

The Seismic Definition of the Main Structural Elements of the Canning Basin

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Abstract

Selected seismic sections show some of the main tectonic elements and provinces of the Canning Basin, clearly revealing the structural complexity and diversity in the basin. In the north, the deep Fitzroy/Gregory graben is bounded by major listric faults and flanked by tilted shelves and terraces. Local structures caused by salt movement and wrench faulting occur on the

southern terraces, adjacent to the broad mid-basin ridge, the Broome Arch. Complex compressional structures occur in the graben, and bounding faults often show Mesozoic reverse movement. By contrast the southern basins are shallower and relatively undeformed, with normal faults controlling section thickness in some areas.

The sections have been provided by current operators or chosen from open file material. The interpretations are best working estimates, guided by the donor companies but ultimately the responsibility of the authors.

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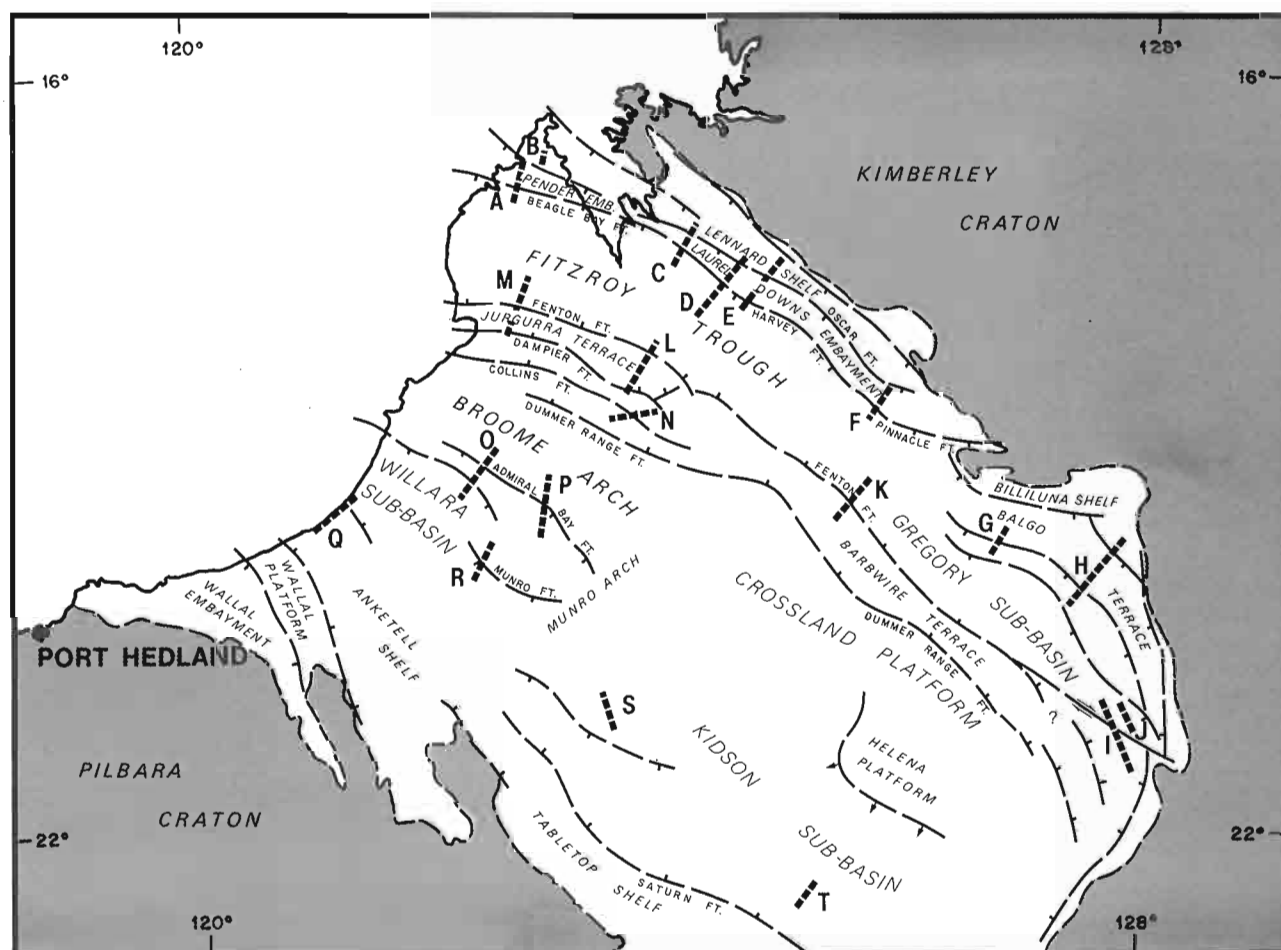


Figure 1: Main Tectonic Elements, Canning Basin, showing location of selected seismic profiles.

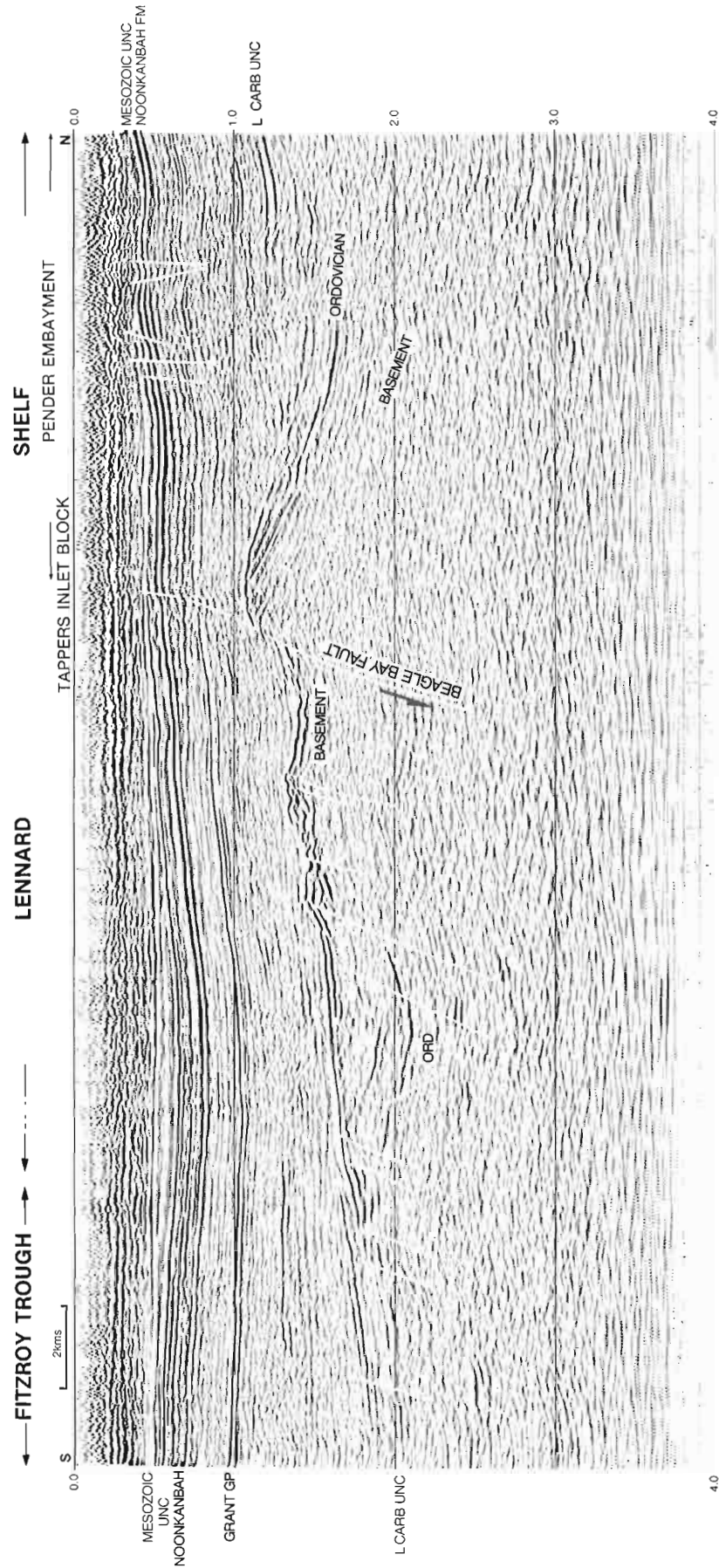


Figure 2. Profile A crossing the Pender Embayment and Tappers Inlet structure, Lennard Shelf.
Source: Vibroseis. Fold: 24. Date: 1978. Courtesy of Esso, EP 104.

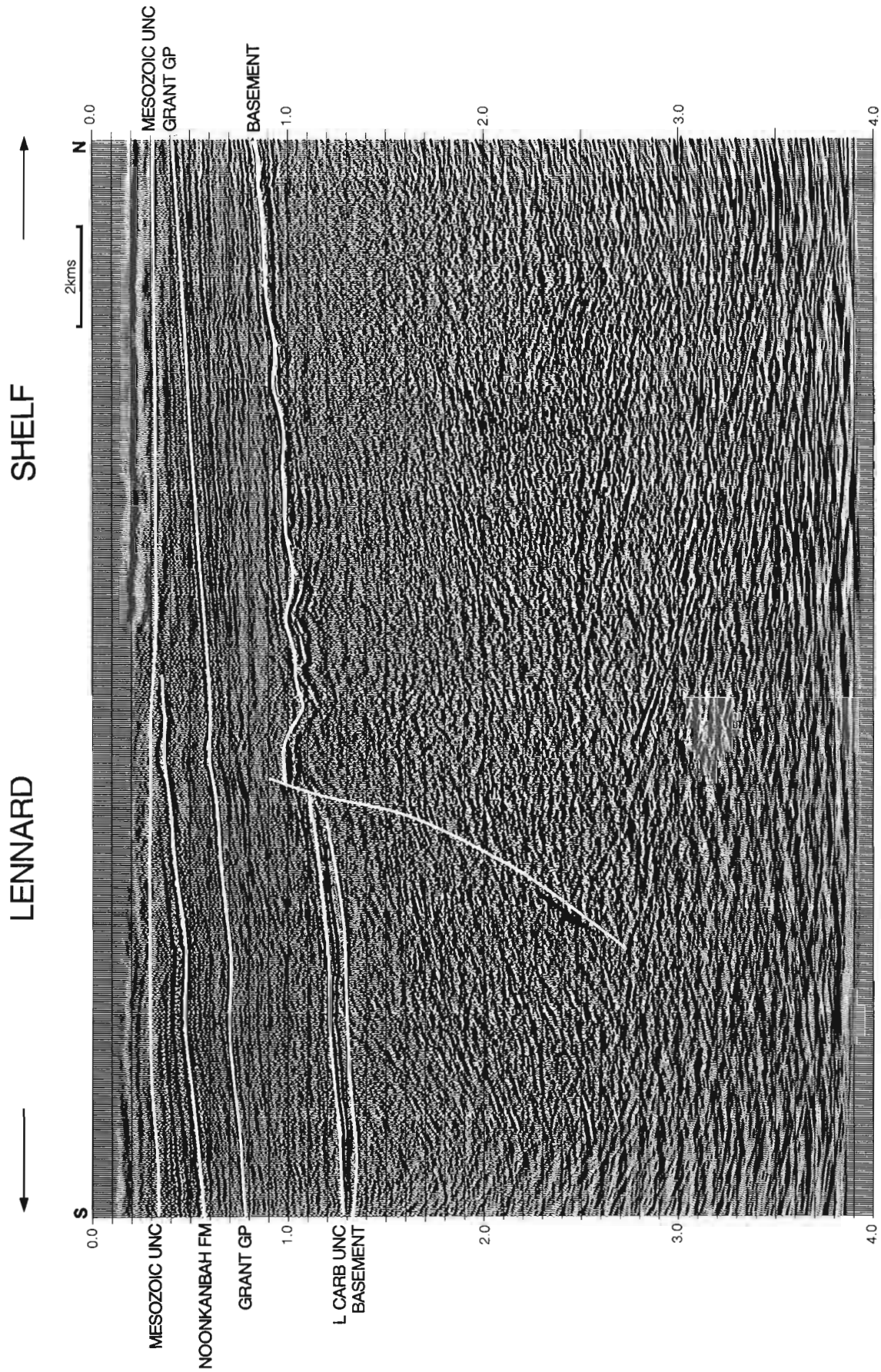


Figure 3. Profile B across the Lennard Shelf showing the shallow basement upthrown to the Pender Bay Fault, located immediately south of line.
Source: Vibroseis. Fold: 24. Date: 1978. Courtesy of Esso, EP 104.

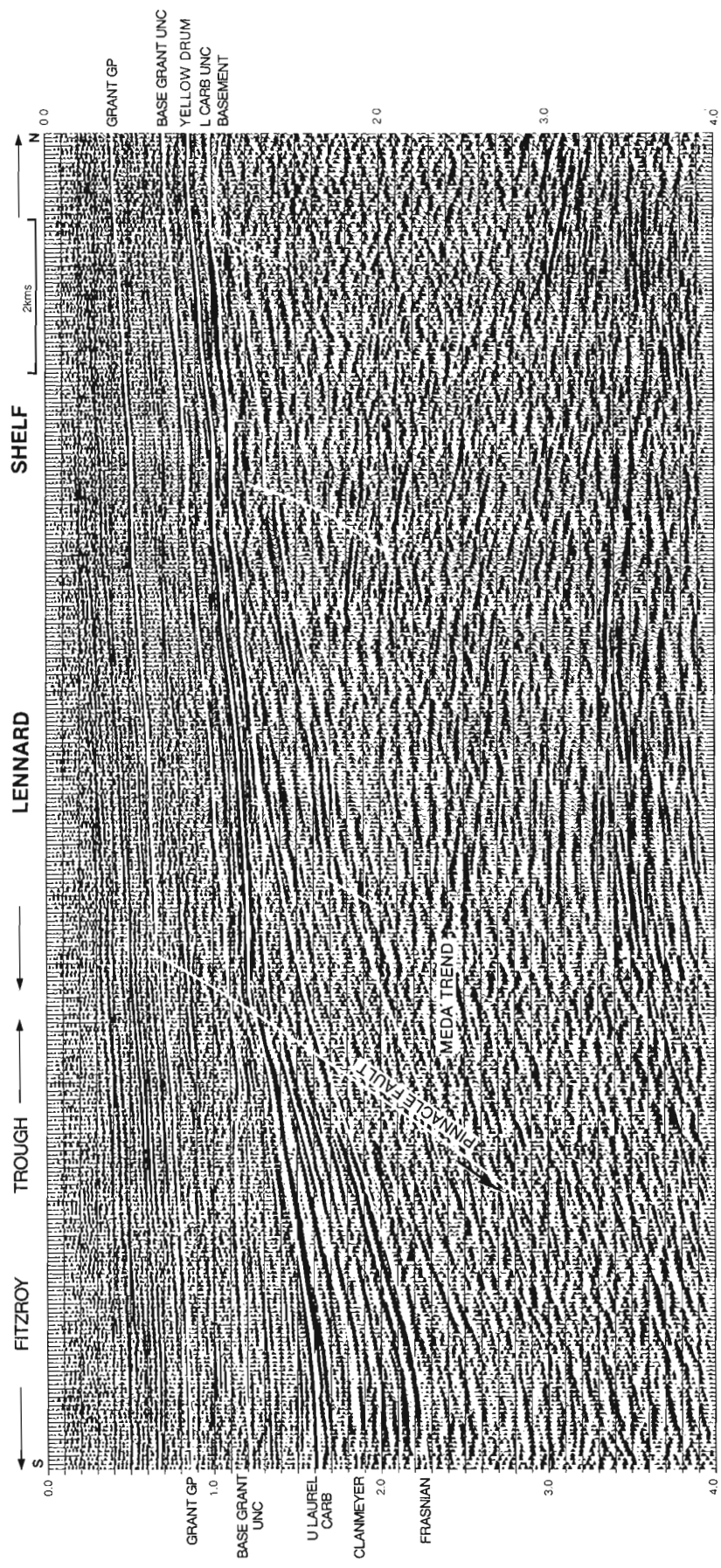


Figure 4. Profile C across the Lennard Shelf—Fitzroy Trough margin, showing the “Meda” carbonate edge.
Source: Dynamite. Fold: 12. Date: 1980. Courtesy of Home, EP 129.

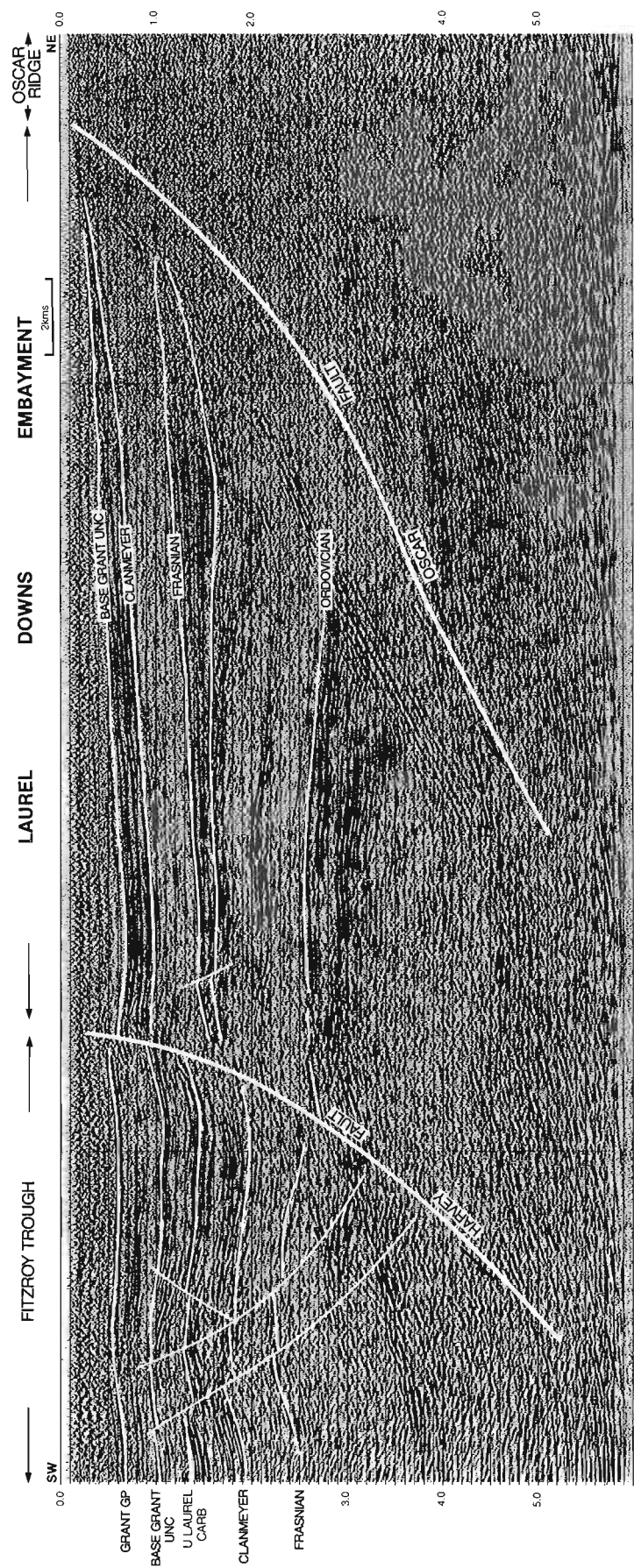


Figure 5. Profile E across the Laurel Downs Embayment and Harvey Fault zone. Source: Vibroseis. Fold: 24. Date: 1981. Courtesy of IEDC, EP 101.

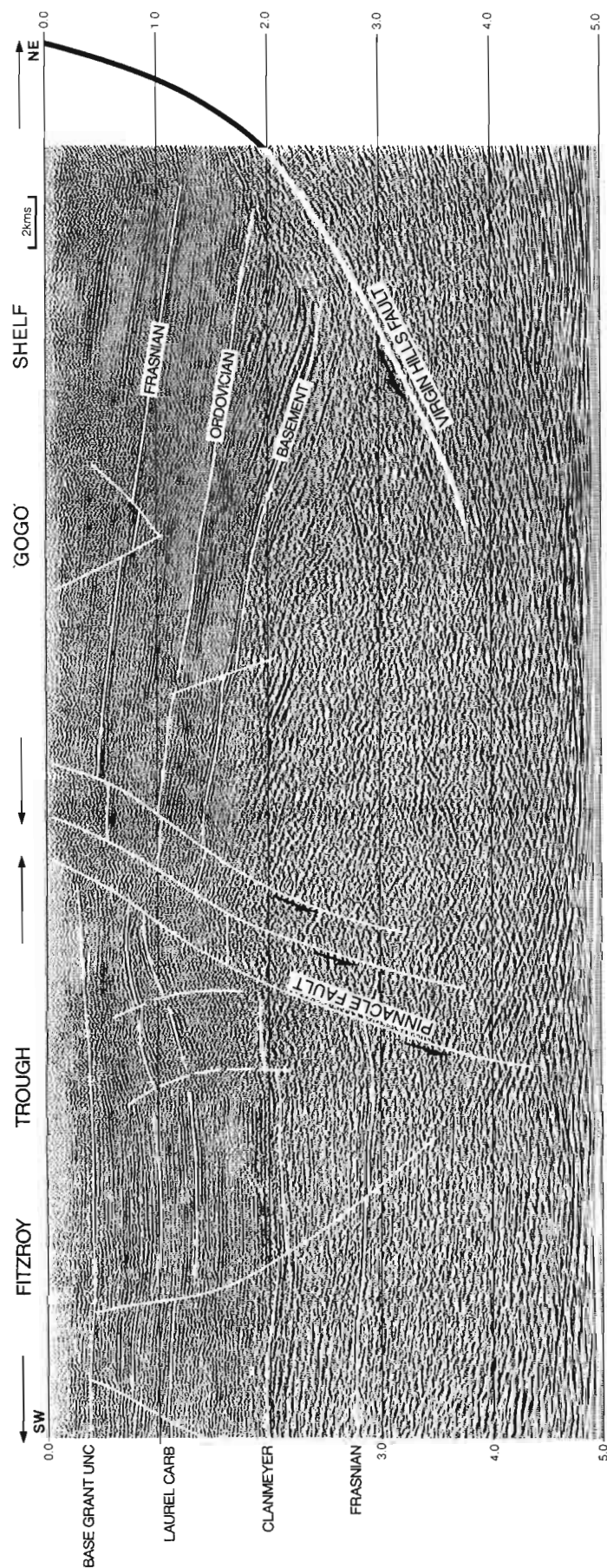


Figure 6. Profile F crossing the "Gogo" Shelf and the Pinnacle Fault zone into the Fitzroy Trough. Basement outcrops upside of Virgin Hills Fault. Source: Dynamite. Fold: 6. Date: 1970. Wapet Line B. (PSSA File 70/718).

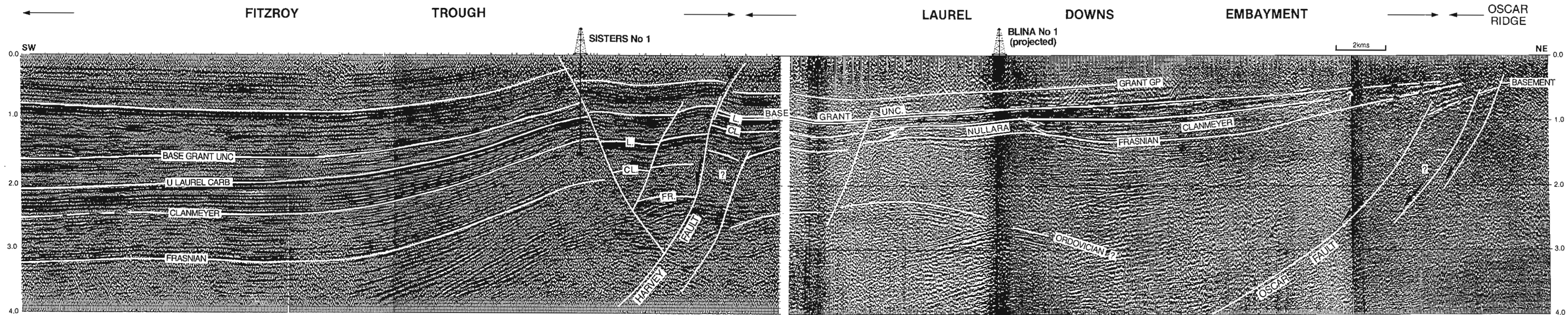


Figure 7. Profile D extending from the Oscar Ridge across the Laurel Downs Embayment into the Fitzroy Trough. The Blina reef complex is shown.
 Left Section—Source: Vibroseis. Fold: 12. Date: 1978. Courtesy of IEDC.
 Right Section—Source: Dynamite. Fold: 6. Date: 1970. Wapet Line AF. (PSSA File 70/765).

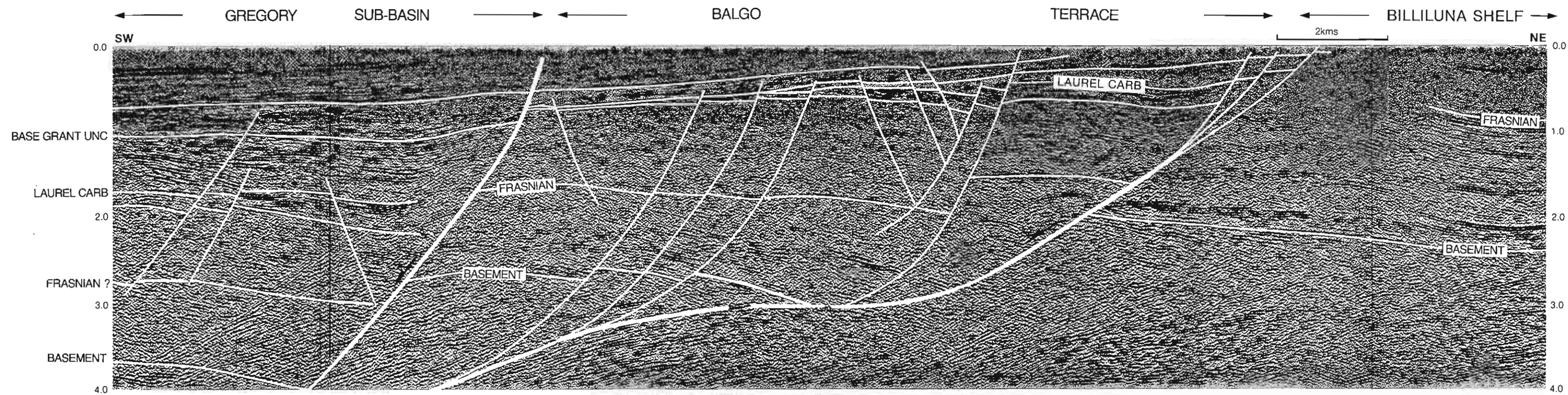


Figure 8. Profile H across the Billiluna Shelf and Balgo Terrace into the Gregory sub-basin. Source: Dynamite. Fold: 24. Date: 1981. Courtesy of Ranger, EP 216.

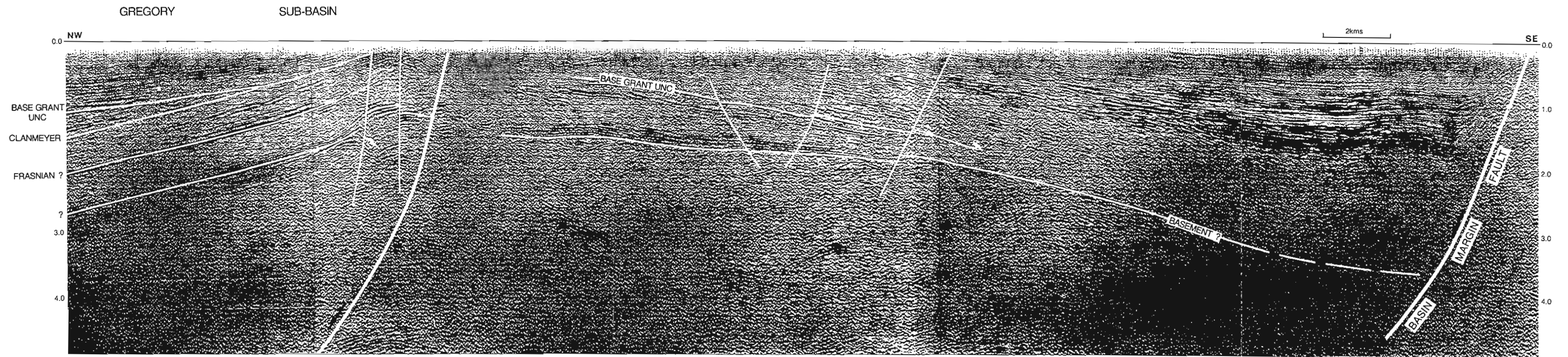


Figure 9. Profile I in the southeast Gregory sub-basin showing mid-basin uplift associated with transcurrent movement.
Source: Vibroseis. Fold: 24. Date: 1982. Mobil Line 82LH-52 (open file).

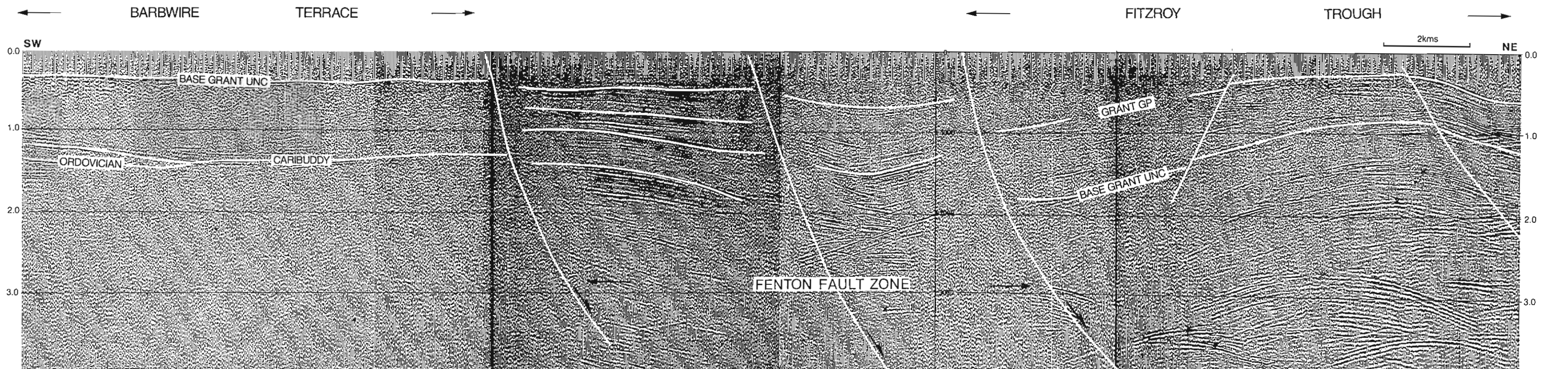


Figure 10. Profile K showing the Fenton Fault Zone separating the Barbwire Terrace and the Fitzroy Trough.
Source: Dynamite. Fold: 6. Date: 1970. Wapet Line Crossland A (PSSA 70/687).

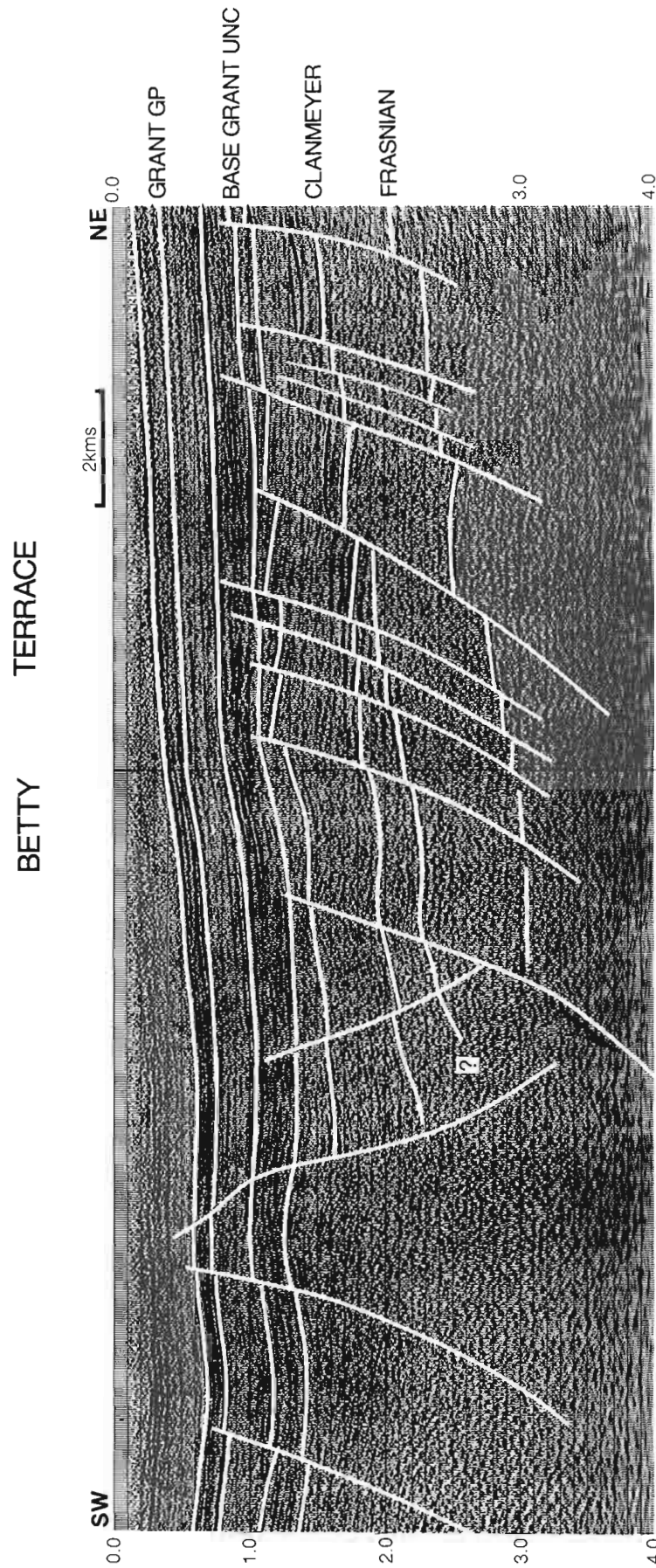


Figure 11. Profile G across the Betty Terrace showing the faulting into the Gregory sub-basin.
Source: Geoflex. Fold: 24. Date: 1981. Courtesy of Sydney Oil, EP 170.

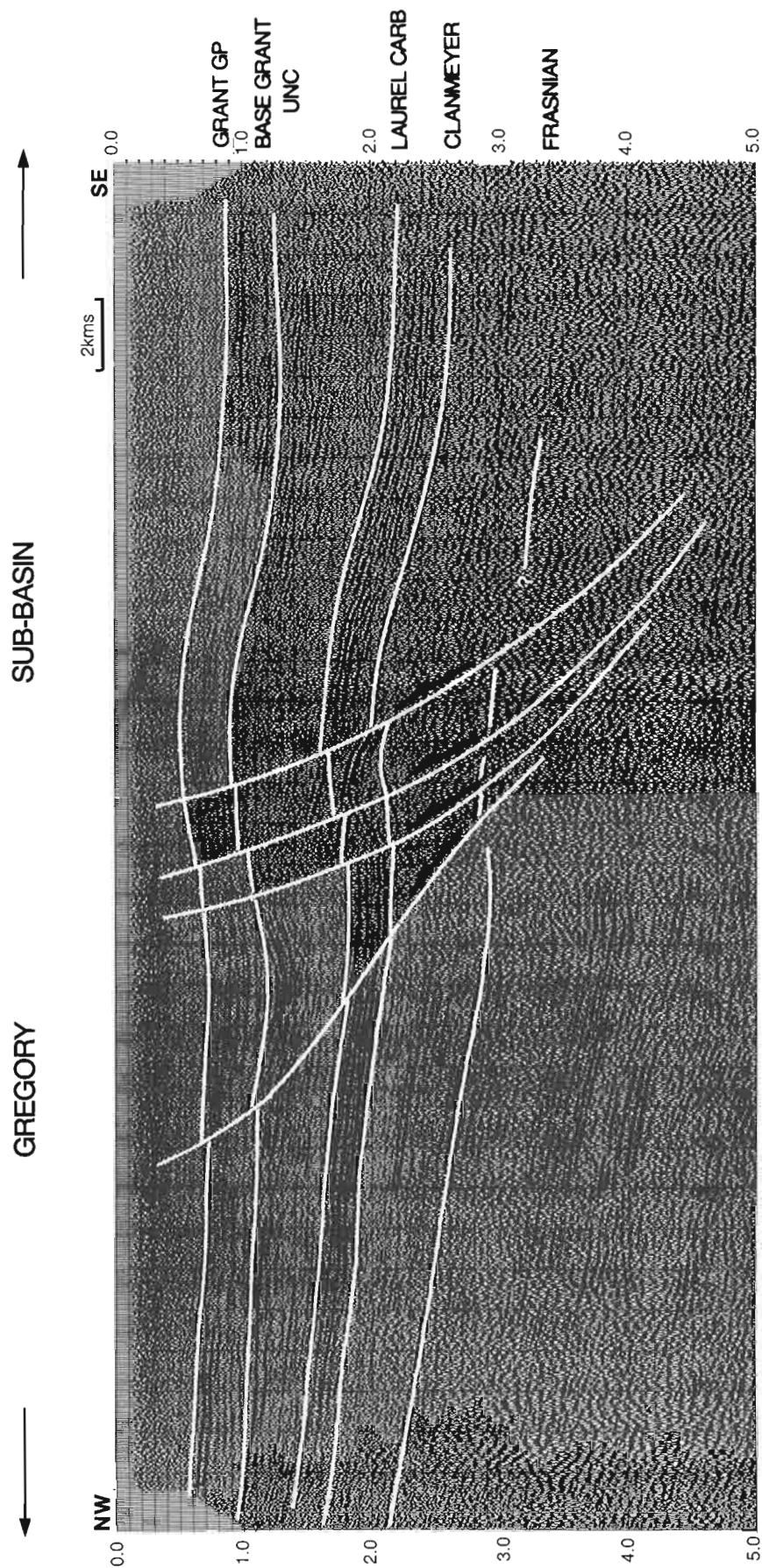


Figure 12. Profile J in Gregory sub-basin showing the compressional White Hills structure.
Source: Vibroseis. Fold: 12. Date: 1980. Mobil Line 80WH-1 (open file).

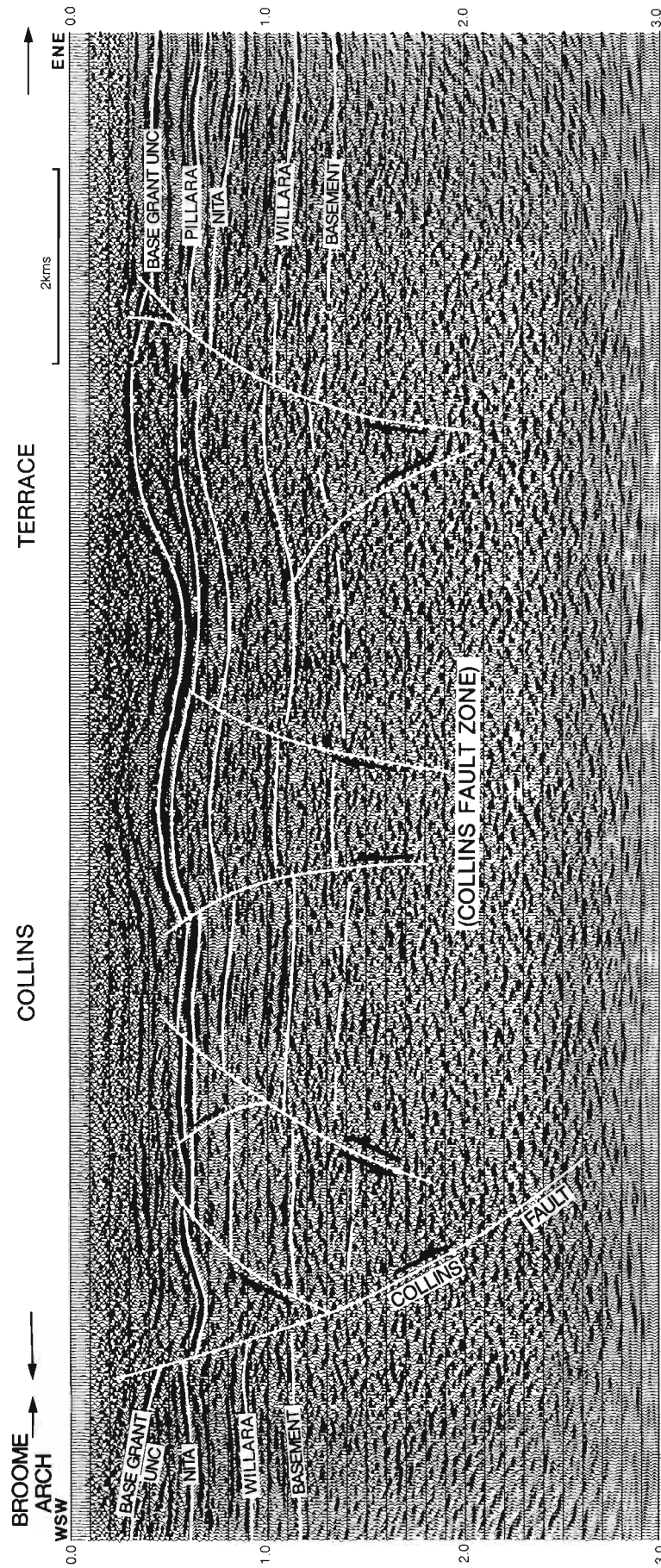


Figure 13. Profile N across the Collins Fault Zone showing the “flower” structures.
Source: Vibroseis, Fold: 24, Date: 1981. Courtesy of Getty, EP 175.

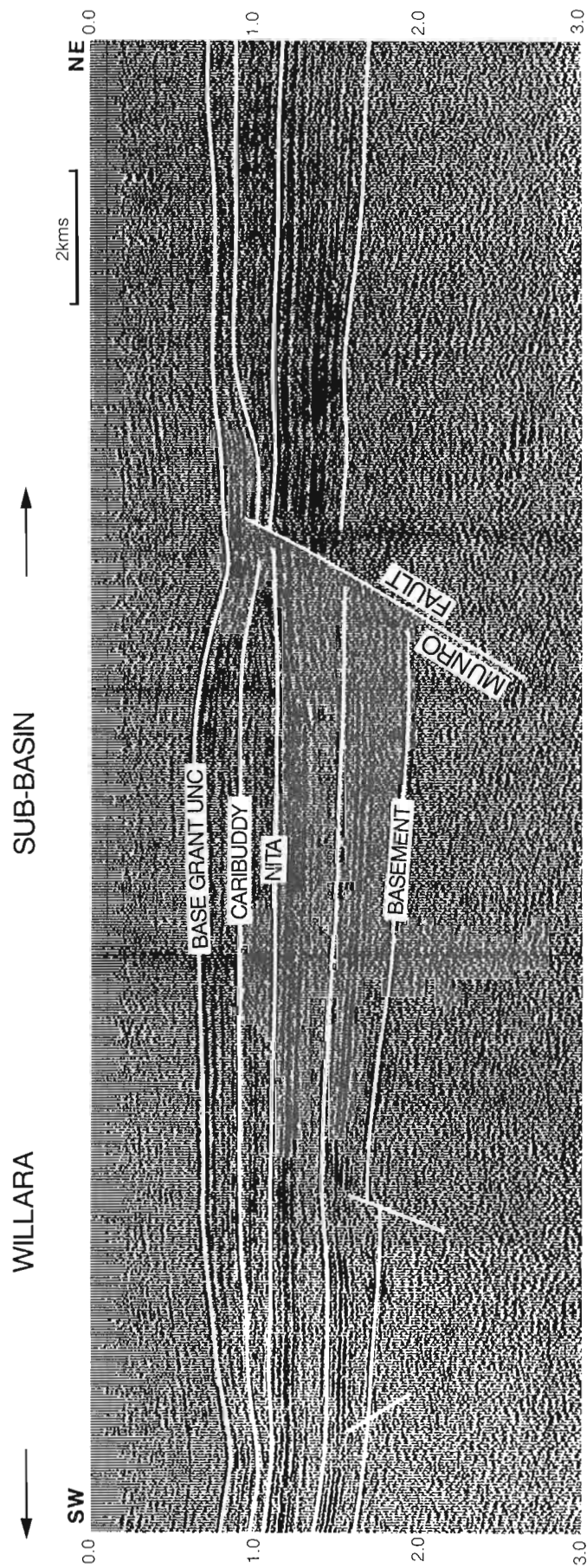


Figure 14: Profile R across the Munro Fault, Willara Sub-basin. Source: Dynamite. Fold: 6. Date: 171. Wapet Line F. PSSA
File 71/478.

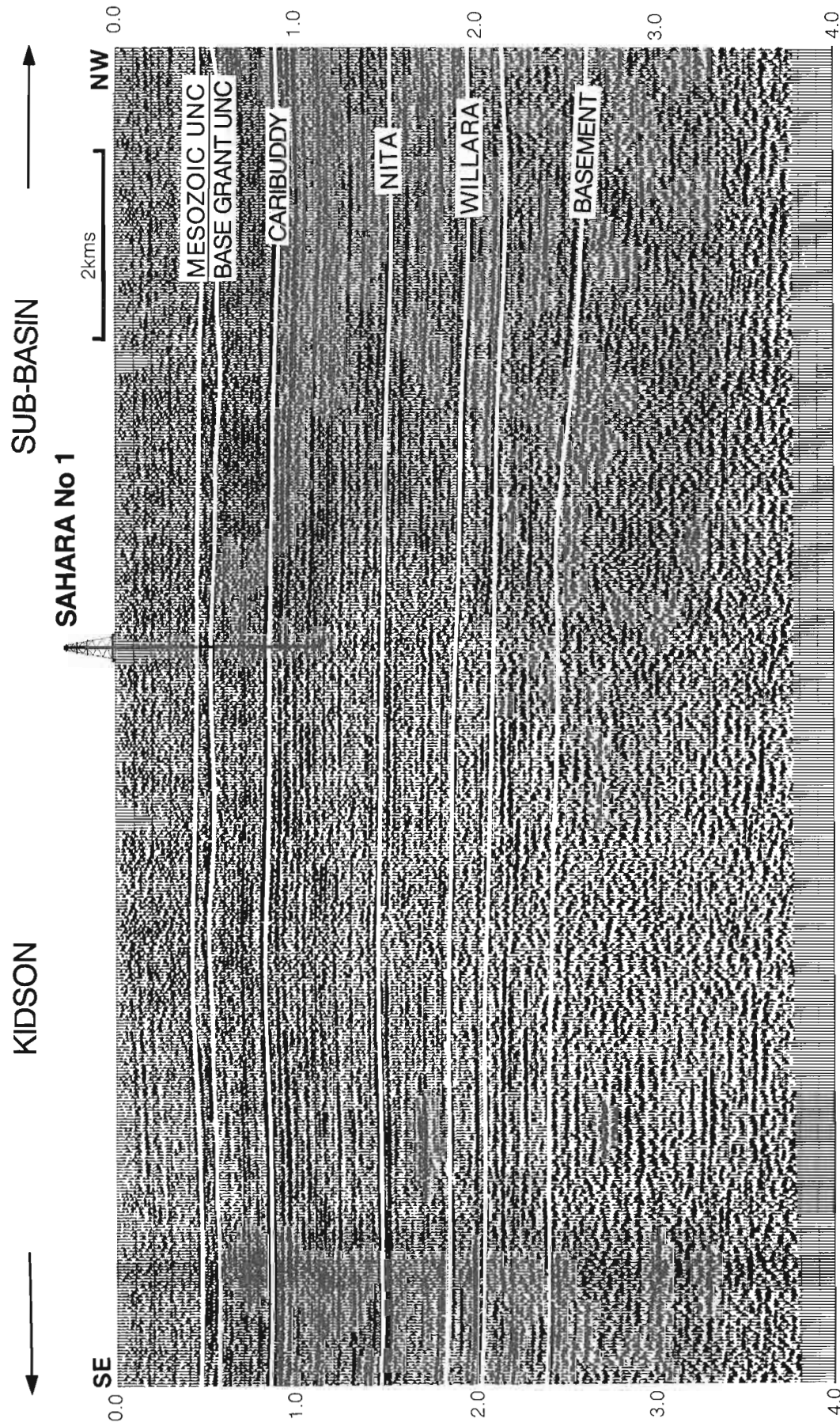


Figure 20: Profile S through the Sahara 1 well, Kidson sub-basin. Source: Dynamite. Fold: 6. Date: 1973. Wapet line 73-1. PSSA File 73/234.

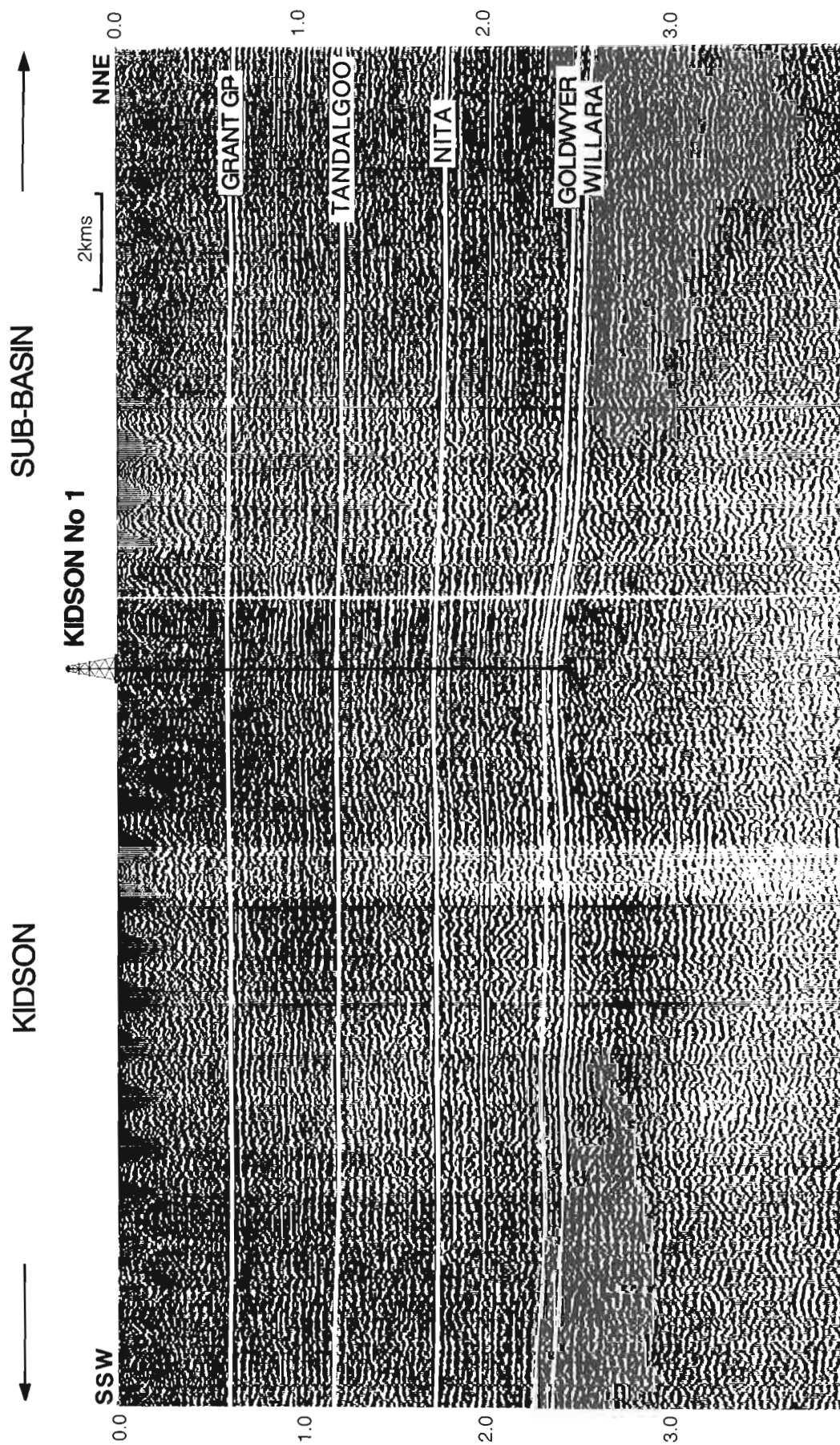


Figure 21: Profile T through Kidson 1, Kidson Sub-basin. Source: Dynamite. Fold: 1. Date: 1965. Wapet Line E. PSSA 65/11014.