shelf material is being contributed to the slope.

The slope therefore acts as a sink during sea level lowstands, for shelf-derived carbonate material produced during sea level highstands. The existence of at least 5 such sequences implies a cyclicity of similar depositional episodes that may be correlated with sea level fluctuations.

BROOKS, LAWRENCE L., Exxon Co., U.S.A., Houston, TX

Graphical Displays of Cross Sections Produced on the Computer

Much time is devoted to manually constructing cross sections and interpreting geologic data. Computer-generated displays can save manual effort and provide an interpretive aid for the geologist.

This poster session will display computer-generated cross sections containing full curve logs, lithology, oil and gas shows, geologic markers, interpreted dipmeters, and structural relationships. Contouring and the use of color will also be demonstrated as interpretive aids. Two of the methods used in preparing geologic data—the polynominal regression and the Markov process—will also be demonstrated. The poster session summarized the various ways in which the computer may display and aid in the interpretation of cross sections.