Seismic survey, Tertiary sediments near Gordon

D.E. Leaman

At the request of Dr Farmer, currently mapping the Kingborough Quadrangle, a seismic refraction survey was undertaken at high water mark beneath cliffs of probable Tertiary sandstone at 52122N, 5202E. The cliffs, about 5-8 m high, are of soft, friable sandstone. Near sea level some clay is exposed. The object of the survey was to confirm whether the material had a seismic velocity compatible with Tertiary materials and to determine its thickness. Nearly 300 m of foreshore was examined.

RESULTS

The following velocity profile was observed:

Layer	*Velocity (m/s)*	*Thickness (m)*	*Depth to interface (m)*
1	1525	6-9	6-9
2	1880-1920	65-70	71-79
3	>4500-5000	?	

A velocity of 1500 m/s is typical of a moderately consolidated, poorly cemented Tertiary sand. Clay beds may be included but layer 1 is considered to be material similar to that observed in the cliff face.

A velocity of 1900 m/s implies a consolidated or over-consolidated clay or weathered rock of any type. However, the time-distance plot is very straight and characteristic of Tertiary clays. Weathering plots are not consistently straight for long periods and this possibility is therefore discounted. The velocity recorded is up to 100 m/s higher than found for most clays and does imply an over-consolidation or purity not encountered elsewhere.

It is not possible to state positively the rock type of layer 3. However the velocity noted is sufficiently high to say that it could not be any Triassic formation, but could be Permian or dolerite.

[8 December 1972]