

Figure 1. Part of the reflection record of profile FC5. A gravity fault (F) with surface offset occurs at the seaward end of the Blake Plateau at a water depth corresponding to a 1.8-s two-way travel time. Note that the fine horizontal lines in the photograph indicate lenses of acoustic impedance. A set of at least two, but probably three, high-velocity reflectors (H) is also present. At the right side of the figure, at 1.2 s, is an extensively channelled unconformity (U), probably formed by deep-sea erosion. High velocity is a feature between the middle Cretaceous and the middle Tertiary, reported in a core drilled in the region (Ding and Hollister, 1972). The strong reflector at 1.8 s at the right side of the photograph (C1) was originally identified as horizon Beta based on its acoustic appearance at other sites where Beta was drilled (Dillon and others, 1976). However, (Dillon, Buffler, and Watkins (in press)) concluded that this represents a Tithonian reflector based on extrapolation to a University of Texas profile which crosses profile FC7.

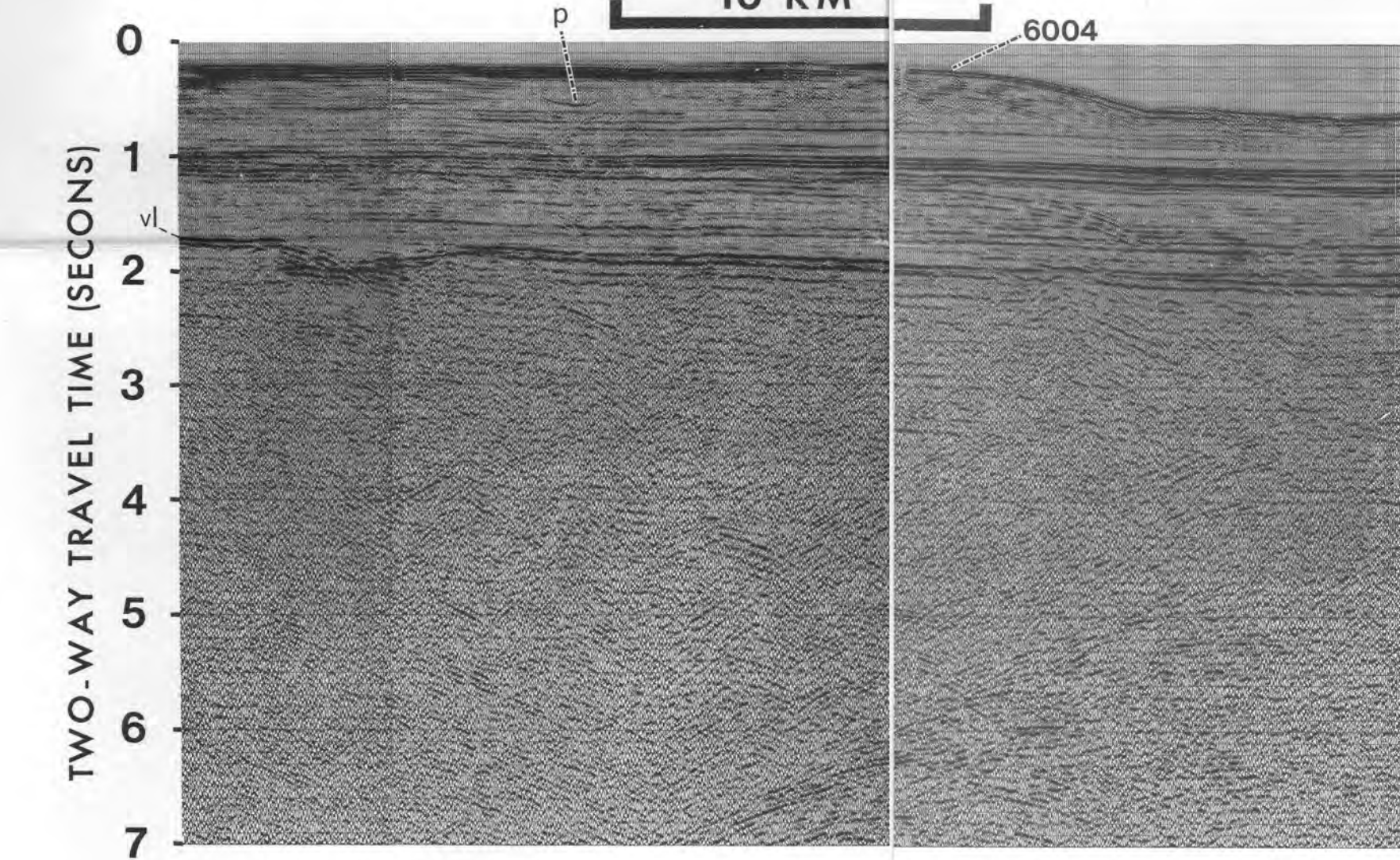


Figure 2. Part of the reflection record of profile FC6. The very strong reflector which intersects the left side of the photograph at 1.7 s (V1) is believed to represent volcanic rocks similar to those drilled on the Blake Plateau (see also Triassic, perhaps continental deposits, although it is possible that rocks below the unconformity are of Paleocene age). The first strong reflector above the unconformity on the left side of the photograph at 2.8 s (V2) probably represents the furthest seaward extent of the continental shelf. The unconformity in the reflection record is probably a result of a change in sedimentation to the right of center (C) as a result from the development during the Tertiary.

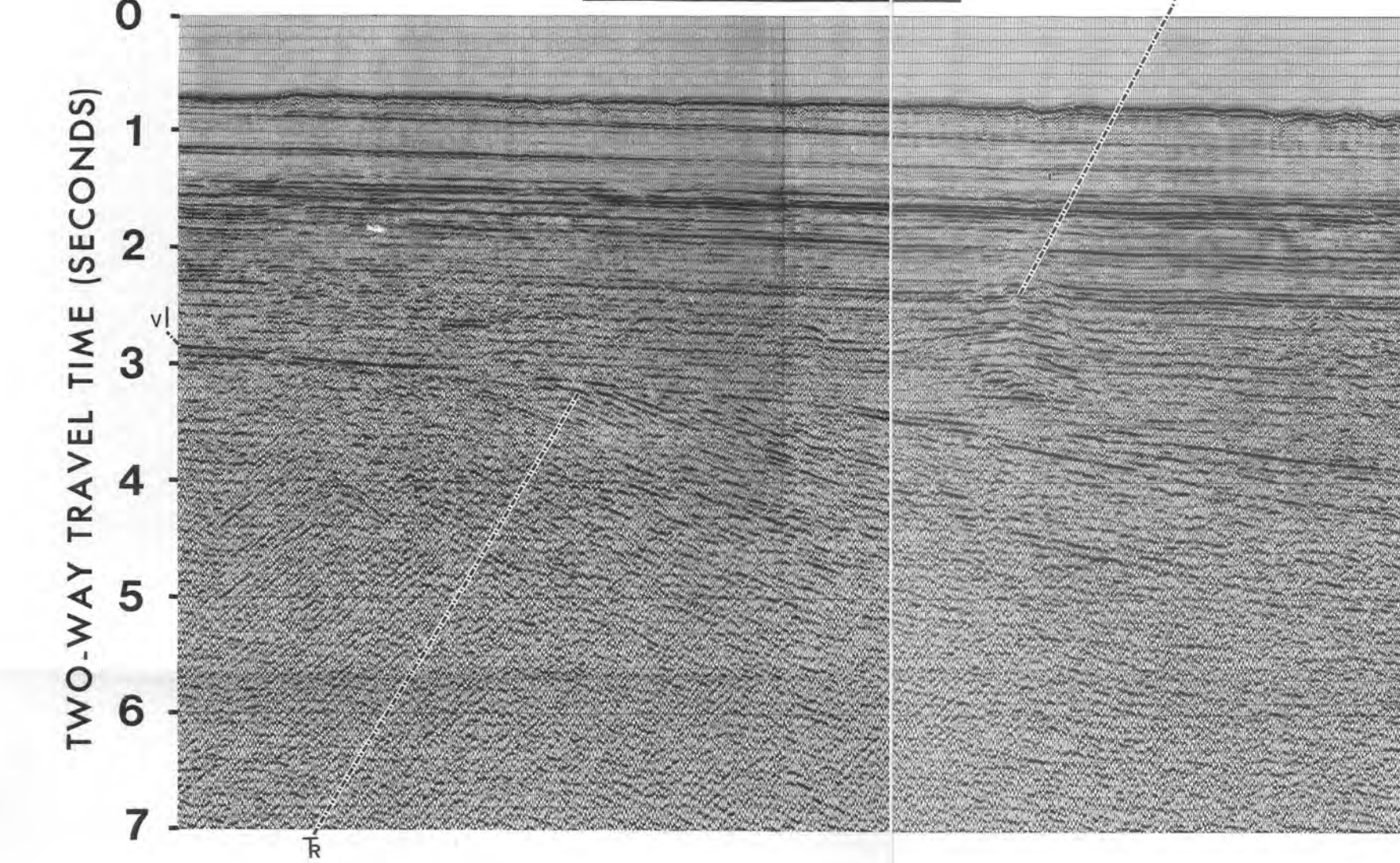


Figure 3. Part of the reflection record of profile FC7. A marked angular unconformity at about 4.1 s (U) is highly seaward, is thought to have been the base of the Blake Plateau surface in the right part of the photograph is irregular due to erosion by the Gulf Stream, and this section has probably not been constructed and is essentially horizontal beds during the Tertiary. The very strong reflector intersecting the left side of the photograph at 1.75 s (V1) is thought to represent the western edge of the Blake Plateau (see Figure 1).

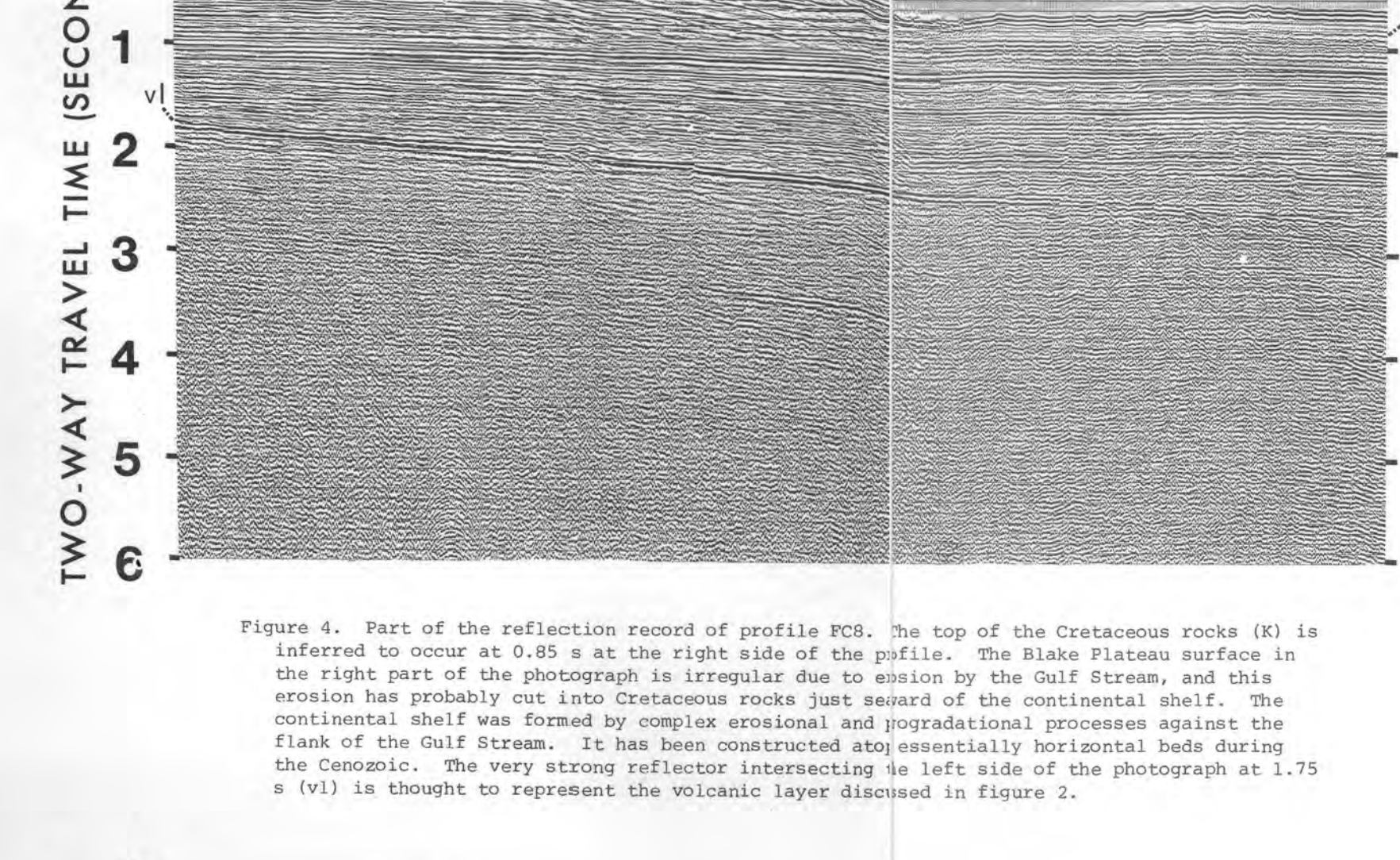


Figure 4. Part of the reflection record of profile FC8. The top of the Cretaceous rocks (C1) is inferred to occur at 0.45 s at the right side of the profile. The Blake Plateau surface in the right part of the photograph is irregular due to erosion by the Gulf Stream, and this section has probably not been constructed and is essentially horizontal beds during the Tertiary. The very strong reflector intersecting the left side of the photograph at 1.75 s (V1) is thought to represent the western edge of the Blake Plateau (see Figure 1).

Figure 5. Part of the reflection record of profile FC8. A marked unconformity, rising toward the left, underlain by discontinuous reflectors, and capped by strong continuous reflectors, intersects the right side of the photograph at 4.2 s (U). This unconformity separates contact of hemipelagic mass overlying carbonate turbidites of early late Miocene age (O'Brien and others, 1974). This unconformity is a major reflector of many late Miocene (1970), which contains the base of the Blake Ridge. The reflector identified as Tithonian in Figure 1 intersects the right margin at 1.9 s (T1). An observed unconformity at the top of Cretaceous strata (C1) occurs at 1.8 s. Beneath the outcrop of the Blake Plateau (approximately 1.4 s at left side of photograph) lies a horizon (at about 1.4 s) interpreted as containing prograded reflectors and displaying relatively high interval velocities of 4000-4700 m/s. This probably represents a Cretaceous shelf-edge carbonate bank or reef. This feature also is crossed near the seaward end of profile FC7 where interval velocities reach 4800 m/s. A velocity inversion is present here; velocities below the lateral roof of carbonate bank section are lower than velocities within that section.

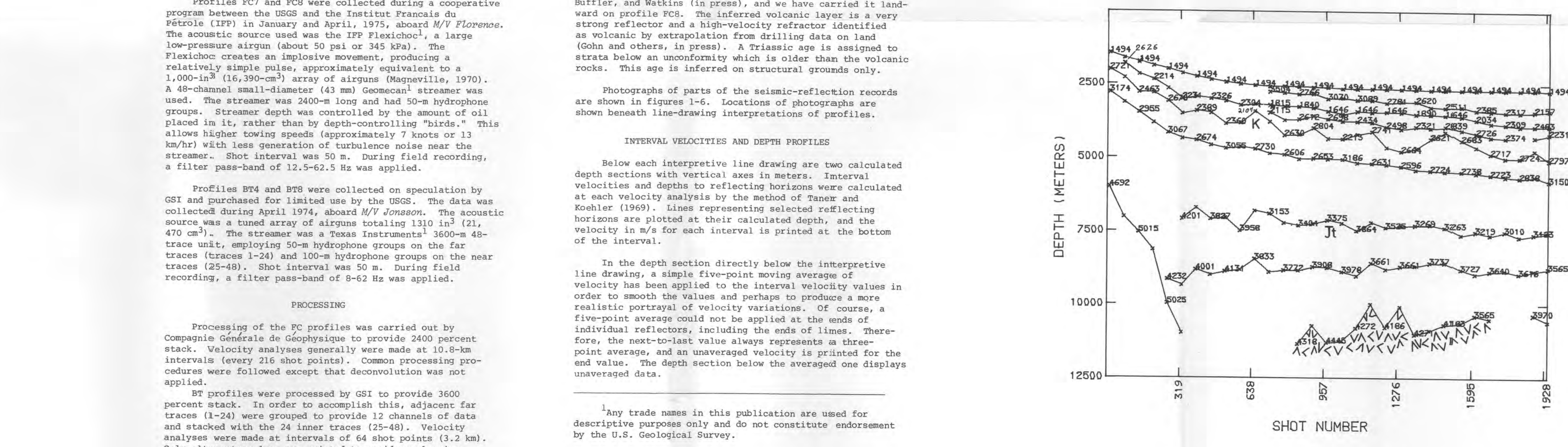
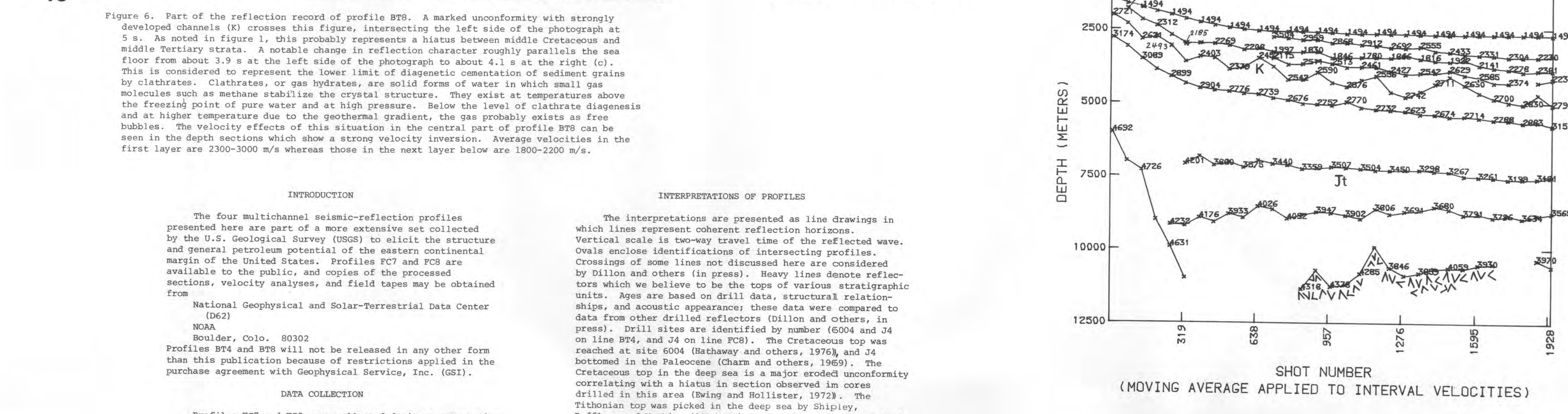
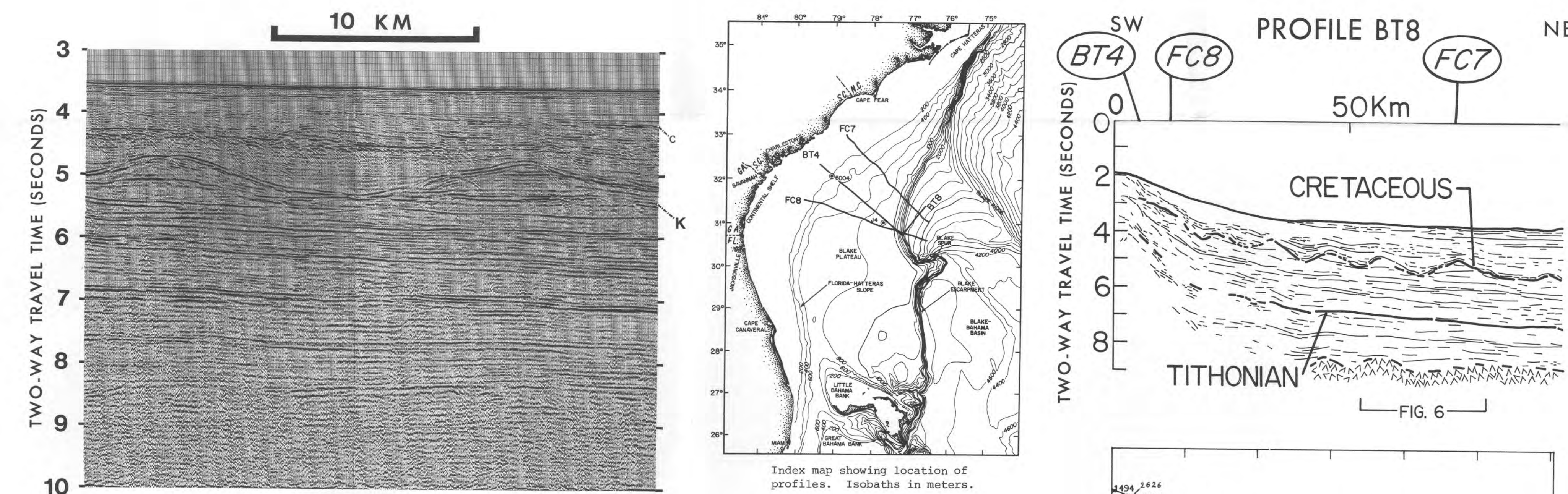
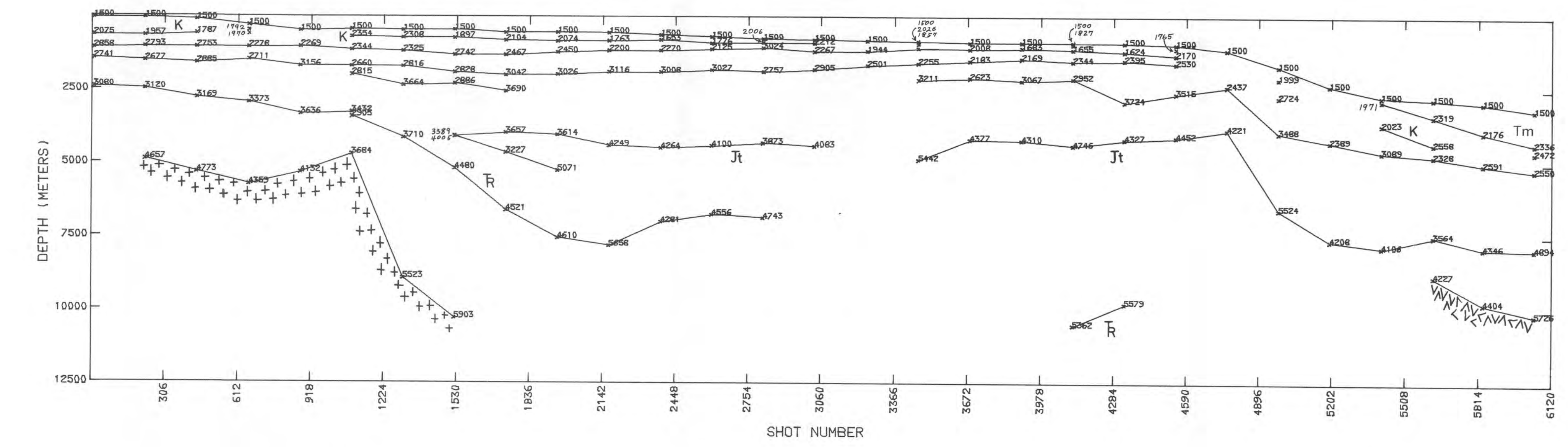
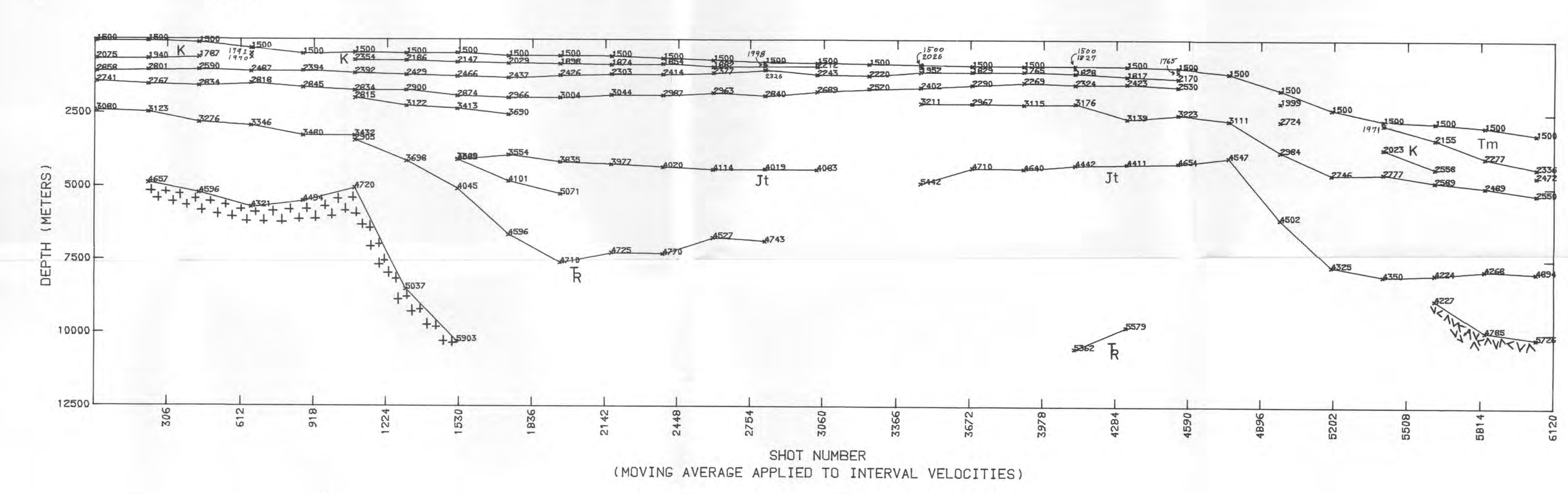
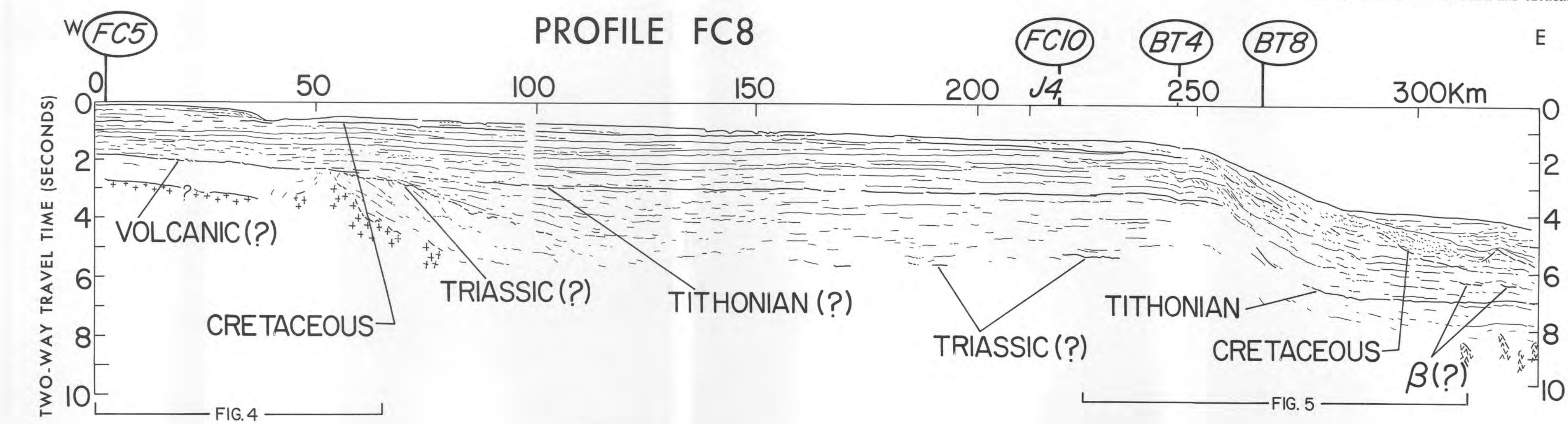


Figure 6. Part of the reflection record of profile BT8. A marked unconformity with strongly developed channels (C) crosses the left side of the photograph at 1.8 s. As noted in Figure 1, this probably represents a high-velocity zone of the middle Cretaceous and middle Tertiary strata. A notable change in reflection character roughly parallels the sea floor from about 1.8 s at the left side of the photograph to about 4.1 s at the right (C). This is considered to represent the lower limit of diapiric concentration of sediment grains by chlorination, chlorination, or sea hydrates, are solid forms of water in which small ice velocities such as methane stabilizes the crystal structure. They exist at temperatures above the freezing point of pure water and at high pressures. Below the level of chlorination diapirism and at higher temperatures due to the geothermal gradient, the gas probably exists as free bubbles. The velocity effects of this situation in the central part of profile FC7 can be seen in the depth section which shows a strong velocity inversion. Average velocities in the first layer are 250-300 m/s whereas those in the next layer are 1800-2000 m/s.

INTERPRETATION OF MULTICHANNEL SEISMIC-REFLECTION PROFILES OF THE ATLANTIC CONTINENTAL MARGIN OFF THE COASTS OF SOUTH CAROLINA AND GEORGIA

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