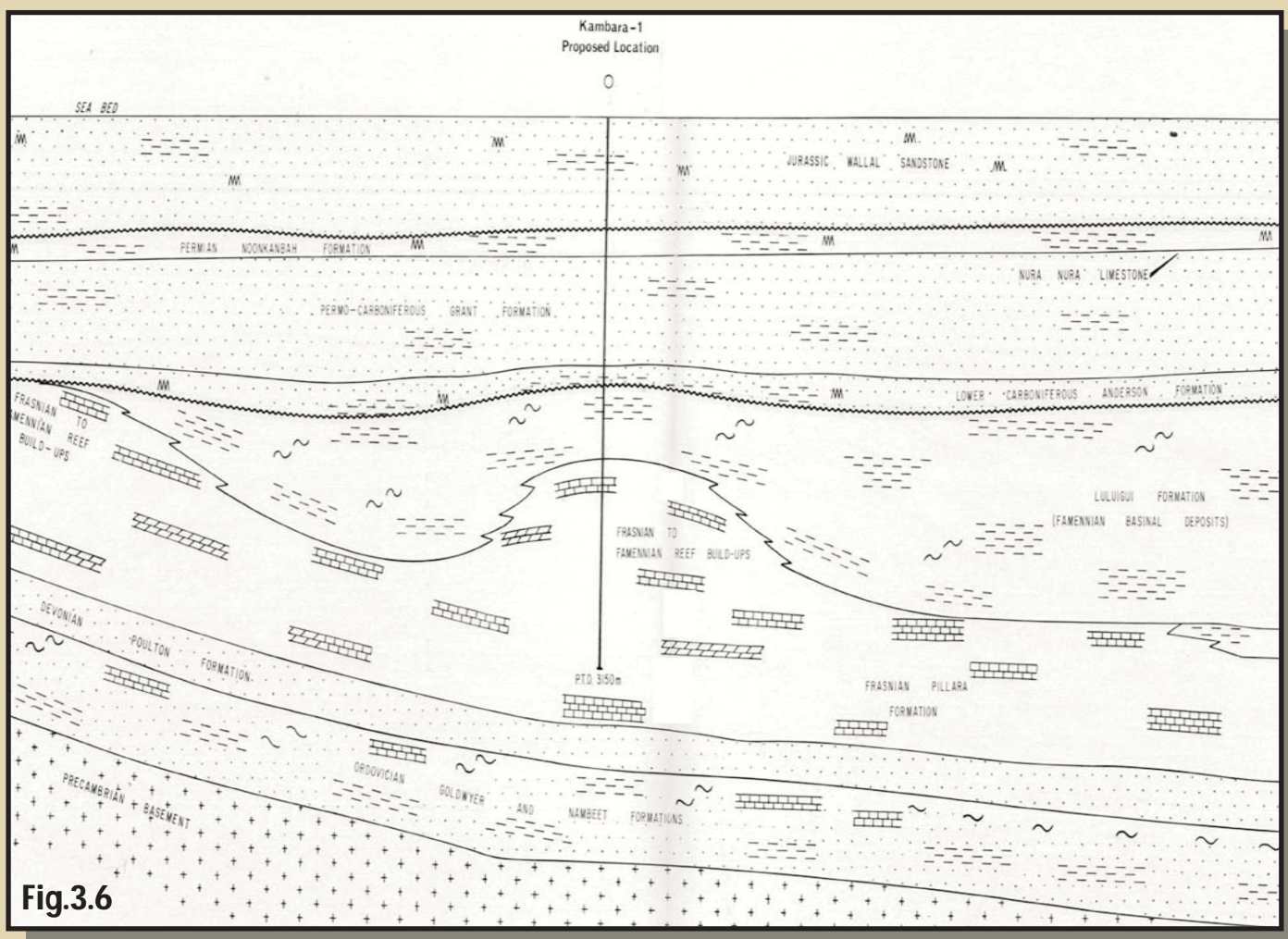
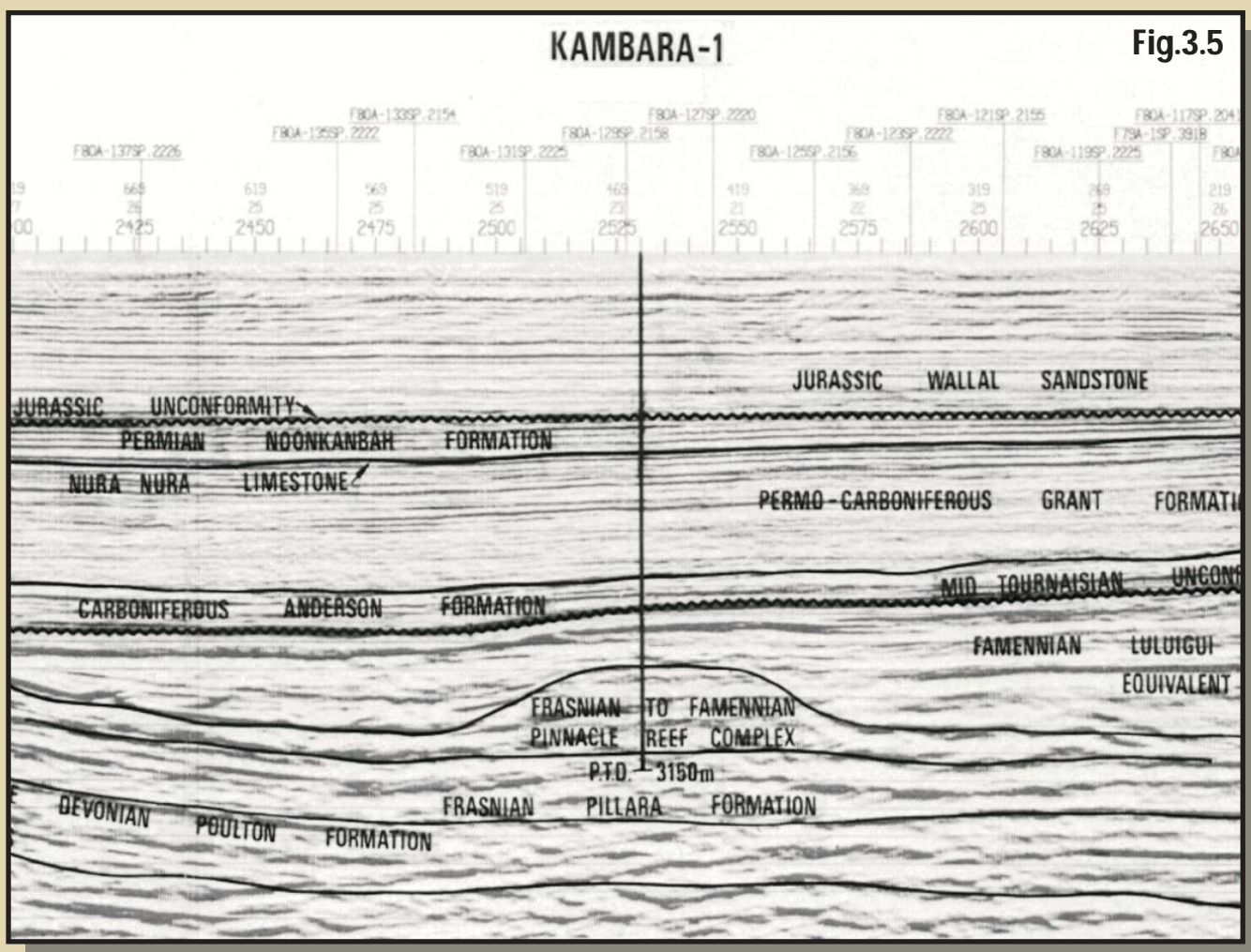
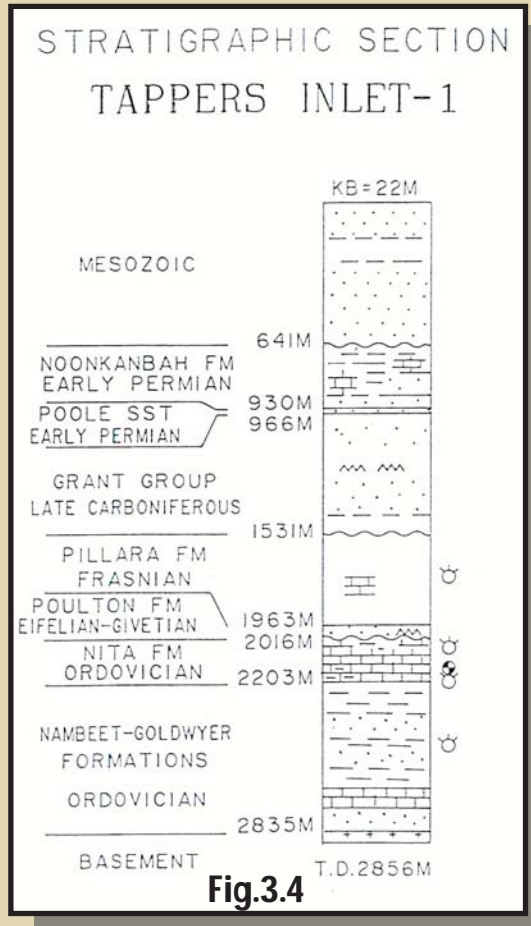
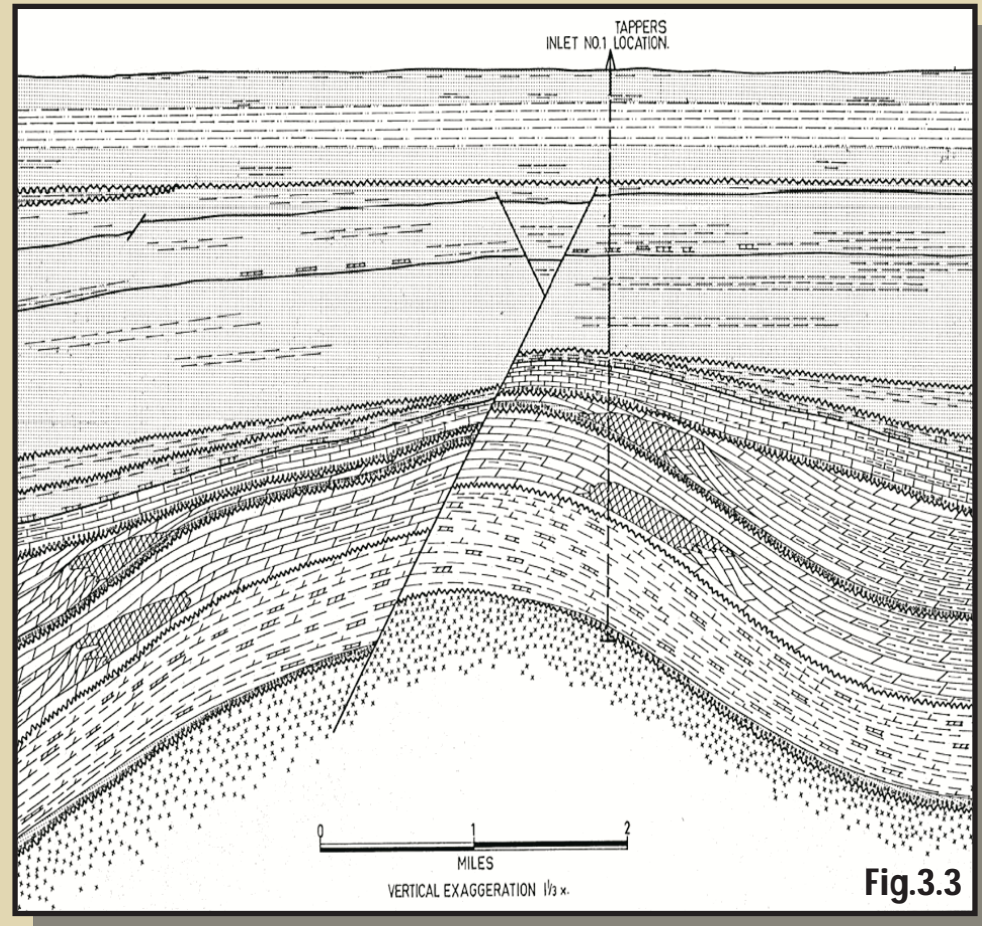
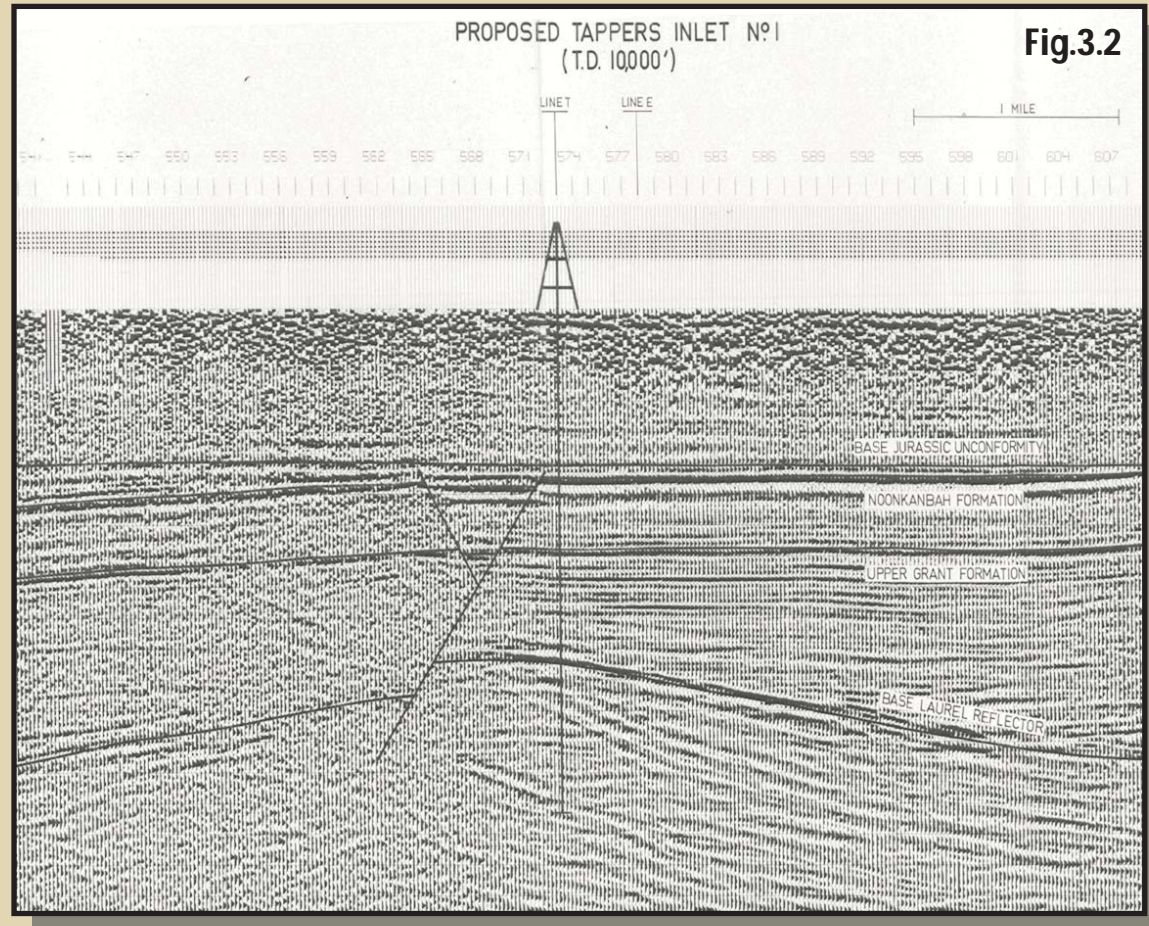
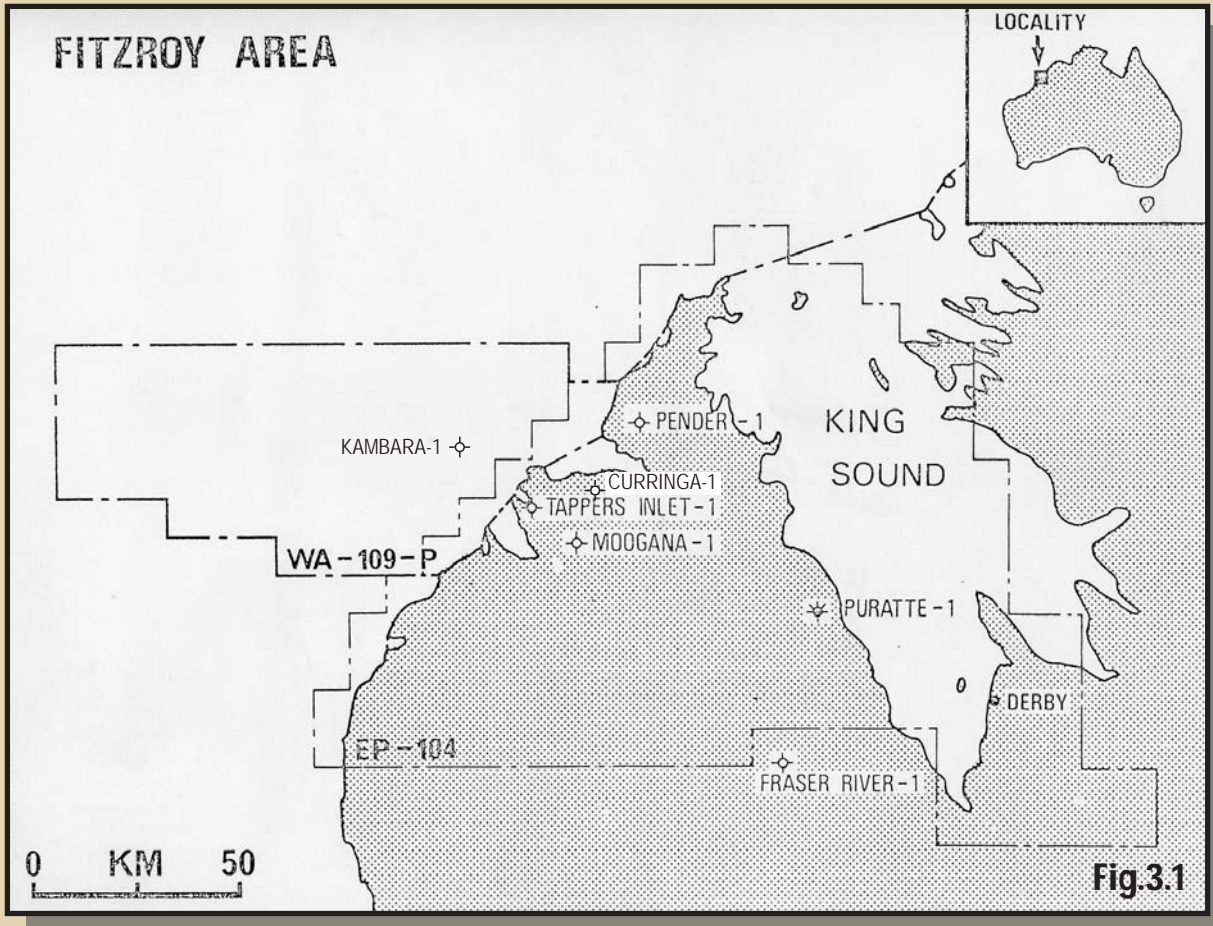


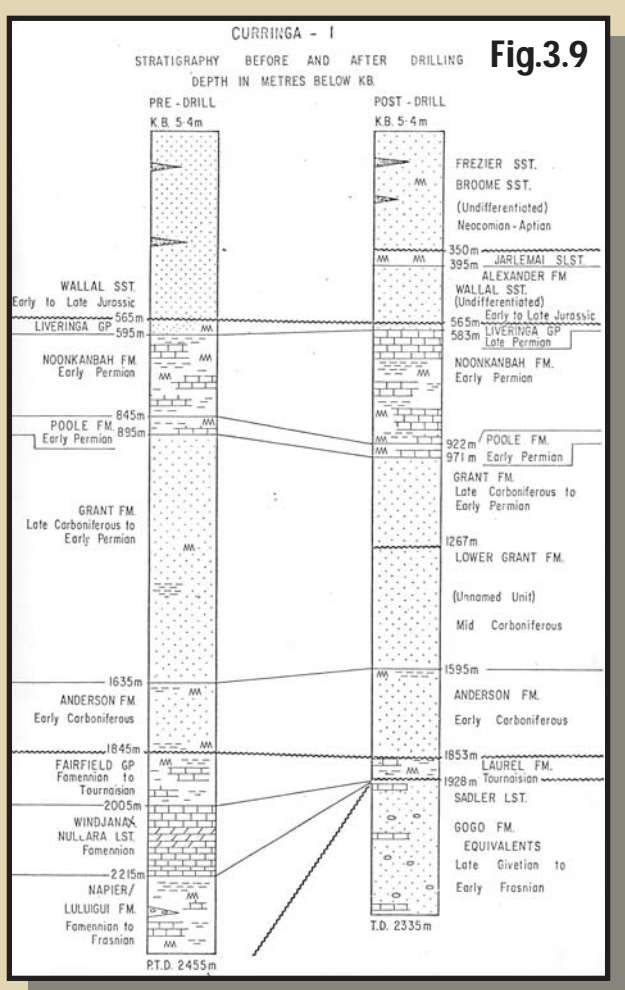
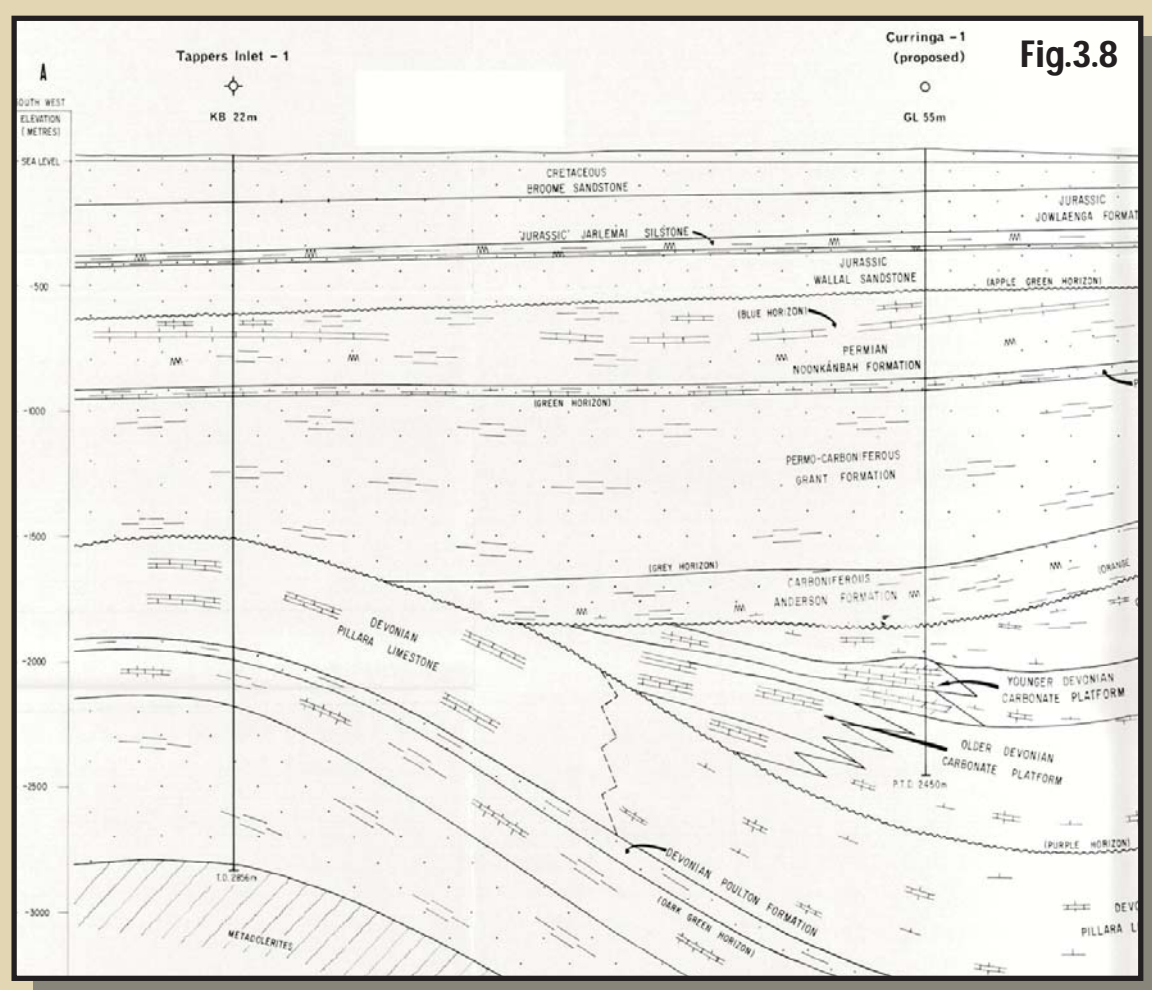
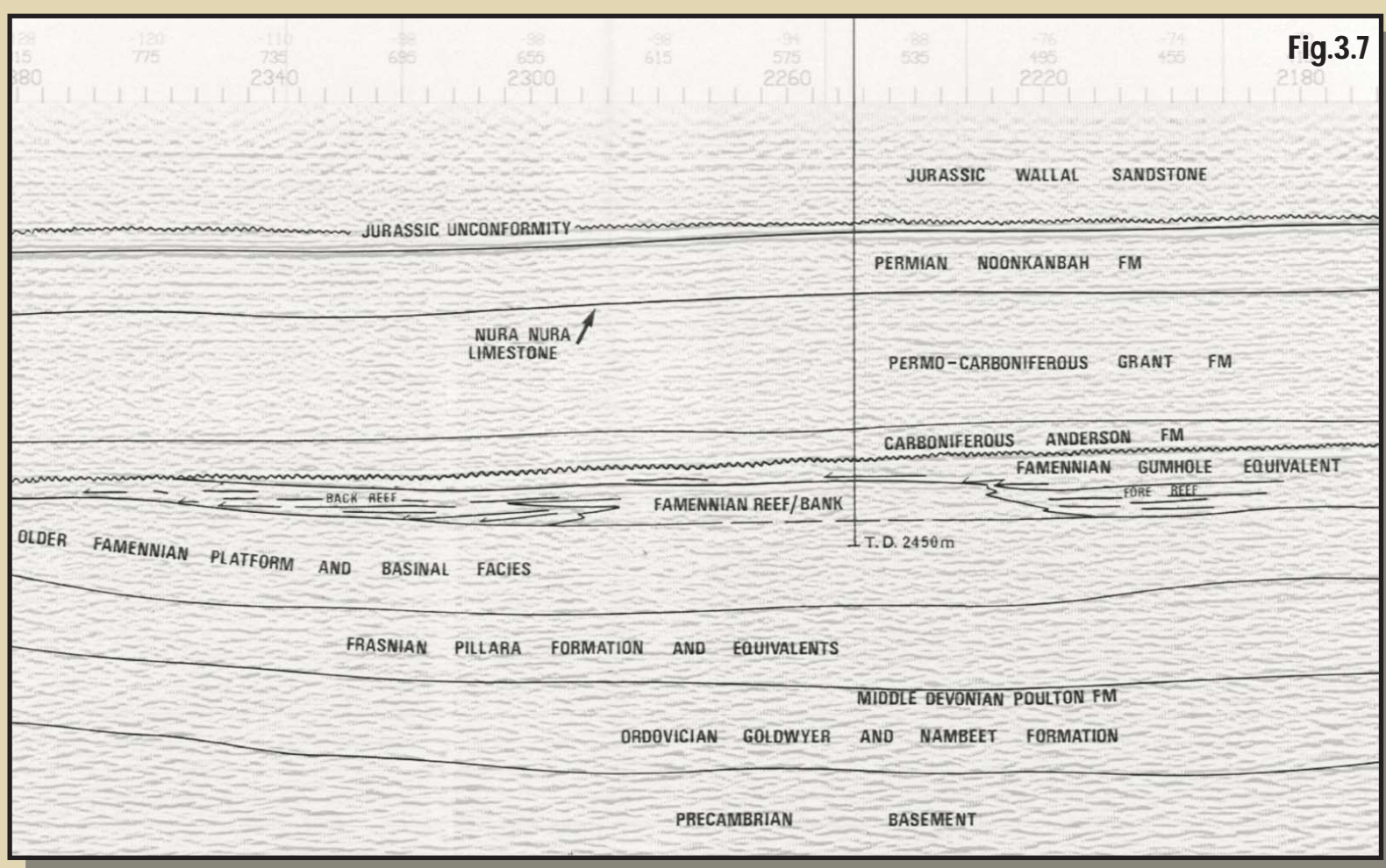
PANEL 3: EXPLORATION ON WESTERN & CENTRAL TERRACES

- The Pender Terrace (Figure 3.1), essentially the western Lennard Shelf, and its offshore extension, have been another favoured area for Devonian reef exploration in the Canning Basin.
- Wapet's Tappers inlet well in 1972 proved the extension of the reef complex into this western area – though the unexpected results might be seen now as an omen of problems to come.
- Figures 3.2 and 3.3 show a Wapet seismic line and interpreted stratigraphic section pre-drill at Tapper's Inlet-1. The well encountered Permian Grant Group unconformably overlying about 530 m of Pillara Fm platform carbonates, in turn overlying Ordovician sequence, as shown on the Figure 3.4.
- Esso's 1978-1980s program had the benefit of better seismic data than WAPET, especially offshore, but most wells still failed to encounter the predicted Devonian section, as illustrated below.
- Santos and Command later explored in this same area but their drilling efforts led to similar frustrating results.

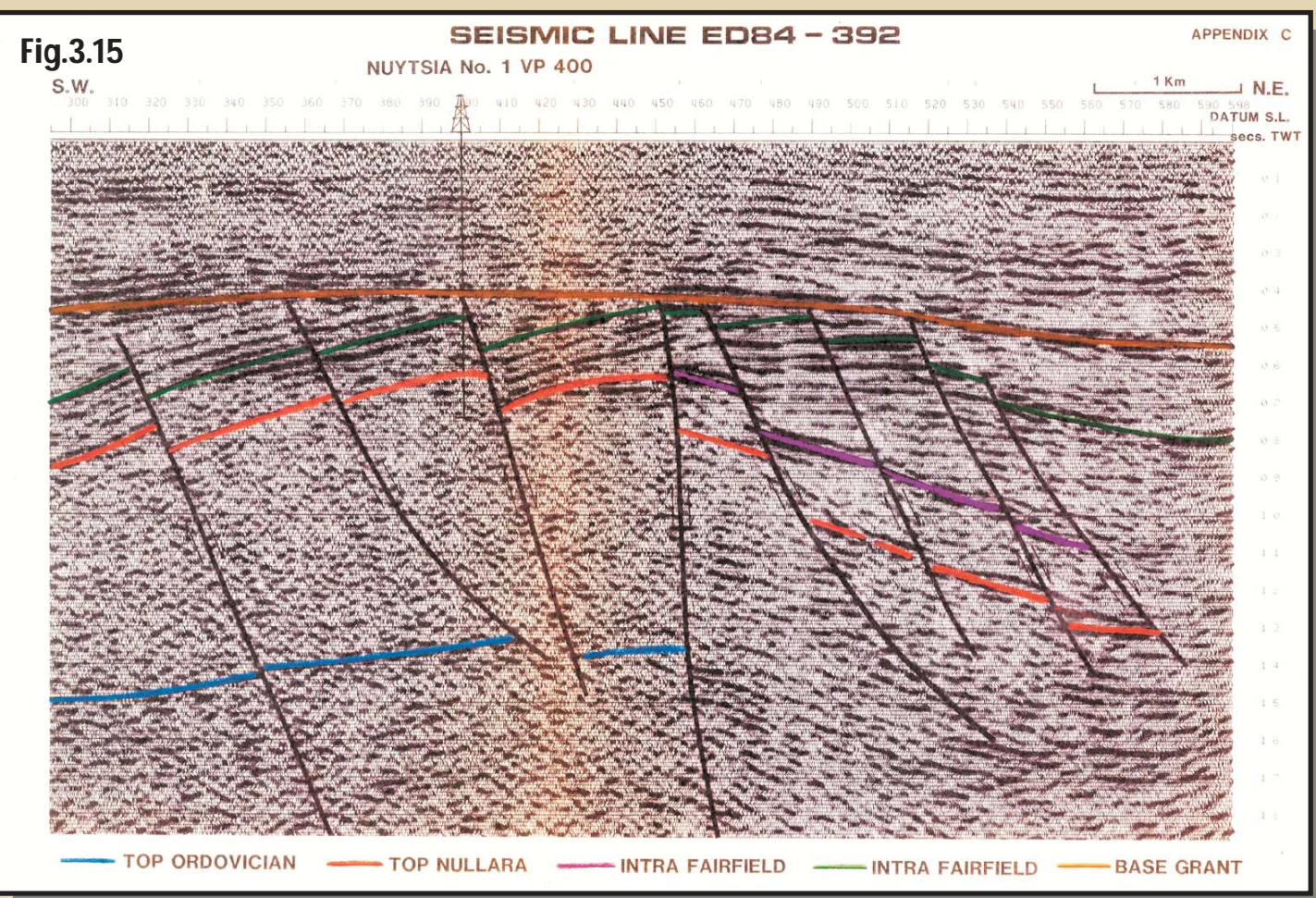
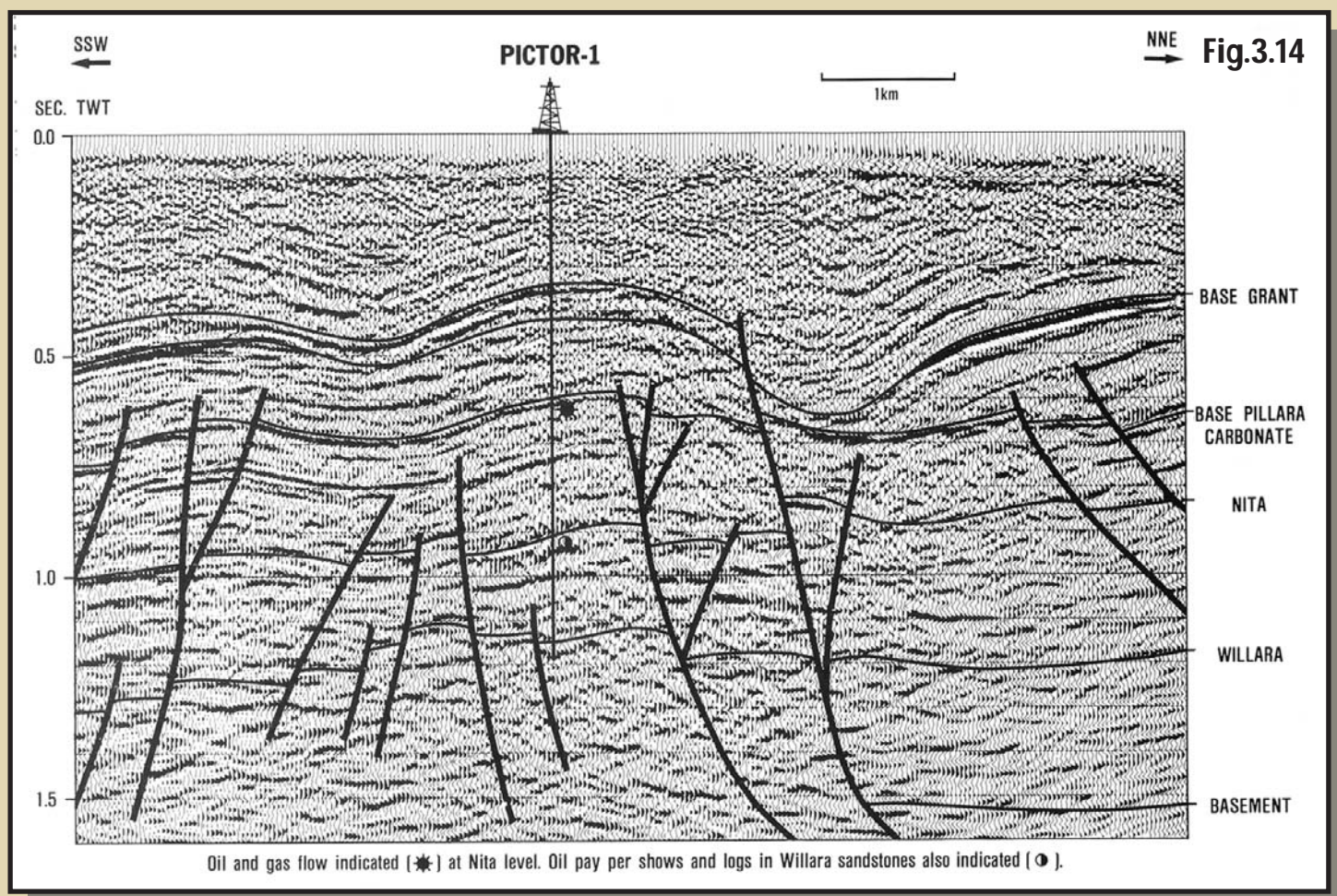
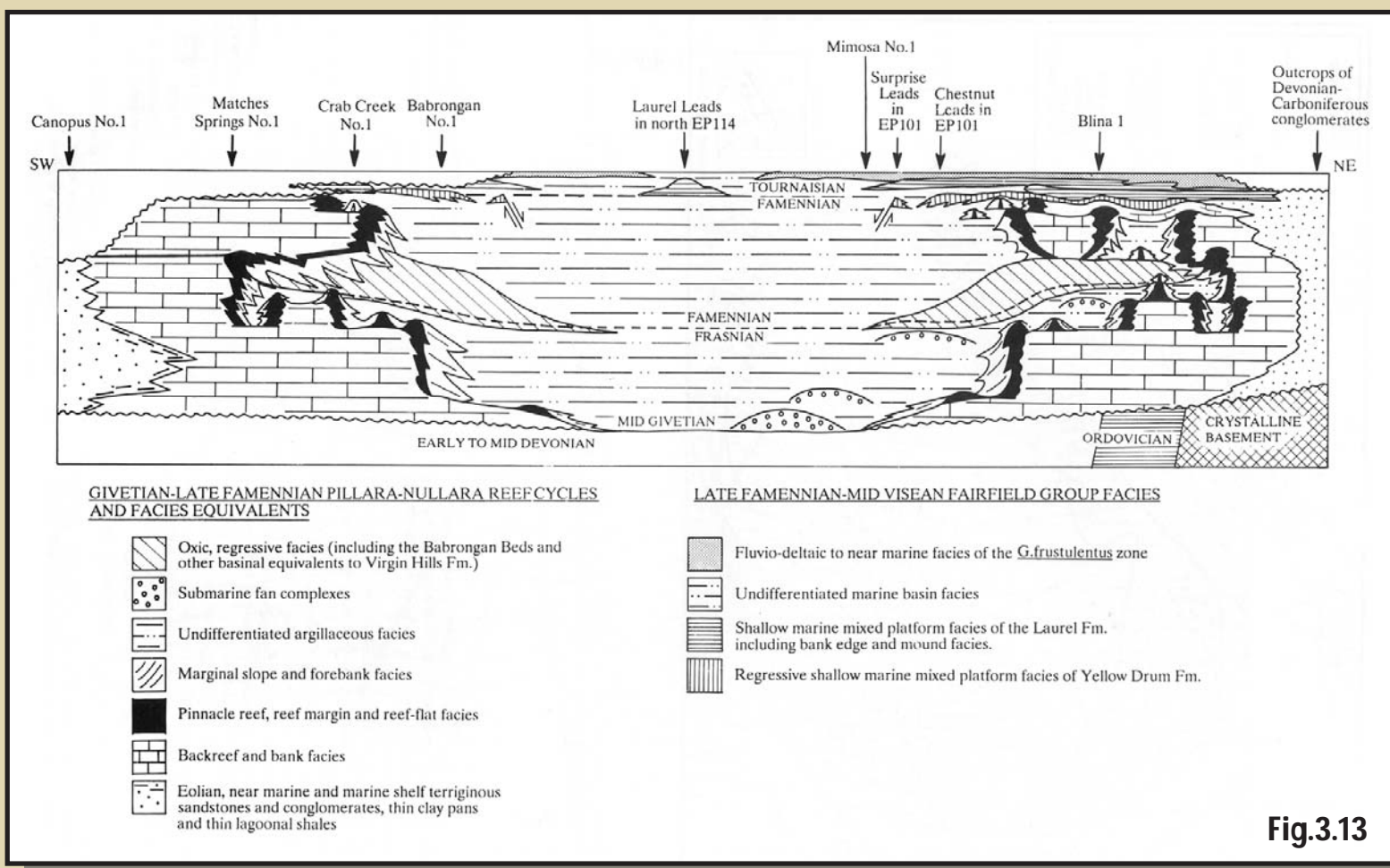
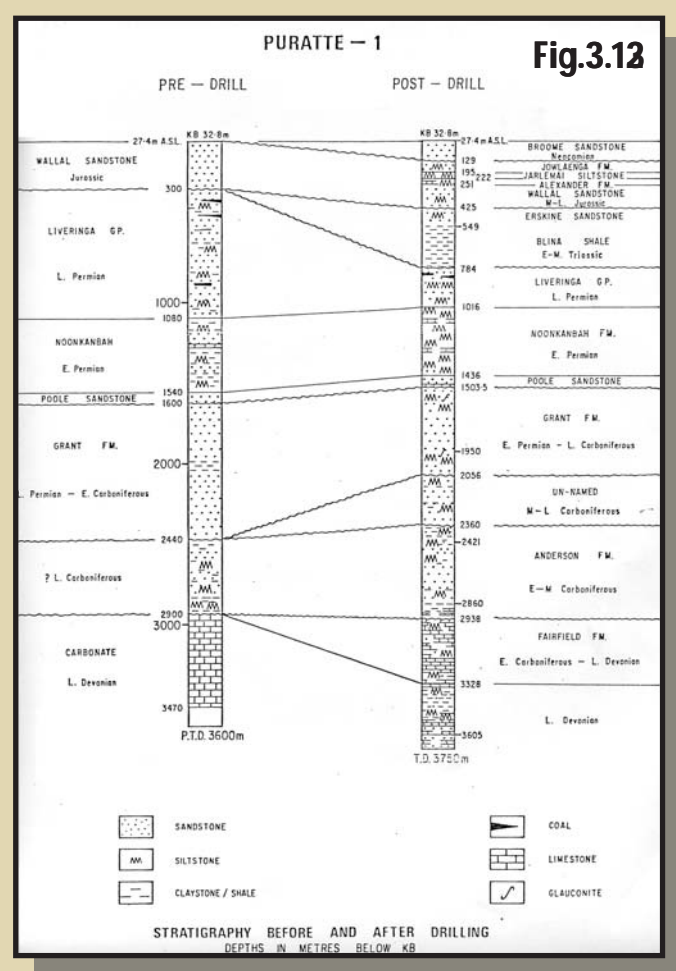
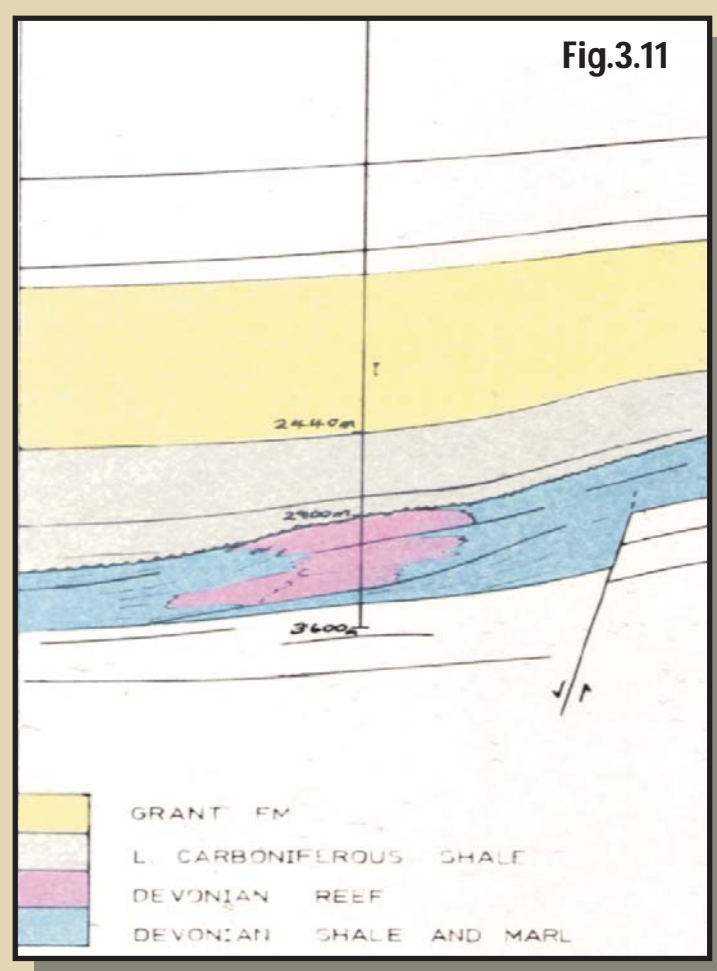
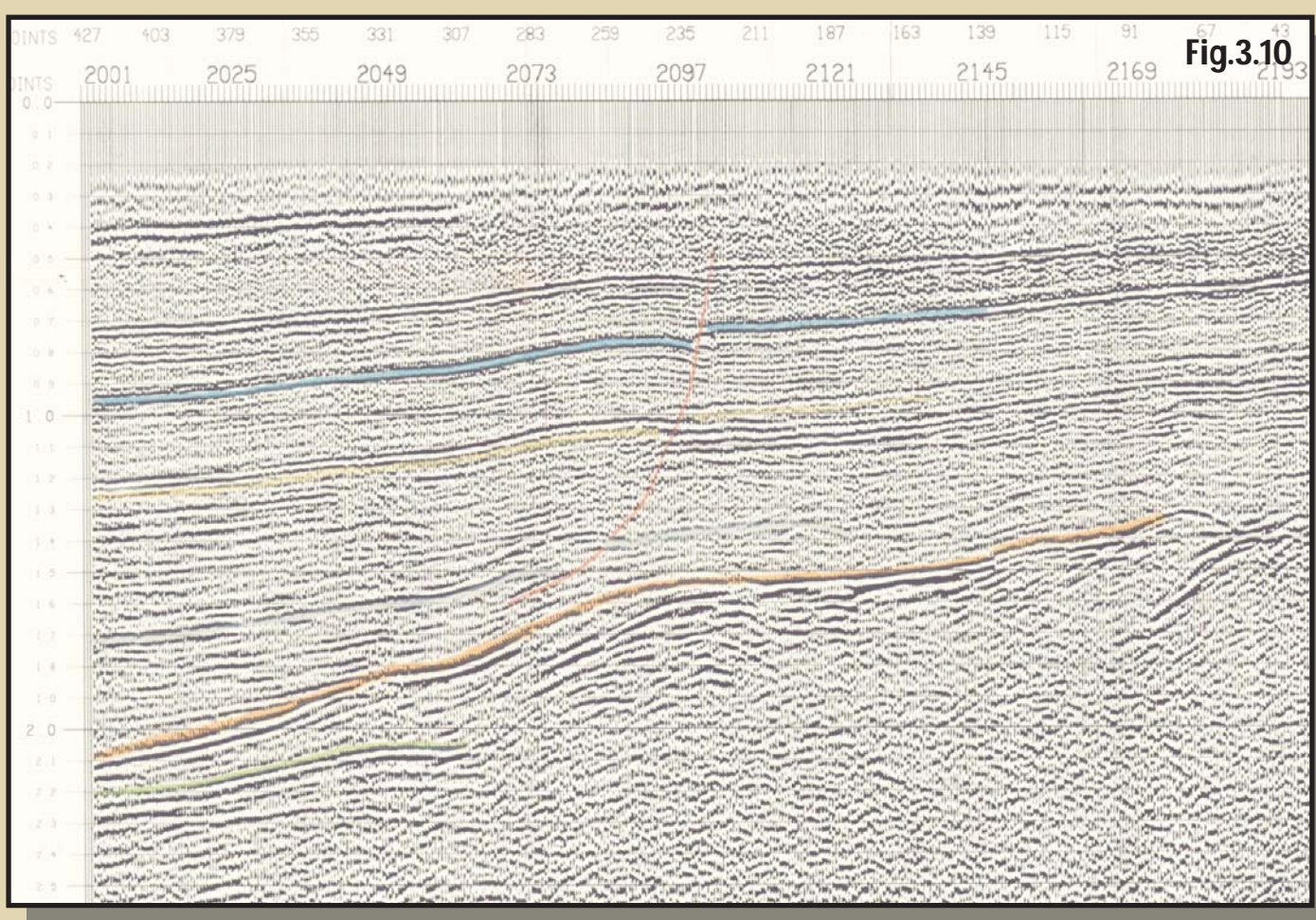


- Kambara was drilled to test an interpreted 'Famennian to Frasnian pinnacle reef which had grown on an older carbonate platform'.
- The 'pinnacle' is well defined by the termination of high frequency seismic events which show onlap and drape.
- Esso preferred a pinnacle reef interpretation but noted that 'the overall scale and geometry was unusual for Canning reefs'.
- Hence they considered the possibility it could be 'a growth feature (reef), an erosional feature or structural, or some combination of all three' (Esso, 1982a).
- Kambara encountered an erosional knoll of Pillara platform limestone, without significant shows or porosity.

- Curringa was drilled to test a 'Famennian reef margin on a carbonate platform built out from the Tappers Inlet High' (Esso Well Proposal)
- No Famennian section was encountered
- Intersected a 'sequence of Givetian to Frasnian clastics with minor interbedded limestone'.
- These sandstone and conglomerates were submarine fan deposits derived from highland basement areas to the north and cutting through the carbonate platform into the basin.

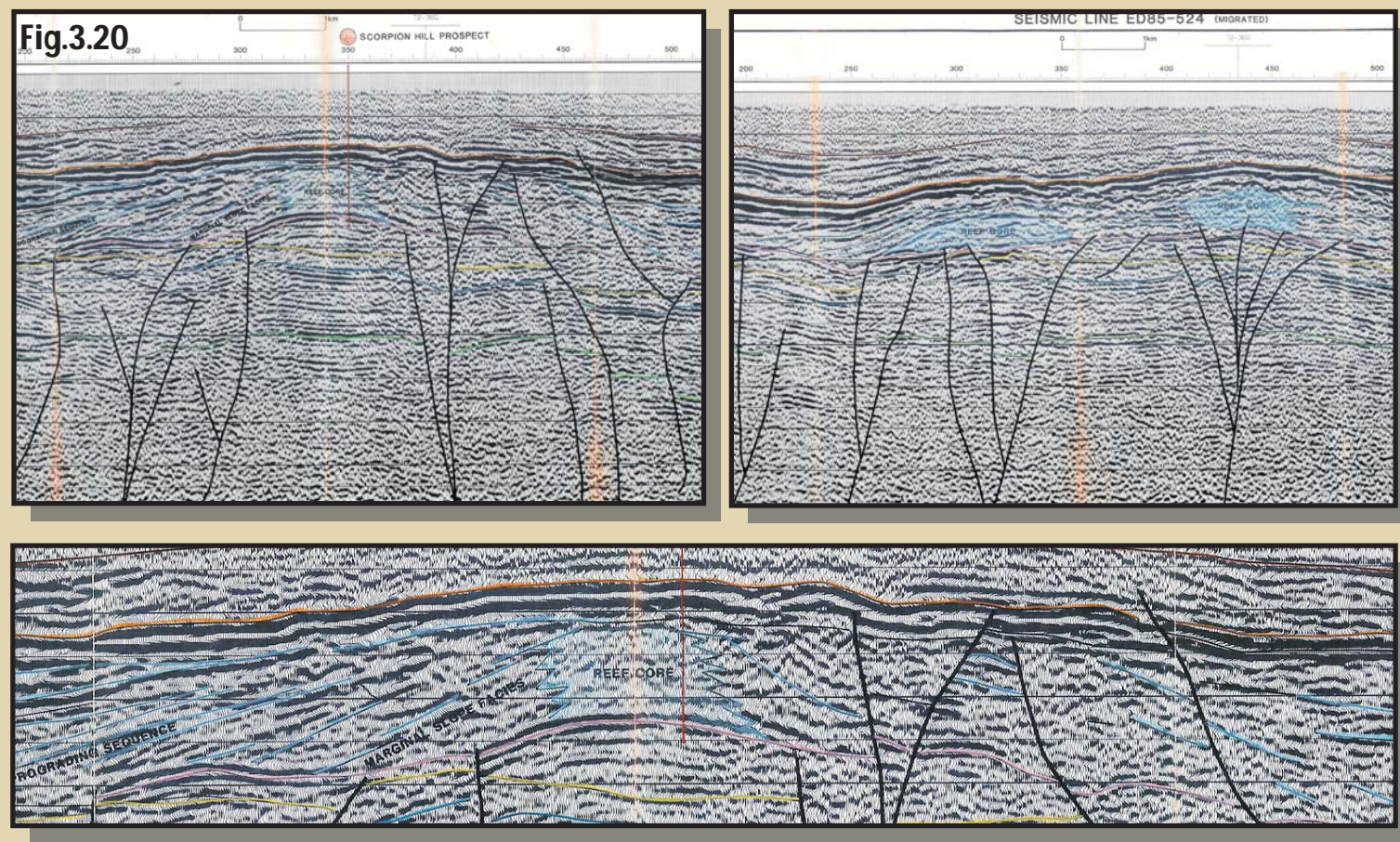
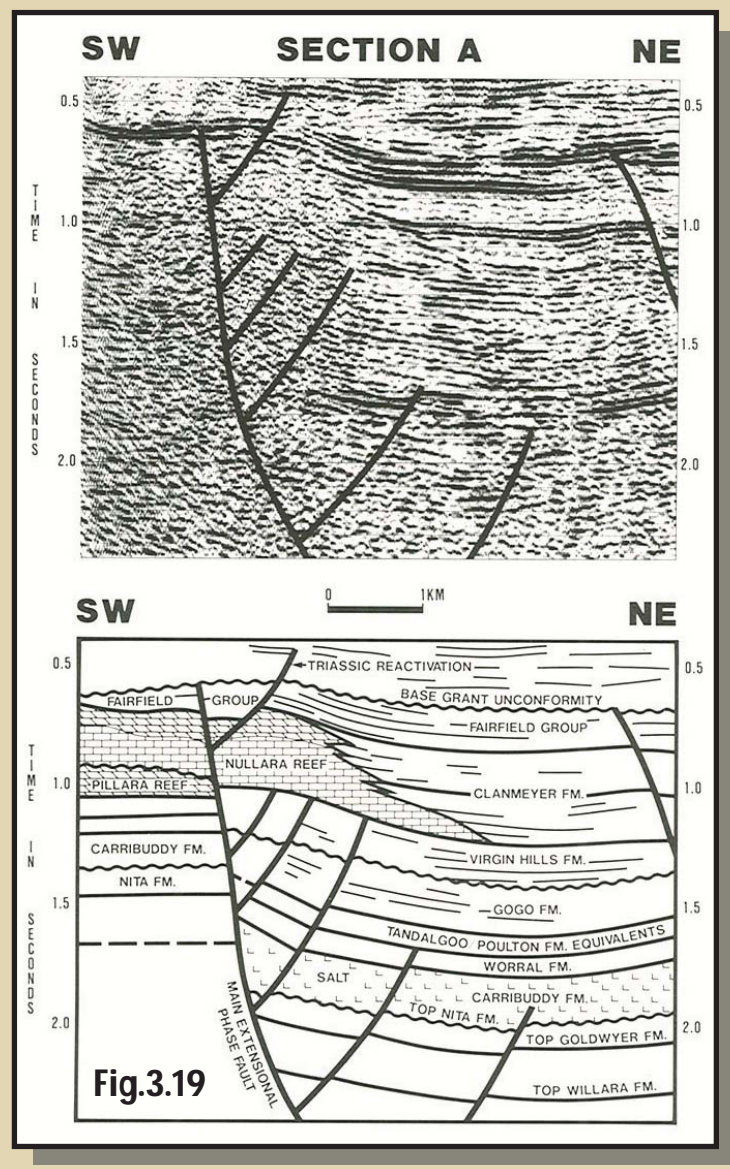
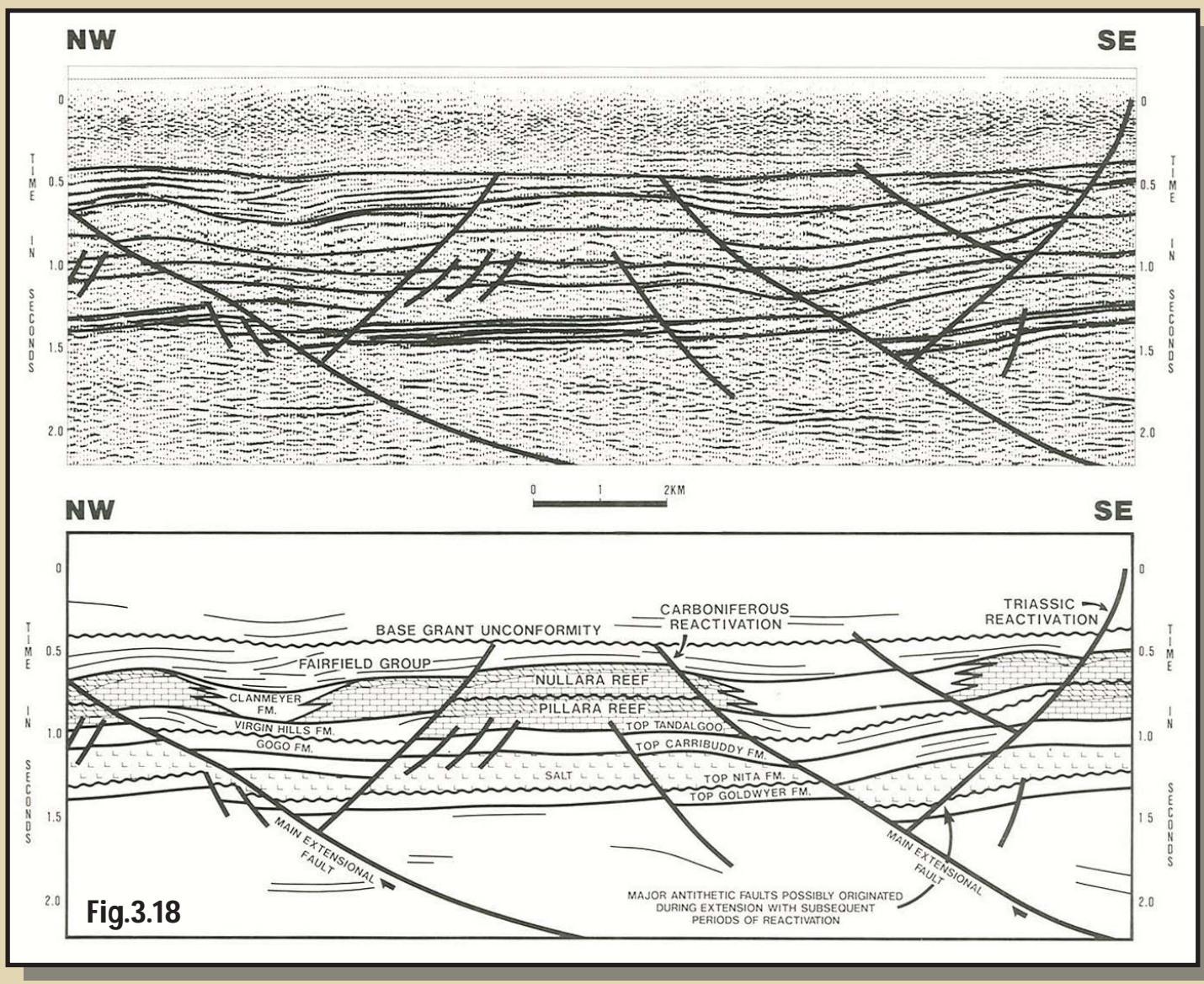
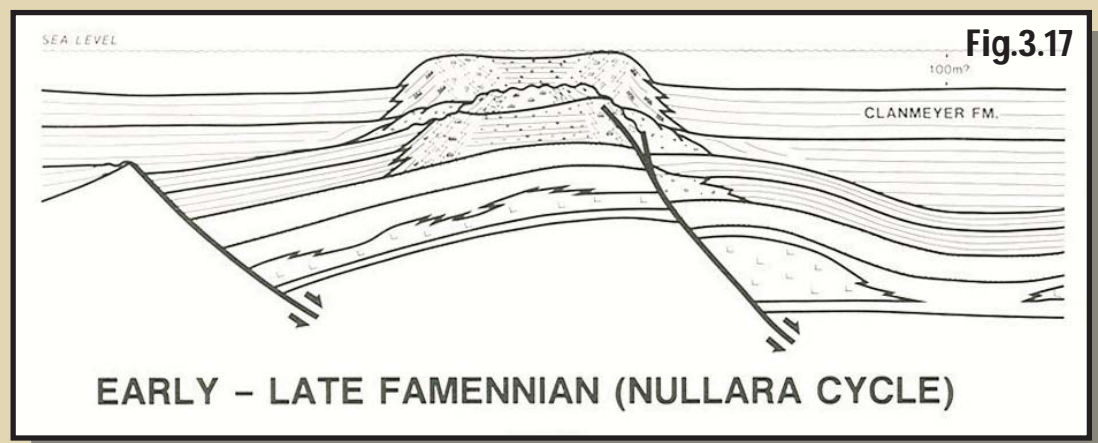
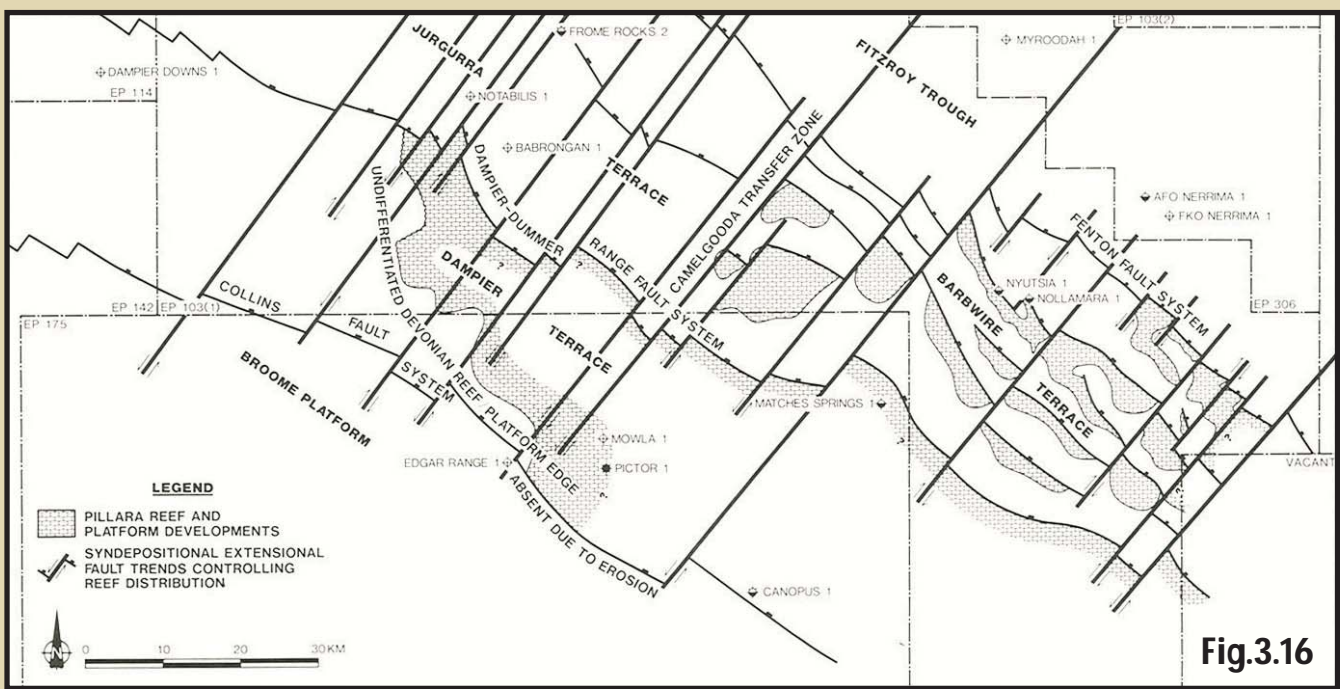


- Puratte-1 was drilled to test 'a pinnacle reef of Late Devonian age, which had developed on an older carbonate platform and grown in front of a major fault, thus being encased in shales'.
- Section encountered was entirely basin carbonates and clastics which had developed mainly as a fan deposit in front of the fault.
- A 45 m thick sandstone bed appears to be the origin of the strong reflector which was misinterpreted as a carbonate platform.

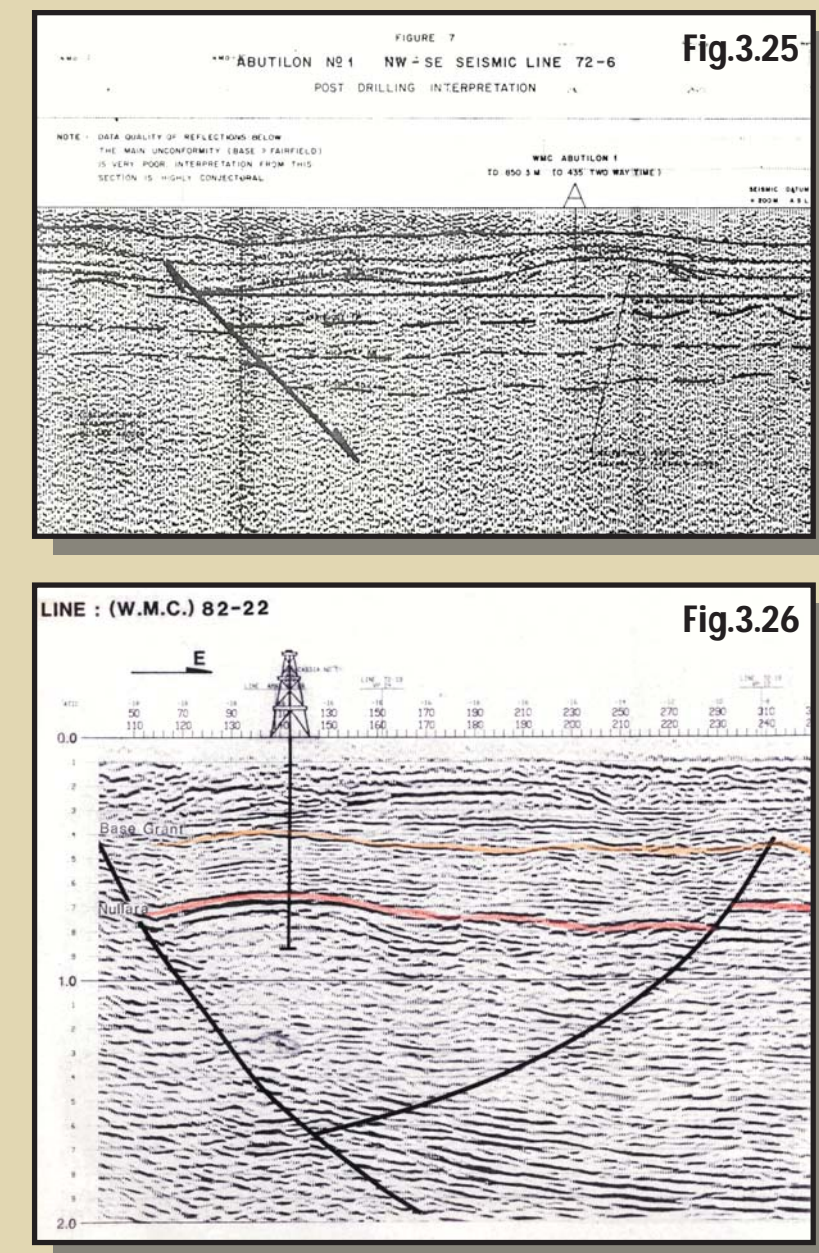
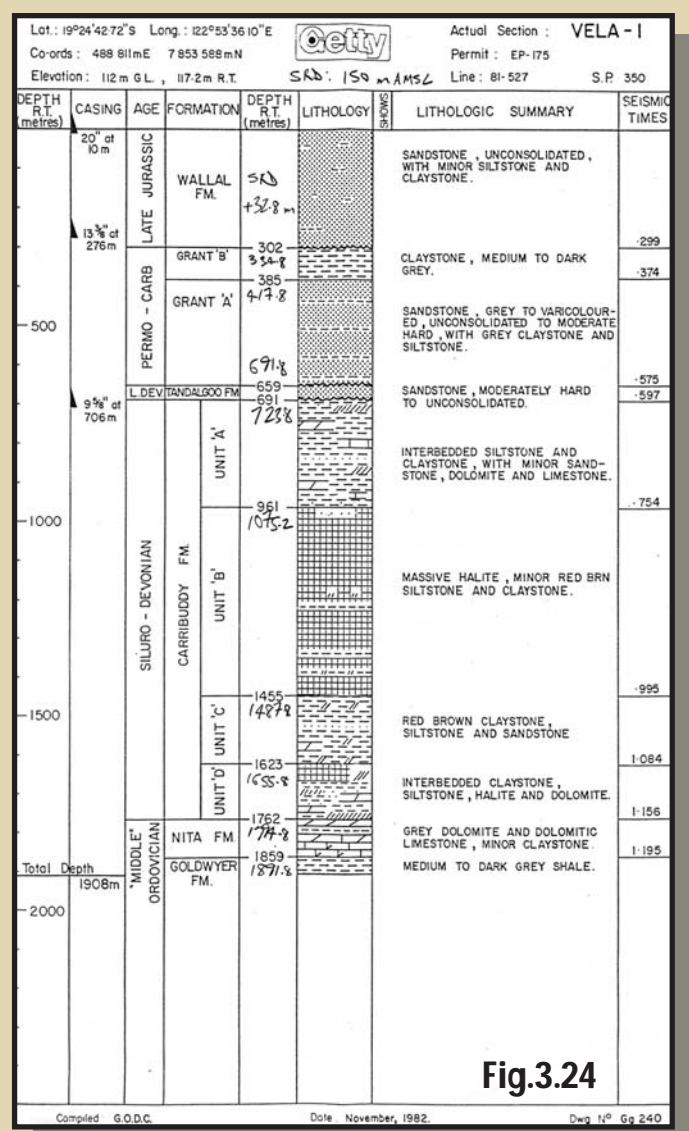
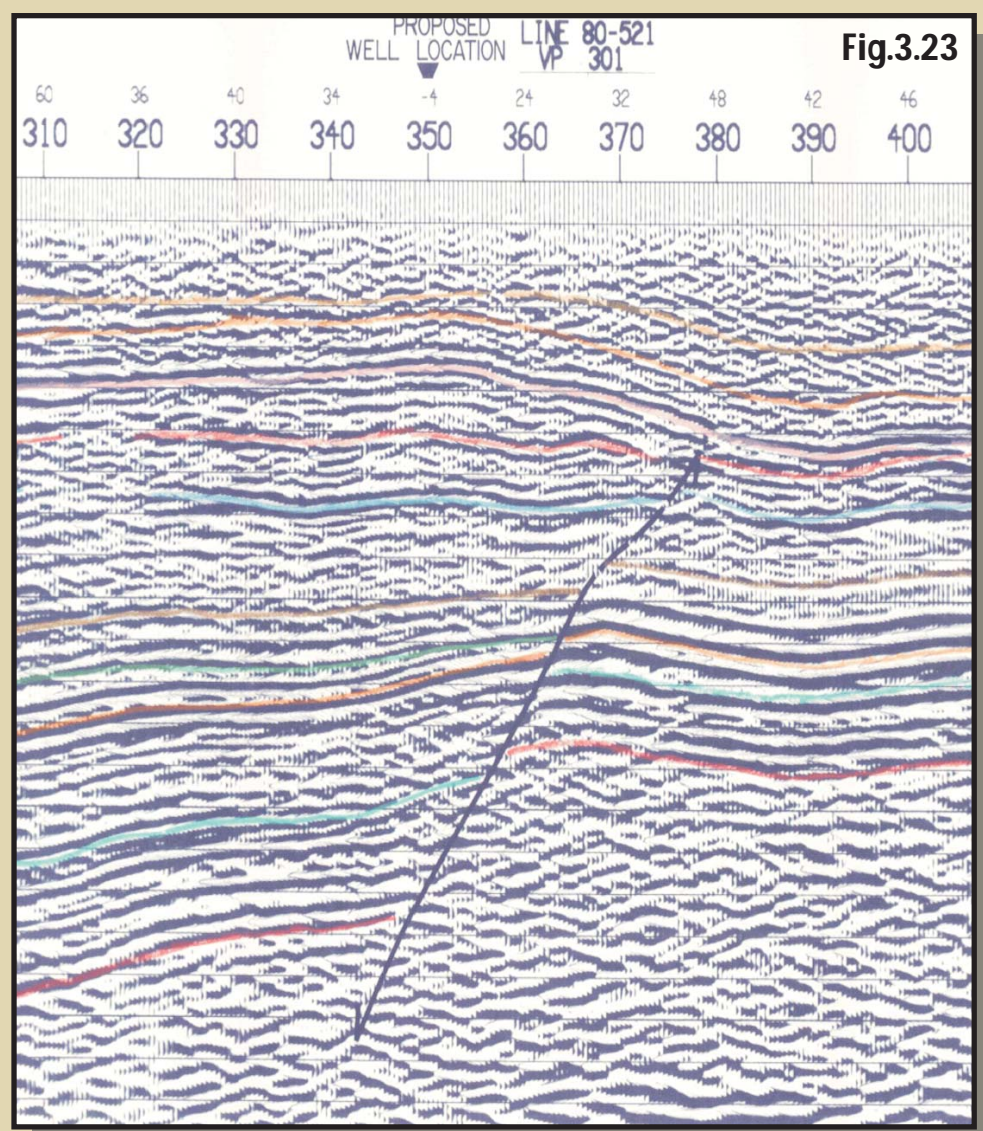
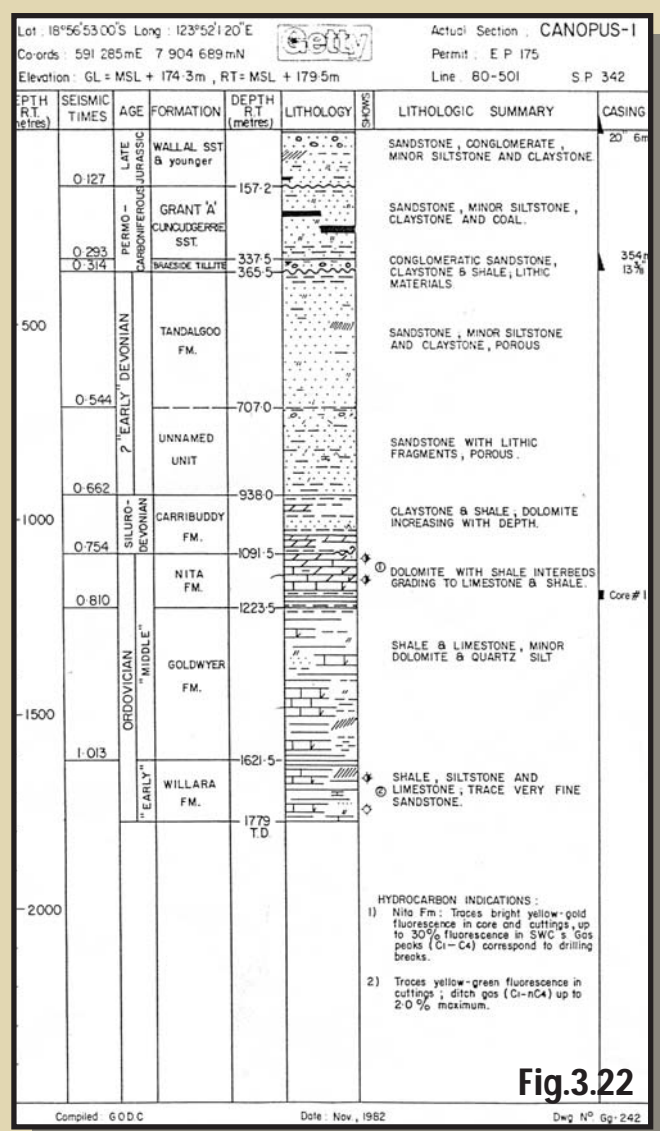
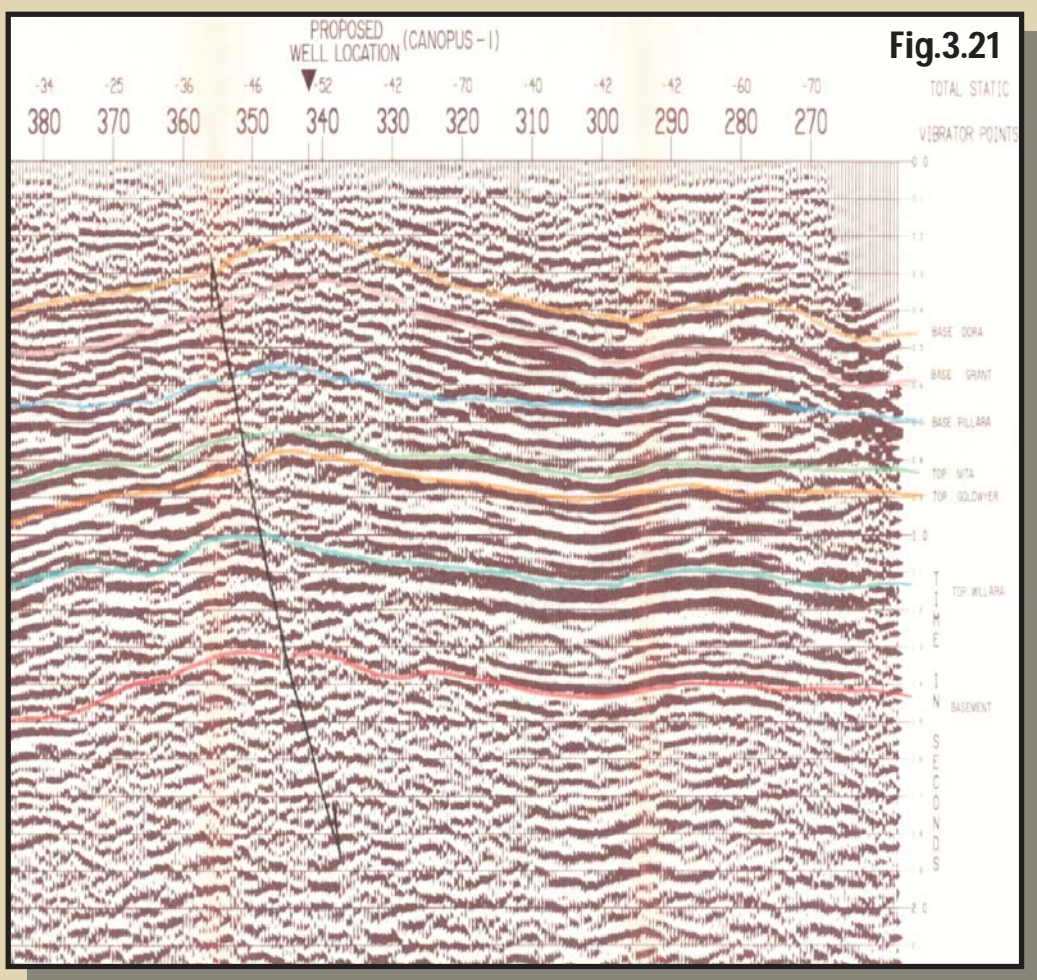


- The Jurgura and Barbwire terraces and the Broome Platform on the southern side of the Fitzroy Trough (Figure 1.2) have also been the focus of exploration and drilling for Devonian objectives over the past 40 years. This work has been more scattered and sporadic than along the northern basin margin, and is summarised only briefly and very selectively on this panel.
- Figure 3.13 is a schematic cross-section of the Givetian-Frasnian basin (Goldstein, 1989) illustrating how this southern area was the setting for a major carbonate basin that is, in general terms, the mirror image of the northern margin of the basin.
- Matches Springs-1 drilled on very poor seismic in the 1960s by Total encountered Famennian and Frasnian back-reef limestones and dolomites, with thick porous intervals. Most play concepts for this area and the wells that tested them have been based on that Matches Springs platform section, or on an interpreted reef front separating the platform from the Fitzroy Trough to the north.
- Getty drilled Pictor-1 in to test a four-way dip closure in Devonian and Ordovician reservoirs in a structure formed by Triassic wrench faulting (Figure 3.14). The well encountered oil shows in the Nita Formation and has been seen as a potential producer by various Australian junior companies. There was no significant porosity or shows in the Devonian Pillara Formation carbonates.
- Kufpec drilled Nuytsia-1 in 1984 to test their Green Springs C Prospect, a small tilted fault block (Figure 3.15) with shallow Nullara Formation carbonate objectives. The well encountered the section as predicted but without significant shows.

- In contrast to those 'platform' plays, Kufpec and Ampolex developed in the mid 1980s a concept of stacked Famennian (Nullara) and Frasnian (Pillara) reefs on rotated fault blocks stepping down into the Fitzroy Trough. The stacked reefs are shown schematically in cross-section on Figure 3.16 and the reefs trends at end Nullara time are shown on Figure 3.17.
- Figure 3.18 shows the geoseismic interpretation from Begg (1987) of stacked Nullara and Pillara reefs. Figure 3.19 shows the geoseismic interpretation of the faulting leading edge of the Nullara reef complex, facing the basinal Fitzroy Trough.
- This play has not been drilled.



- Kufpec also developed reef plays along the Jurgura Terrace in the late 1980s. An interpretation of line 85-523 over their Scorpion Hill Prospect is shown on Figure 3.22.
- This prospect appears not to have been drilled.



- Getty conducted exploration in the 1980s on the eastern Broome Platform, as did Gulf, who drilled the East Crab Creek wells, which they interpreted as a back-stepped reef margin.
- Getty interpreted Pillara reefs on seismic on several structures in the northern area of EP 175. The well prognosis seismic profiles over Vela-1 and Canopus-1 are shown as Figures 3.21 and 3.23 respectively.
- Neither well encountered the interpreted Pillara sequence. The seismic sequence interpreted as Pillara proved in both cases to be the aeolian Tandalgoo Formation sands, as shown on Figures 3.22 and 3.24 respectively.
- Western Mining adopted an innovative stratigraphic drilling program that took exploring 'shapes' to a new level. Reflective of their mineral company psyche, and recognizing the poor seismic and unknown stratigraphy on the central Barbwire terrace, WMC used a modified mineral coring rig to drill numerous shallow seismic anomalies on the old Wapet seismic and later on their own new surveys.
- Two of the anomalies drilled, Abutlon-1 and Cassia-1, are shown as Figures 3.25 and 3.26 respectively.
- Abutlon encountered a Pillara reef mound; Cassia drilled a Famennian platform sequence, considered to be close to the reef margin facing the Fitzroy Trough.
- This brief comment does not do justice to the WMC program and the thorough approach to exploration it involved.