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**Final Report** - MACQUARE HARBOUR.  
**E.L. 5/75 - Tasmania**

**CSA&FE Region**  
**April, 1983**

1861-83

Amoco Australia Petroleum Company

## EXPLORATION LICENSE 5/75 FINAL REPORT

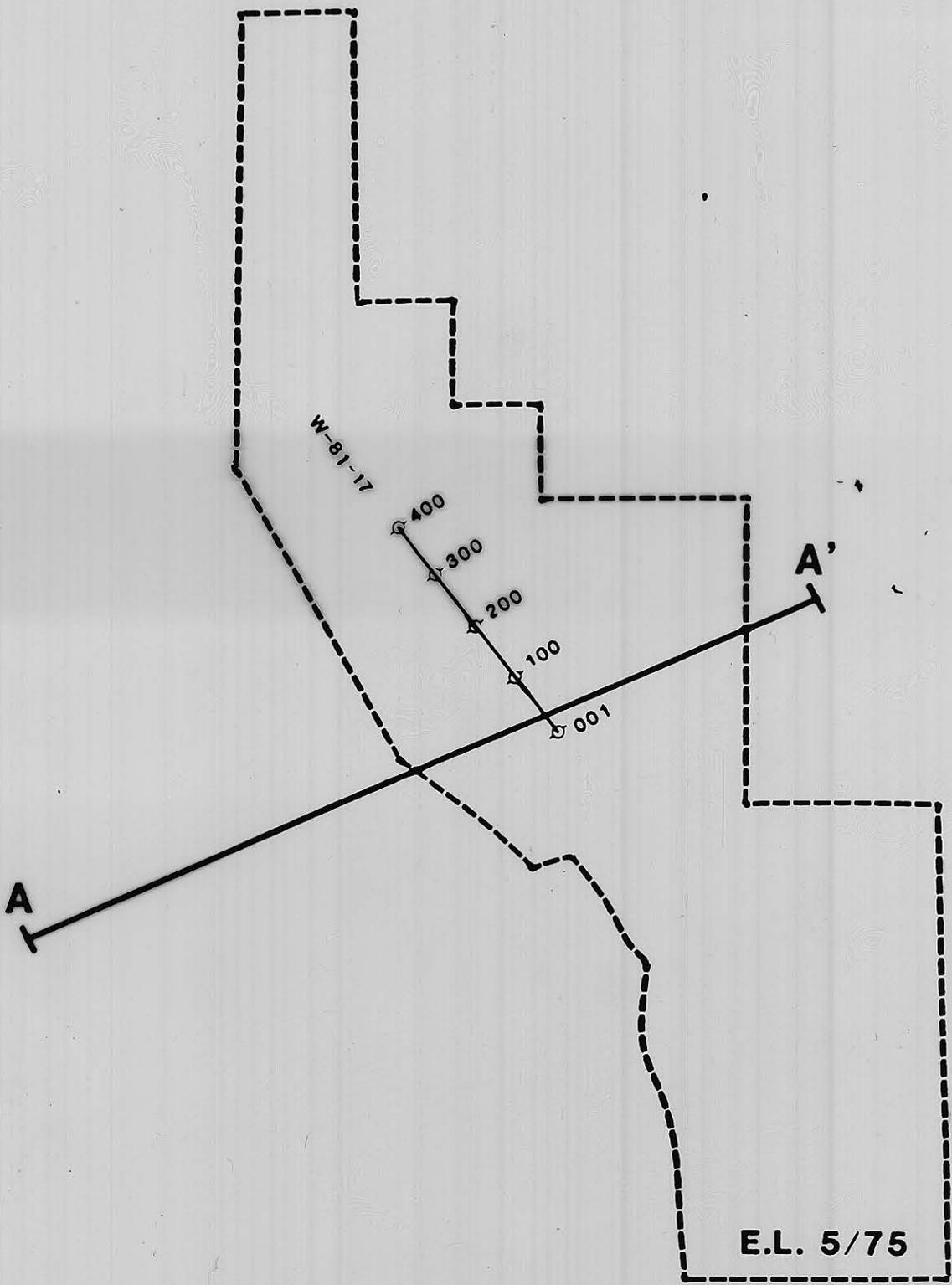
In accordance with the guidelines issued June 5, 1981, Amoco Australia Petroleum Company, "Amoco", as operator of E. L. 5/75 submits the following information on behalf of itself and Tasman Oil, Inc., as the Final Report pertaining to said area.

Expenditures to date on the license area total AU \$44,859.64 and include IO&A (revised) of AU \$44,162.13, Operating Base and Facilities AU \$387.50 and Office Furniture and Fixtures AU \$310.01.

Exploration License 5/75 was acquired to test the hydrocarbon prospectivity of the Macquarie Harbor graben, a NNW-SSE linear fault-bounded basin underlying Macquarie Harbor and extending beyond it for 25 kilometers to the south and 15 km to the north. The average width of the basin is approximately 10 kilometers (Figure 1).

Surface reconnaissance of geology indicated that this linear basin is filled with an unknown thickness of Tertiary age sediments. Flanking the graben to the west is Cape Sorrell, with Precambrian metamorphics, Cambrian sedimentary rocks of various lithologies and minor Ordovician sediments. The presumed western fault boundary is not exposed. To the east, the graben is bounded by a clearly defined normal fault (informally named here the Mt. Discovery Fault) separating the Tertiary sediments from Cambrian through Devonian age sediments (Enclosure 1). Locally, in the northernmost portion of E. L. 5/75 minor outcrops of Upper Paleozoic age are evident flanking the graben.

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E.L. 5/75

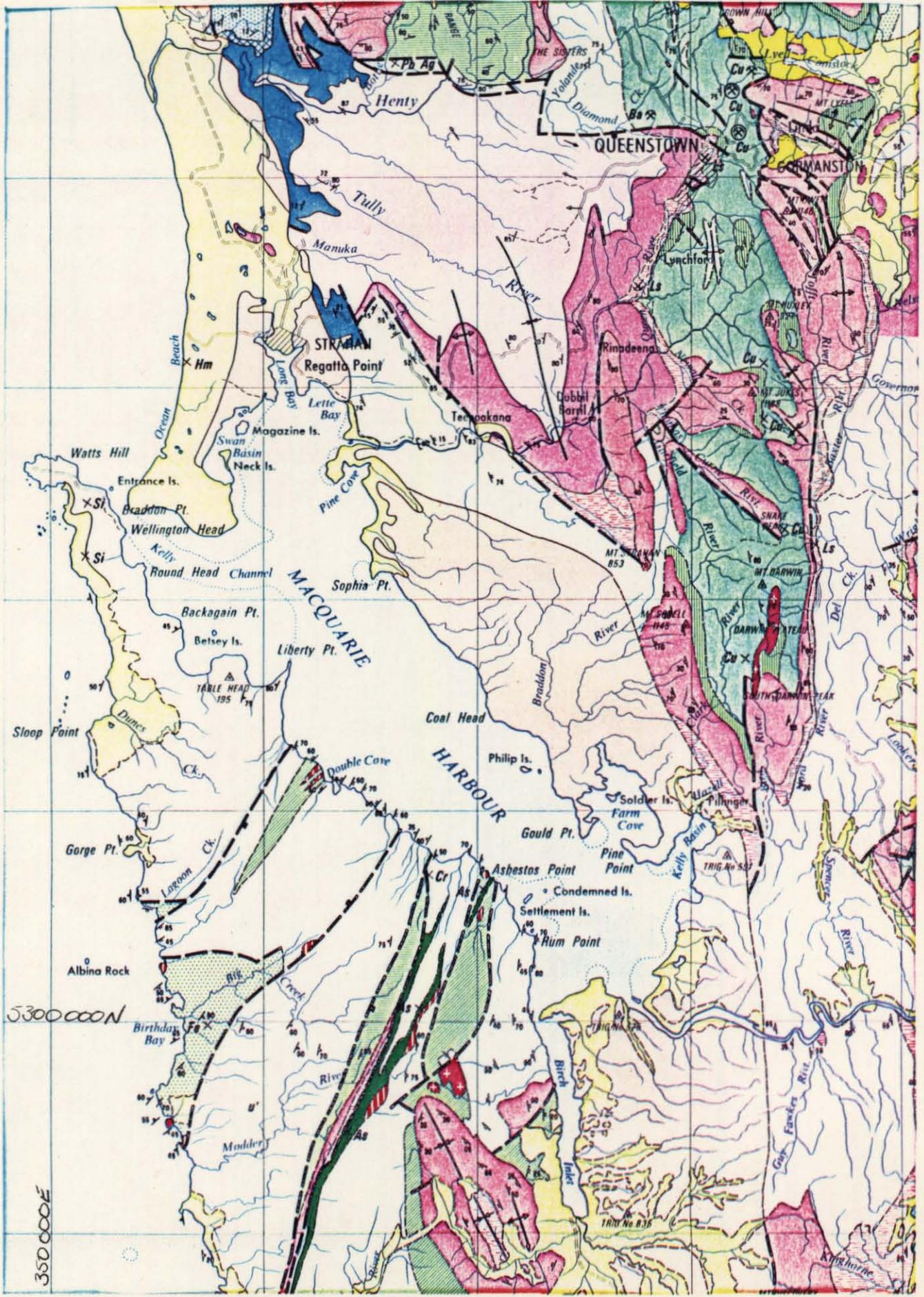


FIGURE 1

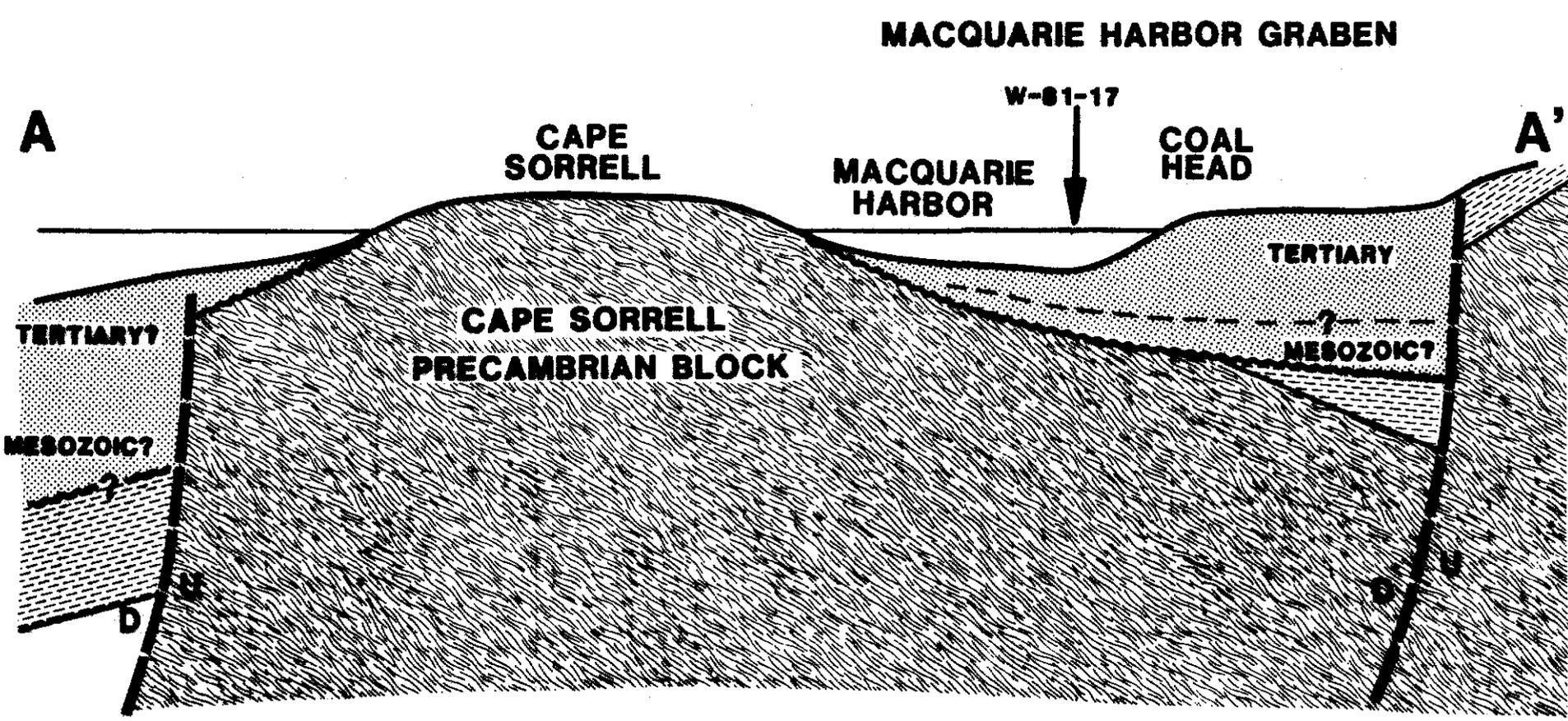


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In March of 1981, a 10 kilometer seismic line, W-81-17, was acquired in Macquarie Harbor, within the bounds of E. L. 5/75. The line was located, based on the regional geologic evaluation, along the anticipated trend of maximum sedimentary thickness within the basin. Subsequent processing and interpretation of the data indicated the presence of economic basement at a two-way time of 500 to 700 milliseconds, corresponding to a depth of 1600 to 2500 feet (Enclosure 2). It is impossible to determine, using this data, if Tertiary sediments comprise the entire sequence to basement, or if there are Mesozoic sediments also present at depth. Irrespective of the nature or age of the lower graben fill, it is clear that the sequence is much too thin to have thermally generated hydrocarbon. The nature of the older rocks bounding the graben also preclude generation of hydrocarbon with subsequent migration into the Tertiary series.

Based on the nature of the Tertiary-Cambrian contact on the west margin of the basin south of Macquarie Harbor, and on the shallowness of acoustic (and economic) basement within the harbor, we consider it probable that the Macquarie graben may actually be a half-graben, with normal fault displacement only along the east margin (Figure 2). The entire Cape Sorrell Precambrian block (informal name), extending from the Mt. Discovery fault in the east to a major up-to-the-east normal fault approximately 10 km offshore Cape Sorrell in the west, is slightly tilted to the east. The minor Tertiary sediment accumulation has formed in response to the small rotational displacement of the Cape Sorrell block and limited sediment catchment area.

# SCHEMATIC STRUCTURAL CROSS-SECTION



NOTE: LINE LOCATION SHOWN ON FIGURE 1

MT. DISCOVERY  
FAULT

FIGURE 2

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Based on these interpretations and conclusions, in combination with the negative results of the Cape Sorrell No. 1 well in the contiguous offshore permit T/12P, we consider E. L. 5/75 to be non-prospective with respect to hydrocarbon.

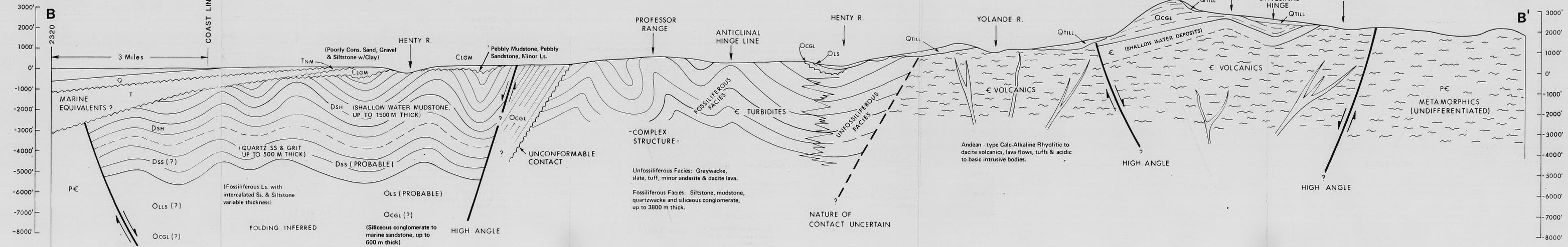
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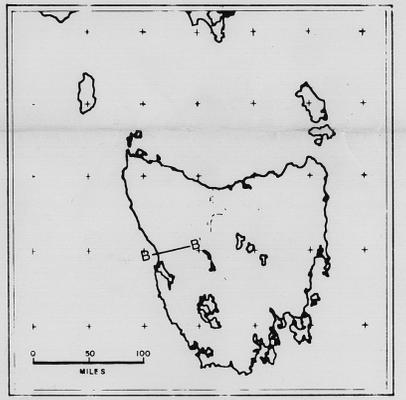
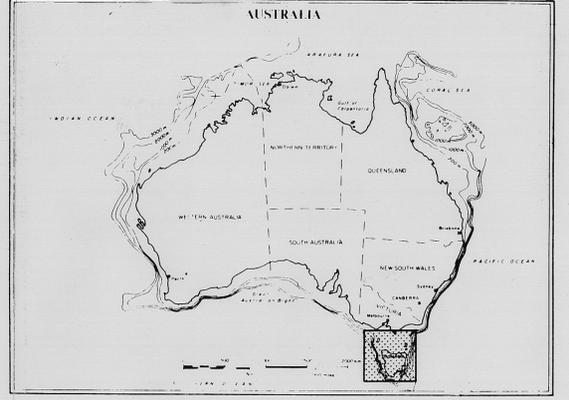
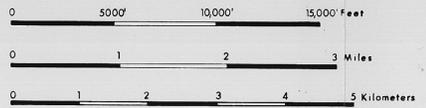
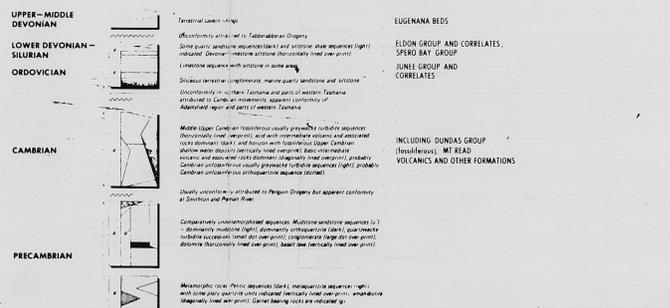
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**SCHEMATIC CROSS-SECTION  
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Author: M.B. WOMER Date: JAN. 1981

