

structure indicative of oscillation (wave) ripples were not observed. Some ripples bear a resemblance to hummocky cross-stratification structures on the rock-face cut at right angles to the current direction (Lyons and Officer, 1992), but at a rock-face cut parallel to the current direction they show their unidirectional cross-bedded character. The top surface of the highest rippled layer is bioturbated. Some *chondrites* burrows also occur at the top of the next-to-last ripple and in the silt layer in between. We have not observed any traces of burrows in any of the lower ripples or ripple surfaces of Unit III or in Units I and II.

The highest ripples are overlain by a 4-cm-thick silt layer, containing a 2- to 5-mm-thick flaserlike fine sandstone layer that is most enriched in Ir (Fig. 13; Table 2). This layer can be traced over the entire outcrop, and at the westernmost outcrops of the K/T sandstone complex (outcrop Mimbral 2 of Stinnesbeck et al. [1994]) the thin flaserlike sandstone layer is red stained by iron-oxides. Stinnesbeck et al. (1994a) and Hildebrand et al. (1991) termed this layer as "red K/T layer" and "fireball layer," respectively, but in thin section (Fig. 12C) it is clearly a sandstone with goethite matrix, not compatible with an interpretation as a K/T red ejecta or fireball layer. The 4-cm silt layer is overlain by a 7-cm-thick micritic limestone layer, still silty and graded (Fig. 12D; Fig. 13). This layer appears correlative with the graded silty limestone layer (unit F of Hansen et al., 1987) at Brazos River. The first small Danian foraminifers (*G. eugubina*?) appear about 12 cm above the silty limestone layer in shales of the Velasco Formation that are somewhat darker than the Mendez shales. The first fine-grained sediments above the rippled layers and all of the subsequent Velasco shales are highly impoverished in Cretaceous planktic foraminifers (Fig. 12E) in comparison with the uppermost Mendez shales underlying the clastic beds (Fig. 12F). Those few present are probably reworked.

Petrography of the Mimbral sandstone sequence

Twenty-nine thin sections were analyzed from samples taken every 10 cm in Units II and III in a vertical section at

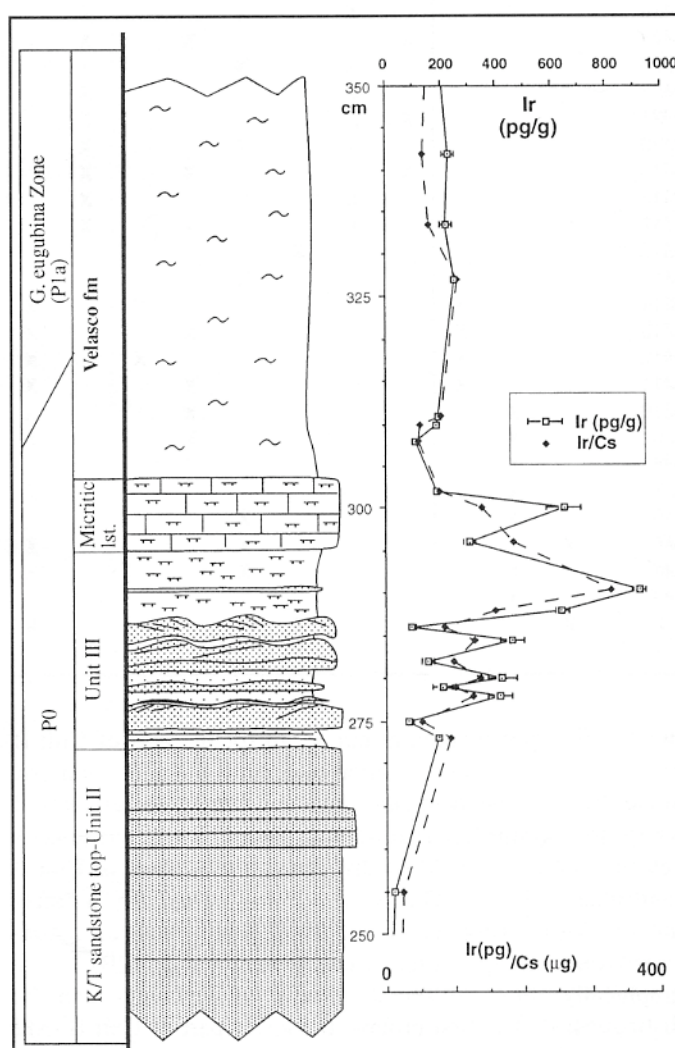


Figure 13. Mimbral, northeastern Mexico. Detail of the top of the K/T sandstone complex near meter mark 16 (cf. Fig. 11). Lithological column traced from a photograph. Ir and Cs data from Table 3 (F. Asaro, personal communication, 1991). Ir is normalized to Cs to eliminate dilution effects by carbonate.