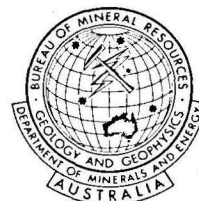


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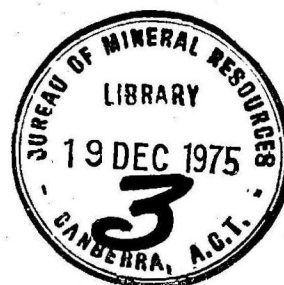
DEPARTMENT OF
MINERALS AND ENERGY



BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS

RECORD 1975/163

1975



SUMMARY OF ACTIVITIES

OPERATIONS BRANCH

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1975

SUMMARY OF ACTIVITIES

OPERATIONS BRANCH

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EDITING AND INFORMATION SECTION

K.A. Townley, K.M. Kennedy (part of year), H.L. Higginson, W.H. Oldham, E.P. Shelley, R. Jacobson (part of year), M.E. Bartlett, J. Truswell, E.E. Young, G.M. Bladon, I.M. Hodgson, P.A. Smith (part of year), L.E. Walraven (part of year), L.C. Mundy, M. Manzano (part of year), A.G.L. Paine (part of year)

After about 15 years as senior editor of the Bureau, K.A. Townley retired towards the end of the year owing to ill health. During several months of sick leave during the second half of the year K.M. Kennedy acted as OIC of the Section.

Three General Instructions, Nos 129-131 were issued in August; these outlined significant changes in the publications policy and format of the Bureau. A BMR Journal of Australian Geology and Geophysics will be issued quarterly, commencing 1976. J. Truswell is the Editor of the Journal and a system of refereeing papers has been established.

Considerable changes have been foreshadowed for the Bulletin, Report, and Record series. The material published in these series is to be regrouped and a move is to be made into the use of microfiche wherever practicable. K.M. Kennedy, P.A. Smith and J. Truswell gave a Wednesday Morning Lecture, which occupied the full session on 5 November, on the proposed changes to publications.

The responsibilities of Editors were reviewed and each Editor is now allocated a group of metalliferous provinces, sedimentary basins and disciplines where appropriate; Editors will play a more active role in guiding manuscripts from the planning phase through to final copy.

Regular meetings on publications continued with Branch representatives and with the Australian Government Publishing Service.

Editing Sub-section

Dr R. Jacobson retired in January, and his Class 3 position was filled on 21 April with the appointment of Dr J. Truswell. The editing team was strengthened in June when A.G.L. Paine was seconded from the Petroleum Exploration Branch for an indefinite period. H.L. Higginson was transferred to the Information Sub-section on 28 July because of staff shortage there.

In the past, K.A. Townley has edited most of the palaeontological reports; this year his contribution was restricted by ill health, and W.H. Oldham has taken over this work.

The Acting Director approved a long-standing suggestion that BMR issue a quarterly journal of Australian earth science. J. Truswell was selected as editor, and the first issue is scheduled for March 1976.

The Director also agreed that suitable BMR publications would be issued in microform to reduce costs and delays associated with printing, and to broaden circulation. Cuts in publication funds gave this matter an unexpected urgency, and the editing group devoted much effort to consideration of the problems that will have to be overcome.

Because of the problems just mentioned, a high rate of written output by the staff of the Geological and Geophysical Branches, and the group's involvement in urgent tasks connected with next year's International Geological Congress, the backlog of manuscripts to be edited has grown.

A new approach to the apportioning of work within the group has been adopted. A broad list of topics, geological provinces etc. has been prepared, and each item has been allotted to one member of the group. That editor will edit all the manuscripts on topics associated with his speciality.

The group's activities included participation in the Publications Review Committee, and monthly meetings with the Australian Government Publishing Service.

Information Sub-section

Staff

While I. McLeod was on temporary transfer to Mineral Resources in 1975, P. Shelley acted as O.I.C. of the group until 28 July when L. Higginson was temporarily transferred to the position. Since 28 July, P. Shelley and P. Smith have been on special duties with the Technical Grades Review Committee. L. Walraven acted vice P. Smith since 19 May, as P. Smith was on temporary transfer to the Planning and Co-ordination Section from 19 May to 28 July. M. Manzano (Acting C.A. 3) joined the sub-section in August as a supernumary. A proposal for the creation of a C.A. 4 position in the sub-section was approved by the Department but has been deferred by the PSB. This proposal involved the re-allocation of duties within the sub-section and revised duty statements were prepared.

Information

As in previous years, the major part of the group effort was directed towards the continuous, and increasing, flow of enquiries from Government, industry, and the public. Although many enquiries can be answered simply and readily by sending BMR publications or pamphlets, some require research or considerable effort to obtain the desired information. The increased flow of enquiries has been engendered substantially by BMR Open Days, Symposia, and other public relations exercises; it was a major factor in the creation of a new position within the group.

The group helped prepare a detailed reply to the Royal Commission on Australian Government Administration questionnaire on 'Government administration and public information'. A submission was prepared, in collaboration with Mineral Resources Branch on 'Technical aid by BMR to the mineral industry' for the Industries Assistance Commission. A submission on BMR participation in ALBIS (Australian Library - Based Information System) was sent to the National Library.

Publications

BMR brochures were revised and reprinted before the 'Australia '75' festival held in Canberra in March. Several new brochures were written, in collaboration with other Branches. BMR now has 35 give-away brochures, and because of this a period contract was arranged through the Australian Government Publishing Service for printing and re-printing.

The 1974 BMR Annual Report was prepared and issued. The List of Coming Events and two supplements were compiled and distributed within BMR and to geoscience organizations.

Against a background of substantially increased cost and pricing, and also of declining sales, a study was made of the style of the Pictorial Index of Activities, in collaboration with the Drawing Offices. Submissions were presented at Heads of Branches meetings, and approval was given to substitute the present Pictorial Index with a series of give-away map sheets containing explanatory notes.

Other material prepared for publication included List of Records 1942-66 (Part 3), Open File Circular 13, Catalogue of Publications Part 1, and a substantial number of contributions to Government and commercial publications. Distribution of BMR Records continued throughout the year.

Alternative methods for producing the Antarctic Stratigraphic Lexicon were considered. In view of the minimal finance available in 1975-76 under the Contract Specialists vote, it was decided to defer work on the lexicon.

BMR Symposium

The Fourth BMR Symposium was poorly attended, despite the considerable time and effort put into its preparation; attendance by non-BMR persons was only about 100, a drop of 45% on the 1974 attendance. The Harold Raggatt award was won by Dr E.C. Druce for his paper "The geology of the Fairfield Group of the Canning Basin". Preliminary arrangements have been made for the Fifth BMR Symposium to be held on 28-29 April 1976.

Displays and Visits

Visits by and to schools decreased markedly during the year, despite the increase in written enquiries by schools and students. However, there was an increase in the number of lectures given by BMR staff to universities and colleges of advanced education.

Regular changes were made to the displays in the foyers and showcases; a feature was the formal presentation of the Chidley Mineral Collection by the donor to the Australian Government at a function attended by the Director and the acting Deputy Secretary.

Special displays were presented at ANZAAS (Canberra in January), Australia '75 festival (Lakeside Hotel in March), Chinese geoscientist delegation (Canberra in April), and BMR Symposium (Canberra in April). Arrangements are in hand for a display by BMR at the IGC in Sydney in August 1976.

Information storage and retrieval

Developments relevant to national scientific and technical information systems, and in scientific and technical information systems generally, were kept under review during the year. P. Shelley attended the A.M.F. Geoscience Information Seminar in Adelaide on 12-14 March, and P. Shelley and L. Walraven an IBM demonstration of an information storage and retrieval system and an advanced text management system.

Continuing liaison was maintained with the Australian Archives Office on the storage of scientific data. Preliminary discussions were held in October on the archival storage of R.A.N. bathymetric data presently stored in the Geological Marine Section.

The program of putting PSSA reports and BMR Records onto microfiche did not advance as far as expected. Delays in arranging a contractor resulted in none of the 1974/75 finance allocation being spent, and no cash has been provided for this work in 1975-76. Two more microfiche readers have been delivered and other units have been ordered. P.A. Smith attended the International Micrographic Congress in Sydney in October. The sub-section continues to provide a consultancy service for other BMR groups requiring advice on use of microfilm.

LIBRARY

M.A. Thompson, S.M. Attwood, M. Murnieks,
J. Tait, G. Lohse, L. Woods, M. Dawes,
H. Hughes (part of year), M.F. Johnson (part
of year).

Performance statistics, November 1974 to October 1975, inclusive.

<u>Loans</u>	11,143
<u>Serials Circulation</u>	19,718 (a rise of 11% on last year's figures)
<u>Inter-Library Loans</u>	
Requested from BMR	1,608
Requested by BMR	739
(Owing to staff shortage, inter-library loans were suspended from 9 October 1975).	
<u>Reference Searches</u>	812 (a rise of 63% on last year's figures)
<u>Cataloguing (new and revisions)</u>	
Books and pamphlets	1,390 (a rise of 60% on last year's figures)
Serials	466 (a rise of 44% on last year's figures)

The increased demand for reference services reflects both user confidence and the growing need for information not directly obtainable by library users themselves. In this climate of demand the Library has continued to participate in the evaluation of various approaches to the collection and utilization of geoscience information.

As well as proposing long term involvement in both ANSTEL and ALBIS, the Library has taken an active part in the Australian Geoscience Information Association and in attempts to establish a co-operative nationwide information retrieval system for the geosciences. As a first step, all monograph material catalogued conventionally since May 1975 has also undergone experimental indexing on AMF Data Transmission sheets using the Australian Thesaurus of Earth Science and Related Terms. The latter will become the Library's official subject authority when the prototype thesaurus is released late in 1975.

A critical shortage of space has prompted a study of the availability of periodicals in microform. Of 102 publishers' replies 39 advised that retrospective (and in 7 cases current) material was available. In fact micropublishing is finding growing acceptance as a possible solution to the problem of production and distribution costs, shortage of space and paper, and availability of out-of-print material.

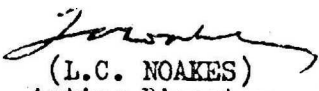
BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICSGENERAL INSTRUCTION NO. 129PUBLICATION OF A BMR JOURNAL

BMR is to publish a quarterly Journal. The name will be:
BMR Journal of Australian Geology and Geophysics.

1. A senior editor will be nominated to be responsible for the production of the Journal : including quality, acceptance of papers, and layout. He will have the advisory assistance of a committee of six officers and be subject to the Director on policy matters. (The current editor is Dr J. Truswell, Room 519, ext. 619, and the committee members are Drs P. Davies, Druce, Exon and Messrs Tucker, Mann and Driessen.)
2. It is essential that the scientific standard of papers printed in the Journal be high; otherwise it will not gain acceptance among geoscientists. Therefore the editor has full power, in the name of the Director, to reject any submitted MS that is not in his opinion of high enough standard, or to require such amendment as will raise it to that standard.
3. A system of rigorous refereeing will be instituted to achieve the aims of (2) above. (See General Instruction No. 130). It is expected that BMR can provide such refereeing from its own strength in most cases, but the editor may at his discretion use external referees also. Refereeing by a BMR officer is to be accepted as an official duty; it is hoped that the close and expert critical appraisal demanded of referees will not only help the author but will be regarded as an aid in the scientific education and experience of the referees.
4. Papers for the BMR Journal will be accepted from (1) officers of BMR, (2) co-authors, one of whom is an officer of BMR, (3) other authors whose work has been commissioned by BMR. (Members of the Baas Becking group are considered as BMR officers for this purpose.) Discussions of papers, on the other hand, will be open to anybody.
5. A small part of the BMR Journal will - though not necessarily in all issues - be devoted to scientific notes and news, the scope and content of which will be determined by the editor.
6. For the success of a periodical the active encouragement of Branch Heads and Supervisors is essential. Senior officers are enjoined to view the Journal not as a diversion from programmed activity but as one form in which such activity can be consummated.
7. It is hoped to issue Volume 1, part 1 of the Journal in the first quarter of 1976. Officers who are engaged in or contemplate writing research papers are encouraged to have them ready for presentation to the Editor by mid-August 1975.

Distribution: All Staff

Issued: 6 August 1975


 (L.C. NOAKES)
Acting Director

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICSGENERAL INSTRUCTION NO. 130REFEREEING OF PAPERS FOR BMR JOURNAL

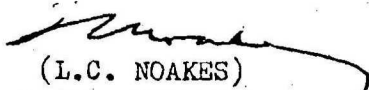
Papers submitted for publication in the BMR Journal will be subject to review by referees. The final form of the refereeing system may be modified after experience, but the initial procedure is as follows:

1. Before submitting the paper, author must discuss illustrations with Editor. He is also encouraged to discuss the whole project with the Editor at an early stage.
2. Author submits 3 copies of MS to his Supervisor (N.B. not direct to Editor) along with names of any colleagues who have already read it critically.
3. Supervisor, after consultation with Section and/or Branch Head, either passes MS to Editor or returns it to Author with his comments.
4. Editor and Supervisor (with or without Author) decide on two referees, and Editor passes MS to referees.
5. Referees' comments (written on sheets attached to MS, not on MS itself) are returned to Editor, who adds his comments and returns everything to Author.
6. Revised draft, with comments still attached, passes for approval to Branch Head.
7. Branch Head passes it to Editor, who thereafter deals directly with Author.

It is essential that the process move smoothly: any participant who finds himself unable to complete a stage within reasonable time (2 days for Supervisor, etc; 2 weeks for referee) must pass up his chance to participate. Comments and criticism are welcome at all stages: but they must not hold up the flow. The aim is to get any MS submitted in reasonable shape to press within 3 months. Major revision may of course defeat that object, but that is the author's responsibility (in the first place to produce a MS not open to criticism involving major revision).

Distribution: All Staff

Issued: 6 August 1975


(L.C. NOAKES)
Acting Director

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICSGENERAL INSTRUCTION NO. 131CHANGES IN PUBLICATION POLICY

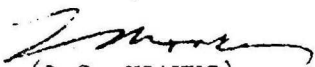
Some changes have been made in the publication policy of the Bureau. A number of these will be effected only gradually, but authors are requested to take them into account when preparing material for dissemination. In cases of doubt they should seek the advice of the OIC, Publications and Information Section.

The changes are:

1. Bulletins: Methods of presentation will be slightly changed. The main change that affects authors is that in future Bulletins will be printed in double column, which gives greater flexibility to the design of illustrations. These can now be presented with a maximum width of either 6.7 cm or 14 cm, and a maximum length of 20 cm.
2. Reports: MSS now presented for the Report series will be sorted into three categories:
 - (a) some will be included in the Bulletin Series,
 - (b) some will be adapted for presentation in the BMR Journal (see below),
 - (c) the remainder, along with a proportion of what are now Open File Records, will be published in microform (and during a transitional period in a very limited edition at full size also).
3. Records:
 - (a) Some will fall into category 2(c).
 - (b) Client-oriented, internal use, and classified documents will constitute the new Record Series.
 - (c) Papers submitted for outside publications will not be produced as Records: instead, a file will be raised for each paper, which will consist of a duplicate copy of the MS and the Director's approval to publish; lists of such files will be circulated throughout the Bureau, and they may be consulted until the paper is published, when the file will be archived or destroyed.
 - (d) MSS destined for publication by the Bureau will not be issued as Records. Copies will be held in the Publications Section until the publication is released, and may be consulted and, with the approval of the Assistant Director concerned, copied by Xerox or borrowed.
 - (e) Background data will be microfilmed: some, such as Observatory MHV tables, will be included in the new Report Series; others, such as detailed geochemical analyses, will be made available to inquirers on request. The category into which any particular block of data falls will be determined by consultation with the Branch Head concerned.
4. The Bureau will produce a quarterly Journal, consisting largely of research papers. This is the subject of General Instruction No. 129.

Distribution: All Staff

Issued: 6 August 1975


(L.C. NOAKES)
Acting Director

A.D.P. APPLICATIONS SECTION

A.J. Barlow, D.W. Kerr, E.L. Smith, J.T. Brown,
P. Elliott, F.D. Newman, A. Alps, W. de Courcey-
Browne, L. Wooton, W. Bridge, R. MacDuff.

During the year the activities of the ADP Applications Section has evolved a pattern of operation which indicates future development of the section.

The work of the section can be divided into four main areas - management of computing facilities, including finance and liaison with CSIRO Division of Computing Research; advice and assistance on programming and system operation; implementation of on-line data acquisition systems on the Bureau mini-computer system; and feasibility studies and design of new computer systems particularly in the information storage and retrieval field.

The management function has occupied the Geophysicist-in-Charge to the exclusion of the system feasibility and design duties in which he is also expected to be involved. Control of finance has proved difficult in this period of economic constraint and more particularly by an increase of 25% in CSIRO charges that have been implemented after the preparation of estimates. Continued liaison with CSIRO has also been necessary because of continuing poor performance of the Cyber 76 computer both by the hardware and software. The hardware problems are completely outside of BMR control but in the case of software failures the BMR has contributed by systematic reporting to CSIRO and also has had to find means of temporarily circumventing problems.

One of the major functions of providing consultant-type service to other users has involved both the reporting of problems to CSIRO and assisting the many users to get around the problems. These tasks take more than half the time of the CSO 3 and the remainder is occupied by other assistance to users by advice, and also by conversion to the Cyber 76 of programs which have been acquired from other institutions. He has also provided assistance to the Marine Group to integrate and tidy up programs for Phase 3 of the processing of data from the Continental Margins Survey.

During the year several requests were received for computerized systems for information storage and retrieval. Three of these, together with one commenced some years ago, have been implemented in a restricted form using the INFOL package on the Cyber 76. INFOL is the only such package immediately available on this computer and is suitable only for relatively small and simple requirements. However this has been valuable in getting started on information systems and in educating the user on the advantage, problems, and limitations of computerized systems.

A major design project on a system for the Stratigraphic Index was also commenced but has been delayed by limited user time for consultation and the need to verify requirements with the Stratigraphic Committee.

This project has in turn led to a major investigation of suitable hardware and software for implementing more complex information systems. Three possible approaches are being investigated, namely conversion of a suitable data base package available in other Control Data computers to the Cyber 76, use of other service organizations such as I.B.M. or Burroughs, and the possibility of purchase of a Bureau medium-size computer suitable for this and other applications.

Two other major projects have been commenced. One is to computerize the production of subsurface structure maps from digitized seismic data and well-log information. This project is well advanced but is presently being delayed because of a vacant Computer Systems Officer Grade 2 position. The other project is a long-term investigation into the use of automated cartographic techniques. This project has barely commenced but it is expected that continuous effort will be made in 1976.

A review of the year's work has indicated that requests for assistance from the section far exceeds its capacity. While the group was initially set up primarily to assist or advise in the geological and geophysical areas it has become apparent that a number of users would like the section to completely take over the design and implementation of their systems and, in some cases, provide the operating assistance. The organisation of the section is being reviewed with these requirements in mind.

The Geophysicist Class 3 in charge of the Hewlett Packard data acquisition system divided his time during the year between the following main areas.

- (a) HP 2100 data acquisition system software and maintenance
- (b) Major projects such as ERTS data processing, ANU ion-microprobe project, and magnetotelluric processing software
- (c) Submissions for new equipment
- (d) Administrative tasks and training

The Programmer Class 6 spent the whole year working on data acquisition systems and various utility programs; some time was spent in training and program maintenance.

At the conclusion of 1974, there were two outstanding problems in the data acquisition group, namely an acute lack of staff and inadequate disc storage space and computer power.

Of these, the second has been rectified and the system should be still further improved by the addition of a large-capacity moving-head disc drive and additional CPU late this year. The system as it now stands is illustrated at the end of this report (fig. 1).

The necessity for professional staff to operate the computer and peripherals has now been removed by transferring the Computer Operator Class 1 from the CYBER 76 node to the HP 2100 computer room, pending upgrading of that position and the addition of another computer operator position.

CURRENT AND OUTSTANDING PROJECTS

P R O J E C T

PROJECT DEVELOPMENT
TOTAL MAN-MONTHS

PROJECT OPERATION & MAINTENANCE
MAN MONTHS/YEAR

GROUP	NAME	STATUS	A D P			U S E R			A D P			U S E R		
			GEO	CSO	OTHER	GEO	CSO	OTHER	GEO	CSO	OTHER	GEO	CSO	OTHER
Service	Consulting Cyber 76	A							4	4				
	Education Courses	B	2	2						1				
	Consulting (HP system)	A							4	2				
	Consulting (Miscell)	A							3					
	Project Evaluation	B							6					
	Plotter Editing	B	3	3										
	Tape Labelling	A		1										
	Terminal Operation											12		
Info Storage Retrieval	Library Loans	C		6		9								12
	Mineral Prices	B		5	9	4								
	Basin Station Index	A	3	2		1		12		$\frac{1}{2}$	$\frac{1}{2}$	2		2
	Stratigraphic Index	A	12	18	14	12		180				4		8
	Minerals Ref. Index	A	1	5	5	$1\frac{1}{2}$		14		$\frac{1}{2}$	1	1		3
	Publications Index	C	12	34	32	15		450		1	2	6		36
	Comp. Program Index	A		2	4	9		18		1				12
2100 Laboratory System	Well Index	B		9	33	8		10			1			8
	System Operation	A	6	2	2					2	12			
	Miscellaneous copying editing	A	$\frac{1}{2}$	$5\frac{1}{2}$									2	
	Magnetotelluric proc.	A	6	$1\frac{1}{2}$								2		
	Digitiser	A	3	5							$\frac{3}{2}$			12
	Fast Fourier Xform	B	6	4	1				$\frac{1}{2}$	1	$\frac{1}{2}$			
	Crustal A to D Cwv	A	5	3	3				1			1		2
	Integration G.D.U.	B	3	3	3									
	Electron Probe	A	2	2		2	2							4
	Xray Diffraction	B	4	5	1							1		2
	A.A.S.	A	$\frac{1}{2}$	2										3
	Sedimentation Tube		2	2			1		$\frac{1}{2}$				$\frac{1}{2}$	1
	Direct Reading Opt.													
	Spectrometer	A	2	1									1	
	Integration Cassette	B	4	2	1									

(STATUS - A. Current project or scheduled for 1976. B. Project assessed and scheduled for 1976-78.
C. Project requested but not assessed.)

CURRENT AND OUTSTANDING PROJECTS

GROUP	PROJECT NAME	STATUS	PROJECT DEVELOPMENT TOTAL MAN-MONTHS						PROJECT OPERATION & MAINTENANCE MAN MONTHS/YEAR					
			A D P			U S E R			A D P			U S E R		
			GEO	CSO	OTHER	GEO	CSO	OTHER	GEO	CSO	OTHER	GEO	CSO	OTHER
Other HP	Maintenance of ANU	A							2	1				
	ANU Microprobe	A	6	6						1		1		
	Observatory Digitiser	A	4	4				1						1
	Engineering Seismic	A	4	12		2		2		1				2
	Magnetotelluric	A	5	1								2		1
Geological Branch	Geological Statistics	C				20	13	4						4
	Geological Field Acquisition	B	10	16	10	10					20			10
	Geological Simulations	C	2			6								
	Geological Computation & Display	C				20	13	4						
	GAB Simulation	A				24						2		2
Airborne Geophysics	Interpretation programs	B				20	20	6						
	Data Processing Develop.	A				12	12	6						
	Data Processing Operations	A				4	4					40	12	40
Marine	Processing Development	A				12	8							
	Interpretation Devel.	B				12	12							
	Program Library Maint.	B												6
	Acquisition Development	A				6	12	6						
	Survey Processing	A										48	4	42
Other Geophysical	Observation Program Maint.	A								1	1			12
	Reg. Grav. Interpretation	B				10	10							
	Gravity Recomputation	A										6	1	20
	Programs for Auto. Observ.	B		5		1								
	Conversions 3600-Cyber 76	B		3		4								
	Geophysics Bore Log Dig.	C	2	14		2					2			18
	Gravity Data Storage	B		5		3		11						
	Regional Crust Interpret.	C		4		8		6				1		12
	Regional Crust Cover IMB	B		4	1									
Drafting & Display	Resistivity Modelling	C	2	12		2								
	ERTS Processing	B	6	5										
	Geol. Map Compilation	B		48	22	26	12	27						
	Basin Study Seismic Display	A		3	4	4		4						

(STATUS - A. Current project or scheduled for 1976. B. Project assessed and scheduled for 1976-78. C. Project requested but not assessed.)

A Trainee Technical Officer has been attached to the group to handle some of the hardware problems and to receive some training in computer basics. An acute lack of staff still exists in the group and this has restricted work to those projects with the highest priority or requiring minimum effort for maximum productivity. It has been impossible to document any work since the inception of the Section in July 1973.

During 1975 a Gould 5000 electrostatic printer plotter was received and installed. It was found necessary to modify the supplied software as it did not work. Problems were experienced with the hardware controllers and these required some redesign and modification. Approximately 30 programs were rewritten to use the Gould, which has now become an invaluable peripheral. The printer/plotter has sped up program development considerably and usage has exceeded the most optimistic predictions of last year. Over 100 000 feet of paper have now passed through it in its first year of operation.

Processing programs to complement the data acquisition software developed for the Direct Reading Optical Spectrometer (DROS) were completed, tested and handed over to Geological Branch early in the year.

Hardware and software on the digitizer were upgraded and the digitizer error rate reduced by an order of magnitude. Plans are in hand for the use of writeable control store to enhance the speed of the digitizer beyond the present 25 readings per second.

Submissions for a joint engineering seismic and magnetotelluric field data acquisition system were prepared and submitted. The successful tenderer was Hewlett Packard and the equipment will arrive in December 1975 or early 1976. A chart showing the simplified system block is at the end of this report (fig. 2). An HP 21MX computer, rack, and moving-head disc were ordered to complement the HP 2100 system and will arrive before February 1976.

A majority voting program for doppler satellite data retrieval and preliminary processing was modified and implemented on the HP 2100 computer system for the Division of National Mapping. Over 150 000 feet of paper tape were produced before the arrival of National Mapping's own computer system.

The hardware plus acquisition and processing software for the Varian Atomic Absorption Spectrometer was completed and handed over. Very few problems have been experienced with this system.

Acquisition and processing programs were written for the Geological Branch electron microprobe. Programs supplied by ANU and modified by Geological Branch had to be completely rewritten because of logic structure and space problems. This system became operative in a limited capacity during the year.

A nine-track phase-encoded magnetic tape drive, extra disc capacity and writeable control store were put into commission during the year and have all contributed to an improvement in processing capability.

Many modifications and improvements were made to the operating system and terminal operating system in an attempt to use the limited core and disc resources on the HP 2100 to the fullest extent; a complete permanent file system was implemented and some "bugs" removed from the interactive editor. Background swapping was implemented on the system and a compatible multi-file spooler developed to handle concurrent output from swapping programs.

Assistance was given to ANU Department of Earth Sciences with its multi-user system and maintenance of this system was taken over by the BMR data-acquisition section. The group is writing all software for ANU's new high-resolution ion microprobe and assistance is being provided with hardware development.

High-speed raster plotting programs were written to plot VH-~~ENG~~ and VH-BMR flight tapes at approximately 90 times acquisition speed. Turnaround for this type of plotting is now of the order of 1 hour (for tape transcription, verification and plotting).

An eight-channel digital to analogue converter built in the design and development laboratories was debugged and will now be produced in quantity for the HP 2100 system, marine, aircraft, engineering seismic, and magnetotelluric systems.

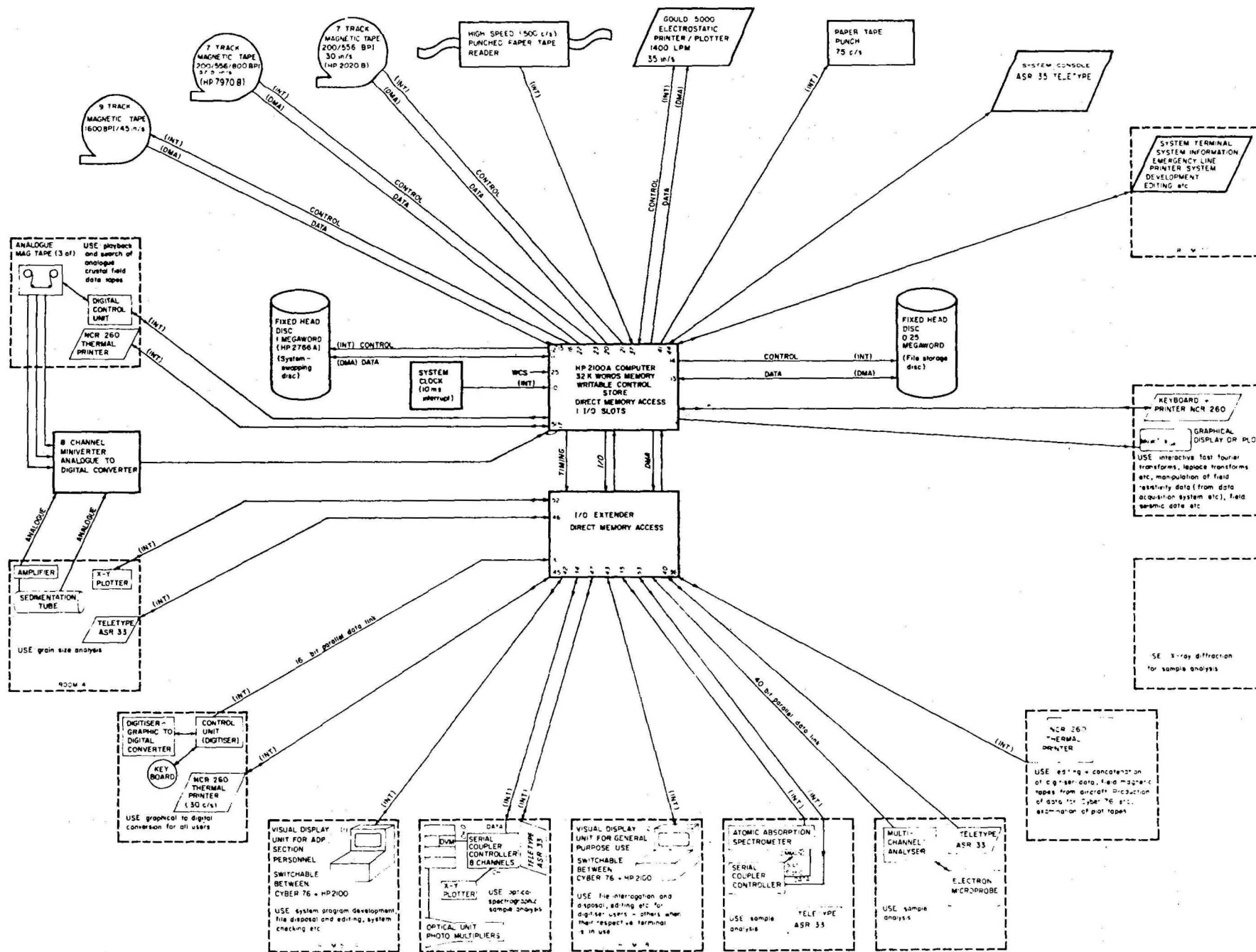
During the year, many tapes which could not be read at CSIRO were successfully read and copied on the in-house system.

Further modifications were made to the magnetotelluric processing programs and three-dimensional tipping vector information was added.

Planning and investigation for interactive ERTS facilities scheduled for 1976 was carried out and contracts called for an interactive graphics display terminal.

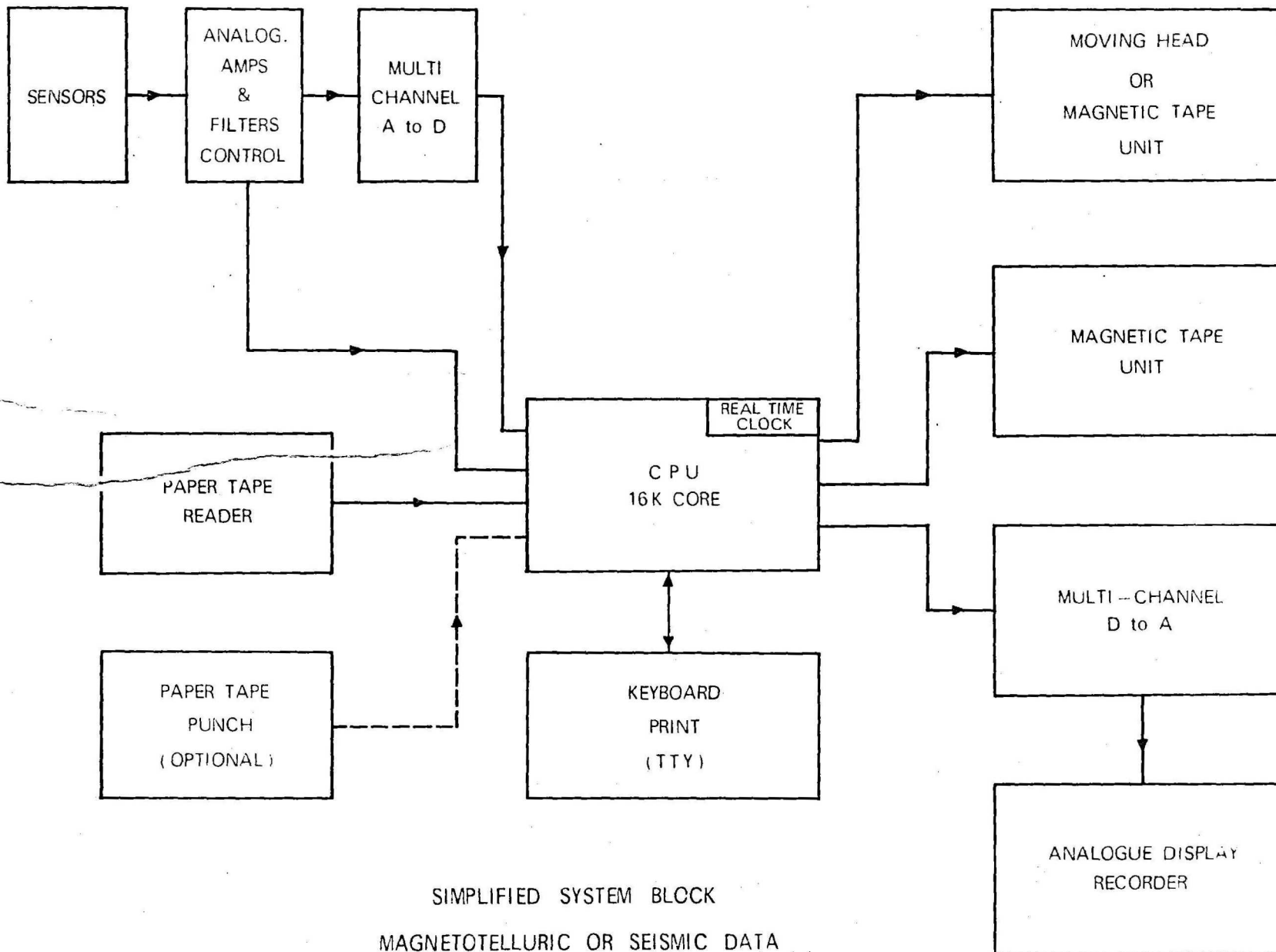
Firmware for the HP 2100 microprocessor was developed during the year to carry out various system functions.

Some training courses on Hewlett-Packard equipment were provided during the year and a number of users operated batch programs on the system during times of low utilization.



BMR HP-2100 COMPUTER SYSTEM

24 CH SEISMIC
5 CH MAGNETOTELLURIC



SIMPLIFIED SYSTEM BLOCK
MAGNETOTELLURIC OR SEISMIC DATA
ACQUISITION

PLANNING AND CO-ORDINATION SECTION

K.M. Kennedy, R.B. Aronsen, R. Thieme, C. Watt,
P. Smith (part of year)

The Section, four professional officers, was fully staffed throughout the year.

The Bureau program for 1975-77 was prepared and distributed in March 1975. Notification of activities was passed to State Mines Departments and to relevant mining companies for concurrence. The Supervisors' meetings for the 1976-78 program were conducted during the week ending 17 October. CSIRO Mineral Research Laboratories representatives were present, at these meetings, by invitation; this resulted in a useful interchange of ideas, and a move towards closer co-operation on projects of mutual interest.

K.M. Kennedy was included in a committee formed to carry out a detailed review of the Bureau's forward marine program. The success of this committee's work has brought proposals to form similar committees to formulate forward program for other major activities of the Bureau.

The Bureau's project costing system, which was initiated by the Section in 1973, now covers financial years 1973/74 and 1974/75. Computer printouts showing details of costs and man-effort are available.

Considerable administrative effort was directed towards the training and employment of Colombo Plan fellows, Overseas Undergraduate Scheme personnel, Trainee Technical Officers, and vacation students. The second intake of Trainee Technical Officers (Science) to undergo the Applied Science (Geology and Chemistry) certificate course at Canberra Technical College completed Phase I of the course this year. This course now includes training in geophysics.

A period contract to cover the Bureau's helicopter airlift requirements for 1975 was implemented. Further refinement of the contract specification has been recommended by party leaders.

The Section co-ordinated arrangements to obtain additional accommodation for the Bureau in order to ease existing congestion of personnel and equipment.

A number of staff reviews were effected as a planning basis for the Bureau's staff ceiling.

Other activities undertaken by the Section include representation on various committees, assessment of the Bureau's future ADP requirements, establishment and organization matters, aspects of Bureau involvement in the 25th International Geological Congress (1976), and preparation/co-ordination of material submitted by professional staff to the Royal Commission into the Australian Public Service.

Following are two tables of expenditure for the 1974/75 financial year. The first is a breakdown into sections giving total direct expenditure, the salary component, and the total manpower effort. One man year is defined as 250 working days. The second table gives the salaries, total direct expenditure and manpower effort on selected projects in the 1974/75 financial year. This period actually covers parts of two field seasons and consequently the figures cannot be easily related to specific programs.

BREAKDOWN OF 1974/75 BMR EXPENDITURE

BRANCH/SECTION/GROUP	TOTAL EXPENDITURE (\$)		SALARIES (\$)		TOTAL MANPOWER* (many years)	
	\$	%	\$	%		%
GEOLOGICAL BRANCH	3,503,518	(31.7%)	2,322,431	(33.8%)	210.5	(38.8%)
Sedimentary Mapping	633,049	(5.7)	328,937	(4.8)	29.0	(5.3)
Photogeology	73,843	(0.6)	43,124	(0.6)	2.9	(0.5)
Palaeontology	308,504	(2.8)	254,589	(3.8)	21.7	(4.0)
Marine Geology	260,172	(2.4)	129,273	(1.9)	12.2	(2.2)
Metalliferous Mapping	624,555	(5.6)	358,312	(5.2)	33.2	(6.1)
Darwin Uranium	166,798	(1.5)	119,252	(1.7)	11.2	(2.0)
Petrology	132,883	(1.2)	88,936	(1.3)	7.5	(1.4)
Geochemistry	198,628	(1.8)	124,248	(1.8)	12.1	(2.2)
Geochronology	87,974	(0.8)	54,373	(0.8)	4.7	(0.9)
Geobiology	61,920	(0.5)	51,023	(0.7)	4.0	(0.7)
Engineering Geology	266,587	(2.4)	184,806	(2.7)	17.0	(3.1)
Drafting	405,488	(3.7)	379,084	(5.5)	35.9	(6.6)
Photographic	47,929	(0.4)	29,932	(0.4)	4.3	(0.8)
Map Compilation	58,050	(0.5)	54,369	(0.8)	4.3	(0.8)

18.

BREAKDOWN OF 1974/75 BMR EXPENDITURE

BRANCH/SECTION/GROUP	TOTAL EXPENDITURE (\$)		SALARIES (\$)		TOTAL MANPOWER* (many years)	
	\$	%	\$	%		%
Museum	45,645	(0.4)	24,891	(0.3)	2.3	(0.4)
Mineral Reports	40,146	(0.3)	37,865	(0.5)	4.2	(0.8)
- Geol. Branch Undiff.	191,347	(1.7)	59,419	(0.9)	4.0	(0.7)
GEOPHYSICAL BRANCH	4,091,803	(37.0%)	2,389,991	(34.7%)	210.5	(38.8%)
Metalliferous (Canberra)	227,525	(2.1)	156,654	(2.3)	13.2	(2.4)
Metalliferous (Darwin)	66,809	(0.6)	47,498	(0.7)	4.8	(0.9)
Airborne (BMR)	483,475	(4.4)	136,808	(2.0)	10.7	(2.0)
Airborne (Contracts & Reductions)	93,501	(0.8)	89,327	(1.2)	6.8	(1.2)
Observatories	806,017	(7.3)	353,233	(5.1)	26.8	(4.9)
Regional Gravity	117,673	(1.0)	59,126	(0.8)	5.4	(1.0)
Regional Structural	144,258	(1.3)	82,670	(1.2)	6.6	(1.2)
Gravity	97,748	(0.9)	67,086	(1.0)	5.4	(1.0)
Seismic	190,280	(1.7)	98,417	(1.4)	8.7	(1.6)
Marine	405,161	(3.7)	283,252	(4.1)	25.5	(4.7)

BREAKDOWN OF 1974/75 BMR EXPENDITURE

BRANCH/SECTION/GROUP	TOTAL EXPENDITURE (\$)		SALARIES (\$)		TOTAL MANPOWER* (manyears)	
	\$	%	\$	%		%
Geophysical Labs	721,107	(6.5)	423,825	(6.2)	43.4	(8.0)
Engineering Geophysics	181,305	(1.6)	121,358	(1.8)	10.8	(2.0)
Drafting	411,704	(3.7)	388,570	(5.6)	37.4	(6.9)
- Geoph. Branch Undiff.	145,240	(1.3)	88,167	(1.3)	5.0	(0.9)
MINERAL RESOURCES BRANCH	873,314	(7.9%)	562,771	(8.2%)	52.5	(9.6%)
Mining Engineering	38,244	(0.3)	33,769	(0.5)	2.0	(0.4)
Mineral Economics	190,765	(1.7)	164,468	(2.5)	12.6	(2.3)
Pet. Tech. Labs	57,885	(0.5)	49,515	(0.7)	4.2	(0.8)
Pet. Tech. Office	113,412	(1.0)	105,508	(1.5)	8.7	(1.6)
Drilling	460,428	(4.2)	201,535	(2.9)	24.0	(4.4)
- Min. Res. Branch Undiff.	12,580	(0.1)	7,976	(0.1)	0.5	(0.1)
PETROLEUM EXPL. BRANCH	487,227	(4.4%)	443,036	(6.4)	39.2	(7.2%)
Basin Study Group	166,871	(1.5)	164,082	(2.4)	12.6	(2.3)
Core & Cuttings Lab	98,029	(0.9)	57,656	(0.8)	7.4	(1.4)

BREAKDOWN OF 1974/75 BMR EXPENDITURE

BRANCH/SECTION/GROUP	TOTAL EXPENDITURE (\$)		SALARIES (\$)		TOTAL MANPOWER* (manyear)	
	\$	%	\$	%		%
Subsidy	159,147	(1.4)	151,313	(2.2)	13.5	(2.5)
Drafting (PEB)	41,412	(0.3)	41,220	(0.6)	4.7	(0.9)
- PEB Undiff.	21,768	(0.2)	18,765	(0.2)	1.0	(0.2)
OPERATIONS BRANCH	1,426,404	(12.9)	1,044,188	(15.2%)	26.6	(4.9%)
Planning & Coordination	60,279	(0.5)	57,807	(0.8)	3.9	(0.7)
Information	80,282	(0.7)	65,922	(1.0)	4.9	(0.9)
Editing	82,574	(0.7)	81,058	(1.2)	4.9	(0.9)
ADP	261,219	(2.4)	129,101	(1.9)	11.9	(2.2)
Administration & Library & Publ.	1,000,599	(9.0)	691,782	(10.0)	not known	
- Operations Br. Undiff.	21,451	(0.2)	18,518	(0.2)	1.0	(0.2)
BMR undifferentiated	489,546	(4.4)	127,349	(1.9)	2.4	(0.4)
TOTALS	11,051,812	(100%)	6,879,800	(100%)	541.7	(100%)

* Manpower excludes Administration, Library personnel, and trainee technical officers and draftsmen. Includes wages hands.

Derivation: Figures prepared from BMR Costing System for 1974/75.

Expenditure during 1974/75 on selected projects.

Project	Discipline	Salaries (\$)	Total Direct Expenditure (\$)	Manpower (man yrs)
Mt Isa -	Geological Mapping	37 000	67 700	3.508
Cloncurry	Geochronology	9 400	18 500	.728
	Geochemistry	4 300	17 200	.444
	Petrology	8 100	17 400	.676
	Geol. Drafting	14 700	14 700	1.088
	Ground Geophysics	11 100	27 400	.904
	Airborne Geophy.	1 500	5 600	.144
	Geophys. Drafting	9 200	9 200	.612
	Others	2 200	3 200	.176
	TOTAL	\$97 600	\$180 900	8.280
	% OF TOTAL BMR	1.4%	1.6%	1.5%
Georgetown	Geological Mapping	41 900	108 700	4.196
	Geochemistry	29 200	39 000	3.116
	Petrology	1 300	1 900	.088
	Geochronology	8 400	9 200	.824
	Geological Drafting	7 300	8 500	.660
	Ground Geophys.	3 800	5 300	.356
	Airborne Geophys.	900	2 900	.096
	Geophys. Drafting	800	800	.064
	Editing	1 000	1 000	.060
	TOTAL	\$94 600	\$177 400	9.460
	% OF TOTAL BMR	1.3%	1.6%	1.7%

Project	Discipline	Salaries (\$)	Total Direct Expenditure (\$)	Manpower (man yrs)
Carpentaria	Geological Mapping	35 300	44 300	2.984
Basin	Drilling	11 100	19 300	1.356
	Geol. Drafting	16 800	16 800	1.556
	Engin. Geophysics	15 400	26 300	1.476
	Airborne Geophysics	21 100	63 600	1.868
	Geophys. Drafting	11 400	11 400	.888
	Others	1 700	1 800	.152
	TOTAL	\$112 800	\$183 500	10.28
	% OF TOTAL BMR	1.7%	1.6%	1.8%
Canning	Geological Mapping	32 300	90 900	3.212
Basin	Basin Studies	58 500	59 200	5.212
	Palaeontology	4 600	5 300	.304
	Geological Drafting	7 700	7 700	.860
	Editing	1 200	1 200	.076
	Others	400	400	.008
	TOTAL	\$104 700	\$164 800	9.678
	% OF TOTAL BMR	1.5%	1.5%	1.7%
Arunta	Geological Mapping	69 200	111 400	5.928
Complex	Geochronology	7 400	8 000	.640
	Petrology	7 000	7 600	.424
	Geological Drafting	13 500	13 500	1.298
	Airborne Geophysics	6 600	12 100	.524
	Ground Geophysics	4 100	5 100	.404
	Gravity	900	900	.088
	Others	2 200	2 200	.178
	TOTAL	\$110 900	\$158 600	9.484
	% OF TOTAL BMR	1.6%	1.4%	1.7%

Project	Discipline	Salaries (\$)	Total Direct Expenditure (\$)	Manpower (man yrs)
Darwin -	Geological Mapping	35 700	49 800	2.932
Katherine	Petrology	6 400	7 400	.388
Granites	Geochronology	6 600	7 000	.456
	Drilling	34 500	80 200	3.700
	Geological Drafting	7 400	7 400	.696
	Ground Geophysics	29 400	47 200	2.864
	Airborne Geophysics	15 700	51 700	1.464
	Geophysical Drafting	14 000	14 000	1.130
	Others	1 300	1 300	1.130
	TOTAL	\$151 000	\$266 600	13.810
	% OF TOTAL BMR	2.1%	2.4%	2.5%
Rum Jungle	Geological Mapping	24 500	40 300	2.220
	Drilling	9 200	23 800	.960
	Geobiology	45 200	48 000	3.528
	Ground Geophysics	26 000	35 500	2.400
	Geophysical Drafting	1 700	1 700	.020
	Others	2 500	2 500	.488
	TOTAL	\$109 100	\$151 800	9.576
	% OF TOTAL BMR	1.5%	1.4%	1.7%
Georgina	Geological Mapping	43 900	82 600	4.972
Basin	Palaeontology	15 200	17 000	1.400
	Drilling	10 800	35 600	1.228
	Geological Drafting	1 000	1 000	.116
	Seismic	1 200	1 200	.088
	Others	100	200	.028
	TOTAL	\$72 200	\$137 600	7.832
	% OF TOTAL BMR	1.0%	1.2%	1.4%

Project	Discipline	Salaries (\$)	Total Direct Expenditure (\$)	Manpower (man yrs)
Wiso	Geological Mapping	13 900	50 900	1.360
Basin	Palaeontology	400	800	.032
	Drilling	31 800	63 600	3.612
	Others	400	600	.016
	TOTAL	\$46 500	\$115 900	5.020
	% OF TOTAL EMR	0.6%	1.0%	0.9%

The above are costs and manpower figures for the largest projects during 1974/75 financial year. Overheads have not be taken into account in the Total Direct Expenditure column. If general administration expenses, staff training, conferences, supervision and leave costs were added the expenditure on each project would be increased by about 33%.

ADMINISTRATIVE SECTION

G.C. Scott	A. Eglite	M. Tacon
T. Devine	B. Baker	B. Barrett
P. Johnson	J. Fry	P. Black
M. Terefelco	P. Evans	J. Bayliss
R. Thompson	R. Gajic	P.J. Swan
L. Thwaites	A. Corvera	S. Stanford
G. Bresnan	M. Tyrrell	R. Gibbs
A. Lee	A. Walker	S.R. Ross
P. Flanagan	J. Kopras	P. Corrigan
T. Moss	J. de Zilva	D. Lamont
C. Tomlinson	S. Bilton	R. Ingram
K. Styles	J. Marshall	J. Frieberg
O. Domitrjak	T. Harris	J. Keogh
L. Mackintosh	A. Martin	S. Jacobson
C. Casadei	H. Reilly	J. Somerville
A. Haines	J. Magro	W. Coulson
E. Moreno	L. Walton	A. Bright
J. Exposito	B. Thompson	A. Lea
M. Murphy	C. Foulstone	J. Tait
A. Witherdin	J. Gilmore	M. Dawes
D. Parkes	C. Shooks	L. Woods
J. Oldfield	K. Maloney	G. Lohse
F. Moffat	P. Hilyard	K. Bendall
N. Hyett	P. Shore	N. Elgood
S. Hitch	W. Hessler	M. Manzano
V. Mraz	N. Foudoulis	R. Nott
D. Stafford	A. Wong	J. Rhodes
P. Filby	P. Butt	T. Scheld
S. Shippley	E. Petrushevski	S. Bresnan
J. Richardson	S. Hassan	A. Pasfield
S. Fulton	S. Westerhuis	B. O'Connor
D. Shaw	G. Mortimer	M. Kwaczynski
E. Smith	S. Styles	J. Pinchin
I. Hillier	M. Missingham	E. Percival

A second WANG automatic typewriter was purchased during the year to assist in the production of BMR publications. This provides camera-ready material.

The 1975/76 Works Program is attached. Most major works projects are beyond the design briefs stage and tender target dates have been set by the Departments of Treasury, and Housing and Construction for the first three months of 1976. It is anticipated that completion of all projects will be achieved by December 1976.

As in 1974 a large percentage of the administrative staff was on higher duties during the year. The Administrative Officer was absent for seven months on secondment and furlough.

During the year a complete internal review of the Administrative Section was carried out. Management Services Branch is proceeding; one new position (Clerk Class 6, Finance) has been created. Proposals for other sub-sections are under review.

Finalizing the estimates for 1975/76 proved to be a major task following the Government's decision to restrain expenditure wherever possible.

Serious accidents to BMR vehicles have been few. A fatal accident however occurred at Winton, Qld.

"Flexitime", flexible working hours, was introduced during May 1975 and appears to be working satisfactorily.

BMR was represented on a Departmental Committee to discuss field survey conditions and allowances. A number of recommendations have been passed to the Public Service Board.

Staff changes for the period 1.10.74 - 30.9.75 are as follows:

	<u>Joined</u>	<u>Left</u>	<u>Difference</u>
Professional	23	23	0
Technical/Drafting	24	25	-1
Clerical	33	39	-6
Total	80	87	-7

In accordance with Government policy the BMR staff ceiling for 1975-76 is 573, plus 57 wages hands.

The following publications were released during the year or are expected to be released for distribution.

September/October 1974 - September 1975

Bulletins

- 83A - Timor Sea continental shelf sediments map - Jones & Burgis.
- 121 - Templetonian and Ordian xystridurid trilobites of Australia - Opik.
- 146 - Chemical analysis of Australian rocks: igneous and metamorphic - supplement 1961-1969.- Joplin.
- 147 - The Lower Carboniferous geology of the Rouchel district, NSW.- Roberts & Overby
- 148 - Explanatory notes on the 1:250 000 mineral deposits map of PNG.- Grainger & Grainger
- 150 - Palaeontological papers 1972-73,
 1. Foraminifera from the Ilaga valley, Nassau Range, Irian Jaya - Belford
 2. Palynology of subsurface Lower Cretaceous strata in the Surat Basin, Qld - Burger
 3. Some Ordovician graptolites from the Canning Basin, WA, 2: Graptolites from the Goldwyer No. 1 well - Skwarko
 4. Jurassic fossils of WA, 1: Bajocian bivalva of the Newmarracarra Limestone and the Kojarena Sandstone - Skwarko
 5. Marine Triassic molluscs of Australia and Papua New Guinea - Swarko & Kummel.

Bulletins (Cont'd)

- 152 - Standard curves for interpretation of magnetic anomalies due to thin finite dykes.- Haigh & Smith
- 153 - (2 parts) Late Cambrian and early Ordovician trilobites from the Burke River structural belt, W.A. - Shergold.
- 154 - Permo-Triassic stratigraphy and sedimentation in the Bowen Basin, Qld.- Jensen
- 157 - Marine geology of the Arafura Sea.- Jongsma
- 161 - Australian and Soviet gravity surveys along the Australian Calibration Line.- Wellman, Yu. D. Boulanger, Barlow, Shcheglov, & Coutts.

Reports

- 140 - Post-Palaeozoic rocks of the Warwick 1:250 000 Sheet area, Qld and NSW.- Exon, Reiser, Casey & Brunker.
- 152 - Geology of the Lansdowne 1:250 000 Sheet area, SE52-5, WA.- Gellatly, Derrick, & Plumb.
- 153 - The older Precambrian geology of the Lennard River 1:250 000 sheet area, WA.- Gellatly, Sofoulis, Derrick, & Morgan.
- 154 - Geology of the Charnley 1:250 000 Sheet area.- Gellatly, Derrick, Halligan, & Sofoulis.
- 161 - Precambrian geology of the Auvergne Sheet area.- Sweet, Pontifex, & Morgan.
- 166 - Geology of the northern Victoria River region, NT.- Sweet, Mendum, Morgan, & Pontifex.
- 167 - The geology of the southern Victoria River region, NT.- Sweet, Mendum, Bultitude, & Morgan.
- 171 - Environmental significance of folds in the Rangal Coal Measures at Blackwater, Queensland.- Burgis.
- 172 - Cainozoic history of the Torilla Peninsula, Broad Sound, Qld.- Burgis.
- 176 - (PNG 7) - Seismological report on the Madang earthquake of 31 October 1971 and aftershocks.- Everingham.
- 177 - Burdekin Delta underground water investigation, north Queensland, 1962-63.- Weibenga, Polak, Andrew, Wainwright, & Levi.
- 178 - (PNG 8) - Some earthquake focal mechanisms in the New Guinea/Solomon Islands region, 1963-70.- Ripper.
- 189 - Geological Branch, summary of activities, 1974.

Other Publications

AMI Quarterly Review Vol. 26 Nos. 3 and 4.

AMI Quarterly Review Vol. 27 Nos. 1-3.

Australian Mineral Industry 1973 Review, Preprint Chapters:

Iron Ore	Black Coal
Copper	Lead
Zinc	Tin
Petroleum	General Review
Aluminium	Nickel
Titanium	Uranium

Other Publications (Cont'd)

Interpretation of Mineral Exploration Reports.
 Petroleum Newsletter Nos. 57, 58, 59, 60, 61.
 Petroleum titles map and key - 1 July 1974, December 1974.
 Mineral Resources Report No. 6 - Uranium Deposits.
 Pictorial Index of Activities to 31 December 1974.

Preliminary Geological Maps

(1:250 000)

Jardine River Qld	Aitape PNG
Vanimo PNG	Wewak PNG
Helena WA	Karkar Island PNG
Dummer WA	Yule PNG
Alligator River (2-colour), NT	Minigwal WA
Mt Theo NT	Victoria River Downs NT
Alligator River Region NT	Torres Strait-Boigu-Daru Qld and PNG
(including interpretation of	Pt Moresby-Kago-Aroa PNG
airborne geophysical results)	Tennant Creek NT
Cundeelee WA	Throssell WA
Coen Qld	Westmoreland Qld
Mt Creswell ANT	Cumpston Massif ANT
Highland Rocks, (3-colour), NT	Orford Bay Qld

(1:100 000)

Warrego NT	Brindabella NSW
Hadley's Creek Qld	E. Alligator River NT
Tantangara NSW	Prospector Qld

(1:500 000)

Bathurst Island/Melville Island/Coburg Peninsula NT

(1:1 000 000)

N.W. Eromanga Basin (2nd Ed)	Northern Eromanga Basin (3-colour)
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Geological Maps and Explanatory Notes (1:250 000)

Esperance-Mondrain Island WA	Hughenden Qld
Jericho Qld	Fomio PNG
Victoria River Downs NT	Waterloo NT
Yampi WA	Alcoota NT
Cobb WA	Dongara-Hill River WA
Malcolm-Cape Arid WA	Murgoo WA
Warri WA	Mason WA
Rockhampton Qld	Ramu PNG
Dalby Qld	Goondiwindi NSW/Qld
Karimui PNG	Tufi-Cape Nelson PNG
Wau PNG	Huon-Sag Sag PNG
Blucher Range PNG	Simpson Desert North NT
Simpson Desert South NT	Port Clinton Qld
Herbert WA	Warwick Qld/NSW
Seemore WA	

30.

Total Magnetic Intensity Maps (1:250 000)

Glenburgh WA
Peak Hill WA
Robinson Range WA

Nabberu WA
Stanley WA

Total Magnetic Intensity and Radioactivity Maps (1:250 000)

Byro WA
Yalgoo WA

Murgoo WA

Gravity Maps (1:500 000)

Ajana WA
Barlee WA
Belele WA
Burnabbie WA
Byro WA
Cooper WA
Cue WA
Culver WA
Dongara WA
Duketon WA
Edjudina WA
Eucla WA
Forrest WA
Geraldton WA
Glenburgh WA
Glengarry WA
Jubilee WA
Kennedy Range WA
Kingston WA
Kirkalocka WA
Laverton WA
Lennis WA
Leonora WA
Waigen WA
Wanna WA
Wiluna WA
Westwood WA
Yalgoo WA
Youanmi WA

Loongana WA
Madura WA
Mason WA
Menzies WA
Minigwal WA
Mt Phillips WA
Murgoo WA
Nabberu WA
Naretha WA
Neale WA
Ningham WA
Noonaera WA
Perenjori WA
Peak Hill WA
Plumridge WA
Quobba WA
Rason WA
Robert WA
Robinson Range WA
Sandstone WA
Seemore WA
Sir Samuel WA
Stanley WA
Talbot WA
Throssel WA
Vernon WA
Wooramel WA
Yaringa WA
Yowalga WA

SUMMARY OF ESTIMATES

	<u>Estimate</u> <u>1975/76</u> \$	<u>Expenditure</u> <u>1974/75</u> \$
<u>DIVISION 432</u>		
1. <u>Salaries and Payments in the nature of Salary</u>		
01. Salaries and allowances	7 050 000	6 724 485
02. Overtime	198 000	177 229
	<u>7 248 000</u>	<u>6 901 714</u>
2. <u>Administrative Expenses</u>		
01. Travelling and subsistence	415 000	488 875
02. Office requisites and equipment, stationery and printing	80 000	74 574
03. Postage, telegrams and telephone services	180 000	168 392
04. Office services	32 000	30 221
05. Printing and distribution of maps and publications	280 000	283 420
06. Motor vehicles - Hire and maintenance	530 000	553 357
07. Aircraft - Maintenance and running expenses	236 000	214 698
08. General stores	420 000	356 344
09. Contract investigations	740 000	990 971
10. Freight and cartage	75 000	71 464
11. Minor field operating costs	70 000	65 385
12. Repairs and maintenance of plant and equipment	45 000	47 511
13. Computer services	370 000	398 547
14. Incidental and other expenditure	50 000	60 948
Total Administration	<u>3 523 000</u>	<u>3 804 708</u>
3. <u>Other Services</u>		
01. Search for oil - Subsidy	191 000	5 858 087
02. Riverview Observatory - Grant	6 000	6 000
	<u>197 000</u>	<u>5 864 087</u>
Total Division 432	<u>10 968 000</u>	<u>16 570 509</u>
<u>DIVISION 890-1</u>		
01. Plant and equipment	<u>550 000</u>	<u>600 625</u>
Grand Total BMR	<u>11 518 000</u>	<u>17 171 134</u>

WORKS PROGRAMMES 1975/76

TREASURY ALLOCATIONS

Repairs & Maintenance	Proposal	(*)	\$126,530
	Reduction		<u>\$ 25,630</u>
	Programme	(Ø)	<u>\$100,900</u>
Major New Works	Proposal	(*)	\$170,000
	Difference		+ <u>\$ 23,000</u>
	Programme	(Ø)	<u>\$193,000</u>
Minor New Works	Proposal	(*)	\$ 96,570
	Reduction		<u>\$ 10,170</u>
	Programme	(Ø)	<u>\$ 86,400</u>
Furniture & Fittings	Proposal	(*)	\$102,778
	Reduction		<u>\$ 27,178</u>
	Programme	(Ø)	<u>\$ 75,600</u>

* 1975/76 Draft Estimate Bid

Ø 1975/76 Final Treasury Allocation

Some items deferred due to increases in cost following Design
List cost estimates.