sequence or were produced shortly after deposition of the rippled sandstone layers.

The rippled sandstone (unit D) is overlain—in ascending order—by a thin silt layer (unit E, 1 cm thick), a weathering-resistant silty limestone (unit F, 8 cm thick), and a silt/mudstone (unit G, 20 cm thick) (Fig. 6). The first (rare) Paleocene biota appear at the top of the mudstone (unit G) (Jiang and Gartner, 1986; Hansen et al., 1987). A single laminated fine sand layer (unit H, 2 to 3 cm thick) follows, overlain by fossiliferous mudstones, containing extremely rare Paleocene planktic foraminifers in the upper part (unit I, 2.5 m thick) capped by a burrowed transgressive surface. Large *Ophiomorpha*-type burrows associated with the transgression extend downward for 0.5 m into the mudstones of unit I. The Littig Member of the Kincaid Formation, a sandy, glauconitic, phosphatic lag bed containing reworked Cretaceous fossils (unit J, >30 cm thick), overlies the transgressive surface.

It has been suggested by some authors that the silty limestone and mudstone (units F, G) represent either the grading settling "tail" of the tsunami disturbance (Bourgeois, 1991; Bourgeois et al., 1988) or low-energy sedimentation after a storm (Hansen et al., 1987). Alternatively, it has been suggested that no size grading is apparent in those units and that they represent a homogeneous background sedimentation, not related to the deposition of the sandstone units (Beeson et al., 1994; Keller, 1989b; Keller et al., 1993; Keller et al., 1994a; Stinnesbeck, et al., 1993; Stinnesbeck et al., 1994a).

To verify these hypotheses, the grain-size distribution of the HCl-insoluble and H_2O_2-treated residue of 60 samples across the K/T boundary sequence of the Brazos 1 outcrop (units A through I) was analyzed. HCl-insoluble residues were used to eliminate biases that could be caused by such factors as the difference in size between Cretaceous and Paleocene foraminifers. Samples from the Corsicana mudstones, the basal skeletal sandstone, and the rippled sandstone (units A through D) were taken from the outcrop in the Brazos river bed, and the remaining samples (units E through I) came from the Brazos 1 outcrop in the west bank of the river, about 20 m to the northwest. The silty limestone and overlying mudstone (units F, G) above the last sandstone ripples were sampled in detail (on average every 0.8 cm) (Fig. 6).

The grain-size distributions are presented as histograms (Fig. 7). Percentages of the 60 histograms, arranged in ascending stratigraphic order, were contoured at 1% intervals (Fig. 8). The detailed sampled interval of units E through G is presented in Figure 9.

Several trends can be observed in the grain-size distributions that are not easily visible in outcrop. The Corsicana mudstones (unit A) can be subdivided into a slightly siltier lower part (0.5 to 10 m below the K/T boundary) and a more clay-rich upper part (0 to 0.5 m below the K/T boundary). The rippled sandstone (unit D) is fining upward, consistent with inferred settling from suspension-rich currents decreasing in strength. Above unit D no fine sand has been stirred up anymore, with the exception of one 1- to 2-cm-thick very fine sand layer (unit H). The silt, silty limestone, and mudstone (units E through G) above the rippled sandstone (Figs. 7 through 9) show a bimodal size distribution, with peaks in the silt (Phi 5.75 to 6.5) and clay (Phi 9) size-fraction (Fig. 9). The silt fraction gradually decreases upward while the clay fraction (Phi 9) gradually increases, until near the top of unit G the clay fraction dominates. In the silty limestone (unit F) the modal grain size of the silt fraction shifts gradually from Phi 5.75 to Phi 6.5 (19 to 11μ, Fig. 9). The graded grain size distribution through units E through G strongly suggests that a suspended cloud of silt and clay settled out during low-energy conditions to form those units, directly on top of the K/T sandstone units, contradicting the suggestion (Beeson et al., 1994, Keller et al., 1993) that these silt-mudstones are part of normal background sedimentation. The grain-size distributions of the unit A mudstones are comparable to those of units E through G, suggesting

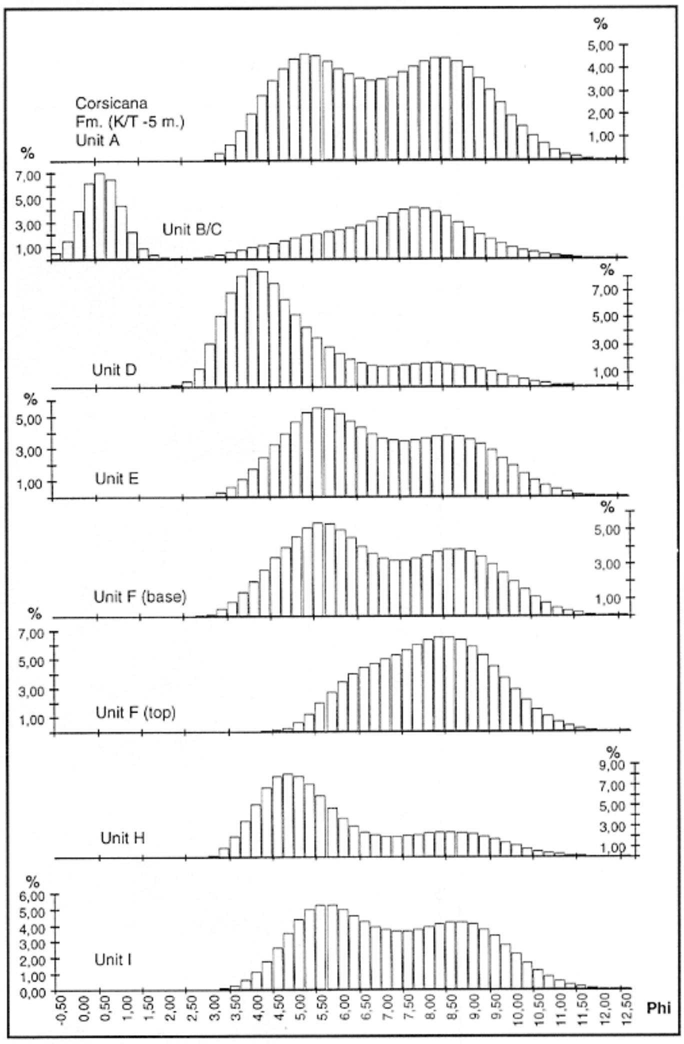

Figure 7. Selected histograms of the grain-size distribution of the different lithological units (see Fig. 6). Grain size in Phi units.