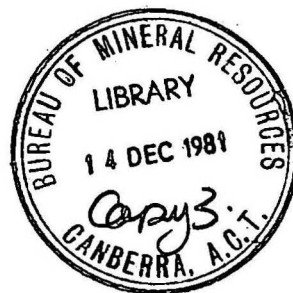


1981/70

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BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)

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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

Record 1981/70

OPERATIONS BRANCH

SUMMARY OF ACTIVITIES

1981

AND STAFF LIST

Assistant Director (Operations): L.W. WILLIAMS

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Record 1981/70

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PUBLICATION AND INFORMATION SECTION

Head of Section: A. Renwick

A. Renwick administered the Section throughout most of the year. During his comparatively short absences on leave and duty, E.P. Shelley acted for him.

The year saw progress with a number of interesting publications, including a revised edition of 'Rocks and Fossils around Canberra' which is intended for the layman, and the more definitive commentary on the 1:50 000-scale map of Canberra, Queanbeyan, and Environs, aimed at the more serious student and the professional.

Progress was also made with the BMR Earth Science Atlas of Australia, for which a number of new commentaries and some new maps were prepared.

Publication Subsection

Principal Editors: W.H. Oldham (until July), A.G.L. Paine

J.F. Truswell was absent on secondment for the whole year, but J. Adkins's appointment in March prevented the Subsection from falling seriously behind in its publications program. However, W.H. Oldham retired in July and, although his position has been filled by internal promotion, the ensuing vacancy has not yet been filled. In the latter half of the year, publication of the BMR Journal fell a month behind schedule because of work overload.

The Publications Coordinating Committee, established in 1979, continued to meet fortnightly and is becoming progressively more experienced and successful in its role of planning and expediting production.

The transfer for functional purposes of the Publications Production Group from the Administrative Section on an experimental basis in 1980, has proved to be successful, and a closer working relationship with editors, and hence an increase in overall efficiency, have resulted.

After wide consultation with authors and draftsmen the Subsection compiled 'Preferred Abbreviations', which is to be published shortly as the first edition of a miscellaneous monograph.

Information Subsection

Principal Information Officer: E.P. Shelley

General Services

A large part of the Subsection's activities was directed towards the continuous flow of enquiries from Government, industry, and the public. The demand from schools and students for project material continued at a high level throughout the year. In the 8-month period February-September, 582 requests from schools and over 10 000 from students were received, a significant increase over the same period of 1980. There was also an increase in the number of enquiries from industry reflecting the steady increase in exploration activity.

The Subsection coordinated BMR contributions to various publications including the Arid Zone Newsletter, AAEC Annual Report, Newsletter of the NSW Committee for the Coordination of Government Geological Programs, the Department's Annual Report, and various yearbooks and directories. The Subsection also coordinated answers to Parliamentary questions and Ministerial correspondence, and prepared briefs and background papers for the Minister and the Department.

A brief was prepared for the Department for the 37th meeting of ESCAP and the 8th meeting of the ESCAP Natural Resources Committee.

Information Systems

Maintenance of the Publications and Records Index continued during the year. This index shares the GEODX database with the Stratigraphic Index, and is maintained on BMR's HP-1000 computer using the IMAGE Data Base Management System. The list of Records in the 'Quarterly list of publications of BMR' is now compiled from the database, as was Appendix 2, and the first part of Appendix 1 in this Record.

In cooperation with the Cartography Section, a computer database was designed to facilitate the production of the index of airborne surveys.

During January and February, a survey was made of reference and source databases in BMR, both existing and proposed.

In March, E.P. Shelley presented a paper, 'Non-bibliographic geoscience databases in Australia', at an AMF seminar on geoscience numeric and bibliographic data.

In September, BMR hosted a meeting of BMR and State Geological Survey information specialists to discuss common problems and explore possible areas of cooperation.

BMR continued its support of the Australian Earth Sciences Information System (AESIS). \$7 000 was contributed towards AESIS computing costs in 1980/81 and \$8 000 has been provided for 1981/82. E.P. Shelley represented BMR at the AESIS Advisory Committee Meeting in Melbourne in October.

Publications

New editions of Parts 1 and 2 of the list of publications were compiled, printed and distributed. A brochure 'Geological, Geophysical, and Geochemical Maps from BMR' was produced early in the year to replace the two brochures 'The Geological and geophysical activities of BMR in Australia and Antarctica'.

A consolidated list of BMR maps and other material available from the Government Printer Copy Service, and a list of PSSA operations are at an advanced stage of compilation.

The Subsection produced the 'Quarterly List of Publications of BMR' during the year. BMR Records were despatched monthly to open file centres.

The 12th issue and one supplement of the list of coming events in the earth sciences were compiled and distributed within BMR, and to some other organisations and individuals.

Four project brochures were revised and printed in October; one other was reprinted without revision. Seven others, including a new title (Tin), are in various stages of preparation.

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Internal Information Services

The Subsection continued to provide a watching brief on UN activities in the earth sciences and mineral and energy resources relevant to BMR, and briefed officers and circulated material as appropriate. Hansard and Notice Papers were scanned for items of interest to BMR and these were circulated to relevant officers.

Symposium and Lectures

The 10th BMR Symposium was held in Canberra on 5-6 May. There were 160 registrations by geoscientists from industry, tertiary education institutions, and Commonwealth and State organisations. Fifteen papers were presented by BMR scientists; the Harold Raggatt Award for the best presentation was awarded to Dr R.W. Johnson.

The Subsection organised the Tuesday morning lecture series held at BMR from January to April.

Public Relations and Publicity

Several student groups visited BMR during the year; most visits were organised in cooperation with Museum staff. Careers information in the geosciences and mining was provided at 'Careers 81' at Bruce College of Technical and Further Education in July. Some of the material from the Careers 81 display was sent to Rockhampton for a similar display in late July.

A collection of rocks from the Canberra region, and assistance with a seismology display were provided to Canberra's 'Questacon' science education centre.

In the 12-month period to September 1981, 28 news releases were prepared on various BMR activities (7), publications (7), availability of data (10), and petroleum reserves (4). A program of advertising of BMR publications in selected newspapers continued in 1981.

LIBRARY

Librarian-in-Charge: M.A. Thompson

Computerised Loan System

Further development of LIBLN, the computerised loan system, took place during the year. Three new items and a new set were added, and the database was reorganised to provide for the incorporation of ordering information, and to minimise the amount of empty space. A clean up of serial entries was also made. The computerised ordering information proved valuable during the time when new subscription lists were being prepared for the contractor.

The list of keywords used in the database was rationalised.

Reference Services

The Reference Librarian made a number of on-line searches of overseas databases during the year. BMR joined AUSINET and it is now possible to interrogate AESIS again. The keyword data in LIBLN are also proving useful in answering queries.

A bibliography on mineral resources assessment was commenced.

Seminars and Courses

The more important seminars and courses attended by Library staff during the year were:

18-26 January - Mrs Thompson attended the first joint conference of the New Zealand Library Association and the Library Association of Australia, held in New Zealand, and a Post-Conference Seminar on Resource Sharing. While in New Zealand, Mrs Thompson visited the libraries of the Geological Survey and of DSIR Geophysics Division in Wellington.

23-24 March - Mrs L. Woods, Ordering Officer, attended an Interdepartmental Finance Seminar organised by the Department of Administrative Services.

27 March - Mrs McGeehan and Mrs Toth attended an Inter-Library Loans Seminar, organised the the Special Libraries' Section of the ACT Branch of the Library Association of Australia.

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1 June - Mrs Toth attended a Workshop on Copyright at the National Library.

10 July - Mrs Toth attended a Seminar on Serials Cataloguing in the '80s.

22 July - Mrs McGeehan and Mrs Norfolk attended a meeting of the Library Association of Australia, ACT Branch, On-Line Users' Group held at BMR. Mrs McGeehan presented a short paper on the Library's database.

27-28 August - Mrs Norfolk attended a National Seminar on Acquisitions: Approval Plans and Blanket Orders - Viable Acquisition Techniques for the '80s? in Melbourne.

General

Four Library Committee meetings were held during the year. Members of the Committee assisted in preparation of the list of serials to be ordered in 1982; the number of subscriptions had to be reduced owing to rapidly increasing prices.

Periodical circulation was suspended from March to October owing to staff shortages.

While overseas on leave, Mrs Thompson visited the IGS Library in London, USGS Library in Reston, and the Science and Technology Division of the Library of Congress in Washington.

Use of the Library's facilities and collections by non-BMR personnel increased as shown by inter-library loan and visitor statistics.

Statistics

A statistical summary of Library activities for the period November 1980 to October 1981 is given below. Figures for the previous 12-month period are given in parentheses.

Loans (internal, including circulation of serials)	11 466	(17 466)
Reference searches - for BMR staff	215	(187)
- for others	221	(227)
- total	436	(414)

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Recall notices (produced by computer)	4 290 (15 483)
Inter-library loans - requested from BMR	4 377 (4 116)
- requested by BMR	893 (967)
Acquisitions - new serials	64 (104)
- books (\$10 + in value)	260 (400)
Cataloguing - books, pamphlets, maps, company reports, microfiche	927 (847)
- serials	80 (120)
Visitors to the Library	705 (606)

ADP APPLICATIONS SECTION

Head of Section: A.J. Barlow

General

The Section provided ongoing services to computer users as in previous years. These functions included operation of the Hewlett Packard computer system, CSIRO node operation, on-line and off-line data preparation, programming of laboratory data acquisition systems including joint projects with the Australian National University, and consultant services on system operation, data base problems and programming to user groups.

CSIRO Computing

There was little change from 1980 in the nature of jobs processed by the CSIRO computer. To keep pace with increasing charges, some processing was transferred to the in-house Hewlett Packard system. Running of jobs at low priority to reduce computing costs was encouraged.

Finance

Although computing charges on the CSIRO network were increased by about 25% in July 1980, most of the increase was absorbed. A further increase of about 15% in July 1981 was compensated by an allowance in the 1981/82 budget allocation. Total expenditure for 1980/81 was \$620 000 including about \$150 000 for consumable items and repairs and maintenance, and about \$90 000 for contract processing of seismic data.

Information Storage and Retrieval

There are now some 30 separate data bases in operation on the Hewlett Packard system using the IMAGE data base management system. The total storage capacity required by these data bases is about 150 million

characters of on-line disc storage and about 50 million characters on removable disc packs. A few of the small data bases are dormant due to lack of user involvement. Some of the larger data bases are near capacity and will require restructuring by the end of the year. To cope with this requirement, an additional disc drive has been ordered and is due for delivery about the end of the year. Several new data bases were implemented during the year including one for Central Office. This was rather larger than anticipated and it was necessary for Central Office to provide their own data entry operator.

Automated Cartography

Utilisation of the digital flat-bed and drum plotters during 1981 was high for currently running projects but little progress was made on the development of new major applications. An interactive, intelligent graphics terminal was received and cartographic personnel made considerable progress in becoming familiar with its use, and have developed some minor applications. The next major task is to produce a comprehensive report on future cartographic applications, together with a summary of necessary hardware and software. A 'turnkey' hardware and software system is desirable, but it may be necessary to implement some of the less demanding applications on existing hardware. It is expected that much of the necessary application software may be able to be purchased.

ANU Joint Projects

The mass-spectrometer computer-based acquisition system performed satisfactorily throughout 1981 and little intervention by BMR programmers was necessary to ensure continuous operation.

Considerable effort was spent on the acquisition and processing of data from the new experimental ion-microprobe. By the end of the year, good data was being obtained and processed, but there will need to be intermittent enhancement of the computer system for probably some years. ANU have been hampered by the loss of their research assistant who was expected to maintain and contribute to the enhancement of the system. ANU expect to recruit a replacement programmer, but he will probably require considerable tuition before contributing a great deal to the project.

Very little work was done on the palaeomagnetic data acquisition system as priority for programming resources was given to the ion-microprobe project. However, the system operated satisfactorily throughout the year. A major enhancement to the operating system and the addition of new magnetometers and computer peripherals is scheduled for early 1982.

Computing Systems Review

The feasibility study on a proposal to obtain a medium size in-house computer remained suspended during 1981. It is expected that the computing 'Strategic Plan', being prepared for the PSB, will include much of the necessary study and documentation for the submission to enable the necessary approvals to be sought.

Assistance to other Branches

The usual assistance in programming, development, systems design, and program conversion was provided to scientific and technical staff, and a number of problems relating to retrieval from data bases were resolved. For some users, complete data base design was undertaken and systems implemented ready for data compilation and input. One Science 3 officer from the ADP Section spent nearly the entire year on the LANDSAT system both with installation of hardware and development of applications programs. Two CSOs remain outposted to the Airborne Reductions Group, and an additional CSO 3 is outposted to the seismic processing development project. The acting CSO 3 was seconded to the Irian Jaya project in Bandung for two months to assist in the setting up of applications software on their mini-computer system, to upgrade the operating system software, and to train users.

Hardware

The in-house Hewlett Packard 1000 system was further expanded during 1981. The accompanying diagram shows the current configuration of the system. The most notable addition to the system was the digital image processing system for LANDSAT magnetic tapes. The processor was installed on the ground floor; with the computer, monitor, keyboard, and track ball on the third floor. An additional 120 Mbyte disc and several user terminals were also integrated into the system.

A dial-up facility for the Hewlett Packard system was also successfully implemented.

Some enhancement was also made to some of the field acquisition systems. A replacement disc and CPU were obtained for the magnetotelluric system, a flexible disc for the palaeomagnetic system, and additional tape drives and replacement CPU for the marine acquisition systems.

PLANNING & REVIEW SECTION

Acting Head of Section: P.A. Smith

Staff

K.M. Kennedy retired on 7 April 1981 and P.A. Smith acted as Head of Section for the remainder of the year. Dr Marion Leiba was appointed to the Section on 15 May 1981. S.E. Smith continued to act on higher duties throughout the year.

Program Formulation

A document summarising BMR projects for 1981/82 was prepared and distributed.

During 1981 a new divisional structure was approved for BMR and program formulation for 1982/83 was largely based on it. Divisional programs were compiled within operational groups for consideration at Director's meetings early in December 1981. The resulting tentative program will provide a basis for Forward Estimates and for allocation of in-house scientific and technical services.

A move was made towards program budgeting and program formulation shifted to a financial year basis.

Program Data Base

Development continued of a data base incorporating financial, staffing, and other information on BMR programs. The possibility of extending the use of the data base for program budgeting is being investigated. The costing system developed by the Section during the 1970s for use on the CYBER 76 computer was discontinued.

General

The section provided a secretariat for the Director and Assistant Director (Operations) and represented BMR at AMSTAC and ARPAC meetings as required. Involvement with various review and program

committees continued and assistance was given in the preparation of new program initiatives.

CARTOGRAPHY SECTION

Chief Cartographer (Production): P.A. Boekenstein
Chief Cartographer (Resources) : M.E. Nancarrow

Management and Staffing

At October 1981 the staff of the section consisted of 64 Draftsmen, 1 Graphic Designer, 3 Photographers, 1 Technical Officer, 11 Drafting Assistants, 1 Assistant (Printing), and 1 Clerical Assistant.

The section continued to operate with the Mapping Subsection located at Canberra and the Publications Subsection at Queanbeyan. Project management continued to be applied successfully.

Three draftsmen accompanied parties on field surveys: P. Corbett, Lyndhurst (geology); C. Knight, Davenport (geology); and J. Gallagher, Pine Creek (geology). I. O'Donnell visited the three geological field parties during a field supervisory visit between 7 and 23 August. He also visited the offices of the NT Department of Mines and Energy at Alice Springs and Darwin to discuss geological map compilation methods, future mapping programs, and estimated completion times.

R. Swoboda visited Mercury-Walch between 3 March and 13 March 1981 to prepare reprostat and partly supervise reprinting of 1:2½ million Australia geological map (4 sheets).

M. Steele visited Mackay Aerial Photo Surveys at Mackay from 21 to 23 September to advise the contractor on flight-path recovery requirements, procedures, and standards.

H. Hennig visited BSP Planning & Design in Melbourne on 12 March to discuss contract drafting procedures and problems on completion of the Mundogie 1:100 000 geological map. R. Cooper and S. Holliday visited several organisations in Sydney to inspect their plotting and Interactive graphics systems from 25-27 March.

R. Cooper attended a seminar "Using and understanding computer graphics", in Sydney from 15-17 July.

A "Tektronix" 4054 graphics computing system was acquired during the year.

Production (November 1980-October 1981)

1. <u>Geological maps</u>	1:100 000	1:250 000	Other scales
Photoscale compilation in progress	19	4	-
Photoscale compilation completed	5	-	-
Preliminary Edition:			
Compilation by BMR in progress	4	-	3
Compilation by BMR completed (ready for printing)	1	-	2
Printed	11	3	2
1st and 2nd Edition:			
Fair drawing in progress,			
BMR	-	-	1
Contract*	4	5	-
Fair drawing completed,			
BMR	-	-	5
Contract*	4	7	-
Printing in progress**	3	2	-
Printing completed**	3	6	10

Notes:

* Contract drafting stages: Specifications prepared - 6 maps; contractor recommended - 10 maps; first proof checked - 14; second proof checked - 12 maps.

** Printing stages: specifications prepared - 20 maps; printing contracts recommended - 15 maps; colour designs and colour guides - 19 maps; screen masters and dyeproofs checked - 17 maps; machine proofs checked - 10 maps; printed maps checked - 15 maps.

The above statistics include two 1:10 million maps for BMR Earth Science Atlas together with reprints of Australia 1:2.5 million geological map (4 sheets).

2. <u>Geophysical Maps</u>	1:100 000	1:250 000	1:1 000 000	Other scales
Pre-survey compilation completed	1	19	-	-
Flight path recovery, in progress	1	1	-	-
Flight path recovery, completed	-	11	-	-
Preliminary releases: magnetic and radiometric	4	130	20	-
Total magnetic intensity contours (updating)	-	-	8	8
Marine surveys (computer drawn):				
Track maps	-	-	-	1
TMI profiles	-	-	-	3
gravity series maps, (computer drawn)	-	51	3	-
Stream sediment geochemical series (computer drawn)	8	-	-	-
Petroleum Development and Exploration Titles	-	-	-	2
3. <u>Text Figures, diagrams etc. completed</u>				
BMR Journal (issues 6/2, 6/3, 6/4, 7/1)				230
Bulletins 187: 8 figures; 210: 12 figures, 11 plates; 212: 43 figures, 7 plates; 213: 30 figures, 25 plates				136
Reports				84
BMR Earth Science Atlas commentaries				11
Records and Miscellaneous (includes AMI)				1 148
External publications				240
Slides for BMR Symposium and lectures				491

ADMINISTRATIVE SECTION

Senior Executive Officer: B.M. Williams

The Administrative Section provided administrative support throughout the year in the areas of finance, personnel, establishments, recruitment, publications processing, sales and distribution, office typing and registry services, vehicles, overseas visits, printing, and photocopying, and day-to-day administrative assistance.

Finance

Table 1 sets out the final estimates for 1981/82 and actual expenditure for 1980/81. Total BMR expenditure of \$15 198 924 in 1980/81 was 0.03% less than appropriations.

In 1980/81, additional estimates were obtained for salaries and allowances (\$301 300), office requisites (\$15 000), office services (\$11 000), general stores (\$18 000), and freight and cartage (\$4 000). To offset these additional estimates, savings were offered against motor vehicles (\$20 000) and aircraft operations (\$32 000).

A new accounting procedure was introduced on a trial basis whereby minor field purchases and travelling/camping allowances are paid by cheque in the field. The 1981 seismic field party used the new procedure and if it proves successful, it will be extended to all field parties in 1982.

Preliminary investigations took place in September 1981 to establish whether the effort currently required to process several different stores forms can be reduced by the introduction of a composite form. This has become necessary because of staffing difficulties in the Supply Section, Fyshwick. If a practical solution can be found, the new procedures and form are likely to be introduced early in 1982.

Draft estimates forms were redesigned to complement the new 'Project Proposal' and 'Continuing Project' forms. The draft estimate forms will be used initially to establish the cost of each project then become part of BMR's draft estimates. The forms will be modified as the need arises to meet future requirements.

At the request of Department of Administrative Services, BMR put in a submission on alternative methods of ordering/paying for contract fuel.

Staff

The level and standard of administrative support was below that of past years. This was due to several factors: staff turnover exceeded 70, 'relief' positions were abolished, it was necessary to use more staff for greater periods on higher duties, and several positions were unoccupied for varying periods.

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The Administrative Section was restructured, and divided into two Subsections, namely Establishments and Staffing, and Administrative Services, each headed by an Executive Officer. A Senior Executive Officer is responsible for the overall operation of the Administrative Section. The Establishments and Staffing Subsection now handles establishments, staffing, personnel, recruitment, and branch services; the Administrative Services Subsection handles finance, registry, office and typing services, works programs, vehicles, travel, and publications sales and distribution.

Major reviews of technical positions in the Geological and Geophysical Branches were undertaken during the year. Other overdue establishment reviews will be expedited when the vacant establishment cell positions are filled.

One major change in conditions of service was the amalgamation of the two-tier camping allowance (married/unmarried) rate into one rate based on the married rate.

Works Program

The program for 1981/82 is shown in Table 2.

Public tenders are to be invited before the end of 1981 for the Palaeontological Store (est. \$220 000), and an extension to the Core and Cuttings Laboratory (est. \$380 000). Both are due for completion by mid-1982.

Compactus units for half the areas of each of the above are expected to be ordered before June 1981 for delivery and installation immediately after the buildings are completed. These are estimated to cost in excess of \$400 000.

Work commenced during 1981 on replacement or modification of existing fume cupboards in the BMR building; work should be completed in early 1982.

Expenditure on furniture and fittings will be at a higher level partly because of the need to provide new furniture for the new positions of Divisional head.

Vehicles

Four accidents were recorded. No personal injuries were sustained, but one vehicle and one 4-wheel trailer were extensively damaged.

Six 30-cwt International 4 x 4s were replaced by 30-cwt Chevrolet CK20 4 x 4s and twenty 2-wheel drive vehicles were replaced. As a result of deferred replacement over the past two years, owing to financial constraints, the Transport and Storage Division, Department of Administrative Services, is scheduled to replace a further 54 vehicles at the end of 1981 for the 1982 field season.

This major replacement program presents an opportunity to change the composition of the existing fleet. Fully modified 4 x 4 vehicles are to be replaced by a mixture of 4 x 4 and 4 x 2 vehicles some of which will require little if any modification. Sufficient fully-modified SWB 4 x 4s will be retained on hire. This will result in savings in hire charges, and modification and running costs.

General

Sales of publications exceeded \$154 000 for year ending September 1981, an increase of 67 percent over the same period of 1979/80.

The Department completed a stocktake of publications held in the bulk store at Fyshwick and these stocks are to be reviewed in line with a recommendation of the Review of Commonwealth Functions Committee.

All light-fittings in passageways and stairwells were changed from light bulbs to fluorescent tubes to overcome a safety problem caused by the constant failure of the light bulbs.

Severe restrictions had to be imposed on photocopying services from March to June, owing to financial constraints.

Assistance was given for the engagement of a consultant to prepare tender specifications for the crewing and operation of BMR aircraft. This was necessary owing to the withdrawal of TAA from this function after many years.

The new IBM Copier Mark III has been in operation since the commencement of 1981. While it has several advantages over its predecessor, Mark II, it also has had several mechanical failures and periods of stand-down.



TABLE 1EXPENDITURE FOR 1980/81 AND FINAL ESTIMATES FOR 1981/82

<u>Item</u>	<u>Description</u>	<u>Final Estimates</u>	<u>Actual Expenditure</u>
		<u>1981/82</u>	<u>1980/81</u>
		\$	\$
432-1-01	Salaries and allowances	11 270 000	9 866 641
02	Overtime	166 200	158 338
		<hr/>	<hr/>
		11 436 200	10 024 979
		<hr/>	<hr/>
432-2-01	Travelling and subsistence	610 000	553 910
02	Office requisites and equipment, stationery and printing	160 000	157 922
03	Postage, telephones and telegrams	227 600	224 897
04	Office services	54 000	51 530
05	Printing and distribution of maps and publications	348 000	346 739
06	Motor vehicles - hire and maintenance	641 000	599 216
07	Aircraft maintenance and running expenses	556 000	478 029
08	General stores	698 000	640 565
09	Contract services	660 000	675 949
10	Freight and cartage	67 000	63 870
11	Repairs and maintenance	73 000	72 063
12	Computer services	702 600	629 249
13	Contract services - Bass Basin geophysical framework study	2 000 000	-
14	Incidental and other expenditure	82 200	71 740
		<hr/>	<hr/>
		6 879 400	4 565 679
		<hr/>	<hr/>
TOTAL DIVISION 432		18 315 600	14 590 658
		<hr/>	<hr/>
891-1-01	Plant and equipment	650 000	608 266
		<hr/>	<hr/>
TOTAL BMR		18 965 600	15 198 924
		<hr/>	<hr/>

TABLE 21981/82 WORKS PROGRAM

	<u>BMR</u> \$	<u>DAS</u> \$
Major new works	600 000 (1)	310 000 (2)
Minor new works	23 500	82 000
Repairs and maintenance	19 000	91 000
Furniture and fittings	27 000 (3)	-

(1) Comprises \$220 000 for Palaeontological Rock Store and \$380 000 for extension of Core and Cuttings Laboratory.

(2) Modify fume cupboards \$160 000, upgrade air conditioning \$150 000.

(3) Estimated - not yet approved.

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APPENDIX 1
Publications issued
in period 1/10/80 to 30/9/81

Bulletins

- 182. Cook P.J. Mayo W.
Geochemistry of a tropical estuary - Broad Sound, Queensland.
- 186. Shergold J.H.
Late Cambrian trilobites from the Chatsworth Limestone, western Queensland.
- 196. Fraser A.R. Pettifer G.R.
Reconnaissance gravity surveys in Western Australia and South Australia, 1969-1972.
- 198. Wells A.T.
Evaporites in Australia.
- 202. Smart J. Grimes K.G. Douth H.F. Pinchin J.
The Mesozoic Carpentaria Basin and the Cainozoic Karumba Basin, north Queensland.
- 205. Huleatt M.B. Kennewell P.J.
Geology of the Wiso Basin, Northern Territory.
- 207. Marshall J.F.
Continental shelf sediments: southern Queensland and northern New South Wales.
- 208. Livingston K.R.
Geological evolution and economic geology of the Burdekin River region, Queensland.
- 209. Palaeontological Papers 1981.
- 211. Kennard J.
The Arrinthunga Formation: Upper Cambrian epeiric carbonates in the Georgina Basin, central Australia.

Reports

- 214. Walter M.R.
Adelaidean and Early Cambrian stratigraphy of the southwestern Georgina Basin: correlation chart and explanatory notes.
- 219. Norvick M.
Permian and Late Carboniferous palynostratigraphy of the Galilee Basin, Queensland.
- 220. Everingham I.B. Sheard S.N.
Seismicity of the New Guinea/Solomon Island region, 1972.

APPENDIX 1
Publications issued
in period 1/10/80 to 30/9/81

- 224. Foldvary G.Z.
Catalogue of palaeontological type specimens located in the Department of Geology and Geophysics, University of Sydney - supplement to Report 149.
- 225. Sweet I.P.
Definitions of new stratigraphic units in the Seigal and Hedleys Creek 1:100 000 Sheet areas, Northern Territory and Queensland.
- 226. Sweet I.P. Mock C.M. Mitchell J.E.
Chemical analyses of igneous rocks from the Seigal and Hedleys Creek 1:100 000 Sheet areas, Northern Territory and Queensland.
- 227. Gust D.A. Johnson R.W. Chappell B.W.
Petrological data catalogue for Boisa Island, an andesitic volcano in Papua New Guinea: whole-rock, mineral, and modal analyses, and modelling data
- 229. Arculus A. Johnson R.W.
1937 Rabaul eruptions, Papua New Guinea: translations of contemporary accounts by German missionaries.

BMR 80 - Yearbook of the Bureau of Mineral Resources.

Australian Mineral Industry Annual Review 1978.

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Other Publications

HENDERSON, G. A. M. - Commentary on the engineering geology map of the Coppins Crossing area, ACT.

RENWICK, A. (compiler) - The Australian Geological Delegation to China 1979.

SWEET, I. P., MOCK, C. M., AND MITCHELL, J. E. - Commentary on geology of Seigal and Hedleys Creek 1:100 000 Sheet areas, NT and Queensland.

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1:100 000 Geological Map

East Alligator NT.

Preliminary Geological Maps

1:100 000

Carrara Range Region NT, Constance Range Region Qld, Coolullah Qld,
Mary River-Point Stuart NT, Mount Oxide Qld, Myally Qld, Undoolya NT.

1:250 000

Duchess (special) Qld, McKinlay Qld, Youanmi WA.

Stream-Sediment Geochemistry Maps

(1:100 000-scale)

Georgetown Qld (4 maps: copper-lead-zinc, tin-bismuth-rubidium,
tungsten-niobium-arsenic, uranium-cerium-thorium); Gilberton Qld
(4 maps: copper-cobalt-nickel, tin-bismuth-tungsten, uranium-thorium-
yttrium, zinc-arsenic-lead).

Engineering Geology Map

(1:10 000-scale)

Coppins Crossing ACT.

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- 1968/136 Smith E.R.
Discussion on seismic record sections, Ngalia Basin Survey, Northern Territory 1967-1968.
- 1978/ 52 Bauer J.A.
Denison Trough seismic survey, Queensland, 1978: Preview Report.
- 1978/107 McKay B.A. Duff P.G.
Application of enhanced recovery to the Moonie oilfield, Queensland.
- 1979/ 20 Robertson C.S. Cronk D.K. Nicholas E. Mayne S.J. Townsend D.G.
A review of petroleum exploration and prospects in the Great Australian Bight region.
- 1979/ 34 Rees J.E. Wyatt B.W. Luyendyk A.P.J.
The Airborne Reductions Group utility system - manuals and program listings.
- 1979/ 76 Moore R.F.
Estimation of parameters using least squares.
- 1979/ 87 Henderson G.A.M.
The geology of the Canberra-Queanbeyan 1:50 000 map area.
- 1980/ 30 Towner R.R. Gibson D.L.
Geology of the Late Carboniferous and younger rocks of the onshore western Canning Basin, Western Australia.
- 1980/ 31 Purvin & Gertz Inc. Macdonald, Wagner & Priddle Pty Ltd
Minimum economic reservoir size project.
- 1980/ 33 Stuart-Smith P.G. Needham R.S. Roarty M.J. Crick I.H.
Geology of the Mundoque 1:100 000 Sheet area, Northern Territory.
- 1980/ 39 Rossiter A.G. Scott P.A.
Stream-sediment geochemistry of the Seigal and Hedleys Creek 1:100 000 sheet areas, northern Australia.
- 1980/ 43 Hutton L.J. Sweet I.P.
The geology of the Lawn Hill/Riversleigh region, Queensland.
- 1980/ 44 Warren R.G.
Summary descriptions of mineral deposits by commodities in the Alice Springs 1:250 000 sheet area, Northern Territory.
- 1980/ 45 Warren R.G.
The Arunta Block in the Huckitta 1:250 000 Sheet area: a review of data to June 1980.
- 1980/ 52 Fraser A.R. Anfiloff W.

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Gravity survey along traverses in the southwest of Western Australia,
1970 - operational report

- 1980/ 53 Jaques A.L.
Mineral analyses and rock descriptions for cumulate peridotites and gabbros from the Marum ophiolite complex, northern Papua New Guinea.
- 1980/ 54 Dow D.B.
Palaeozoic rocks of the Hardman, Rosewood, and Argyle Basins, East Kimberley Region, Western Australia.
- 1980/ 56 Jacobson G. Hohnen P.D.
Groundwater investigation at the Hume Industrial Estate, ACT, 1978.
- 1980/ 57 Lorenz R.P. Abell R.S.
Bibliography of the geology of the ACT and environs.
- 1980/ 58 Purvin & Gertz Inc. Macdonald, Wagner & Priddle Pty Ltd
User manual for the financial model of petroleum reservoir system (FIMPER).
- 1980/ 60 Moss F.J.
Central Eromanga Basin Project progress report, January-June 1980.
- 1980/ 61
Geological Branch Annual Summary of Activities 1980.
- 1980/ 62 Liu Y.S.B. Gardner D.
Trisponder navigation system modifications.
- 1980/ 63 Stewart A.J. Offe L.A. Glikson A.Y. Warren R.G. Black L.P.
Geology of the northern Arunta Block, Northern Territory.
- 1980/ 64 Fuchs K.
Calculation of synthetic seismograms by the reflectivity method.
- 1980/ 65 Plumb K.A.
Report on symposium on Qinghai-Xizang (Tibet) Plateau. Beijing and southern Tibet, May-June 1980.
- 1980/ 66 Rixon K. Nicholas E. Haupt A.
Uncorrected geothermal map of Australia.
- 1980/ 67 Abell R.S. Truswell E.M.
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- 1980/ 68 Stagg H.M.J. Fraser A.R. Dulski R.A.
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- 1980/ 69 Operations Branch Summary of Activities 1980 and Staff List.
- 1980/ 70 Geophysical Branch Summary of Activities 1980.
- 1980/ 71 Mineral Resources Branch Summary of Activities for 1980.
- 1980/ 72 Interim Engineering Services Summary of Activities 1980.
- 1980/ 73 Petroleum Exploration Branch Summary of Activities 1980.
- 1980/ 74 Simpson C.J.
Georgina research for the period April-September 1980.
- 1980/ 76 Sweet I.P. Mond A.
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- 1980/ 77 Pinchin J.
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- 1980/ 78 Tucker D.H.
Westmoreland airborne magnetic and radiometric survey, Queensland 1973.
- 1980/ 79 Pieters P.E.
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- 1980/ 80 Cull J.P.
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- 1980/ 82 Perry W.J.
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- 1980/ 84 Tilbury L.A. Whitworth R. Staqq H.M.J.
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- 1980/ 85 Mutton A.J. Warnes A.T.
The source of some magnetic anomalies in the Burrell Creek Formation, Pine Creek Geosyncline, Northern Territory.
- 1981/ 2 Collins C.D.N.
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- 1981/ 3 Ward J. McLeod I.R.
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- 1981/ 6 Abell R.S.
Notes to accompany the 1:25 000-scale geological field compilation
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- 1981/ 7 Wolter P.J.
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- 1981/ 10 Mutton A.J. Stuart D.C.
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Northern Territory, 1979.
- 1981/ 11
Abstracts: 10th BMR Symposium, Canberra, 5-6 May 1981.
- 1981/ 12 Ozimic S.
Stratigraphic drilling in the Cretaceous Toolebuc Formation in the
southern and eastern Eromanga Basin, 1980 - a contribution to BMR/CSIRO
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- 1981/ 14 Sheraton J.W.
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- 1981/ 16 Tilbury L.A.
1980 Heard Island Expedition: marine geophysical operations and
preliminary results.
- 1981/ 17 Sexton M.J.
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- 1981/ 19 Wake-Dyster K.D.
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- 1981/ 20 Plumb K.A.
McArthur Basin Research, July-December 1980.
- 1981/ 21 Gidley P.R.
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- 1981/ 22 Wake-Dyster K. Pinchin J.

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- 1981/ 23 Stewart A.J. Williams I.R. Elias M.
Notes on the preliminary Yovanmi 1:250 000 geological series map,
Western Australia.
- 1981/ 25 Sparksman G.F.
Road gravel investigation, Block 64, Tennent, ACT.
- 1981/ 26 Gidley P.R.
Macquarie Island Geophysical Observatory Annual Report 1976.
- 1981/ 27 Tilbury L.A. Whitworth R.
A guide to digitising stripchart profiles and seismic horizons.
- 1981/ 28 Passmore V.L.
BMR Ivanhoe No. 1 well completion report.
- 1981/ 30 Perry W.J.
Murray Basin Hydrogeological Project, Progress Report 5 for half year
ended 31 March 1981.
- 1981/ 37 Donald I.
The computer program 'OYSHL'.
- 1981/ 39 Needham R.S.
A tabulated presentation of metallic mine and prospect data for the Pine
Creek Geosyncline, NT.
- 1981/ 49 Shelley E.P.
Summary of BMR information sources and systems.

APPENDIX 3

Data released through the Australian Government Printer copy service during period 1/10/80 to 30/9/81

Photoscale geological compilations1:100 000 Sheet areas

Bowthorn Qld (12 sheets), Carrara NT (8 sheets), Dneiper NT (12 sheets), Mammoth Mines Qld (16 sheets), McKinlay River NT (12 sheets), Mitchiebo NT (4 sheets), Musselbrook Qld (7 sheets), Quartz NT (12 sheets), Undilla Qld (4 sheets). All compilations are at 1:25 000.

Airborne geophysical maps

(Key: 1 = Magnetic contours, 2 = Magnetic profiles, 3 = Total-count radiometric contours, 4 = Total-count radiometric profiles, 5 = Potassium radiometric profiles, 6 = Uranium radiometric profiles, 7 = Thorium radiometric profiles, 8 = Radioaltimeter profiles, 9 = Flight lines, 10 = Th/K, U/Th, U/K ratio profiles, * = data reduced from published 1:126 720-scale maps and re-issued at 1:250 000)

1:100 000 Sheet areas

South Australia. Cannawigara (1), Keith (1), Kingston (1), Lucindale (1), Naracoorte (1), Santo (1).

1:250 000 Sheet areas

Northern Territory. Arnhem Bay/Wessel Islands (1), Blue Mud Bay/Port Langdon (1), Gove/Truant Island (1), Milingimbi/Junction Bay (1), Mount Marumba (1).

Western Australia. Billiluna (2, 4, 5, 6, 7, 8, 9), Collie (2, 4, 5, 6, 7, 8, 9, 10), Gordon Downs (2, 4, 5, 6, 7, 8, 9), Lucas (2, 4, 5, 6, 7, 8, 9), Pemberton (1, 2, 3, 4, 5, 6, 7, 8, 9, 10), Stansmore (2, 4, 5, 6, 7, 8, 9).

South Australia. Naracoorte (1, 2, 3, 4, 5, 6, 7, 8, 9, 10).

Queensland. Glenormiston (1, 2, 2-surface, 9).

New South Wales and Victoria. Bathurst (1*), Bourke (1*), Cargelligo (1*), Cobar (1*), Dubbo (1-50nT), Forbes (1*), Gilgandra (1, 1-50nT, 2, 3, 4, 5, 6, 7, 8, 9), Goulburn (1*), Horsham (1, 2, 3, 4, 5, 6, 7, 8, 9, 10), Mallacoota (1), Narromine (1*), Nymagee (1*), Nyngan (1, 1-50nT, 2, 3, 9).

1:1 000 000 Sheet areas (magnetic contours revised)

Bourke NSW & Qld, Cape Wessel NT, Roper River NT.

Other maps

Lithgow region NSW (1-smoothed, 1-continued up 500 m, 1-continued down 400 m, 9).

Gravity maps

1:250 000 Sheet areas (new series)

Western Australia. Barrow Island, Bedout Island, Dampier, Edmund, Marble Bar, Minilya, Mount Bruce, Newman, Ningaloo, Onslow, Port Hedland, Pyramid, Roebourne, Roy Hill, Turee Creek, Winning Pool, Wyloo, Yanrey, Yarraloola.

New South Wales & Australian Capital Territory. Bathurst, Booligal, Canberra, Cargelligo, Cootamundra, Deniliquin, Dubbo, Forbes, Goulburn, Hay, Ivanhoe, Jerilderie, Narrandera, Narromine, Nymagee, Wagga Wagga.

1:1 000 000 Sheet areas (new series)

Canberra ACT & NSW, Hamersley Range WA.

Seismic data

Shot-point location maps. Barrolka Qld, Canterbury Qld, Eromanga Qld, Windorah Qld 1:250 000 Sheet areas.

Seismic sections. Eromanga Basin 1980, Galilee Basin 1976, Welford 1967, Thylungra 1967 surveys.

Wireline logging data

Map of Great Artesian Basin at 1:2 500 000 showing well locations and registered numbers.

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 R.S. Abell, B.Sc.(Hons)
 L.P. Black, B.Sc.(Hons), Ph.D.
 A.T. Brakel, B.Sc.(Hons), Ph.D.
 C.M. Brown, B.Sc.(Hons), M.Sc., D.I.C.
 D. Burger, M.Sc., Ph.D.
 G.C.H. Chaproniere, M.Sc., Ph.D.
 *J.B. Colwell, B.Sc.(Hons), M.Sc.
 I.H. Crick, B.Sc.(Hons), Dip.Ed.
 M.A. Habermehl, M.Sc., Ph.D.
 G.A.M. Henderson, B.Sc.
 A.L. Jaques, B.Sc.(Hons), Ph.D.
 *J. Knutson, B.A.(Hons), Ph.D.
 D.E. MacKenzie, B.Sc.(Hons)
 *J.E. Mitchell, B.Sc.(Hons)
 K. Modrak, B.Sc., Grad. Dip. Lib.
 A. Mond, Provmany Geol.
 R.S. Nicoll, B.S., M.A., Ph.D.
 L. Offe, B.Sc.(Hons)
 B.M. Radke, B.Sc.(Hons), Ph.D.
 G.P. Robinson, B.Sc.(Hons), Ph.D.
 *S. Shafik, M.Sc.
 *P.G. Stuart-Smith, B.Sc.(Hons)
 E.M. Truswell, B.Sc.(Hons), Ph.D.
 R.G. Warren, B.Sc., M.Sc., D.I.C.
 D. Wyborn, B.Sc.(Hons)
 *L.A. Wyborn, B.Sc.(Hons), Dip.Ed., Ph.D.
 G.C. Young, B.Sc.(Hons), Ph.D.

CHEMIST CLASS 2

*G.R. Ewers, B.Sc.(Hons), Ph.D.

GEOPHYSICIST CLASS 4

B.C. Barlow, B.Sc.(Hons), A.A.I.P.

GEOLOGIST CLASS 1

W.R. Evans, B.Sc.
 *D.B. Fitzsimmons, B.Sc.
 J.R. Kellett, B.Sc.
 R.P. Lorenz, B.Appl.Sc., A.L.A.A.
 P. O'Brien, B.Sc.(Hons)
 A. Stephenson, B.Sc.

SENIOR TECHNICAL OFFICER
GRADE 1

J.G. Pyke
 *A.T. Wilson

TECHNICAL OFFICER GRADE 2

M.J. Bower
 *R.W. Brown
 *K. Ellingsen
 J.L. Fitzsimmons, B.Appl.Sc.
 *D. Guy
 K. Heighway, Dip.Appl.Geol.
 *H. Hughes, F.G.A.A.
 T. Slezak, Dip.Anal.Chem.
 T. Zapasnik

TECHNICAL OFFICER GRADE 1

K. Armstrong
 N. Davis
 H.M. Doyle
 *L. Paine
 *J. Reid, F.G.A.A.
 *K. Reine
 G. Sparksman, B.Sc.
 M.H. Tratt

TECHNICAL ASSISTANT GRADE 2 M. Amar
 P.W. Davis
 *J. Haldane
 L. Kraciuk
 *D.B. Pryce
 A.W. Schuett

CLERICAL ASSISTANT GRADE 4 *H. Harrison
 J. Morrissey

FIELD ASSISTANT D. Gregg
 R. McPake
 *J. Pollard

GEOPHYSICAL BRANCH

ASSISTANT DIRECTOR *J.C. Dooley, B.A.(Hons), M.Sc., F.A.I.P.

GEOPHYSICIST CLASS 5 *D. Denham, B.Sc.(Hons), Ph.D., Grad.A.I.P.,
 M.Inst.P., Grad. Dip. Appl. Geoph., Grad. Dip.
 Statistical Communication Theory
 A. Turpie, B.Sc.(Hons), Grad.A.I.P.
 G.A. Young, M.Sc., A.M.Aus.I.M.M.

GEOPHYSICIST CLASS 4 *F.W. Brown, B.A.Sc., Grad.A.I.P.
 D. Downie, B.Sc., Grad. Dip. Comp. Stud.
 *D.M. Finlayson, M.Sc., A.A.I.P.
 P.M. McGregor, B.Sc.(Hons)
 F.J. Moss, B.Sc.
 D.C. Stuart, B.Sc.
 R. Whitworth, B.Sc.(Hons)

GEOPHYSICIST CLASS 3 *W. Anfiloff, B.Sc.(Hons)
 J.C. Branson, B.Sc.(Hons)
 *F. Brassil, B.A., Dip. Geoscience
 *J.P. Cull, B.Sc.(Hons), Ph.D.
 I.B. Everingham, B.Sc.(Hons), M.Sc., Grad.A.I.P.,
 M.Inst.P.
 J.E.F. Gardner, B.Sc., A.M.Aus.I.M.M.
 P.J. Gregson, B.Sc.(Hons)
 I. Hone, B.Sc.(Hons)
 K. Horsfall, B.Sc.
 M. Idnurm, B.Sc., Ph.D.
 C.O. Leary, B.Sc.
 S.P. Mathur, B.Sc., A.I.S.M., M.S., Ph.D.
 J.M.H. Mulder, Dip.Geol/Geophys.
 G.R. Small, B.Sc., Grad.A.I.P.
 R.S. Smith, B.Sc., M.A.I.P.
 A.G. Spence, B.Sc., B.Comm.
 *H. Stagg, B.Appl.Sc.(Hons)
 *P. Symonds, B.Sc.(Hons)
 F.J. Taylor, B.Sc.(Hons)
 P. Wellman, M.Sc., Ph.D.

* Acting in that position.

GEOPHYSICIST CLASS 2

R.A. Almond, B.Sc.
 *C.D.N. Collins, B.Sc.(Hons)
 *V.F. Dent, B.Sc.
 B.J. Drummond, B.Sc.(Hons)
 J.W. Giddings, B.Sc.(Hons), M.Sc., Ph.D.
 G.D. Karner, B.Sc.(Hons)
 *J.M. Lock, B.Sc.(Hons), Ph.D.
 J.A. Major, B.Sc.
 A.J. McEwin, B.Sc.(Hons)
 M.W. McMullan, B.Sc.
 E.P. Paull, B.Sc.(Hons)
 D.C. Ramsay, M.Sc., Grad.Dip.App.Geoph.
 N. Sampath, M.Sc., Ph.D., A.M.Aus.I.M.M.
 *M.J. Sexton, B.Sc.(Hons)
 S. Sheard, B.Sc.(Hons)
 *K. Wake-Dyster, B.Sc.(Hons)
 I. Zadoroznyj, B.Sc.(Hons)

GEOPHYSICIST CLASS 1

J. Dale, B.Sc.
 P.M. Davies, B.Sc.(Hons)
 I. Ferguson, B.Sc.(Hons)
 B.A. Gaull, B.Sc.
 P. Hopgood, B.Sc.(Hons), Ph.D.
 S. Kravis, B.Sc.(Hons), Ph.D.
 A.S. Marks, Dip.Appl.Sc., Grad.Dip.Comp..
 A. Parisi, B.Sc.(Hons)
 *A.S. Scherl, B.Appl.Sc.
 R. Silberstein, B.Sc.(Hons)
 W. Williams, B.Sc., B.E., M.Eng.Sc., M.A.A.P.

SENIOR TECHNICAL OFFICER
GRADE 2

*J.K. Grace

SENIOR TECHNICAL OFFICER
GRADE 1

*G.S. Jennings
 J. Vahala
 J.W. Williams

TECHNICAL OFFICER GRADE 2

*T. Hegvold
 *B. Jones
 *D. Pfister
 G. Woad

TECHNICAL OFFICER GRADE 1

V. Carberry
 B.J. Page
 G.B. Price
 G.H.Y. Thomas

TECHNICAL ASSISTANT GRADE 2

N.A. Ashmore
 E.C. Chudyk
 M.K. Douch
 P. Fowler
 H.G. Reith
 J.F. Salib
 E. Smilek
 S.J. Wilcox

CLERK CLASS 5

P.J. O'Rourke
 *R. Reitsma

CLERICAL ASSISTANT 3

M.A. Bousfield

COMPUTING ASSISTANT	U. Hammerling
FIELD ASSISTANT	R.D.E. Cherry D. Johnstone L.O. Rickardsson A. Takken

ENGINEERING SERVICES SECTION

GEOPHYSICIST CLASS 5	M.G. Allen, B.Sc., Grad.A.I.P.
ENGINEER CLASS 3	*Y.S.B. Liu, B.E., M.E.Sc., M.I.E.E., M.I.E.Aust.
GEOPHYSICIST CLASS 4	K. Seers, B.Sc., A.A.I.P., A.M.I.E.E.
GEOPHYSICIST CLASS 3	*M. Gamlen, B.Sc.(Hons)
GEOPHYSICIST CLASS 2	R.W. Cobcroft, B.Sc., Grad.Dip.App.Sci. A.B. Devenish, B.Sc., Grad.Dip.Comp.Stud.
SENIOR TECHNICAL OFFICER GRADE 2	D. Cook *G. Thom A. Zeitlhofer, Dip.B.I.E.T.
SENIOR TECHNICAL OFFICER GRADE 1	W. Burhop R. Dulski G.A. Green W. Greenwood J. Rutledge
TECHNICAL OFFICER GRADE 2	R. Curtis-Nuthall *T. Dalziell J.W. Eurell R. Gan D. Gardner R.B. Grigg *J. Mangion D. Pownall M. Schimizzi *D.O. Stevens J. Whatman
TECHNICAL OFFICER GRADE 1	F. Clements *W. Harkness *L. Miller *K. Mort *S. Prokin G. Russell-Smith
TECHNICAL ASSISTANT GRADE 2	G. Black G. Carr L.S. D'Arcy D. Foulstone W. Gunner G. Lockwood E.C. McIntosh R. Westmore

* Acting in that position.

MAINTENANCE MECHANIC

D.K. McIntyre

MOTOR DRIVER

R.L. Gibbs

Officers under Contract to Geological Survey of Papua New Guinea at
31 October 1981

<u>Name</u>	<u>BMR Designation</u>
G.K. Anderson	Geologist Class 1
P. Hill	Geophysicist Class 2
G.D. Knight	Draftsman Grade 2
I. Ripper	Geophysicist Class 2
G. Seidel	Geologist Class 2

Officers on Study Leave at 31 October 1981

B. Drummond	ANU, Canberra
G. Karner	Lamont-Doherty Geophysical Observatory, Palisades, USA
I.P. Sweet	University of Reading, UK.