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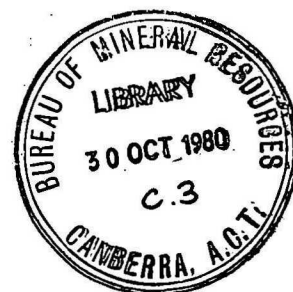


# BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

Record 1978/53

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THE AUSTRALIAN OFFSHORE COMPILATION FOR CIRCUM-PACIFIC MAP  
PROJECT, SOUTHWEST QUADRANT, MAY 1978

by

DERK JONGSMA

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## SUMMARY

Compilation of the Australian offshore tectonics and geology map took four months to complete. The map shows the tectonics, the sediment thickness, and ages of the sediment and basement rocks underlying the continental margin. In addition the magnetic anomaly pattern of the oceanic areas around Australia is shown, to indicate to the Circum Pacific Map compilers what data are available. This should not be used on the final map as the location of the anomalies in various areas is inaccurate.

Overlays comprising names of basins and other features of the continental margin, a series of sedimentary columns, the surficial sediment distribution, and carbonate content of the sediments on the continental shelf were also produced. References used, and a short summary of rock types, approximate thicknesses, and ages are appended.

## INTRODUCTION

This compilation of the offshore geology and tectonics of the Australian continental margin took two and a half months and draughting of the maps took another two months. Several major problems were encountered which are by no means solved.

The most difficult problem was that of trying to display, in plan, data which generally show the variation of stratigraphy with depth along a line. The recommendation of the panel chairmen that bedrock on the seafloor should be mapped, was for most of the Australian continental margin impracticable owing to the lack of adequate data or the way in which the data were presented in publications.

The map of the continental margin presented here is a combination of tectonics, sediment thickness, and age-data. It would be compatible with a tectonic/geologic map but it differs from a 'traditional' geological map. The suggestion made by the panel that the geological map be dropped in favour of a combined tectonic/geologic map therefore receives my strong support.

## DISCUSSION OF MAP

### 1) Sediment contours

The sediment thickness contours were obtained from several sources by a variety of methods, e.g. seismic and magnetic surveying and drilling. The 1-km sediment contour was obtained from a report by Branson & Turpie (1974) which was based on the results of the Bureau of Mineral Resources (BMR) Continental Margin Survey seismic data. The 3-and 5-km contours come from compilations done at BMR and from several company reports. Dr Wilford, Geological Branch, BMR is at present preparing a much more detailed compilation on a 1:10 000 scale Mercator Projection. Some of the contours are generalised from his compilation. In addition to this the Shell Development (1973) survey of the continental margin with the M.V. Petrel resulted in maps of total sediment thickness contours based on magnetic measurements and from these the contours on the outer edge of the Northwest Shelf were obtained.

The 3-and 5-km contours on the inner part of the Northwest Shelf show the thickness of Mesozoic and younger sediments and are therefore only minimum contours.

## 2) Tectonics

Faults - These were obtained from papers published on the continental margin and from the 1976 Geological Map of Australia (1:2 500 000 scale). In most instances they do not affect the upper part of the sedimentary column and the most are within basement.

Folds - These are from published papers and many are also shown on the Tectonic Map of Australia 1:5 000 000 scale (Geol. Soc. Aust., 1971). They are invariably large-scale features and do not imply noticeable local deformation of the sediments.

Hinge-lines - These were not required by the C-PMP panel but I have included some in the Bonaparte Gulf Basin because they conveniently show the extent of this basin.

Edge of cratonic blocks - Also not asked for but put on the map to show the extent of these blocks as known offshore.

Fracture zones - All of these are from published literature except those off the Queensland coast. The latter have been traced by members of the BMR Marine Geophysics Group and it is expected that a paper on these will be published in the near future.

## 3) Magnetic lineations

These were obtained from papers published by members of the Lamont-Doherty and Woods Hole Oceanographic Institutes, USA; the list of references is appended. They are intended to show the extent of knowledge at present and should not appear on the final version of the map as they have been enlarged many times from small-scale figures with various projections. It is understood that Larson and Pitman from Lamont will supply the magnetic lineations for the maps. The BMR should procure a copy of their compilation as soon as it is available.

## 4) Geology/ages

This has been the most difficult part of the compilation. The most frustrating problem is that in many areas, and particularly in the Northwest Shelf area, the age of the basement or the oldest sediments is unknown. What has been published is virtually intelligent guesswork.

Secondly, the areal extent or boundary between rock units and basins is in most cases not available from the reports. Furthermore, basement as defined by many authors is sedimentary rather than older deformed igneous or metamorphic rocks as used in this compilation. Where the sediment exceeds 1 km in thickness I have used the colour of the oldest sediment. As the time divisions of the legend are fairly broad these should have some bearing on reality. However, the boundaries between the colours are purely speculative. An alternative would be to show the main period of activity of the basins involved by the use of an appropriate colour. This would result in most of the Northwest Shelf having a Mesozoic colour rather than Paleozoic. To give an idea of the basement I have shown the age range of the sediments and the suspected age of the basement by means of symbols.

In several areas such as the Rankin Platform, the Ashmore Sahul Block, and the Sahul Ridge basement consists of Triassic sediments in the form of fault-blocks. Nothing is known about the older deformed basement and I have therefore designated the Triassic as basement. The age of these overlying sediments which were deposited after the fault-blocks were eroded are indicated by a colour and appropriate symbol.

For the purpose of giving the map user some idea of the stratigraphy as we know it I have included an overlay of the results of exploratory wells on the margin. In addition I have prepared a short summary of the rock types and ages in the various basins and on the plateau so that once the panel decides exactly they want to show on the margin, the information is available in a concise form.

The disadvantage of using the 1-km thickness contour for the purpose of defining the edge of a sedimentary basin is that it results in a glaring discrepancy between offshore units and those units mapped onshore. The only way in which this could be overcome would be to use a pattern of, for instance, stripes or squares of different colour which would represent the ages of the various units present offshore. If the map printers can cope with this I recommend that this possibility be seriously considered.

#### DISCUSSION OF OVERLAYS

##### 1) Names

The names shown on the overlay relate to the basins, the plateaux, and the sub-basins. They are the names in popular usage by those

who have published papers on the margin. This overlay should assist in locating the areas mentioned in the summaries of ages and rock types appended to this report.

2) Sediment columns

The columns shown are selected exploratory wells sunk on the margin. They are mainly obtained from the 1976 Geological Map of Australia (1:2 500 000) produced by BMR with an additional one in the Great Australian Bight and one obtained from seismic reflection results over the Exmouth Plateau (Willcox & Exon, 1976). These should give the map compiler some idea of the stratigraphy of the margin. The scale of the columns is 1 cm equals 1 000 metres. These may be put on the map itself if space permits or if not then they could be shown in an inset on the map.

3) Surficial sediments

This overlay shows the distribution of gravel, sand, and mud on the continental shelf for the areas that have been surveyed. This surveying was done by BMR as part of a program to map the shelf sediment. The samples were taken on a grid with a spacing of about 20 km. Gravel denotes sediment with the major part i.e. 50% composed of grains larger than 2 mm. Sand is sediment composed of more than 90% coarse fraction; this conforms with the coding for the new Scripps data bank. A map using the Shepart Classification with a 50% cut-off for sand was also prepared and can be forwarded to the panel if required. Mud is sediment which is composed of less than 90% coarse fraction.

4) Carbonate content

This overlay shows the areas where the carbonate content of the sediment exceeds 60%. As in the case of the surficial sediments only those areas covered by the BMR marine geological surveys are shown.

## CONCLUSIONS

This compilation leads me to conclude that the mapping of the ocean floor and the continent is a fairly straightforward exercise when compared with that of mapping the continental margin. The nature of the present compilation is somewhere between the very generalised tectonic map devised by the Geological Society of Australia (1971) and that which one should like to see. What is needed is an effort to map subsurface units on the margin. Also some process needs to be devised to show several units on a map. What is presented here is very much the result of reconnaissance oil exploration with most of the detail in areas which appear prospective.

## ACKNOWLEDGEMENTS

I should like to thank those people who have commented and constructively criticised the maps produced. In particular the people in the marine geophysical and geological groups and several members of the Petroleum Exploration Branch. The help of Dave, Gianni, and Joyce of the Geological Map Compilation Section was invaluable and I thank Andy for his excellent drafting work. Lastly I thank Dr Wilford for his considerable contribution towards the production of sediment contours.

## APPENDIX 1

Circum Pacific Map Project

SW Quadrant  
Australia, Offshore

### Short summaries of rock types and ages

The following short summaries of rock types, ages, and approximate thickness information are given for each area shown on the name sheet. Starting in the north with the Arafura Basin, the basins are treated in an anticlockwise direction.

#### Arafura Basin

Reference: Balke et al., 1973

Mesozoic - Tert. basin and one fault-bounded pre-Mesozoic basin.

Basement: Precambrian clastics and carbonates - non-metamorphosed off the Arnhem Shelf.

Metamorphic rocks off McArthur Basin.

Some Silurian found in Money Shoal No. 1 (91 m).

Sediments: Triassic rocks may be present in pre-Mz graben - not known at present.

Jurassic ( 500 m) - Cretaceous (1500 m) - Clastics sandstone (continental).

Tertiary Carbonates (500 - 1000 m) (marine).

#### Sahul Ridge (Platform)

Reference: Laws & Kraus, 1974

Basement: Permo-Triassic, faulted uplifted sediments

Sediments: Jurassic - Tertiary (3000 m).

Cretaceous thickest - shale and siltstone (marine).

#### Malita Graben

Reference: Laws & Kraus, 1974

Basement: unknown, probably Palaeozoic.

Sediments: Mesozoic - Jurassic - shale (1200 m)

Cretaceous (2100 m), shale and fine-grained micrites.

Tertiary (2400 m) marl and calcareous sandstone.

#### Darwin Block

Reference: Laws & Kraus, 1974

Basement: Precambrian, metamorphic, and non-metamorphic igneous and sedimentary rocks.

Sediments: Thin veneer of Phanerozoic sediments.

#### Petrel Sub-basin

Reference: Laws & Kraus, 1974

Basement: Palaeozoic. Evaporites (Silurian-Devonian?) fringing reef carbonates (Devonian), shale, and siltstone.

Sediments: Late Carb-Permian, 6000 m shale, sand, and minor limestone.

Lower to Middle Triassic, sand and shale (marine to fluvial).

Upper Triassic to Lower Jurassic (continental) redbeds, shale, and sandstone (500 m).

Lower Jurassic-Neocomian, sandstone and shale (800 m)

Cretaceous: shale (1000 m)

Tertiary: Carbonates (500 m)



Ashmore Block

Basement: Triassic.

Igneous rocks - basalt; late Jurassic.

Sediments: Thin Cretaceous (200 m) limestone and marls.

Tertiary: 2000 m, carbonates.

Timor Trough

Tertiary - shale and siltstone.

Londonderry High

Reference: Laws & Kraus, 1974

Basement: Triassic to Lower Jurassic

Sediments: Upper Jurassic-Tertiary.

Cretaceous (2200 m) shale.

Tertiary (600 m) shale and carbonates.

Browse Basin

Reference: Halse and Hayes, 1971  
Crostell, 1976

Basement: Proterozoic - quartzitic rock

Sediments: Permian (600 - 1500 m); continental; silty claystone, carbonaceous sandstone, siltstone, and some limestone.

Triassic (300 - 4500 m) sandstone, shale, siltstone, limestone, and dolomite.

Jurassic (63 m to 2000 m) marine.

Cretaceous - (232 m) marine - limestone, marl glauc. sandstone, shale.

Tertiary - (up to 3500 m) marine carbonates.

Scott Plateau

Basement: Probably Palaeozoic

Sediments: (Jurassic?) - Cretaceous (600 m) marine?

Tertiary (500 m) carbonates, marine.

Rowley Terrace

Reference: Stagg, 1978

Basement: Precambrian

Sediments: Mesozoic - Tertiary - (6 km)

Triassic-Jurassic, 3 km maximum

Cretaceous-Tertiary, 2 km average

Rowley Sub-basin

Reference: Warris, 1976  
Challinor, 1970

Basement: Lower Palaeozoic?

Sediment: Permian (600 m) sandstone, shale (continental).

Triassic (800 m) sandstone and siltstone, redbeds.

Jurassic (1000 m) sandstone, shale, siltstone, coal.

Cretaceous (1200 m) shale, sandstone, marl.

Tertiary (1000 m) carbonates, marine.

Offshore Canning Basin

Reference: Warris, 1976  
Challinor, 1970

Basement: Precambrian? seds/Archean igneous and metamorphic.

Sediment: Ordovician (200 m) shale, limestone, sandstone.  
Silurian (200 m) sandstone, evaporites.  
(Devonian-(2000 m) siltstone, shale, limestone, redbeds,  
(Carboniferous, sandstone, siltstone, shale, coal.  
Permian (2000 m) sandstone, siltstone, shale, tillite.  
Triassic (200 m) sandstone, siltstone.  
Jurassic (1500 m) sandstone, shale, coal, siltstone.  
Cretaceous (1200 m) sandstone, shale, marl.  
Tertiary (500 m) carbonate.

Bedout Sub-basin

Reference: Warris, 1976

Basement: Palaeozoic? : may be sediments underlain by Proterozoic

Sediment: Triassic volcanics, sandstone (continental).  
Jurassic (1200 m) redbeds, sandstone (continental).  
Cretaceous (1000 m) sandstone, shale, marl.  
Tertiary (700 m) carbonates, marine.

Beagle Sub-basin

Reference: Halse, 1976

Basement: Palaeozoic - sediments?

Sediments: Triassic (1000 m) sandstone, claystone. Siltstone (some coal) (continental).  
Jurassic, Lower and Middle (2000 m) sandstone, claystone, and siltstone with local coal (continental).  
Cretaceous (200-500 m) claystone, marl, calcilutite (marine).  
Tertiary (1200 m) marl, claystone, carbonate (marine).

Rankin Platform

Reference: Powell, 1976  
Kaye et al., 1972

Basement: Palaeozoic?  
Lower Jurassic, Upper Triassic fault-blocks.

Sediments: Lower and Middle Jurassic.  
Upper Cretaceous - shale (thin).  
Tertiary - clastic and marl in Lower Tertiary,  
carbonates from upper Eocene.

Dampier Sub-basin

Reference: Powell, 1976  
Kaye et al., 1972

Basement: Palaeozoic?

Sediments: Permian - sandstone, rhyolite, tuff.  
Triassic 0-1600 m - sandstone, siltstone, claystone (shallow marine).  
Cretaceous 21-2500 m - marl, calcilutite, claystone, sandstone, siltstone (marine).  
Tertiary 300-2700 m - carbonates.

Barrow Sub-basin

Reference: Thomas & Smith, 1976  
Kaye et al., 1972

Jurassic-Cretaceous Basin.

Basement: Palaeozoic (Devonian-Carboniferous).

Sediments: Permian 600 m (glacials, marine, lacustrine)  
Triassic 3000 m (marine to fluvial), shale, sandstone, claystone, calc. sandstone.  
Jurassic 7000 m, shale, siltstone, sandstone (marine, deltaic)  
Cretaceous 2500 m, sandstone, conglomerate, claystone, siltstone, (carbonates at top) deltaic marine.  
Tertiary 2000 m, carbonates (marine).

Exmouth Plateau

Reference: Willcox and Exon, 1976

Basement: Precambrian metamorphics

Sediments: Palaeozoic 5000 m? Silurian-Permian, marine?  
Triassic 3000 m - shale, siltstone, sandstone, shallow marine to deltaic.  
M-U Jurassic 500 m shale, deltaic.  
Cretaceous 1500 m, sandstone, siltstone, claystone, shallow marine carbonates at top (marine).  
Tertiary 8000 m, carbonates, marine.

Wallaby Plateau

Reference: Symonds & Cameron, 1977

Basement: Precambrian or Palaeozoic.

Sediments: Early Cretaceous 200 m siltstone, shallow marine.  
Late Cretaceous-Tertiary 400 m carbonates, marine.

Carnarvon Terrace

Reference: Symonds & Cameron, 1977

Basement: Precambrian.

Sediments: Devonian limestone, dolomite, sandstone.  
Permian?  
Triassic-Jurassic 1000 m, shale, siltstone, marine.  
Cretaceous 1400 m, claystone, siltstone - carbonates at top.  
Tertiary 1000 m - carbonates.

Houtman Sub-basin and Abrolhos Sub-basin

Reference: Jones, 1976  
Symonds & Cameron, 1977

Basement: Precambrian

Sediments: Permian? 500 m tillite, shale (marine).  
Triassic 3000 m sandstone, marine.  
Jurassic 3000 m.  
Cretaceous 200 m.  
Tertiary 500 m.

Vlaming Sub-basin

Reference: Jones, 1976

Late Jurassic-Early Cretaceous

Basement: Precambrian

Sediments: L. Jurassic 12000 m? continental.  
Cretaceous-Tertiary 3000 m - marine.

Naturaliste Plateau

Reference: Jongsma & Petkovic,  
1977

Basement: Precambrian?

Sediments: Cretaceous - 1000 m volcanic claystone, shallow marine.  
Tertiary - 500 m carbonates, marine.

Bremer Basin

Reference: Cooney et al., 1975

Basement: Precambrian

Sediments: Cretaceous 1500 m marine sandstone, siltstone.  
Tertiary carbonates, 300 m.

Eyre Terrace

Basement: Precambrian

Sediments: Cretaceous  
Tertiary

Ceduna Plateau

Reference: Pattinson et al., 1976  
Boeuf & Doust, 1975  
Willcox, 1978

Basement: Precambrian

Sediments: Jurassic?, locally shale and siltstone (non marine).  
Cretaceous, 3000-5000 m siltstone, shale, sandstone, claystone,  
continental.  
L. Tertiary, sandstone.  
U. Tertiary, carbonates, marine.

Duntroon Basin

Reference: Pattinson et al., 1976  
Boeuf & Doust, 1975

Basement: Precambrian

Sediments: Jurassic?  
Cretaceous 3000-5000 m.  
Tertiary 1500 m marine clastics.

Polda Trough

Reference: Pattinson et al., 1976

Basement: Precambrian.

Sediments: Jurassic?  
Cretaceous 1000 m.  
Tertiary 500 m.

Otway Basin

Reference: Ellenor, 1976  
Denham & Brown, 1976  
Boeuf & Doust, 1975

Basement: Precambrian or Palaeozoic.

Sediments: Jurassic? - volcanic shales.  
Cretaceous 6000 m, sandstone - non marine, shale, siltstone, coal.  
Tertiary 1500 m marl and limestone.

Bass Basin

Reference: Brown, 1976

Basement: Palaeozoic.

Sediments: Cretaceous 3000 m, sandstone, siltstone, volcanics (basalt).  
Tertiary 1000 m, claystone, coal.

South and East Tasmania Rises

Reference: Kennet et al.

Basement: Precambrian, schist.

Sediments: Cretaceous 500 m shale.  
Tertiary 800 m carbonates.

Gippsland Basin

Reference: James & Evans, 1971

Basement: Palaeozoic - sediments siltstone, shale, sandstone.  
Ordovician - siltstone.

Sediments: Cretaceous 6000 m shale, coal, continental.  
Tertiary 4000 m sandstone, coal, shale, continental.

Capricorn Basin

Reference: E.K. Ericson, 1976

Mesozoic - Recent

Basement: Palaeozoic - Tasman Geosyncline  
Early Cretaceous Volcanics, mildly metamorphosed shale, siltstone.

Sediments: Cretaceous-Paleocene (900 m) conglomerate, redbed (continental).  
Tertiary, quartz sandstone (mixed)  
L. Oligocene-Recent, carbonates.

Halifax Basin

Reference: Swarbrick, 1976  
Rasidi and Smart, 1978

Mesozoic - Recent

Basement: Palaeozoic

Sediments: Cretaceous 500 m unknown.  
Tertiary 5000 m, carbonates?

Marion Plateau

Reference: Jongsma, 1976

Basement: Palaeozoic

Sediments: Tertiary? - 200-1000 m - reef carbonates?

Queensland and Townsville Trough

Reference: Pinchin & Hudspeth,  
1975

Basement: Palaeozoic?

Sediments: Cretaceous?  
Tertiary - carbonates? 300-2000 m.

Queensland Plateau

Reference: Mutter, 1977

Basement: Palaeozoic Tasman Geosyncline

Sediments: Cretaceous?, minor if at all  
Tertiary - limestone and ooze - 1400 m.

Laura Basin

Reference: Day, 1976

Basement: Jurassic Cretaceous  
Permian - sandstone, shale, coal, volcanics, limestone (continental)

Sediments: Jurassic (600 m) sandstone, conglomerate, siltstone, mudstone,  
coal (continental).  
Cretaceous - mudstone, sandstone, siltstone (shallow marine,  
carbonates at top).  
Tertiary - carbonates.

Papuan Basin

Reference: Wise, 1976

Basement: Tertiary basin  
Paleozoic Mesozoic

Sediments: Mesozoic - shales, siltstone, coal 1600 m.  
Tertiary Eoc- limestone 500 m.  
Mio- limestone 1000 m.  
Plio-Pleistocene - mudstone, sandstone, marl 1500 m.

Cape York Oriomo Ridge

Palaeozoic

Carpentaria Basin

Reference: Douth, 1976

Jurassic-Cretaceous basin

Basement: Precambrian

Sediments: 1500 m total  
M-U Jurassic, quartz, sandstone, siltstone, conglomerate 225 m.  
Cretaceous, sandstone, claystone, bituminous shale, limestone 1000 m.  
Tertiary 200 m sandstone, claystone, siltstone.

APPENDIX 2

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) NICHOL, G.N.

3 Date 1970 Title Exploration and geology of the Arafura Sea.

4 Publication APEA J., 10, 56-61

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) MARTISON, N.W., McDONALD, D.R., and KAYE, P.

3 Date 1973 Title Continental Shelf off Northwest Australia.

4 Publication AAPG Bull. 57, 972-89.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) GEOLOGICAL SOCIETY OF AUSTRALIA.

3 Date 1971 Title Tectonic Map of Australia and New Guinea.

Sc. 1:5 000 000 (1 sheet).

4 Publication Geol. Soc. Australia, Sydney.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) COONEY, P.M., EVANS, P.R., and EYLES, D.  
3 Date 1975 Title Southern margin of Australia in VEEVERS, J.J., ed.,  
Deep Sea Drilling in Australasian Waters.  
4 Publication Challenger Symposium, Sydney, 26-27.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) BOEUF, M.G. and DOUST, H.  
3 Date 1975 Title Structure and development of the southern  
margin of Australia.  
4 Publication APEA J., 15, 33-43.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) HOUTZ, R., and MARKL, R.  
3 Date 1972 Title Seismic profiler data between Antarctica and  
Australia in HAYES, D.E., ed., Antarctic Oceanology II  
The Australian-New Zealand Sector.  
4 Publication Antarctic Res. Ser. 19, 125-145  
AGU, Washington D.C.



1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) LAWS, R.A. and KRAUS, G.P.

3 Date 1974 Title The regional geology of the Bonaparte  
Gulf Timor Sea area.

4 Publication APEA J., 14, 77-84

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) BALKE, B., PAGE, C., HARRISON, R. and  
ROUSSOPOULOS, G.

3 Date 1973 Title Exploration in the Arafura Sea.

4 Publication APEA J., 13, 9-12

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) DAVIES, P.J.

3 Date 1975 Title Shallow Seismic structure of the continental  
shelf, southeast Australia.

4 Publication J. Geol. Soc. Austr. 22, pt 3, 345-59.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) JAMES, E.A. and EVANS, P.R.

3 Date 1971 Title The Stratigraphy of the Offshore Gippsland  
Basin.

4 Publication APEA J. 11, 71-74

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) EDGGERLEY, D.W., and CRIST, R.P.

3 Date 1974 Title Salt and diapiric anomalies in the southeast  
Bonaparte Gulf Basin.

4 Publication APEA J., 14, 85-94.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) ELLIOTT, J.L.

3 Date 1972 Title Continental Drift and basin development  
in south eastern Australia.

4 Publication APEA J., 12, 46-51

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) WILLCOX, J.B. and EXON, N.F.  
3 Date 1976 Title The regional geology of the Exmouth Plateau.  
4 Publication APEA J. 16, 1-11.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) POWELL, D.E.  
3 Date 1976 Title The geological evolution of the continental  
Margin off Northwest Australia.  
4 Publication APEA J., 16, 13-23.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) EXON, N.F. and WILLCOX, J.B.  
3 Date 1976 Title Mesozoic outcrops on the lower continental  
slope off Exmouth, Western Australia.  
4 Publication BMR J. Aust. Geol. Geophys., 1, 205-09

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) TAYLOR, L. and FALVEY, D.

3 Date 1977 Title Queensland Plateau and Coral Sea Basin:  
Stratigraphy, structure and tectonics.

4 Publication APEA J. 17, 13-29.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) SYMONDS, P.A., and CAMERON, P.J.

3 Date 1977 Title The Structure and stratigraphy of the  
Carnarvon Terrace and Wallaby Plateau.

4 Publication APEA J. 17, 30-41.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) HALSE, J.W. and HAYES, J.D.

3 Date 1971 Title The geological and structural framework of  
the offshore Kimberley Block (Browse Basin) area, Western Australia.

4 Publication APEA J., 11, 64-70.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) PINCHIN, J., and HUDSPETH, J.W.  
3 Date 1975 Title The Queensland Trough: Its petroleum potential  
based on some recent geophysical results.  
4 Publication APEA J., 15, 21-31.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) MUTTER, J.C.  
3 Date 1977 Title The Queensland Plateau  
4 Publication Bur. Miner. Resour. Bull. 179.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) JONGSMA, D., and PETKOVIC, P.  
3 Date 1977 Title The Structure of the Naturaliste Plateau  
and Trough.  
4 Publication APEA J. 17, 3-12.

Surficial Sediments

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
 2 Author(s) MARSHALL, J.F. and MATVEEV, G. (compilers)  
 3 Date 1978 Title /1977/ Continental Shelf sediments Southern  
Queensland and Northern New South Wales Scale 1:1,000,000,  
1 sheet.  
 4 Publication MARSHALL, J.F., 1978, Marine geology of the Southern  
Queensland and Northern New South Wales continental Shelf.  
Bur. Miner. Resour. Aust. Bull. (in press).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
 2 Author(s) DAVIES, P.J. compiler  
 3 Date 1978 Title /1977/ Continental Shelf sediments Eastern  
Bass Strait and Tasmania. Scale 1:1,000,000 1 sheet  
 4 Publication DAVIES, P.J. 1978, Marine geology of Eastern  
Bass Strait and Tasmanian continental shelf.  
Bur. Miner. Resour. Bull. (in press).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
 2 Author(s) MAXWELL, W.G.H.  
 3 Date 1968 Title ATLAS OF THE GREAT BARRIER REEF  
 4 Publication Amsterdam, Elsevier.

- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW
- 2 Author(s) MARSHALL, J.F. (compiler)
- 3 Date 1974 Title /1972/ Continental Shelf Sediments Capricorn Channel, Queensland 1:1,000,000, 1 sheet.
- 4 Publication J.F. Marshall 1974. Marine Geology of the Capricorn Channel area. Bureau of Mineral Resources, Geology and Geophysics, Australia, Bull. 163.

- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW
- 2 Author(s) JONES, H.A., BURGIS, W.A., MOFFAT, M.R. (compilers)
- 3 Date 1974 Title /1973/ Continental Shelf Sediments Timor Sea W. Australia and N. Territory 1:1,000,000 1 sheet.
- 4 Publication VAN AMDEL, T.H. and VEEVERS, J.J. 1967, Morphology and Sediments of the Timor Sea Bur. Miner. Resour. Aust. Bull. 83

- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW
- 2 Author(s) JONES, H.A. (compiler)
- 3 Date 1973 Title /1971/ Continental Shelf sediments Scott Reef. Western Australia Scale 1:1 000,000 1 sheet.
- 4 Publication Jones, H.A. 1973, Marine Geology of the Northwest Australian Continental Shelf. Bur. Miner. Resour. Aust. Bull. 136

Surficial Sediments.

- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW
- 2 Author(s) JONES, H.A. (compiler)
- 3 Date 1973 Title /1971/ Continental Shelf sediments Rowley Shoals,  
Western Australia. Scale 1:1,000,000 1 sheet.
- 4 Publication Jones, H.A., 1973, Marine Geology of the Northwest  
Australian Continental Shelf. Bur. Miner. Resour. Aust. Bull. 136.
- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL. Area(s) SW
- 2 Author(s) JONGSMA, D. (compiler)
- 3 Date 1973 Title /1971/ Continental Shelf Sediments Arafura Sea,  
Northern Territory. Scale 1:1,000,000 , 1 sheet.
- 4 Publication JONGSMA, D. 1974, Marine Geology of the Arafura Sea,  
Bureau of Mineral Resources, Geology and Geophysics. Australia Bull. 157.
- 1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW
- 2 Author(s) DAVIES, P.J. (compiler)
- 3 Date 1978 Title /1972/ Continental Shelf sediments Central and  
Southern N.S.W. Shelf N.S.W., scale 1:1,000,000, 1 sheet.
- 4 Publication DAVIES, P.J. 1972, Marine Geology of the continental  
shelf of S.E. Australia. Bur. Miner. Resour. Aust. Bull (in press).



Mag Anomalies

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW

2 Author(s) WEISSEL, J.K. and HAYES, D.E.

3 Date 1977 Title Evolution of the Tasman Sea reappraised.

4 Publication Earth and Planet. Sci. Lett. 36, 77-84.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect. Area(s) SW

2 Author(s) WEISSEL, J.K., HAYES, D.E. and HERRON, E.M.

3 Date 1977 Title Plate Tectonic synthesis: The displacements  
between Australia, New Zealand, and Antarctica since the Late Cretaceous

4 Publication Marine Geol. 25, 231-77

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW

2 Author(s) LARSON, R.L., CARPENTER, G.B. and DIEBOLD, J.B.

3 Date 1978 Title A geophysical and geological study of the Wharton  
Basin near the Investigator Fracture Zone.

4 Publication Geophys. Res. (in press).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW  
 2 Author(s) LARSON R.L.  
 3 Date 1975 Title Late Jurassic sea-floor spreading in the eastern  
Indian Ocean.  
 4 Publication Geology 3, 69-71.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW  
 2 Author(s) LARSON R.L.  
 3 Date 1977 Title Early Cretaceous breakup of Gondwanaland off  
Western Australia.  
 4 Publication Geology 5, 57-60.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW  
 2 Author(s) MARKL, R.G.  
 3 Date 1978 Title Basement morphology and rift geometry near the  
former junction of India, Australia and Antarctica.  
 4 Publication Earth & Planet Science Letters 39, 211-25

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) Tect Area(s) SW  
 2 Author(s) HEIRTZLER, J.R., CAMERON, P., COOK, P.J., POWELL, T.,  
ROESER, H.A., SUKARDI, S., and VEEVERS, J.J.  
 3 Date 1978 Title The Argo Abyssal Plain  
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 4 Publication Earth and Planet. Sco. Lett. (in press)  
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1 CIRCUM-PACIFIC MAP REFERENCE Map(s) \_\_\_\_\_ Area(s) \_\_\_\_\_  
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1 CIRCUM-PACIFIC MAP REFERENCE Map(s) \_\_\_\_\_ Area(s) \_\_\_\_\_  
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1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) BRANSON, J.C. and TURPIE, A.  
  
3 Date 1974 Title Sediments and Structures of the Australian  
continental slope bordering the Indian Ocean.  
  
4 Publication Bur. Miner. Resour. Aust. Record 1974/146 (Unpubl.).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) PALFREYMAN, W.D., D'ADDARIO, G.W.D., SWOBODA, R.A.,  
BULTITUDE, J.M. and LAMBERTS, I.T. (compilers)  
3 Date 1976 Title /1974-76/ Geology of Australia. Scale 1:2,500,000  
(4 sheets)  
4 Publication Canberra, Bureau of Mineral Resources, Australia.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) RINGIS, J.  
  
3 Date 1977 Title The structure and history of the Tasman Sea and  
the Southeast Australian Margin.  
  
4 Publication Ph.D. Thesis, Univ. of N.S.W., Sydney N.S.W. (unpublished).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) STAGG, H.M.J.  
  
3 Date 1978 Title Geology and evolution of the Scott Plateau.  
  
  
4 Publication APEA J. 18 (1) 34-43.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) SHELL DEVELOPMENT (AUST. PTY. LTD.)  
  
3 Date 1973 Title Marine geophysical survey offshore Australia,  
conducted with M.V. Petrel, from 19 Dec. 1972 to 18 April 1973.  
4 Publication Shell Development Report (Unpubl.).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) ROBERTSON, C.S., CRONK, D.K., MAYNE, S.J.,  
TOWNSEND, D.G.  
In press  
3 Date  Title A review of petroleum exploration and prospects  
in the Gt. Australian Bight region.  
  
4 Publication Bur. Miner. Resour. Record. (Unpubl.).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) ERICSON E.K.

3 Date 1976 Title CAPRICORN BASIN

4 Publication Economic geology of Australia and Papua New Guinea.  
& . Petroleum: Leslie et al. (eds.). Australasian Inst. Mining  
and Metallurgy Mon. Ser. No. 7 (464-473).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) RASIDI J.S. and SMART J.

3 Date 1978 Title The Halifax Basin Qld.

4 Publication Queensland Mining Journal (in press)

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) CROSTELLA, A.

3 Date 1976 Title Browse Basin

4 Publication Economic geology of Australia and Papua New Guinea  
& Petroleum, Leslie et al., eds. Australas. Inst. Min. Metal. Mon.  
Ser. No. 7 194-95.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) HALSE, J.W.  
3 Date 1976 Title Beagle Sub-Basin  
4 Publication Economic geology of Australia and Papua New Guinea  
& Petroleum, Leslie et al. eds. Australas. Inst. Min. Metal. Mon.  
Ser. No. 7 188-93.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) WARRIS, B.J.  
3 Date 1976 Title Canning Basin off-shore.  
4 Publication As above., 185-88

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) POWELL, D.E.  
3 Date 1976 Title Dampier Sub-Basin, Carnarvon Basin.  
4 Publication As above, 155-65.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) THOMAS, B.M. and SMITH, D.N.  
  
3 Date 1976 Title Carnarvon Basin  
  
4 Publication Economic geology of Aust (see above), 126-54.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) JONES D.K.  
  
3 Date 1976 Title Perth Basin  
  
4 Publication As above, 108-26

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) PATTINSON, R., WATKINS, G., VAN DEN ABEELE, D.  
  
3 Date 1976 Title Great Australia Bight Basin  
  
4 Publication As Above, 98-104



1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) SWARBRICK, C.F.J.

3 Date 1976 Title Halifax Basin

4 Publication Econ. geol. of Aust. (see above), 458-60.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) JONGSMA, D.

3 Date 1976 Title A review of the geology and geophysics of the  
Marion Plateau.

4 Publication Bur. Miner. Resour. Aust. Record 1976/41 (unpubl.).

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW

2 Author(s) DAY, R.W.

3 Date 1976 Title Laura Basin

4 Publication in Econ. geol. of Aust. (see above), 443-46.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) WISE, R.A.  
3 Date 1976 Title Papuan Basin - Offshore (Gulf Basin)  
4 Publication Econ. Geol. of Aust. (see above), 494-99.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) DOUTCH, H.F.  
3 Date 1976 Title Carpentaria Basin  
4 Publication in Econ. Geol. of Aust. (See above), 374-79

1 CIRCUM-PACIFIC MAP REFERENCE Map(s)        Area(s)         
2 Author(s)         
3 Date        Title         
4 Publication

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) WARRIS, B.J.

3 Date 1973 Title Plate Tectonics and the evolution of the  
Timor Sea, Northwest Australia.

4 Publication APEA J., 13, 13-18.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) CHALLINOR, A.,

3 Date 1970 Title The geology of the offshore Canning Basin,  
Western Australia.

4 Publication APEA J. 10, 78-90.

1 CIRCUM-PACIFIC MAP REFERENCE Map(s) GEOL Area(s) SW  
2 Author(s) KAYE, P., EDMOND, G.M., and CHALLINOR, A.

3 Date 1977 Title The Rankin Trend Northwest Shelf,  
Western Australia.

4 Publication APEA J., 12, 3-8



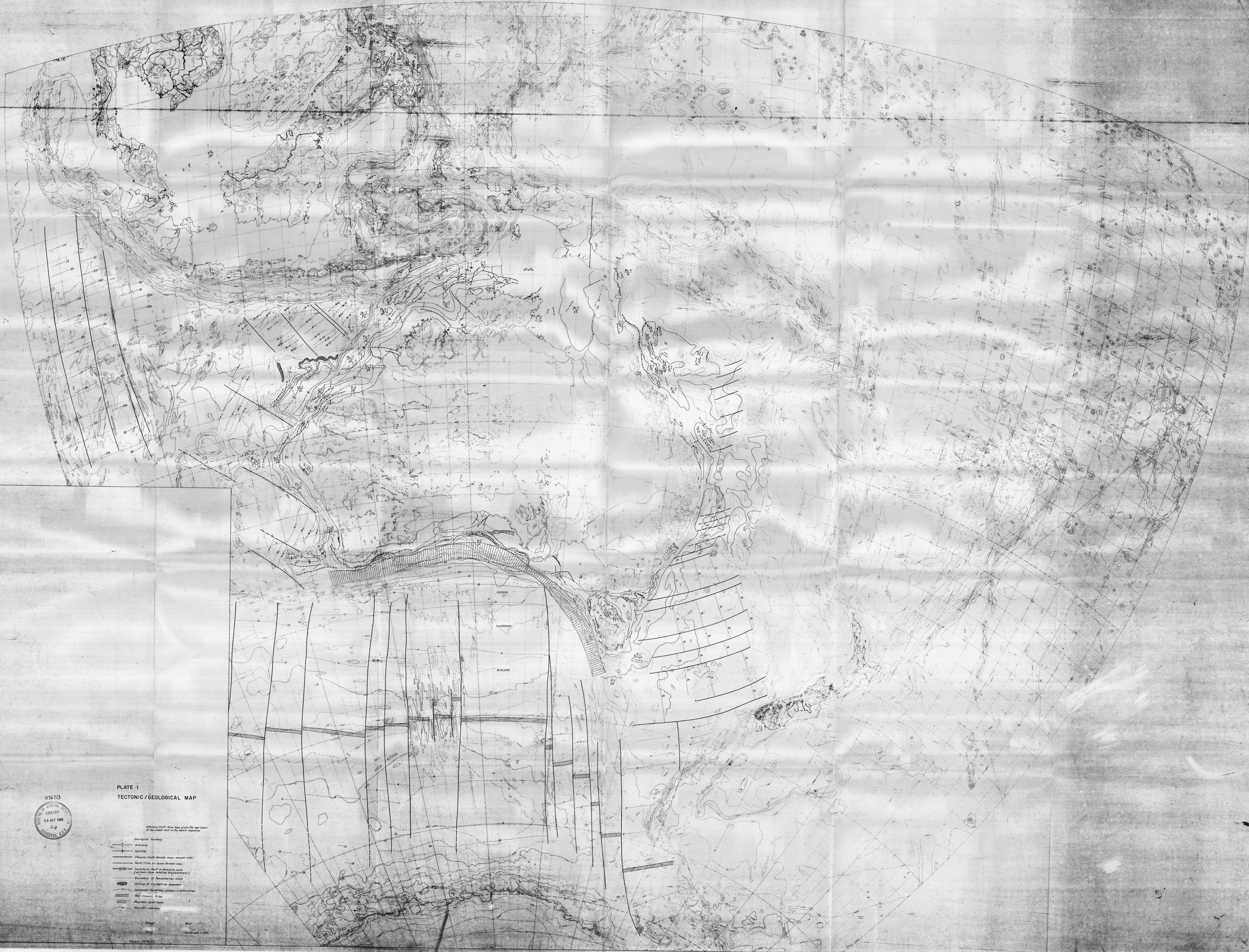
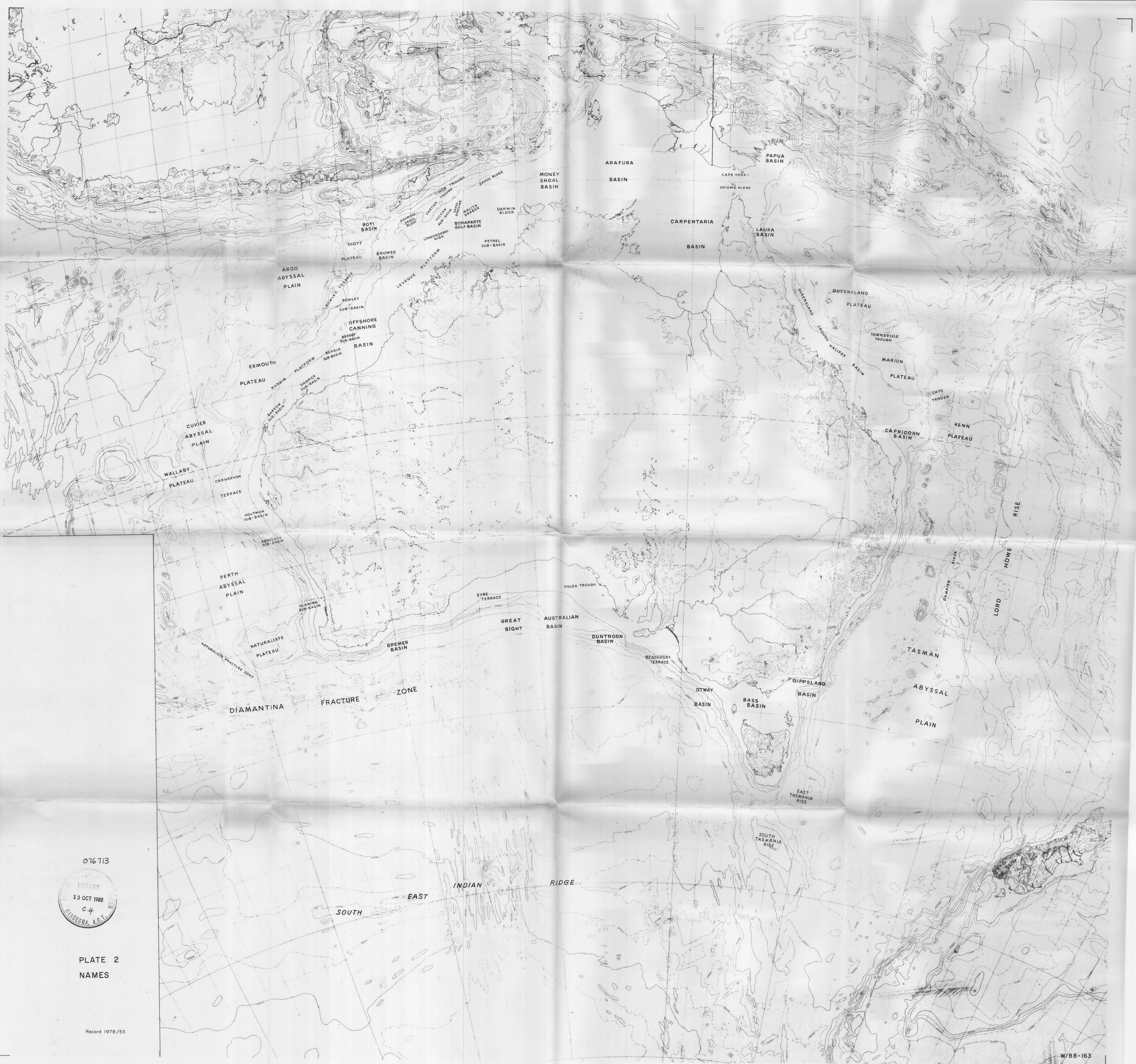


PLATE I  
TECTONIC/GEOLOGICAL MAP

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- Offshore units have been given the top color of the colored unit in the block sequence
- Geological boundary
  - Anticline
  - Syncline
  - Flexure (fresh denote down-warped side)
  - Fault (fresh denote down-thrown side)
  - Transform fault or fracture zone (arrows show relative displacement)
  - Boundary of Precambrian block
  - Outcrop or crystalline basement
  - Submarine topographic contour in kilometers
  - Mid-Oceanic Ridge
  - Magnetic Quiet Zone
  - Magnetic anomaly
- Color: Blue  
Red  
Orange  
Yellow  
Green  
Brown  
Black
- Scale: 1:100,000  
NAD 83  
Datum: WGS 84  
Projection: Mercator  
Units: Meters





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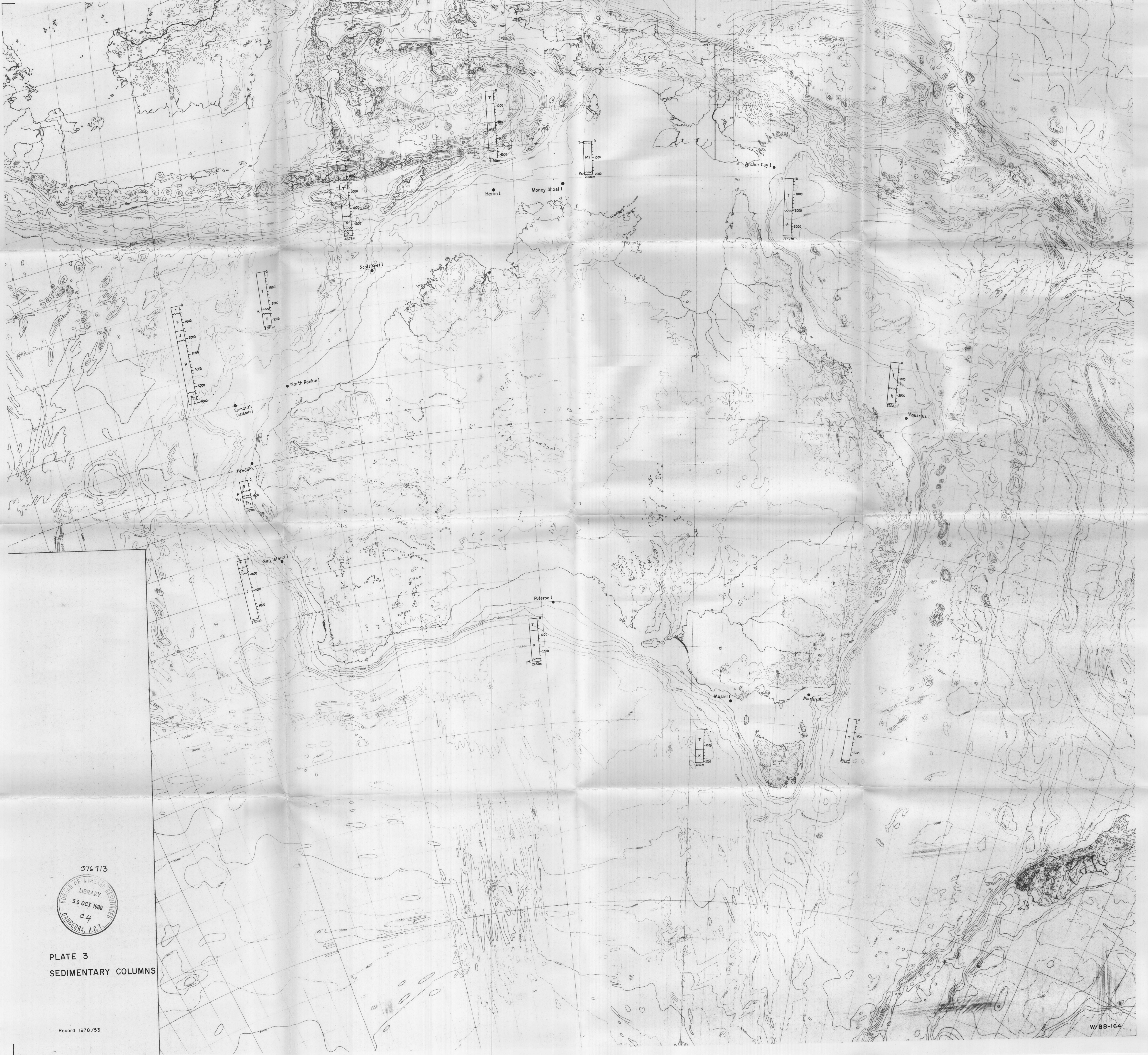


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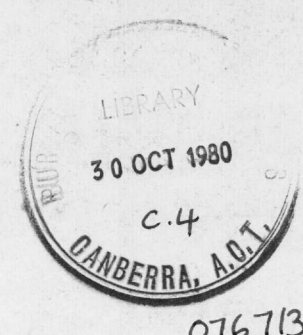
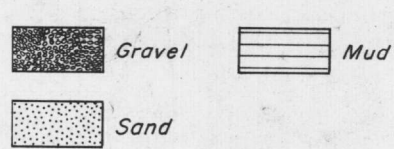
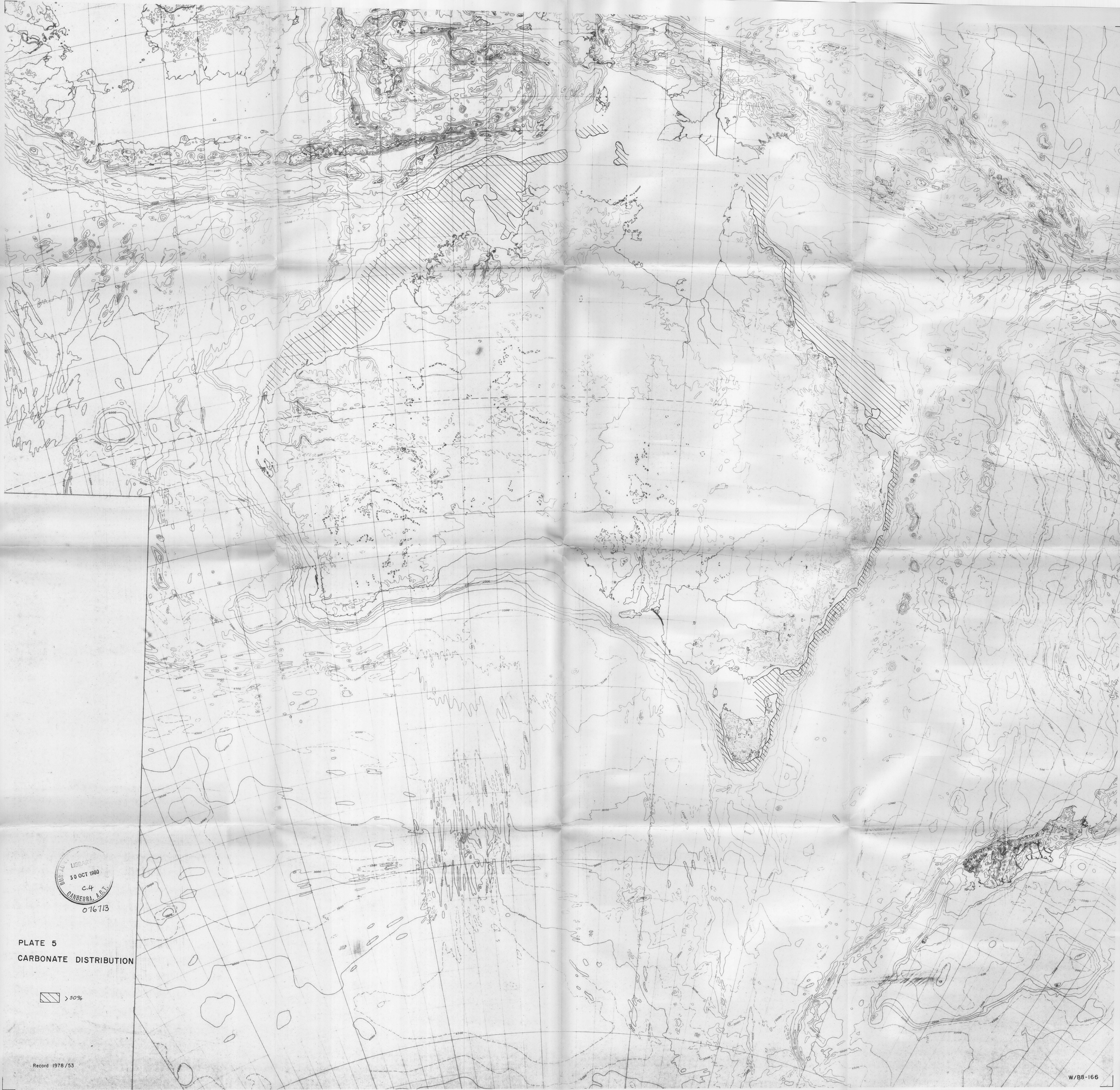


PLATE 4  
SURFICIAL SEDIMENTS

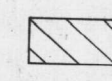






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