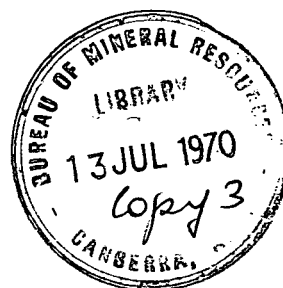


COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record No. 1970 / 51



Bureau of Mineral Resources
1970 PROGRAMME

The information contained in this report has been obtained by the Department of National Development as part of the policy of the Commonwealth Government to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus or statement without the permission in writing of the Director, Bureau of Mineral Resources, Geology & Geophysics.

**BMR
Record
1970/51
c.3**



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**Bureau of Mineral Resources
1970 PROGRAMME**

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BUREAU OF MINERAL RESOURCES, GEOLOGY
AND GEOPHYSICS

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1970 Publication Programme is included under headings Petroleum Investigations, Metals Investigation, etc.

PETROLEUM INVESTIGATION

GEOLOGICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
Carpentaria Basin, Q'ld.	Continue mapping Carpentaria Basin in 1:250,000 map areas: Cape Van Diemen, Mornington Island, Westmoreland, Lawn Hill, Georgetown, Red River, Normanton, Galbraith, Walsh, Hann River, Rutland Plains.	May-October
<u>Results</u>	Record on 1969 Mapping. Explanatory Notes on Cloncurry, Dobbyn, Donors Hill, Burketown, Millungera, Croydon, Gilberton. Record on 1970 Mapping.	Jan.-April Nov.-Dec.
West Surat, Q'ld. Results	Papers on results of 1969 work, Notes on changes to Machattie map area. Explanatory Notes: Homeboin, Dirranbandi, St. George	Jan.-Mar. April-May
Northern & Central Eromanga Basin, Q'ld.	Preparation of two Bulletins and two 1:1,000,000 maps relating previous geological, seismic and magnetic mapping, including re-interpretation where necessary.	June-Dec.
Southwest Eromanga Basin, S.A.	Start mapping South Australian part of Eromanga Basin in 1:250,000 map area: Gason.	Aug.-Sept.
<u>Results</u>	Record on results	Oct.-Dec.
Great Artesian Basin	Co-ordination and supervision of projects within Great Artesian Basin. Plan and supervise geological aspects of bore logging contract and logging of difficult bores.	Continuous
<u>Results</u>	Explanatory Notes: Hughenden, Dalby, Goondiwindi, Galilee, Jericho. Record on 1969 drilling in Surat and Eromanga Basins.	

PETROLEUM INVESTIGATIONS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Texas High Party N.S.W. & Q'ld.	Examine area between Peel Fault Zone (west) and the New England Batholith (east), mapped as Woolloomin Beds, to compare with Palaeozoic rocks of the Warwick-Goondiwindi area. Map in detail area north of Dalveen, where Devonian and Carboniferous sequences are in contact to establish relationship. Examine area between Bunya Phyllite (east) and Triassic rocks of Esk Graben (west) west and northwest of Brisbane shown on Geological Map of Moreton District as Neranleigh-Fernvale Group, to compare with the Palaeozoic rocks of the Warwick-Goondiwindi area.	3 weeks during April/May 3 weeks during Aug./Sept.
Ngalia Basin N.T.	Complete writing up of field results and assist with geo-physical assessment.	Jan.-Sept.
<u>Results</u>	Bulletin - see under publications	
Daly Basin N.T.	Compilation of existing information. Detailed stratigraphic and sedimentological study.	June-Sept.
<u>Results</u>	Record preparation and laboratory studies.	Oct.-Dec.
Officer Basin W.A.	Plan systematic mapping of 1:250,000 map areas in co-operation with G.S.W.A.	as required
Hunter Valley N.S.W.	Stratigraphic and palaeontological study of Carboniferous.	Field visits during Feb.-Dec.
Bowen Triassic	Study of Triassic Mimosa Group sedimentary environments, correlation and extent.	May-July (Field) Jan-April (Office)
<u>Results</u>	Report on investigations	Aug.-Dec.

PETROLEUM INVESTIGATION
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Arltunga Nappe Complex N.T.	Detailed mapping on Alice Springs map of Arltunga Nappe Complex.	June-July
<u>Results</u>	Petermann Ra. Explanatory notes. Continue metamorphic study.	
Stratigraphy of deposits containing mammals	Vertebrate palaeontology of Nerriga (NSW), Gason (S.W. Eromanga Basin) map areas, Eyre Basin.	As required 1970
Mootwingee Ra., N.S.W.	Study field relation of formations and collect late Cambrian trilobites.	1 month
N.W. Shelf Marine Geophysics	Assist Geophysical Branch Marine Group with interpretation of geophysical results.	1970

PETROLEUM INVESTIGATION
GEOLOGICAL BRANCH (Cont'd).
PUBLICATIONS IN PROGRESS

SUBJECT	AUTHOR
<u>BULLETINS</u>	
Ngalia Basin, N.T.	A.T. Wells
Drummond Basin, Q'ld.	F. Olgers
Amadeus Basin, N.T.	A.T. Wells & others
Georgina Basin, N.T. & Q'ld.	K.G. Smith
Northern Eromanga & Galilee Basins	R.R. Vine & Geophysicists
Central Eromanga Basin	B.R. Senior & Geophysicists
<u>REPORTS</u>	
Geology of the Tambo-Augathella area	N.F. Exon
Geology of the Eddystone - Taroom - Mundubbera area	G. Mollan & Others
Texas High	F. Olgers
Upper Permian and Lower Triassic sedimentation in the Bowen Basin	A.R. Jensen
<u>EXPLANATORY NOTES & 1:250,000 SCALE MAPS</u>	
Tickalara	M.C. Galloway & D.A. Senior
Wyandra	B.M. Thomas
Cunnamulla	B.M. Thomas
Surat	R. Reiser (ex. GSQ.)
Mitchell	N.F. Exon
Galilee	H.F. Douth & R.R. Vine
Jericho	F. Olgers & R.R. Vine
Napperby	T.G. Evans
Dalby	A. Medvecky
Hughenden	R.R. Vine & A.G.L. Paine
St. George	D.A. Senior
Dirranbañdi	B.K. Graham
Homeboin	B.R. Senior
Petermann Ranges	D.J. Forman
Goondiwindi	A. Medvecky
Warwick	F. Olgers
Dobbyn	J. Smart
Donors Hill	J. Ingram
Gilberton	F. Douth
Millungera	K. Grimes (G.S.Q.)
Burketown	J. Ingram
Croydon	F. Douth
Cloncurry	K. Grimes (G.S.Q.)

PETROLEUM INVESTIGATION

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
Northern and Central Eromanga Basin	Assistance in preparation of 2 Bulletins and 2 1:1,000,000 maps by relating previous geological, seismic, gravity and magnetic mapping including re-interpretation as required.	June-Dec.
Ngalia Basin, N.T.	Completion of assessment of seismic and other geophysical data.	Jan.-Aug.
<u>Results</u>	Bulletin - see under Geological Branch publications.	
Roma Shelf, Qld.	Completion of report on 1967/68 Seismic Survey.	Jan.-June
<u>Results</u>	Preparation of Report.	
Officer and Eucla Basins and Adjacent Precambrian areas. (Petroleum and Metals)	Helicopter gravity coverage of the following 1:250,000 areas. Station spacing 4½ miles. Abminga, Alberga, Woodroffe, Mann, Birksgate, Noorina, Wells, Wyola, Maurice, Cook, Ooldea, Barton, Tarcoola, Coompana, Nullarbor Fowler, Childara, Nuyts, Streaky Bay, Olary, Orroroo, Parachilna (part), Copley, Curnamona (part), Chowilla (part).	Feb.-Sept.
<u>Results</u>	Preparation of Record	Sept.-Dec.
Collation of Density Data (Petroleum and Metals)	Compilation of rock density data from cores, gamma-ray logs and surface samples. Development of storage and retrieval system.	Continuous
<u>Results</u>	Preparation of Record	November
Bouguer Anomaly Map of Australia (Petroleum and Metals)	Compilation of existing Bouguer anomaly data at a scale of 40 miles to 1 inch. Recomputation of existing data as required.	Continuous
<u>Results</u>	Bouguer anomaly map of Australia at 40 miles to 1 inch and accompanying Record.	Next Edition March 1971
Department of Interior Levelling.	Levelling will be required over the following 1:250,000 map areas in W.A. for the 1971 helicopter gravity survey:	

PETROLEUM INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Department of Interior Levelling. (Cont'd).	Glengarry, Wiluna, Kingston, Robert, Yowalga, Talbot, Cooper, Sandstone, Sir Samuel, Duketon, Throssell, Westwood, Lennis, Waigen, Youanmi, Leonora, Laverton, Rason, Neale, Vernon, Wanna, Barlee, Menzies, Edjudina, Minigwal, Plumridge, Jubilee, Mason, Seemore, Loongana Forrest, Naretha, Madura, Eucla, Culver, Burnabbie, Noonaera.	
Recomputation of Helicopter Gravity Surveys (Petroleum and Metals)	Recomputation of 1963, 1964 and 1965 helicopter gravity surveys.	Continuous
1970 Marine Survey of the Gulf of Papua and the Bismarck Sea (Petroleum and Regional)	(a) Preparation for survey, including testing of equipment. (b) Survey operations. (c) Progress report based on preliminary results only (d) Playback of sections of special interest and more detailed interpretation.	Jan.--June June-Aug. Sept. Oct.--Dec.
Compilation of marine data on Northwest Continental Shelf, Timor Sea and Bonaparte Gulf.	A synthesis of all Bureau and other work on the Northwest Continental Shelf, Timor Sea and Bonaparte Gulf. (a) Gravity (b) Magnetic (c) Seismic	Continuing as time permits
<u>Results</u>	Preparation of Bulletin including preparation of Records on each topic as preparatory stage toward Bulletin.	
Progress map of marine geophysical traverses around Australia.	Compilation of ship tracks and geophysical data in Australian waters.	Continuing
Development of computer programmes	Development of computer programmes to aid interpretation of gravity and magnetic data, including (a) downward continuation (b) second derivative (c) density distribution (d) tectonic interpretation (e) Legendre polynomial fitting to gravity and magnetic fields.	Continuing
<u>Results</u>	Reports on programmes to include flow-charts, documentation and operating instructions.	

PETROLEUM INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Development of computer oriented indexing system	Development of a storage and retrieval system for indexes including :- (a) references (b) surveys (c) data (d) densities (e) seismic velocities	Continuing as time permits
Seismic Data Processing Group	(a) Production of seismic record sections and processing of experimental work for the current seismic programme and for review work of the Seismic and Marine Section, Engineering Group and the Basin Study Group. (b) Laserscan processing of seismic sections; investigations of applications of Laserscanning in other geophysical and geological fields. (c) Digitising of seismic data and well logs and processing of the data through CSIRO computer. (d) Digital Processing of seismic data.	Continuous
Seismic Controlled Directional Reception Method investigations.	Theoretical and laboratory investigations of Controlled Directional Reception and other seismic recording techniques.	March-Dec.
Seismic computer programmes for CDC 3600.	Development, review and documentation of Single Time Series seismic computer programmes. Preparation of Record.	March-Dec. Nov.-Dec.
Marine seismic data	Processing, interpretation and review of Marine Seismic data from 1968, 1970 and other surveys as required.	Jan.-Dec.
Marine seismic equipment test	Equipment test.	February
Preparation for Seismic and Magneto-Telluric Surveys in 1971	Preview reports etc.	Sept.-Dec.

PETROLEUM INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Seismic reports	Preparation of reports on seismic projects 1962-1969.	Jan.-Dec.
Subsidy Operations	Assistance to P.E. Branch in Subsidy Section.	Jan.-Mar. April-June
Contract bore logging	Logging of water-bores in Great Artesian Basin - Gamma, resistivity, S.P., temp. etc.	June-Sept.
Logging difficult artesian bores (up to 36)	Log holes which contractor would not undertake because of various technical difficulties.	May-July 1970 and/or April-May 1971
Sydney Basin Logging	Log 2 holes less than 1,000 feet deep with electrical and gamma logs.	About Feb.
VH-MIN South Australia	Aeromagnetic Survey of Cook, Ooldea and Barton 1:250,000 areas at 1 mile spacing. Preparation of Record.	Mid March-June July
Contract Aeromagnetic Survey, East Papua (Petroleum and Metals)	Survey of mainland and adjacent areas.	Jan.-Nov. as required
Eromanga Basin Qld. Aeromagnetic data.	Review of interpretation of existing B.M.R. and company survey data.	Aug.-Sept.
Northern Great Artesian Basin, Qld.	Interpretation and basement contouring of data from 1966 Contract survey.	Jan.-March
New Guinea Basin Airborne Seismic	Experimental Reconnaissance Refraction/Reflection Survey in swamp and other inaccessible areas, using helicopters for transport & telemetered seismic information recorded on equipment mounted in aircraft.	Mid-August to Mid-Nov.
1:1,000,000 scale FAA, BA and magnetic anomaly and seismic horizon maps and explanatory notes.	Preparation by computer of ICAO scale maps using the UTM grid for geophysical reports.	Continuing

PETROLEUM INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Ngalia Basin	Interpretation of gravity and aeromagnetic data for inclusion in Bulletin on Ngalia Basin.	April-May Feb.-June
Eromanga Basin	Interpretation of gravity data for inclusion in Bulletin on Eromanga Basin.	Aug.-Sept.
New Guinea Survey	Reconnaissance gravity Survey of Mt. Hagen Area.	June
Tasman Geosyncline	Interpretation of the gravity of the Tasman Geosyncline. Records will be written in part preparation for the writing of a bulletin by mid 1971. The areas covered by these records will be:- <ul style="list-style-type: none">- Bowen Basin North of 24°S- Dalby, Surat- Mitchell, Roma, Chinchilla- Springsure, Eddystone, Baralaba, Taroom- Granites- Clarence - Moreton Basin- Surat Basin S. of 28°S.- Darling area	Continuing as time permits
Oil Advisory Committee Reports	Critical comments on company reports for O.A.C.	Continuing

PETROLEUM INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).
PUBLICATIONS IN PROGRESS

SUBJECT	AUTHORS
<u>BULLETINS</u>	
Detailed Gravity Survey over Mount Brown and Mount Fort Bowen	J. Barrett and M.D. Watts
Gravity of the Canning Basin	A.J. Flavelle
Marine Geophysical Survey of the Northwest Continental Shelf, Timor Sea and Bonaparte Gulf	R. Whitworth
<u>REPORTS</u>	
Thargomindah-Noccundra Seismic	J. Davies, C. Robertson
Giles-Carnegie Seismic	A. Turpie
S-E Georgina Basin Seismic 1963/64	C. Robertson, P. Jones
Roma Shelf 1967/68	J. Davies, E.R. Smith
Ngalia Basin 1967/68	P. Jones
Gosses Bluff 1969	A.R. Brown
Vibroseis and Conventional Comparison 1964/66	F.J. Moss
Deep Crustal Reflection 1968/69	J.C. Branson
Gravity Map of Australia	K.R. Vale and F. Darby
Marine Geophysical equipment	A. Turpie
Marine Data Processing	R. Whitworth
Programmes for computerized interpretation of bouguer anomaly profiles	R. Whitworth and I. Briggs
Programmes for computation of the gravitational effect of two dimensional and three dimensional bodies	R. Whitworth and I. Briggs
Programme for plotting isometric views of three dimensional data	R. Whitworth
Programmes for automated data plotting by computer	R. Whitworth and I. Briggs
Amadeus Basin Reconnaissance Gravity Survey using helicopters, N.T., 1961.	W.J. Langron

PETROLEUM INVESTIGATION
PETROLEUM EXPLORATION BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>SUBSIDY SECTION</u>	Process applications, inspect operations, assess final reports, check cost statements, edit reports for publication.	Continuous
<u>SUBSURFACE SECTION</u> Sedimentary Basins Study Group	Stratigraphic Drilling, Sydney Basin. 1-2 holes in Nowra area.	March 1970 April
	Collect, collate and compile all available data including Bibliographies on (in order) Canning, Carnarvon, Bonaparte and Eucla (S.A.) Basins. Prepare Records on existing Bibliographies of Perth, Clarence-Moreton and Papuan Basins.	Continuous
Core & Cuttings Laboratory	Receive, catalogue and store Core and Cuttings, prepare representative samples and thin sections as required.	Continuous
	Operate Differential Thermal Analysis equipment for Basins Study Group and for other Branches as required.	Continuous

PUBLICATIONS IN PROGRESS

SUBJECT	AUTHOR
<u>REPORTS</u>	
Summary of Oil Search Activities in Australia and New Guinea. (to Dec. 1967)	K.G. Smith E. Nicholas
Ditto to Dec. 1968	K.G. Smith E. Nicholas
Sydney Basin Review	K.G. Smith A.L. Bigg-Wither S.J. Mayne
7 PSSA Publications	

PETROLEUM INVESTIGATION
MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>SYDNEY BASIN, N.S.W.</u> Sydney Basin Drill Party	Stratigraphic Drilling & Coring 2 Holes up to 1000 feet. Total footage <u>2,000'</u>	End Feb. March
<u>CARPENTARIA BASIN, Qld.</u> Carpentaria Drill Party	Drilling & Coring for geological mapping 30 holes up to 500 feet each. Total footage <u>8,000'</u> 1 hole continuously cored to 600 - 700 feet.	Mid May August
<u>SOUTHWEST EROMANGA BASIN</u> <u>S.A.</u> Eromanga Drill Party	Drilling & coring for geological mapping 10 holes up to 500 ft. each. Total footage <u>2,500'</u>	Sept.
<u>NGALIA BASIN, N.T.</u> Ngalia Drill Party	Stratigraphic Drilling & coring 4 holes up to 650 feet. Total footage <u>2,600'</u>	2-3 weeks between July and Nov.

PETROLEUM INVESTIGATION
MINERAL RESOURCES BRANCH (Cont'd).

PUBLICATIONS IN PROGRESS

<u>SUBJECT</u>	<u>AUTHOR</u>
<u>PETROLEUM TECHNOLOGY</u> <u>SECTION</u>	J.M. Henry (general Supervision & co-ordination)
The Petroleum Newsletter	W.R.W. Dunn
Petroleum Exploration Contractors, Service Companies and Consultants	W.R.W. Dunn
Petroleum Exploration and Development Companies	W.R.W. Dunn
<u>MAPS</u>	
Petroleum Exploration and Development Titles Map & Key	W.R.W. Dunn

METALS (including URANIUM)
INVESTIGATION

GEOLOGICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
Victoria River, N.T.	Complete drilling programme and sampling of Antrim Plateau and other volcanics; sampling glacial rocks for age determination. Write Report on 1969 field work and prepare maps and explanatory notes for Delamere, Cape Scott, Wave Hill, Victoria River Downs, Waterloo, and Limbunya. Bulletin.	Jan.-May June-Aug. (field)
<u>Results</u>	Report on Antrim Plateau Volcanics.	Oct. 1970- April 1971
Arunta, N.T.	Study structure and map Arunta Complex on Alice Springs and Alcoota 1:250,000 map areas.	May - Oct.
<u>Results</u>	Record	Oct. 1970- April 1971
Tennant Creek, N.T.	Complete mapping Tennant Creek 1:250,000 map area.	June-Sept.
<u>Results</u>	Record	Sept.-May 71.
Kubor Range, N.G.	Complete mapping of Kubor Range area, Central Highlands, and of Schrader Range in Ramu map Area.	June - August
<u>Results</u>	Bulletin	Sept.-1970- May 1971
Antarctica	Regional geological mapping in northern Prince Charles Mountains; collection of samples for age determination.	Jan.-March
<u>Results</u>	Preparation of Reports on above work, including integration with results of some of 1969 work.	1970
	Petrographic work on Permian sediments and report on study of sediments.	Jan.-June
	Writing of reports on work in earlier years and liaison as necessary.	

METALS (including URANIUM) INVESTIGATION
GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
New Britain, T.P.N.G.	Bulletin and maps to be prepared. Explanatory notes and maps for Gazelle Peninsular, Pomio, Talasea, Cape Raoult, Arawe, and Gasmata 1:250,000 map areas.	To April 1971
Eastern Papua, T.P.N.G.	Bulletin and maps to be completed. Explanatory notes and maps of Tufi, Abau, Samarai, Fergusson Island, Rossel, Buna and Salamaua 1:250,000 map areas.	To Dec.
Cape York Party, Qld.	Bulletin and 1:500,000 map of Cape York igneous and metamorphic rocks. Complete Explanatory Notes for parts of map areas occupied by Precambrian and Palaeozoic rocks.	To March
Burdekin, Qld.	1. Complete Record on Bowen 1:250,000 area. 2. Complete compilation of map and explanatory notes for Hughenden, Bowen, and Proserpine 1:250,000 maps. 3. Modify Records for issue as Reports on map areas in (2). 4. Compilation of 1:500,000 map of Burdekin region. 5. Write Bulletin on Burdekin region. 6. Complete 1:1,000,000 map and notes on Burdekin Region.	To May
Carpentaria, N.T.	1. Complete draft of Arnhem Land Bulletin. 2. Complete Roper River to Queensland Border Bulletin. 3. Complete Report on igneous and metamorphic rocks of Arnhem Land.	Jan.-Dec. To June
West Kimberley, W.A.	1. Complete Records on Yampi and Oscar Range areas. 2. Write Explanatory Notes for Yampi and Lennard River 1:250,000 areas. 3. Compile 1:500,000 map of area. 4. Write Bulletin on area. 5. Miscellaneous papers.	To Dec.

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Kimberley Basin, W.A.	1. Write Bulletin 2. Compile 1:500,000 map	To April 1971
Cloncurry, Qld.	Detailed regional mapping of Mary Kathleen and Mount Isa 1:100,000 map areas. Geochemical sampling of gossans. Collection for isotopic dating to begin. Low-level aerial survey to be carried out by Geophysical Branch.	May-Sept.
<u>Results</u>	Record	Oct- 1970- April 1971
McArthur River, N.T.	Complete study and write Report on environment of deposition of McArthur River lead-zinc deposits.	To Dec. 1970
Darwin Uranium Group, N.T.	Continue exploration for uranium and base metal mineralisation in the Rum Jungle area. 1. Auger drilling - up to 20,000 feet, comprising - a. Follow-up geochemical and radiometric surveys in the Rum Jungle East area, in selected areas west of Finnis River, and in vicinity of Mount Fitch and Rum Jungle Creek South prospects, as warranted by the results of current investigations. b. Geochemical and radiometric surveys, initially on spacing of 200 x 1,200 feet, of 2 square-mile area west of Stapleton Railway Siding. c. Further radiometric surveys over poorly exposed portions of Crater and Beestons Formations, as warranted by the results of current investigations. d. Further surveys over representative areas, including areas of known mineralisation, to evaluate and perfect radon measurement techniques.	Continuous

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Darwin Uranium Group, N.T. (Cont'd)	<p>2. Rotary or Percussion drilling - up to 12,000 feet, comprising -</p> <p>a. Radiometric surveys and stratigraphic investigation of radio-active conglomerates in Crater and Beestons Formations.</p> <p>b. Testing of radiometric and geochemical anomalies in Rum Jungle East and Stapleton areas, in selected areas west of Finnis River, and in vicinity of Mount Fitch and Rum Jungle Creek South prospects, as warranted by the results of current investigations and (1) above.</p> <p>3. Diamond drilling - up to 9,600 feet, comprising -</p> <p>a. Up to 3 holes, each of 1,500 to 2,000 feet length, to test radioactive conglomerates in the Crater Formation. 1 x 400 foot hole to check dip of Crater Formation.</p> <p>b. Up to 6 holes, each of 400 to 600 feet length, to test radioactive and geochemical anomalies in Rum Jungle East area, in selected areas west of Finnis River, and in vicinity of Mount Fitch and Rum Jungle Creek South prospects, as warranted by results of (1) and (2) above.</p> <p>4. Petrological and mineralogical studies of Crater and Beestons Formations to assist in selection of deep diamond drill sites.</p> <p>5. Continue investigation and evaluation of magnesite occurrences in Celia and Coomalie Dolomite.</p>	Continuous
<u>Results</u>	<p>Report: Compilation of geological, geochemical, and geophysical information from the Hundred of Goyder.</p> <p>Report: Exploration in the Woodcutters area, Rum Jungle district, 1964-1968.</p> <p>Records: As warranted by progress of investigations.</p>	<p>Dec. 1970</p> <p>Dec. 1970</p>

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd)

PUBLICATIONS IN PROGRESS

SUBJECT	AUTHOR
<u>BULLETINS</u>	
Geology of the Carpentaria Proterozoic Province, N.T. Part I - Roper River to Queensland Border	P.R. Dunn, H.G. Roberts, ² K.A. Plumb
Geology of the Carpentaria Proterozoic Province, N.T. Part II - Arnhem Land.	H.G. Roberts, ² K.A. Plumb, P.R. Dunn
Precambrian Geology of the Kimberley Region - The Kimberley Basin	K.A. Plumb
Precambrian Geology of the Kimberley Region - The West Kimberley	D.C. Gellatly, J. Sofoulis, ¹ G.M. Derrick
Geochronology of the East Kimberley Region, W.A.	V.M. Bofinger
The Geology of the Mt. Garnet/Herberton 1-mile map areas.	D.H. Blake
Burdekin River Region	A.G.L. Paine, D.H. Wyatt ³
Geology of the Victoria River Basin, N.T.	R.J. Bultitude, I.P. Sweet, J. Mendum
Geology of the South Sepik Region	D.B. Dow, J.A.J. Smit, J.H.C. Bain, R.J. Ryburn
Metamorphic and igneous rocks of the Cape York Peninsula and Torres Strait Islands	W.F. Willmott, W.D. Palfreyman, W.G. Whitaker ³
Geology of Eastern Papua including Normanby Island and the Louisiade Archipelago	I.E. Smith (P.E. Pieters, P.D. Hohnen, H.L. Davies)
Geology of New Britain	R.J. Ryburn, R.W. Johnson, D.E. Mackenzie, R.P. Macnab
Geology of the Central Highlands of New Guinea	J. Bain, D.E. Mackenzie
<u>REPORTS</u>	
Adelaidean and Cambrian Stratigraphy of the Mt. Ramsay 1:250,000 map area.	H.G. Roberts, ² I. Gemuts, ² R.A. Halligan
Catalogue of Age Determinations, 1966	R.W. Page
Catalogue of Age Determinations, 1967, 1968	R. Bennett

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd)

PUBLICATIONS (Cont'd)

SUBJECT	AUTHOR
The Geology of North-eastern part of the Hughenden 1:250,000 map area	A.G.L. Paine, R.R. Harding, D.E. Clarke ³
The Geology of the Gazelle Peninsula	R.P. Macnab
The Geology of the Northern half of the Bowen 1:250,000 map area	A.G.L. Paine, D.E. Clarke, ³ C.M. Gregory ²
The Geology of the Proserpine 1:250,000 map area	D.E. Clarke, ³ A.G.L. Paine, A.R. Jensen
Petrography of the igneous and metamorphic basement rocks of Arnhem Land	K.A. Plumb
Exploration of the Woodcutters area, near Rum Jungle, N.T., 1964-1968	C.E. Prichard and geophysicist
Geology of the Ravenswood 1-mile map area, Qld.	D.E. Clarke ³
The Geology of the Auvergne 1:250,000 map area, N.T.	I.R. Pontifex, ² C.M. Morgan, I.P. Sweet
The geology of the northern part of the Victoria River Basin, N.T.	C.M. Morgan, I.P. Sweet, J.R. Mendum
The geology of the southern part of the Victoria River Basin, N.T.	C.M. Morgan, I.P. Sweet, J.R. Mendum, R.J. Bultitude
Environment of deposition of the McArthur River lead-zinc deposit, N.T.	M.C. Brown
Compilation of geological and geochemical information from the Hundred of Goyder	Y. Miezitis ²
Permian sediments around Beaver Lake	A. Medvecky
Geology of eastern side of Prydz Bay	J.H.C. Bain, I.R. McLeod

1. Geological Survey of Western Australia

2 With industry

3 Geological Survey of Queensland

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd).

PUBLICATIONS IN PROGRESS (Cont'd).

SUBJECT	AUTHOR
<u>1:250,000 Sheet Areas</u>	
Montague Sound	A.D. Allen
Charnley	D.C. Gellatly, R.A. Halligan ²
Medusa Banks	K.A. Plumb, W.J. Perry
Yampi	J. Sofoulis, D.C. Gellatly
Lennard River	G.M. Derrick, P. Playford
Hughenden	R.H.R. Vine, A.G.L. Paine
Charters Towers	D.E. Clarke, ³ A.G.L. Paine
Bowen	A.G.L. Paine
Proserpine	A.G.L. Paine
Auvergne	I.R. Pontifex ²
Daru-Maer Island	W.F. Willmott, W.G. Whitaker ³
Port Keats	C.M. Morgan, J.M. Dickins
Cape Scott	J.R. Mendum
Fergusson River (2nd Edition)	I.R. Pontifex ² , J.R. Mendum
Delamere	I.P. Sweet
Victoria River Downs	J.R. Mendum
Wave Hill	R.J. Bultitude
Waterloo	I.P. Sweet
Limbunya	C.M. Morgan, I.P. Sweet
Wau	J.A.J. Smit ²
Ramu	J.H.C. Bain, D.E. Mackenzie
Karimui	J.H.C. Bain, D.E. Mackenzie
Tufi	I.E. Smith, H.L. Davies
Aqau	I.E. Smith
Samarai	I.E. Smith
Rossel	I.E. Smith, P.E. Pieters
Fergusson Island	H.L. Davies, I.E. Smith
Gazelle Peninsula	R.P. Macnab
Pomio	R.J. Ryburn
Talasea	R.J. Ryburn, R.W. Johnson
Gasmata	R.J. Ryburn, D.E. Mackenzie
Arawe	R.J. Ryburn, R.W. Johnson
Cape Raoult	R.W. Johnson

MAPS

1:50,000 and 1 mile to 1 inch Sheets

Mt. Garnet	D.H. Blake, K.R. Yates ²
Herberton	D.H. Blake, J.W. Smith ²
Ravenswood	D.E. Clarke ³

1:100,000

Yampi Sound	D.C. Gellatly
Leopold Downs	D.C. Gellatly
Marraba	G.M. Derrick
Cloncurry	G.M. Derrick

¹ Geological Survey of Western Australia

² With industry

³ Geological Survey of Queensland

METALS (including URANIUM) INVESTIGATION

GEOLOGICAL BRANCH (Cont'd).

PUBLICATIONS IN PROGRESS (Cont'd)

SUBJECT	AUTHOR
<u>MAPS (Cont'd).</u>	
<u>1:250,000 Sheet Areas</u>	
Montague Sound	A.D. Allen ¹
Charnley	D.C. Gellatly, R.P. Halligan ²
Medusa Banks	K.A. Plumb, W.J. Perry
Yampi	J. Sofoulis, ¹ D.C. Gellatly
Lennard River	G.M. Derrick, P.E. Playford
Hughenden	R.H.R. Vine, A.G.L. Paine
Charters Towers	D.E. Clarke
Bowen	A.G.L. Paine, D.E. Clarke ³ , C.M. Gregory ²
Proserpine	A.G.L. Paine ²
Auvergne	I.R. Pontifex ²
Daru-Mear Island	W.F. Willmott, W.G. Whitaker ³
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Karimui	J.H.C. Bain, D. Mackenzie
Tufi	I.E. Smith, H. Davies
Abau	I.E. Smith
Samarai	I.E. Smith
Rossel	I.E. Smith, P.E. Pieters
Fergusson Island	H.L. Davies, I.E. Smith
Gazelle Peninsula	R.P. Macnab
Pomio	R.J. Ryburn
Talasea	R.J. Ryburn, R.W. Johnson
Gasmata	R.J. Ryburn, D.E. Mackenzie
Arawe	R.J. Ryburn, R.W. Johnson
Cape Raoult	R.W. Johnson
<u>1:500,000 Sheet Areas</u>	
Kimberley Basin	K.A. Plumb
West Kimberley	D.C. Gellatly, J. Sofoulis ¹
Burdekin River Region	A.G.L. Paine et al.
Papuan Ultramafic Belt	H.L. Davies
Cape York	D.S. Trail et al.
Eastern Papua	I.E. Smith
Louisiade Archipelago	I.E. Smith
Victoria River	I.P. Sweet
South Sepik	D.B. Dow, J.H.C. Bain, R.J. Ryburn
<u>1:1,000,000 Sheet Areas</u>	
Geological Map of New Guinea	Various, as required

¹ Geological Survey of Western Australia

² With industry

³ Geological Survey of Queensland

METALS (including URANIUM) INVESTIGATION

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
Tennant Creek, N.T.	Review and assessment of available geophysical data for the T.C. Field. Define the problems associated with mineralisation.	Approx. 3 months (as time available)
Mt. Lyell, Tasmania,	Field work completed 1968	Jan.-April
<u>Results</u>	Preparation of Bulletin	
Zeehan, Tasmania.	V.L.F. Measurements	Feb.-March
<u>Results</u>	Preparation of Record	April
Dobbyn - Kamileroi Qld.	Field work completed 1967	
<u>Results</u>	Preparation of Bulletin	Mar.-June
AFMAG Field Recording	Recording stations at Darwin, Perth, (Adelaide). Filing of data.	Continuous
<u>Results</u>	Preparation of Record	Sept.-Dec.
Magnetotelluric investigations	Study of application of magneto-tellurics to metalliferous prospecting. Field testing over selected areas in N.S.W., N.T.	Jan-Aug.
<u>Results</u>	Preparation of Record	Oct.-Dec.
Investigation of Logging Methods	E.M. and I.P. Borehole measurements. Laboratory measurements.	As staff available
<u>Results</u>	Preparation of Record	
Establishment of Test Area.	Investigations for geophysical test area A.C.T./N.S.W.	As staff available
<u>Results</u>	Preparation of Record.	
Astrolabe Field T.P.N.G.	Experimental survey using I.P., E.M., S.P., V.L.F. and possibly other methods.	July-Sept.
Victoria River Area	Interpretation of gravity data for inclusion in Bulletin on Victoria River Region.	Nov.-Dec.
VH-BMR Queensland	Detailed aeromagnetic and radiometric survey of selected areas.	mid April-June
<u>Results</u>	Preparation of Record.	July-Aug.

METALS (including URANIUM) INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
VH-BMR Tennant Creek N.T.	Detailed aeromagnetic and radiometric survey of selected area.	Aug.-Oct.
<u>Results</u>	Preparation of Record	Nov.-Dec.
Contract aeromagnetic Survey W.A.	Aeromagnetic survey of Wiluna, Glengarry and Kingston, 1:250,000 areas at 1 mile spacing.	Jan.-July as required
Twin Otter N.S.W. VH-BMR	Airborne magnetic and radiometric survey of Wagga and Cootamundra, 1:250,000 areas at 1 mile spacing.	Oct.-Nov. if possible
<u>Results</u>	Preparation of Record	
Victoria River Area N.T.	Interpretation of aeromagnetic data and correlation with geological mapping.	June-July
Tennant Creek N.T.	Review of existing aeromagnetic data	March-April
Darwin Uranium Group N.T.	Laboratory services, assaying and investigation using gamma-ray spectrometer, logging, soil radon measurements, field surveys mainly in the Rum Jungle Area. Compilation and analysis of geophysical data from Rum Jungle Area.	Continuous
<u>Results</u>	Preparation of Record on 1969 Rum Jungle surveys.	Jan.-April
	Preparation of Record on Slingram Model Tests.	Jan.-June
Rum Jungle N.T. Data	Assessment of all geophysical data on the Hundred of Goyder, Preparation of Record	As time available Jan.-July
Rum Jungle N.T. Drilling	Drilling of geophysical targets and logging of holes. Up to 8,000 ft of rotary percussion drilling.	July-Sept.
Officer and Eucla Basin and Adjacent Precambrian areas.	Helicopter gravity coverage of the following 1:250,000 areas. Station spacing 4½ miles. Abminga, Alberga, Woodroffe, Mann, Birksgate, Noorina, Wells, Wyola, Maurice, Cook, Ooldea, Barton, Tarcoola, Coompana, Nullarbor, Fowler, Childara, Nuyts, Streaky Bay, Olary, Orroroo, Parachilna, Chowilla (part), Copley, Curnamona (part).	Feb.-Sept.
<u>Results</u>	Preparation of Record.	Sep.-Dec.

METALS (including URANIUM) INVESTIGATION
GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Detailed Gravity	Detailed gravity survey over areas of special geological or geophysical interest in the Kalgoorlie area.	April-Aug.
<u>Results</u>	Preparation of Record for each project.	Sept.-Oct.
Collation of Density Data. (Petroleum and Metals)	Compilation of rock density data from cores, gamma-ray logs and surface samples. Development of storage and retrieval system.	Continuous
<u>Results</u>	Preparation of Record.	November
Bouguer Anomaly Map of Australia. (Petroleum and Metals)	Compilation of existing Bouguer anomaly data at a scale of 40 miles = 1 inch. Recomputation of existing data as required.	Continuous
<u>Results</u>	Bouguer anomaly map of Australia at 40 miles = 1 inch and accompanying Record.	Next Edition March 1971
Recomputation of Helicopter Gravity Surveys. (Petroleum and Metals)	Recomputation of 1963, 1964 and 1965 helicopter gravity surveys.	Continuous
Department of Interior Levelling.	Levelling for detailed gravity survey in the Kalgoorlie area.	

METALS (including URANIUM) INVESTIGATION

MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>Rum Jungle N.T.</u> <u>Rum Jungle Drill</u> <u>Party</u>	<p>Rotary drilling investigation of Geophysical anomalies 40-50 holes, 200-250 feet deep. Total Footage <u>8,000 feet.</u></p> <p>Rotary Drilling and Coring 80 Holes 150-250 feet deep Total Footage <u>12000'</u></p> <p>Diamond Drilling and Coring up to 6 holes each 400-600 feet deep. Total Footage <u>3,600 feet.</u></p> <p>Rotary Drilling and Coring in Celia and Huandot areas. Up to 10 holes 100-150 feet deep. Total Footage <u>1,000 feet.</u></p>	July-Dec.
Victoria River N.T.	<p><u>Contract</u></p> <p>Drilling and Coring (Crater Formation) 3 holes, 1,500-2000 feet deep. Total footage <u>6,000 feet.</u></p> <p><u>Contract</u></p> <p>Drilling and Coring carry over from 1969; 4-6 holes as per contract.</p>	<p>1970</p> <p>Mid April</p> <p>June</p>

NON-METALS INVESTIGATION

GEOLOGICAL BRANCH

<u>PARTY</u>	<u>NATURE OF WORK</u>	<u>TIMETABLE</u>
Study of Evaporites & Sulphur in sedimentary basins.	Compilation of information and exploratory drilling.	After May
Georgina Phosphate Party (Georgina Basin Phosphate Province)	A. No field work (completed during 1969) B. Petrology & geochemistry of collected samples C. <u>Record</u> on 1969 field work <u>Bulletin</u> on Georgina Basin phosphate Province	To March Nov.-Dec. 1969 Jan.-Nov.
Tasman Phosphate Party	Short field trips	Intermittent throughout 1970-1971
Estuary Party (Broad Sound, Qld, Project)	A. Sampling and geochemical investigation of estuary waters, sediments, and bordering catchment area. B. Short individual <u>papers</u> : <u>Bulletin</u> (ultimately)	2 weeks in April 3 months Sept.-Nov. Intermittent; 1971-72?
<u>Marine Geology</u> Off east coast of Australia from Gladstone, Qld., south possibly as far as Newcastle N.S.W.	Survey of the morphology, sedimentation, and superficial structure of the continental shelf, continued.	Sept.-Dec. (3 months)
<u>Results</u>	Record on 1968 NW. Shelf work Record on 1969 Arafura Sea survey Bulletin on 1968 & 1969 Arafura survey Bulletin on 1967/68 NW. Shelf work.	

NON-METALS INVESTIGATION

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
Moura Coalfield survey	Reflection and refraction seismic, gravity, magnetic and electrical methods.	April-May

NON-METALS INVESTIGATION

MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>Bowen Basin, Qld.</u> <u>Bowen Drill Party</u>	Seismic Shothole Drilling (Moura Coal-field investigation) 90 holes, average 80 feet deep - few refraction holes to 500 feet Total footage <u>8,000 feet.</u>	Mid March " " Mid June
<u>Amadeus Basin, N.T.</u> <u>Amadeus Drill Party</u>	Stratigraphic Drilling & Coring (Evaporite investigation) 2 holes up to 1,000 feet Total footage <u>2,000 feet</u>	Mid June " Mid Nov.
<u>Contract</u> <u>Logging</u>	Electric and other borehole logs - B.M.R. logging equipment cannot provide all the logs required.	July-Oct.

ENGINEERING AND HYDROLOGY

GEOLOGICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<p><u>Notes:</u> Most of the items listed below are services to outside organizations. The programme given below is based on advices received from the Commonwealth Department of Works, the National Capital Development Commission and others, and on existing commitments. Because of problems facing the various planning and investigation authorities the timing or implementation of the various projects listed may be uncertain, and unprogrammed projects may be investigated at the request of the appropriate authority.</p>		
<u>AUSTRALIAN CAPITAL TERRITORY AND ENVIRONS</u>		
Damsite for Canberra water supply	(a) Preliminary detailed investigation of Tennent damsite, Gudgenby R., followed by design investigation, or by design investigation of Googong damsite, Queanbeyan River.	Report by September, 1970
Molonglo Valley outfall sewer (right bank)	Design investigations for tunnels and trenches. Involves geological mapping, seismic surveys, drilling and backhoe excavations.	Report by April
Tuggeranong sewer tunnel	Preliminary investigations - geological mapping, seismic work.	?
South-side main outfall sewer - Commonwealth Avenue to Western Creek - duplication of existing system.	Probably mainly seismic work, backhoe excavations and geological advice.	?
Sewer main, right bank Murrumbidgee R. from Tuggeranong to Sturt Is.	Preliminary investigation	?
Construction materials. East Lake sand & gravel, & ad hoc.	Assessment of deposits for Govt. authorities &/or lessees. Investigations range from inspection to systematic sampling and proving.	As required
Drainage investigations	Examine proposed urban development areas for potential drainage problems and investigate problems as they arise.	As required

ENGINEERING AND HYDROLOGY
GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Groundwater investigations.	Maintain & study records of groundwater levels and quality, A.C.T. & environs. Site and test bores; advice to property owners and to A.C.T. authorities. General hydrological advice to Dept. and other bodies; participation in A.W.R.C. projects.	As required
Lake George Study	Maintain & study records of Lake level, temperature, water quality and other parameters. Log drill-holes, study properties of silt from holes.	Periodic observations. Others as required.
Jervis Bay engineering geology and water resources investigations.	Assist Geophysical Branch with nuclear power station investigations; maintain water resources observations, possibly site and log additional drill holes for observation bores; materials investigations as required.	As required
Drilling, A.C.T.	Site, log and test bores that Pet. Tech. Drilling Group has been asked to drill. Collaborate with Drilling Group in experimental drilling project.	Various
Preparation of engineering geology and detailed geological maps of A.C.T. urban areas.	Compilation of available data, supplementary mapping as required and preparation for publication.	As other work permits
Preparation of reports on the geology of (a) Belconnen (b) Woden (c) Possibly other	For publication	As other work permits
Sturt Island sewerage treatment plant	Pre-design investigation - geological mapping, seismic work, drilling and trial excavations.	Report by September.
Bridge & other structures at head of East Lake	Foundation investigation - geological mapping, seismic survey & drilling?	?

ENGINEERING AND HYDROLOGY

GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Water treatment plant, Mt. Stromlo.	Foundation investigations - mapping, seismic work & backhoe excavations.	Report by October
Belconnen Lake - dam and sewer	Investigation of site for small dam and reservoir; relocation of existing sewer.	?
Water Supply mains	Seismic surveys, trial excavation and/or augering; related geological services.	?
Excavated reservoirs, for water supply reticulation	Geological mapping, seismic surveys, augering, etc.	?
Building site investigations, as required.	Geological mapping, possible seismic work, drilling.	As required
Road investigations	Geological mapping, seismic work and probable drilling.	As required
Urban Development areas: (a) Tuggeranong (b) Belconnen-Weston Creek link (c) Weston Creek-Tuggeranong link (d) Belconnen, Woden & Weston Creek areas	(a) Outcrop mapping progressively as neighbourhood development is planned by N.C.D.C. Reports for each neighbourhood on engineering conditions & problems. (b) & (c) Detailed mapping to permit geological correlations between development areas. (d) Trench mapping, as development proceeds, subject to available resources.	Throughout year, as required & resources permit.
Miscellaneous ad hoc & minor investigations for engineering projects	-	As required

ENGINEERING AND HYDROLOGY
GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>PAPUA-NEW GUINEA</u>		
All P.N.G. engineering geology and hydrology projects are listed under Resident Geological staff. The Canberra-based Engineering Geology sub-section is at present providing a geologist for the design investigation of the Upper Ramu hydro-electric scheme; this assistance is expected to continue until February 1970. Thereafter the necessary geological services are expected to be provided by the Port Moresby Resident staff or through a specially created position.		
Some assistance from Canberra may be required in the extensive preliminary investigations for the Musa River hydro-electric scheme, which will probably be undertaken towards the middle of 1970.		
<u>NORTHERN TERRITORY</u>		
Investigating and construction authorities in the N.T. do not expect to require any major engineering geology service. Minor and ad hoc services will be provided by the N.T. Resident staff.		
Cement & lime-making materials Darwin area.	Complete report on investigations carried out in 1962	As other work permits
<u>OTHER PLACES & GENERAL</u>		
Major building foundations, etc.	Possible advisory services and investigations for large buildings and similar constructions in Australian capital cities.	As required
Flowshare	Possible paper studies &/or field investigations related to engineering or mining uses of nuclear explosives.	As required by A.A.E.C.

ENGINEERING AND HYDROLOGY

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
A.C.T. Surveys	Firm and ad hoc investigations mostly shallow refraction seismic.	As required throughout the year.
	(1) Tennent damsite	Feb.-Mar.
	(2) Googong damsite	March
	(3) Molonglo valley sewer right bank	
	• Common. Av. - Western Creek	
	• Sturt Is. treatment	
	• Mt. Stromlo water treatments	
	(4) Tuggeranong sewer tunnel	
	(5) Bridge & other structures at East Lake	
	(6) Belconnen Lake	
	(7) Water supply mains	
	(8) Building site investigations as required	
	(9) Road investigations for NCDC as required	
	(10) Orroral Valley groundwater	March
	(11) Logging and other investigations in A.C.T. experimental water bore programme.	
Jervis Bay reactor site	Detailed site investigation at Murray's Beach - refraction seismic and resistivity.	Jan.-Feb.
Coastal erosion, Brisbane-Noosa Heads	Sonar-boomer profiler, refraction seismic, temperature and salinity and possibly infra-red.	July-Sept.
Jervis Bay groundwater investigation	Refraction seismic and resistivity and flow through porous media experiments.	October
Earthquake Engineering - Corin Dam in particular	Determination of natural frequencies of vibration and seismic velocities in dams and similar structures	Occasionally
Resistivity models	Laboratory work to check field data and interpretation.	As required
Christmas Island groundwater	Interpretation of geophysical data obtained by British Phosphate Commission	Occasionally 1970, 1971

ENGINEERING AND HYDROLOGY
GEOPHYSICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
Rock testing	Dynamic and static tests in laboratory - particularly on Jervis Bay specimens.	Occasionally
Flow through porous media	Use of radioactive tracers in porosity and permeability model studies.	1970 and/or 1971
Musa Gorge damsite, New Guinea	Refraction seismic resistivity etc.	Late 1970 or 1971
Nancar Damsite, Daly River, N.T.	Refraction seismic resistivity etc.	Latter half 1970

ENGINEERING AND HYDROLOGY

MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>A.C.T. AND ENVIRONS</u> <u>A.C.T. Drill Party</u>	Drilling and coring, completion and workovers of water and observation bores in A.C.T., Lake George, Gundaroo, Yass and Jervis Bay. 14 holes, <u>140 feet deep</u> Total footage <u>2,000'</u>	Discontinuous
<u>KOWEN FOREST, N.S.W.</u> <u>Kowen Drill Party</u>	Drilling, coring and completion 1 Hole, <u>1,000 feet deep</u> Total footage <u>1,000'</u>	April-May
<u>A.C.T.</u> <u>A.C.T. Experimental</u> <u>Drill Party</u>	Experimental Drilling 3-9 holes, <u>300-500 ft. deep</u> Total footage <u>1,500'-4,500'</u>	Discontinuous

REGIONAL GEOPHYSICAL SURVEYS

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>MAGNETIC</u>		
First-order survey of Australia	1. Analysis of results in 1st - order network and preparation of isomagnetic maps, epoch 1970.0.	Jan.--June
	2. 1st-order observations at Cocos Islands, Nauru and residue of continental stations.	Jan.--Feb.
	3. Application and updating of IGRF-1965 to Australian region.	
Third-order survey of Australia	1. Analysis of results of 1967 -68 and 1969 surveys (south-eastern Australia) and preparation of charts.	Jan.--June
	2. Third-order observations northern Queensland and analysis	June-Dec.
Variograph Tests	Comparison of variograph and standard magnetograph recordings.	March-May
Anomalies study	Analysis of anomalies revealed by 3rd-order surveys in relation to sub-surface structure.	As time allows
Third-order measurements Antarctica.	1. Repeat observations at Davis and other coastal stations in Antarctica.	Jan.
	2. Observations at NM survey stations, Prince Charles Mountains.	Jan.--Feb.
<u>GRAVITY</u>		
Prince Charles Mountains Gravity Survey	Observations by B.M.R. geologists in the Prince Charles Mountains, Antarctica. Shipborne ties between Australia and Antarctic bases.	To March
	Preparation of Record.	July
Canberra Gravity Survey	Survey of Canberra and Surrounding areas of A.C.T. and N.S.W.	To Feb.
	Preparation of Record.	May

REGIONAL GEOPHYSICAL SURVEYS

GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>GRAVITY (Continued)</u>		
Australian Calibration Line Survey	Multiple gravity meter measurements along east coast of Australia from Hobart, Tasmania, to Laiagam, T.P.N.G. Preparation of record.	April July
B.M.R. Gravity Pendulum Development	1. Continued laboratory development 2. Field tests of apparatus at Canberra and Sydney, Melbourne, Cairns, and Darwin.	2 months 2 months
Earth Tides-Variations in the Intensity of Gravity.	1. Development of recording gravity meters. 2. Continuous recording of solid earth tides at Canberra and other sites.	Continuous Late 1970
Earth Tides-Deflections of the Vertical	Continuous recording of solid earth tides using horizontal pendulum apparatus.	
T.P.N.G. Reconnaissance	Evaluation of Gravity data from Eastern Papua, including ultramafic belt.	Continuous
Gosses Bluff	See Miscellaneous	
Isogal Project	1. Analysis of network of results. Preparation of report. 2. Follow up work at base stations.	Jan.-Dec. Dec.
Computing and Gravity Map of Australia	1. Development of programmes for A.D.P. on CDC 3600 2. Continued re-computation of surveys to Isogal datum. 3. Compile free air and Bouguer anomaly maps of Australia.	Continuous
Department of Interior Levelling	1. Approx. 200 line miles in the Mt. Stromlo area. 2. Continuation of levelling off Aust. Isogal gravity stations.	Jan-June Intermittent

REGIONAL GEOPHYSICAL SURVEYS

GEOPHYSICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEOMAGNETISM</u>		
Bowen Basin, Qld.	Measurement of palaeomagnetic specimens, and data evaluation	Jan.-April
<u>Results</u>	Preparation of record; paper	April
Gosses Bluff, N.T.	Measurement of palaeomagnetic samples	January
New Guinea Palaeomagnetic Survey	1. Collection of palaeomagnetic samples of Pre-Recent formations in the Highlands 2. Measurement of palaeomagnetic specimens	June-August
Equipment	1. Spinner Magnetometer and A.C. Washing Apparatus - assembly, modification and calibration 2. Maintenance of B.M.R. astatic magnetometer at A.N.U. Black Mountain laboratory; instruction to other groups as required.	As required
<u>REGIONAL STRUCTURAL</u>		
New Britain crustal Study	1. Collation of data from 1969 Survey Record.	Jan.-Mar. April
<u>Results</u>	2. Structural analysis of reflection data from 1969 Survey	Jan.-Dec.
	3. Marine refraction New Guinea waters.	July
	4. Evaluation of data.	Sept.-Oct.
Surface wave Dispersion study, W.A.	1. Examination of existing data. Feasibility study record.	Jan.-April
<u>Results</u>	2. Field installation and operation.	

REGIONAL GEOPHYSICAL SURVEYS

GEOPHYSICAL BRANCH (Cont'd.)

PARTY	NATURE OF WORK	TIMETABLE
<u>REGIONAL STRUCTURAL</u> (continued)		
Crustal Structure project review.	1. Complete a review of past projects.	Jan.-April
	2. Long term proposals for regional structural investigations.	June-Sept.
Equipment development	1. Design, development and field testing of portable refraction recorder.	
	2. Design, development and environmental test of surface wave recording equipment.	
Marine Contract Survey, Bismarck Sea.	Gravity, magnetic, shallow seismic reflection reconnaissance profiling	June-Aug.
Geo-Traversal	Completion of report on deep crustal reflections project on Geo-Traversal over West Australian Pre-Cambrian Shield.	Jan.-May

PUBLICATIONS IN PROGRESS

REPORTS

Subject	Author
Isomagnetic map 1970	D. Finlayson
Isogal Survey	B.C. Barlow

OBSERVATORIES
GEOFYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>HEADQUARTERS GROUP</u>		
Reductions and data processing	<ol style="list-style-type: none"> 1. Scaling and conversion of magnetograms 2. Tabulation of ISC seismic data (15 stations). 3. Collation and distribution of preliminary magnetic data (Geophysical Observatories Report; 5 observatories). 4. Examination of digitising process. 5. Collation of specific seismic recordings. 	Continuous
Magnetogram Analyses	Derivation of morphology of transient variations.	As time permits
Seismological Data file	<ol style="list-style-type: none"> 1. Development of computer storage and retrieval system for Australian earthquakes. 2. Preparation and distribution of data lists on request. 3. Development of hypocentral programme for regional events. 	Commence March
Observatory procedures	Training of Antarctic Staff and preparation of Handbook of Procedures.	As required
Automatic digital variograph and automatic observatory	Testing and performance evaluation of BMR prototype and commercial instrument	As required
Morphology of transient magnetic variations.	Operation of variographs at temporary stations throughout Australia.	Commence October
Earthquake Engineering	Supervision of accelerograph network and preliminary analysis of recordings.	As required
Seismological studies	<ol style="list-style-type: none"> 1. Investigation of regional earthquakes 	As time permits
"	<ol style="list-style-type: none"> 2. Review of seismic procedures at Rabaul Volcanological Observatory. 	March-April

OBSERVATORIES
GEOPHYSICAL BRANCH (Cont'd).

<u>PARTY</u>	<u>NATURE OF WORK</u>	<u>TIMETABLE</u>
<u>Macquarie Island</u>	1. Geomagnetic and seismic recordings and analyses. 2. Seismic site testing. 3. Operation of tide recorder 4. Operation of Micropulsations recorder	Continuous Intermittent Daily Daily
<u>Mawson</u>	1. Geomagnetic and seismic recordings and analyses 2. Revision of power and timing systems.	Continuous As time allows
<u>Norfolk Island</u>	Seismic recording	Continuous
<u>Alice Springs</u>	Single component seismic (SP-Z) recording.	Continuous after June
<u>Darwin</u>	Single component seismic (SP-Z) recording.	Continuous to November?
<u>Manton Dam</u>	Three component seismic recording	Continuous after Nov. (?)
<u>TOOLANGI OBSERVATORY</u>		
Observatory operations	1. Geomagnetic and seismic recording and analysis. 2. Analysis of seismograms from Norfolk Island, Alice Springs and Manton Dam. 3. Standardisation of magnetometers. 4. Collation and distribution of data, Toolangi and Antarctic stations.	Continuous
Regional seismology	Establishment of seismic outstation in Western Victoria.	
Variograph tests	Operation of RM variograph and automatic digital variograph	
<u>MUNDARING OBSERVATORY</u>		
Observatory operations	1. Geomagnetic, ionospheric and seismic recording and analyses. 2. Training of recruits for Antarctica	Jan.-Dec. March-Oct.

OBSERVATORIES

GEOPHYSICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>MUNDARING OBSERVATORY</u> (Continued)		
Regional seismology	1. Short-period seismograph stations at Kalgoorlie, Meekatharra and Dampier.	Continuous
	2. Analyses of local and regional events; derivation of travel-time, magnitude and seismicity data.	As time permits
	3. Short-term recording (3 months) at mobile stations on and near W.A. shield.	Continuous
	4. Investigation of micro-tremors in SW seismic zone near Mundaring.	As required
Crustal structure	1. Refraction studies of crustal and upper mantle using artificial explosions.	As required
	2. Long-period recording at Mundaring, Kalgoorlie and Meekatharra	Continuous after June
AFMAG	Operation of recorder for Metalliferous Group	Continuous
Earthquake engineering	Operation and maintenance of accelerographs	After October
<u>PORT MORESBY OBSERVATORY</u>		
Observatory Operations	Geomagnetic, seismic and ionospheric recording and analysis.	April-Dec. Continuous
Regional seismology	1. Short-period seismic recording at Wabag, Lae, Manus Island, Goroka, Talasea and Vanimo.	Continuous
	2. Up-date seismicity file of regional events and field reports, and issue annual seismicity report.	As required
	3. Determination of Hypocentres of local events.	As required
	4. Determination of regional focal mechanisms.	As time permits
	5. Installation and maintenance of accelerographs at selected sites.	As required
	6. After shock recordings following major events	As required
	7. Site tests and vertical readings at Kavieng (New Ireland)	Oct.-Dec.

OBSERVATORIES
GEOPHYSICAL BRANCH (Cont'd).
PUBLICATIONS IN PROGRESS

SUBJECT	AUTHOR
<u>BULLETINS</u>	
Geomagnetic Daily Variations	W.D. Parkinson
<u>REPORTS</u>	
Mean Hourly Magnetic Values;	
Port Moresby, 1957-58)	J.R. Wilkie
1959-60)	G.R. Small
Gnangara, 1957-58)	P.M. McGregor
1959-60)	G.R. Small
1961-62)	
Toolangi, 1959-60	C.A. Van der Waal
	G.R. Small
Macquarie Island, 1957-58	G.R. Small
	J.R. Cleary
	A. Turpie
Mawson, 1957-58	G.R. Small
	J.D. Pinn
	B.C. Cook
Wewak Earthquakes 1968	D. Denham
T.P.N.G. Seismicity 1966	"
" " 1967	"
Kalgoorlie Seismic Events 1965-69	P.J. Gregson
W.A. Seismicity 1966-69	I.B. Everingham

RESIDENT GEOLOGICAL STAFF

GEOLOGICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>PAPUA-NEW GUINEA</u>		
Headquarters	Services to TPNG Admin. and administration of Res. Geological and Volcanological Branch.	Continuous
Regional Mapping and Mineral Investigation Section	Huon and Madang map areas	May-June (Field work only)
	Central District Regional Mapping	Sept-Oct. (Fieldwork only)
	Coal Resources Sampling Project	1 month total
	Mineral Resources Assessments	Continuous
Engineering Geology Section	Review Mapping	Jan.-April
	Hydrology	
	Port Moresby and Rigo	Jan.-May (intermittent)
Village Water Supply Surveys	Bailebo Rubber Scheme	April
	Northern District	May-Sept.
	New Ireland	Oct.-Nov.
Hydro-Electric Schemes	Sirinumu Dam	Continuous
	Ramu H.E. Scheme	Jan.-June
	Rouna No. 3 H.E. Scheme	May-June
	Musa H.E. Scheme	July-Oct.
Roads, Construction Materials etc.	13 road feasibility studies)	As Required
	5 minor hydro-electric schemes)	
Volcanological Section	2 construction material location) investigations)	
	Giluwe)	
	Umbio)	
	Sakar)	As opportunity occurs.
	Ritter)	
	Long Island)	
	Karkar)	
Site Investigations for Stations	Cape Hoskins/Talasea	Jan-Feb.

RESIDENT GEOLOGICAL STAFF
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PAPUA-NEW GUINEA (Continued)</u>		
Site investigations (continued).	Doma Peaks	June-July
	Mt. Yelia	Sept.-Oct.
Seismic Interpretation and Research		Continuous
Design, Installation and Maintenance of Equipment		Continuous
Review of Seismological work by Rabaul Observatory		Mid April

LABORATORIES AND WORKSHOPS

GEOLOGICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY</u>		
Macrofossils	1. Edit, check etc. reports and papers in Ms and press (Geology of the Bowen Basin, Geology of the Port Keats area etc.).	Continuous
	2. Examine and report on Carboniferous and Permian fossils from Texas High Field Party.	Initial Report March, 1970
	3. Examine, identify and describe Upper Palaeozoic fossils, especially Permian mollusks and prepare reports on fossil and geological implications.	Continuous
	4. Prepare review on Permian-Triassic boundary in Australia for 1971 International Calgary Symposium on Permian - Triassic boundary.	December 1970
	5. Attend 2nd International Symposium on Gondwana Geology and associated field activities in South Africa, July 1970.	
	6. Attend to organisation and administration of Palaeontological Group.	Continuous
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	Systematic palaeontology of -	
	1. Middle Tertiary vertebrates from Bullock Creek, Camfield Station, N.T.	Continuing
	2. Early to Middle Tertiary vertebrates from Riversleigh Station, North Queensland.	
	3. Late Pliocene macropod from marine Tertiary sequence, Lake Tyers, Victoria.	
	4. Late Tertiary and Pleistocene vertebrates from T.P.N.G.	
	<u>Results:</u> Publications as work is complete.	
	<hr/>	
	Taxonomy of -	
	1. Ordovician trilobites of northern Australia:	(Late 1969)
	1. Dikelocephalinidae	
	2. Idem: 2. Rusophycus	Late 1970
	3. Idem: 3. Pilekiidae	Late 1970
	4. Idem: 4. Asaphidae (i) asaphelloids	Late 1970

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY (Continued)</u>		
	5. The Lower Ordovician gastropod <u>Teichispira</u> in northern Australia	Late 1969
	6. Upper Cambrian ribeirioids of the Northern Territory.	Late 1969
	7. Ordovician trilobites of northern Australia: 5. Asaphidae (ii) basilicoids	1971
	Routine identification of fossils, as required	Continuing
	1. To study and describe the stratigraphy and palaeontology of the Palaeozoic sedimentary rocks of the A.C.T. and surrounding areas.	Continuing
	2. To study the taxonomy and stratigraphic distribution of the Late Ordovician to Middle Devonian corals, trilobites and brachiopods of the Tasman Geosynclinal Zone, with emphasis on their relationships to the faunas of the Canberra region.	
	<u>Results:</u> Various reports and publications, as necessary.	
	Systematic palaeontology of -	Continuing
	1. Cambro-Ordovician trilobites from the Burke River Structure, western Queensland (Mount Datson, Mount Ninmaroo, Black Mountain, Dribbling Bore).	
	2. Late Cambrian trilobites from Chatsworth, western Queensland.	
	3. Cambro-Ordovician trilobites from the Joseph Bonaparte Gulf Basin, W.A.	
	4. Correlate trilobite Zones within Australia and with other countries.	
	<u>Results:</u> Various reports as necessary.	
	Carboniferous brachiopods from Hunter Valley area, N.S.W.	Continuing

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY (Cont'd)</u>		
	1. Description of the Ordovician graptolites from the Canning Basin bores	Continuing
	2. Description of the Cretaceous fossils from the Northern Territory and Queensland.	
	3. Description of the Mesozoic fossils from New Guinea.	
	4. Dating of samples sent in by the B.M.R. field geologists and private companies.	
	5. Continuation of work on the INFOL System of palaeontological bibliographies.	
	6. Compilation of synonymies for the Australian Cretaceous Bivalvia.	
	1. Study of samples collected by B.M.R. field parties and companies	Continuous
	2. Examine Lower Cretaceous foraminifera from B.M.R. Scout Bores.	
	3. Examine Mesozoic and Permian faunas from oil wells.	
	4. Handle processing of specialist - Mrs. White's reports.	
	Preparation of notes and records.	
	1. Systematic study of foraminifera from offshore wells, Western Australia, and of their stratigraphic distribution.	Continuous
	2. Complete writing of paper on foraminifera from Christmas Island (with Dr. C.G. Adams, British Museum (Natural History)).	
	3. Examine foraminifera from samples collected by B.M.R. field parties, and from exploratory oil wells.	
	4. Continue curating of foraminiferal slide collection.	Continuous
	5. Visit to field party, Kubor Range, New Guinea, to collect samples from selected rock sequences.?	Part-time June-July (depending on party programme)
	<u>Results:</u> Preparation of records, etc. as required.	

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY (Cont'd)</u>		
	1. Examination of larger foraminifera from New Britain.	Continuous
	2. Examination of foraminifera from samples collected by field parties and from oil wells.	
	3. Visit to field party, Kubor Range New Guinea, to collect samples from selected rock sequences.	?June-July (depending on party programme)
	4. Possible short visits to other Papua-New Guinea field parties if necessary.	
	5. Continue curating of foraminiferal slide collection.	Continuous
	<u>Results:</u> Preparation of notes, records and reports as required.	
	1. Systematic palaeontology of Lower Carboniferous Ostracoda, Bonaparte Gulf Basin	Continuous
	2. Study of Upper Silurian-Lower Devonian thelodont scales, Toko Range, W. Q'ld.	Intermittent
	3. Study of Lower Triassic Conchostraca from the Bonaparte Gulf Basin.	"
	4. Adding to collection of Upper Devonian ostracods from the Canning Basin, W.A.	"
	5. Collecting Upper Silurian ostracods from the Yass Basin, N.S.W., for future study (with A. Link, A.N.U.)	"
	6. Review ostracod literature; complete ostracod library.	Continuous
	7. Identify fossils from surface and core samples	As required
	8. Curating of ostracod collection.	Continuous
	<u>Results:</u> Papers when projects are completed; reports as required.	
	Study of Upper Devonian conodont fauna of Bugle Gap area Canning Basin W.A.	1970-71

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY (Cont'd)</u>		
	1. Detailed stratigraphic and systematic palynology of the following subjects:	
	a. Cenomanian and Turonian of Bathurst Island, N.T.	
	b. Tertiary sediments of N.T., Ngalia Basin area	
	c. Angiospermous pollen grains in Albian-Cenomanian sediments of the Otway Basin, Victoria.	
	d. Jurassic and Cretaceous of the Surat Basin, Q'ld.	Continuous
	2. Stratigraphic (comparative) palynology of the following:	
	a. Formations connected with (Neocomian) spore unit K 1a in Surat and Eromanga Basins, Q'ld.	
	b. Lower Jurassic of the Surat and Clarence-Moreton Basins, Q'ld.	
	c. The Cretaceous Rolling Downs Group, Eromanga Basin, Q'ld.	
	3. Study of autofluorescence of selected groups of plant microfossils in the Cretaceous of Queensland, Victoria and Papua; and the Tertiary, mainly in Papua.	Continuous
	4. Examination of samples from B.M.R. stratigraphic bores, exploration wells etc. as necessary.	Continuous
	5. Miscellaneous - including:	Continuous
	a. Major overhaul of collection of photographic and microscope slides.	
	b. Partial reorganization, on the basis of edge punch cards, of data storage and retrieval of fossil palynomorphs.	
	6. Participation in Commonwealth Party, Carpentaria Basin.	1 month
	<u>Results:</u> Publishing of results on following subjects: 1a, b, c; 2a, c.	
	Progress records and/or reports on 1d; 2b; 3; 4; 5.	

LABORATORIES AND WORKSHOPS

GEOLOGICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>PALAEONTOLOGY (Cont'd).</u>		
	1. Begin study of Upper Cretaceous foraminifera, Western Australia and Papua-New Guinea.	Continuous
	2. Data processing of references for Tertiary and Recent bivalves.	"
	1. Begin palynological work on Palaeozoic rocks of Queensland.	"
	2. Small joint projects on Mesozoic spores and pollen (with D. Burger)	"
	3. Assist with organisation and curating of palynological slide collection.	"
	<u>Results:</u> Preparation of records etc. as required.	
	Continue preparation of catalogues on Australian fossil type specimens	As opportunity offers.
	1. 1st part of Middle Cambrian Agnostids of Northern Territory and Queensland.	Continuous
	2. Agnostids and their stratigraphy	
	Determine and report on plant fossils.	As required
<u>SEDIMENTOLOGY</u>	Examination of sediments as required.	Continuous
	Initiation of subject index of sedimentary petrology. Participation in field projects in Bowen, Daly, McArthur River areas.	1970
PETROLOGY, MINERALOG, AND MINERAGRAPHY		Continuous
	1. Geochemical investigation of Australian Granites & associated mineralization. Part 1 - North Queensland.	
	Visit to field; Georgetown Inlier	July-Aug.
	2. Geochemical and petrological studies on representative rocks and minerals encountered in the detailed mapping of the Cloncurry-Mount Isa area.	
	3. Study of the mineralogical changes with progressive metamorphism in basic rocks and pelites of the Soldiers Gap Formation.	
	4. Petrological work for W. Kimberley project.	

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
PETROLOGY, MINERALOGY, AND MINERAGRAPHY (Cont'd).		
	5. Complete study of metamorphic petrology and mineral chemistry, in particular the micas, in the Petermann Range area, Central Australia.	
	6. Complete investigation of Hart Dolerite	
	7. Complete investigations into the application of the DROS to the analysis of geological materials.	
	8. Devise data control index, storage, and retrieval systems	
	9. Development of analytical methods for DROS and XRF required in project work.	
	10. Routine analyses required for project work.	
	11. Ad hoc work and routine determinations, including such work for other Sections and Branches as commitments permit - work indicated at February 1970:	
	i. Assistance with petrographic studies for TPNG regional surveys and Panguna andesite project.	
	ii. Study of heavy mineral concentrates - Crater Formation, N.T.	
	iii. Assistance with interpreting AMDL petrographic descriptions of Antarctic rocks	
	iv. Organisation of AMDL work	
	v. Compilation of silicate analysis for "Analyses of Australian rocks", Part 3.	
	vi. Organization of microscope and ancillary equipment issue, control, and servicing.	
	vii. DROS and XRF analysis of rocks from Mt. Hagen & other Highland Volcances, TPNG.	
	viii. Installing teletype equipment connecting EPM to CSIRO computer	
	ix. Preparation of XRD charts of standard minerals using the museum mineral collection, and thus assist the museum with mineral identification	

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
PETROLOGY, MINERALOGY, AND MINERAGRAPHY (Cont'd).		
	x. Assistance with routine XRD determinations required for investigations of phosphorites, lattice characteristics of phosphates, and clay minerals by Phosphate Group.	
	xi. Trace element and silicate analyses of probable carbonatites in the Strangways Range area, Alice Springs.	Sept.
CHEMISTRY		
	1. Broad Sound, Qld, Project - geochemistry of estuary waters. 2. Continue with the chemical study of phosphate deposition with particular attention to the distribution of radioactive elements. 3. Study of trace element assemblages in carbonate sequences of the McArthur River and Victoria River areas. 4. Trace element studies relevant to Tennant Creek mineralization in the Hematite Shale, ironstones and other sediments, including studies of Hg and Se distribution. 5. Study of weathering of pyrite in the Canberra district (with particular reference to the role of apatite) and geochemistry of associated ground water. 6. Ad hoc work and routine analyses, including such work for other sections and Branches as commitments permit - work indicated at Oct. '69. i. Water analyses, including thermal waters from volcanic regions of TPNG. ii. Investigation of raw materials for Zr-alloy requirements of AAEC.	Continuous

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
GEOCHRONOLOGY		Continuous
	1. Granites and Volcanic rocks of New Guinea	
	2. Herberton-Mount Garnet granitic and volcanic rocks.	
	3. Granite sampling and dating Cape York	May
	4. Continue compiling and indexing age data	Jan.-Feb.
	5. Routine age determinations as required	Continuous
	6. Cloncurry-Mt. Isa area and others, if possible	"
	7. Black Sea sediments (Pb isotopes)	2 months
Investigations by AMDEL	1. Analyses of geochemical samples 2. Assays of diamond drill core 3. Silicate analyses 4. Preparation of thin sections and petrographic reports 5. Analyses and mineral determinations for Phosphate Group. 6. Water analyses.	
BAAS BECKING GEOBIOLOGICAL RESEARCH LABORATORY Biological Group	1. Concentration of metal sulphides by bacteria 2. Formation of metal sulphides from organic material 3. Physiology and ecology of sulphate-reducing bacteria 4. Effects of metals, pressure, and temperature on microorganisms 5. Comparative aspects of sulphur metabolism 6. Isolation of chemical components of sulphate-reducing bacteria	
MINERALOGICAL GROUP	1. Continued study of the chemistry of metal sulphides and sulpho-salts at low temperatures. 2. Investigation of effects of temperature and pressure on the above minerals. 3. Mineralogical studies of selected ore deposits in sedimentary rocks	

LABORATORIES AND WORKSHOPS

GEOLOGICAL BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
MINERALOGICAL GROUP (Cont'd).	1. Study of the physical chemistry of brines containing heavy metal ions.	
	2. Extension of present investigation of the pH of brines to higher temperatures.	
	3. Investigation of chemical reactions taking place during the diagenesis of sediments, especially those involving carbonate and sulphur chemistry.	
	An experimental study of the role of connate waters at temperatures less than 200°C and pressures less than 4 kilobars, in the mobilisation, concentration, and transport of ore-forming materials.	
	1. Metamorphism of sulphide-bearing rocks - studies of mineralogy and texture under a variety of physical and chemical conditions	
	2. Investigations of the conditions of formation of stratiform sulphides.	

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).
PUBLICATIONS IN PROGRESS

SUBJECT	AUTHOR
<u>BULLETINS</u>	
Early Cretaceous angiospermous pollen grains from Queensland.	D. Burger
Conodonts from the Garra Formation (Lower Devonian), N.S.W.	E.C. Druce
* Nepeid trilobites from northern Australia	A.A. "Opik
<u>Redlichia</u>	A.A. "Opik
Devonian and Carboniferous brachiopods from the Bonaparte Gulf Basin, N.W. Australia	J. Roberts
<u>Eurydesma</u> and <u>Glendella</u> gen. nov. in the Permian of Eastern Australia	B.M. Runnegar
Oryctocephalidae (Trilobita: Middle Cambrian) of Australia.	J.H. Shergold
Late Cambrian trilobites from the Gola Beds, W. Queensland.	J.H. Shergold
Bibliography of Australian Permian Invertebrates.	K.A. Townley
Upper Devonian and Lower Carboniferous calcareous algae and stromatolites from the Bonaparte Gulf Basin, northwestern Australia.	J.J. Veevers
Lower Ordovician conodonts from the Bonaparte Gulf Basin and Daly River Basin, N. Australia.	P.J. Jones
<u>Xystridura</u> in Australia	A.A. "Opik
On the discovery of Halobiidae (Bivalvia, Triassic) in eastern New Guinea.	S.K. Skwarko
Middle & Upper Triassic Mollusca from Yuat River, eastern New Guinea.	S.K. Skwarko
A correlation chart for the Cretaceous in Australia.	S.K. Skwarko
<u>Cyathophyllum</u> (<u>Radiophyllum</u>) from the Devonian of eastern Australia (with J.S. Jell)	D.L. Strusz
Dilichometopid trilobites	A.A. "Opik
The Lower Ordovician gastropod <u>Teichispira</u> in northern Australia.	J. Gilbert-Tomlinson

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd).
PUBLICATIONS IN PROGRESS (Cont'd).

SUBJECT	AUTHOR
Ordovician trilobites of northern Australia: 1. Dikelocephalinidae.	J. Gilbert-Tomlinson
Ptychagnostidae and Diplagnostidae of the Northern Territory and New South Wales.	A.A. "Opik
Trilobites from the Middle Cambrian of North Australia with Asian affinities.	A. A. "Opik
Additions to the Riversleigh vertebrate fauna, N. Queensland.	M. Plane
The Bullock Creek fauna	M. Plane
*	
Cambro-Ordovician conodonts from the Burke River Structural Belt, Queensland.	E.C. Druce P.J. Jones
<u>Meneviella viatrix</u> sp. nov., a new conocoryphid trilobite from the Middle Cambrian of W. Queensland.	J.H. Shergold
Bibliography and index of Australian Cambrian trilobites.	J.H. Shergold
Late Cambrian Pseudagnostidae from the Burke River Structure, W. Queensland	J.H. Shergold
Some Ordovician graptolites from the Canning Basin, W.A.	S.K. Skwarko
Revision of marine Jurassic faunas of Western Australia.	S.K. Skwarko
Australian Cretaceous Ammonoidea	S.K. Skwarko
Revision of Etheridge & Mitchell's encrinurid trilobites from the Silurian of Canberra and Yass.	D.L. Strusz
<u>REPORTS AND RECORDS</u>	
The co-precipitation of Fe and trace metals from aqueous solutions	J. Ferguson
Primary element dispersions associated with mineralization at Mount Isa, Queensland	S.E. Smith K.R. Walker
Studies in cold extraction of Cu, Pb, and Zn from geological materials	J.R. Beevers
The Papuan Ultramafic Belt - Stream sediment Geochemical Reconnaissance	H.L. Davies A.D. Haldane
Investigation into water seepages at Corin Dam, A.C.T.	A.D. Haldane

LABORATORIES AND WORKSHOPS
GEOLOGICAL BRANCH (Cont'd)
PUBLICATIONS IN PROGRESS (Cont'd)

SUBJECT	AUTHOR
An investigation into the solubility of apatite, and the synthesis of hydroxy and carbonate apatites	A.D. Haldane H.R. Lord
Progress report on the study of trace element assemblages in carbonate sequences - McArthur River	C.W. Claxton (M.C. Brown)
Composition of ferromagnesian minerals in the ultrabasic rocks of the Papuan Ultramafic Belt, TPNG.	R.N. England (H.L. Davies)
Metamorphic Petrology and mineral chemistry of rocks in the Petermann Ranges	R.N. England
The results of age determination work in the Arunta Complex, Cape York, and West Kimberley areas.	R. Bennett
Geochemical Variation in the Proterozoic Siltstone of the Kimberley Region, W.A.	T. Quinlan
The application of the direct reading optical spectrograph to the analysis of geological materials.	K.R. Walker S.E. Smith T.I. Slezak
The Hart dolerite	K.R. Walker D.C. Gellatly
Miscellaneous chemical and petrographic investigations carried out in the Geological Laboratory, Jan.-Dec. 1969.	
A guide booklet and article for Nat. Dev. Journal on the Geological Laboratory	K.R. Walker A.D. Haldane

LABORATORIES AND WORKSHOPS

GEOPHYSICAL BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>INSTRUMENT DEVELOPMENT GROUP</u>		
	Complete design and construction of three proton magnetometers	Jan.-April
	Modify design of three 3 component fluxgate magnetometers	Jan.-June
	Airborne fluxgate, MFS-7 modification of AN-ASQ 10A	Jan.-March
	Integration of airborne data acquisition system	Jan.-July
	Investigation into design and application of active filters and phase tracking systems	July-Dec.
	Fluxgate detector development	July-Dec.
	Small instrument design and modifications as required	Jan.-Dec.
	Design (from commercial Units) portable seismic recording outstations	July-Dec.
	Down hole tool for gamma ray spectrometry in water bores	Late 1970/71
	Complete tool and uphole electronics for I.P. well logging	As available May-Sept.
	Investigate and design equipment for accurate measurement of VLF signal strength for E.M. surveys.	March-Aug.
<u>SYSTEM DEVELOPMENT GROUP</u>		
	Complete prototype automatic digital observatory	Jan.-March
	Complete GSI absolute pendulum equipment	Jan.-May
	Investigation and integration of magneto-telluric equipment	Jan.-Dec.
	Continuation of remote sensing technique investigations	Jan.-Dec.
	Feasibility study inertial Navigation System	Jan.-Dec.

LABORATORIES AND WORKSHOPS
GEOPHYSICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
	Tidal gravity recording. Design new electronics, test	Jan.-Dec.
	Instrumentation for Sonobuoy refraction seismic system	Jan.-April
	Investigate equipment developments in acoustic holography	As time is available
	Investigate further applications of on-line data acquisition and processing in geophysical instrumentation, e.g. magneto-tellurics, extension of airborne system, digital plotting.	"
	Installation of teleprinter computer terminal on direct line to C.S.I.R.O. Computer	Feb.
<u>ELECTRONIC MAINTENANCE GROUP</u>		
	Complete the rationalisation, overhaul and installation of well logging equipment in B.M.R. vehicles	Jan.-April
	Investigate and improve range of seismic CPO system	March-July
	Construct and check out additional MNS2 proton precession magnetometers	July-Dec.
	Assembly and check out of 3 component fluxgate magnetometers	May-Aug.
	Geophone calibration equipment and procedures	June-Dec.
	Check out of marine instrumentation cabins and installation of equipment	May
	Acceptance testing of new equipment as received	Jan.-Dec.
	Normal maintenance programme of overhaul and repair of equipment	Jan.-Dec.
	1. Check out of telemetry seismic system for Darwin Observatory	Late 1970
	2. Installation of telemetry system Darwin Observatory	1971

LABORATORIES AND WORKSHOPS
GEOPHYSICAL BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>MECHANICAL GROUP</u>	Normal programme of maintenance and repair of geophysical equipment and acceptance testing of new equipment	Jan.-Dec.
	Construction of new instruments and equipment	Jan.-Dec.
<u>ROCK MEASUREMENTS</u>	Assembly and check out of low speed spinner magnetometer	Early 1970
	Ad hoc measurements of rock properties	As required
	Complete review of magnetic susceptibility and remanence measuring techniques	
	Investigation of relationship between seismic velocity and compressive strength - particularly on Jervis Bay samples	Jan.-March
	Investigation of heat conductivity measuring equipment	As time is available

LABORATORIES AND WORKSHOPS

MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>PETROLEUM TECHNOLOGY</u>		
<u>SECTION</u>		
Laboratory	<p>Laboratory Investigations:</p> <p>a. <u>Petrophysical</u> - Determination of and investigations into physical characteristics of cores, cuttings and outcrop rock material (porosity, permeability, density, fluid content, capillary pressure and pore size distribution, etc.).</p> <p>b. <u>Reservoir Engineering</u> - Investigation of relative permeabilities, imbibition tests, determination of formation damage, restoration of flow capacity, etc.</p> <p>c. <u>Drilling Fluids</u> - Evaluation of drilling mud materials and additives, and of drilling muds produced therefrom.</p> <p>d. <u>Source Rock and other Geochemical Investigations</u> - As a preliminary step, literature search is to be made. This to be followed by location of suitable material or access thereto. Actual lab. work is to follow, and initially - may consist of the determination of organic material (and its analysis or characterisation) in various types of sedimentary rocks.</p> <p>e. <u>Reservoir Fluids</u> - Analysis, testing and evaluation of oil, gas, condensate and water from drills and seepages in Australia - including gas from the water bores in the Great Artesian Basin.</p>	<p>Continuous</p> <p>"</p> <p>"</p> <p>"</p> <p>"</p>
Workshop (Fyshwick)	<p>Overhaul, repair and maintenance of drilling equipment returned from Field Parties</p> <p>Checking, servicing, and assembly of new plant and equipment</p> <p>Continuous stock review and review of purchasing requirements. Issues and deliveries to Field Parties</p>	<p>Continuous</p> <p>Continuous</p> <p>Continuous</p>

LABORATORIES AND WORKSHOPS
MINERAL RESOURCES BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>PETROLEUM TECHNOLOGY</u> <u>SECTION (Cont'd)</u>		
Workshop (Fyshwick) (Cont'd).	Annual overhaul of Mayhew Drilling Rigs No. 1 and No. 4 and of Fox Drilling Rig No. 7	Jan.-March
	Preparation for Field Parties	Continuous
Workshop (Brisbane)	Overhaul Rig 5 and ancilliary equipment	March
Workshop (Alice Springs)	Overhaul Rigs 2, 3 and 6	June-July
<u>MINING ENGINEERING</u> <u>SECTION</u>		
Characterization of Australian Clays	Selected samples subjected to test pattern. Results indexed.	All year

OFFICE AND MISCELLANEOUS

OPERATIONS BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>PLANNING AND CO-ORDINATION</u> <u>SECTION</u>		
	Carry out long and short-term planning in consultation with the Branches.	
	Examine work undertaken to promote co-ordination of effort and more efficient use of manpower and equipment.	Continuous
	Negotiate with authorities outside the Bureau on matters concerned with the Bureau's scientific work.	
	Analyse trends in domestic and overseas exploration in so far as they affect the Bureau's forward programme.	
	Investigate requests by outside authorities for work by the Bureau.	
	Undertake studies to determine the effectiveness of the Bureau's work.	
	Co-ordinate the Bureau's 1970 and 1971 programme and prepare it for publication.	
<u>T.C.U.W.</u>	Secretarial Services for T.C.U.W. Extra-Bureau hydrologic work.	Continuous
	(i) Review study of aquifer recharge	
<u>Computer Applications</u>	Carry out a review of the Bureau's activities with a view to identifying areas suitable for and where appropriate, promoting computer applications.	
	Co-ordinate the computer applications being used throughout the Bureau and prepare and update a library of computer programmes.	
	Provide advice and programming assistance to other Branches.	
	Undertake training of Bureau staff in computer techniques.	

OFFICE AND MISCELLANEOUS
OPERATIONS BRANCH (Cont'd).

<u>PARTY</u>	<u>NATURE OF WORK</u>	<u>TIMETABLE</u>
<u>PUBLICATIONS AND INFORMATION</u>		
<u>SECTION</u>		
<u>Information Sub-Section</u>		
	Attend to enquiries for scientific, technical and general information.	Continuous
	Prepare articles, brochures, press statements for the Director, journals, recruitment, and school projects.	
	Continue pilot study of indexing Bureau publications and Records for National Geologic Index.	
	Introduce a micro-film system for relevant unpublished data.	
	Prepare Lists of Publications, Open File Circulars and Pictorial Index for Publication.	
	Maintain library services.	
<u>Publications Sub-Section</u>		
	Assess the (scientific and technical) suitability of manuscripts for publication.	
	Edit manuscripts; arrange and supervise the preparation of illustrations.	
	Prepare manuscripts for publication and for issue as Records; supervise printing contracts, see issue through press, including proofreading.	
	Assess need for reissue or revision of publications going out of print.	
	Supervise reproduction and issue of Records.	

OFFICE AND MISCELLANEOUS

GEOLOGICAL BRANCH

OFFICE

PARTY	NATURE OF WORK	TIMETABLE
Editing	Preparation of manuscripts for publication	Continuous
Minerals index and technical files	Develop and keep up to date the index to Australian mineral deposits, maintain technical files, and answer enquiries. Conduct literature survey of coking coal resources. Prepare and revise statements on Australian mineral occurrences.	Continuous As time permits
Stratigraphic index	Maintain stratigraphic index; deal with enquiries Preparation of Volume 5H (Australia, General) of International Stratigraphic Lexicon. Compilation of bibliography of Australian geology	Continuous If time permits As time permits
Computer Applications	Investigate and provide assistance for the applications of statistical and computer methods for the analysis and interpretation of geological data. Document existing programmes.	As resources permit
Storage & Retrieval of geological data	Development of computer programmes for the storage & retrieval of geological data relating to samples	
Index to Palaeontological Collections	Development of Computer programmes which will provide a facility, in conjunction with the INFOL system, for the indexing of data relating to the Palaeontological collections.	Jan-June (part time)
Electron Micro Probe	Development of a computer programme for the reduction of data obtained from the microprobe on paper tape.	3 months
Map Editing	Editing geological maps for publication; about 30 maps. Training geologist in map editing and compilation	Continuous Discontinuous

OFFICE AND MISCELLANEOUS
GEOLOGICAL BRANCH (CONT'D).
OFFICE (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
<u>Map compilation</u>		
(a) Geology of Australia & Oceania (1:5,000,000 Geological Map of the World)	Complete Sheet 1- general reference sheet	
(b) Geology of Australia 1:10,000,000 (Sheet 15 - International Geological Atlas	Complete compilation	Discontinuous
(c) Geology of Northern Territory	Compilation	Discontinuous
(d) Metallogenic map of Australia 1:5,000,000	Complete compilation and write commentary	Discontinuous
(e) Tectonic Map of Australia 1:5,000,000	Complete compilation	Discontinuous
(f) Groundwater resources maps of Australia 1:5,000,000	Compilation	Discontinuous
(g) Geology and Minerals Map Burdekin, Qld, 1:1,000,000; Resources Map Series	Complete compilation and write commentary	early 1970
(h) Geology of Papua & New Guinea 1:2,500,000	Compilation	Continuous
(i) Various for Geographic Section W.P. & G. Branch, Natdev.	Advice, comment and editorial assistance	As required
Geology of the Cotter area, A.C.T.	Detailed mapping	As opportunity arises
Photogeological Group	Photogeological interpretation Alcoota (N.T.), Walsh, Hann River, Rutland Plains, Ebagoola, Coen, Cape Weymouth & Orford Bay, Holroyd (Qld), Singleton (N.S.W.) & Newcastle. Detailed studies for engineering geology. Research on remote sensing techniques. Training of new staff in photo-geology.	Continuous

OFFICE AND MISCELLANEOUS
GEOLOGICAL BRANCH (Cont'd).
OFFICE (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>Vulcanology</u>		
(a) Petrology of T.P.N.G. volcanoes	1. Extend work on New Britain volcanoes to Umboi Long Island, Karkar, Bam etc. Some additional collecting from New Ireland volcanoes if time permits.	Aug.-Oct.
<u>Results</u>	<u>Record</u>	Nov. 1970- May 1971
	2. Collection of representative material from D'Entrecasteaux area	Aug.-Oct.
<u>Results</u>	<u>Record</u> <u>Report</u>	Nov. 1970- May 1971
	3. Study of material from New Ireland volcanoes	Jan.-June
<u>Results</u>	<u>Record</u>	Aug. 1970
	4. Assembly of all available data on petrology of T.P.N.G. volcanoes.	Continuous
<u>Results</u>	<u>Bulletin</u>	
(b) New Britain Crustal Study Project	To relate petrological findings in New Britain and New Ireland to results of current Crustal Study Projects.	Continuous
(c) Instrumentation	Development of a method for telemetering water tube tiltmeter data.	
(d) Measurement of Crustal Movements in T.P.N.G.	1. Site selection St. George's Channel Grid 2. Site selection Ramu-Markham Valley Grid	September August

OFFICE AND MISCELLANEOUS
GEOLOGICAL BRANCH (Cont'd).
MISCELLANEOUS

PARTY	NATURE OF WORK	TIMETABLE
Strangeways Range Carbonatite	Petrological, mineralogical and geochemical investigations, utilising core from current diamond drill programme by Mines Branch, Northern Territory Administration.	As other commitments permit
Diamond drilling, Cape Vogel, Papua (clinoenstatite locality)	Up to 5 scout diamond drill holes to 200 or 250 feet. To study petrography and stratigraphic succession of lava flows in area of very poor exposure	June-August
Gosses Bluff	Compilation of information and preparation of bulletin	1970
Geology A.C.T.	Stratigraphy & palaeontology of the Palaeozoic sedimentary rocks of the A.C.T. & surrounding areas.	-
<u>PUBLICATIONS</u>		
Gosses Bluff.	Joint U.S.G.S. & B.M.R. Bulletin	June.

OFFICE AND MISCELLANEOUS

GEOPHYSICAL BRANCH

OFFICE

PARTY	NATURE OF WORK	TIMETABLE
Airborne Data Reduction and Processing.	Normal reduction work. Development of programmes for data processing, contouring etc.	Continuous
Gosses Bluff.	Detailed evaluation of gravity results from Gosses Bluff.	Jan.-June
	Contribution to joint B.M.R. Bulletin	June
Gosses Bluff (Bulletin)	Compilation of information and preparation of bulletin	Jan.-June

PUBLICATIONS IN PROGRESS

BULLETIN

Subject	Author
Gosses Bluff	B.C. Barlow) J. van Son) Jointly with others)

OFFICE AND MISCELLANEOUS

GEOPHYSICAL BRANCH (Cont'd)

MISCELLANEOUS

PARTY	NATURE OF WORK	TIMETABLE
Twin Otter Modification and Testing N.S.W. & A.C.T.	Modification, equipment installation and testing	Feb.-Dec.
VH-MIN Northern Victoria	Infra-red photography of irrigation channels	mid-late Feb.
VH-BMR Western Australia	Detailed airborne magnetic, radiometric and multispectral photography of selected areas in W.A. Precambrian Shield	Sept.
VH-BMR N.S.W.	Gamma-ray spectrometry of soils in upper Shoalhaven River catchment district.	March -2 weeks
VH-BMR Test Flying, A.C.T. & N.S.W.	Flights as required for testing airborne equipment	Jan.-March Dec.
VH-MIN Test Flying, A.C.T. & N.S.W.	Flights as required for testing airborne equipment	Jan.-March
Law Ice Dome Project, Antarctica.	A geophysical survey of the Law Ice Dome, Wilkes Land Antarctica, including barometric levelling, gravity, magnetic, seismic and radar echo-sounding.	Jan.-Dec.
	Reduction of data, preparation of record	Jan.-June 1971

OFFICE AND MISCELLANEOUS
MINERAL RESOURCES BRANCH

PARTY	NATURE OF WORK	TIMETABLE
<u>MINERAL ECONOMICS SECTION</u>		
Commodity Studies	Surveys of Industry including field inspections, visits to plant, and discussions with company representatives	As required
World Studies	Studies of mineral industry on a global basis	As required
Basic investigations	Investigation of: <ol style="list-style-type: none"> 1. Long-range production and consumption trends in metals and minerals 2. New techniques in mineral extraction, processing, utilization 3. Cost factors 	Continuous As required Continuous
Special investigations	<ol style="list-style-type: none"> 1. Application of econometrics in determining long-term trends in mineral and metal demand 2. Assessment of Australian resources of coking coal 3. Feasibility study of zirconium sponge production in Australia 4. Projection of mineral exports <ol style="list-style-type: none"> a. short term for Dept. of Trade & Industry b. long term (up until 1980 for Minister (Nat. Dev.)) 5. Investigation of mineral processing in Australia of selected mineral commodities 6. Investigation of Australian equity control of domestic mineral industry 	As time becomes available " To June Half-yearly As time becomes available 1970
International Commodity Problems dealing mainly with lead, zinc, copper, tin, tungsten, sulphur and fertilizers (nitrogen, phosphorus and potassium)	Preparation of appropriate advices	As required

OFFICE AND MISCELLANEOUS
MINERAL RESOURCES BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>MINERAL ECONOMICS SECTION</u> (Cont'd)		
General	Preparation of advices briefs, papers etc. Preparation and circulation of specialised information dealing with enquiries and visitors	As required
<u>PUBLICATIONS IN PROGRESS</u>		
SUBJECT	AUTHOR	
A.M.I. Annual Review 1969	Section	
Reprints of Selected Chapters of 1969 A.M.I. (Review)	Individual officers of the Section	
A.M.I. Quarterly Review	Section	
<u>MINING ENGINEERING SECTION</u>		
Gold Mining Assistance	Reports on operations of mines receiving assistance under the Gold Mining Industry Assistance Act	As required
Export Control	Processing technical aspects of applications to export iron and manganese ores	As required
Wire Rope Research	Representation on AMIRA on wire rope research	As required
Conference of Chief Inspectors of Mines	Representation on Conference. Preparation of codes of safe practice in mining	Continuous
Standards Association of Australia	Consideration of Standards Association Drafts. Participation in Committee	As required
Review Metal mining practice	Inspect and compare operations where trackless underground metal mining in undertaken	To be completed during year
General	Preparation of advice papers answering queries etc. Laboratory Safety Committee, Library Committee Amdel guarantee and so on	As required

OFFICE AND MISCELLANEOUS
MINERAL RESOURCES BRANCH (Cont'd)

PARTY	NATURE OF WORK	TIMETABLE
<u>MINING ENGINEERING (Cont'd)</u>		
Zirconium production	Study of possibilities of zirconium metal production in Australia	Continuing
Review of coking coal resources	Study of information from States, J.C.B., and companies	Continuing
Review of tin resources	Study of information from States and companies	
<u>Publications: Review of Mining Practices (Possible)</u>		

PETROLEUM TECHNOLOGY
SECTION

Petroleum and Reservoir Engineering	a. Estimation of petroleum reserves and valuation work	Continuous
	b. Provision of petroleum engineering services for Bureau operations and other Departments upon request	"
	c. Preparation of reports and papers on laboratory and field investigations or special studies.	"
	d. Liaison with other Bureau Branches, Department of National Development and other Departments and States and Territories on matters arising out of the Petroleum (Submerged Lands) Act and other Commonwealth or State or Territory petroleum legislation	"
	e. Preparation of submission, and answers to Ministerial and Parliamentary questions on petroleum and reservoir engineering and allied matters.	Continuous
Drilling Engineering	a. Provision of drilling services for the Bureau operations and, upon request, for other Departments and supervision of same.	Continuous

OFFICE AND MISCELLANEOUS
MINERAL RESOURCES BRANCH (Cont'd).

PARTY	NATURE OF WORK	TIMETABLE
Drilling Engineering (Cont'd).	b. Preparation of technical specifications for contract drilling operations.	Continuous
	c. Preparation of technical specifications for purchasing or manufacture of drilling equipment.	"
	d. Preparation of technical specifications for modifications to drilling equipment and supervision of work.	"
Information & Statistics	a. Exploration, development and production of petroleum and expenditures thereon.	"
	b. Petroleum titles and company interests therein.	"
	c. Reviews and summaries on developments in the petroleum exploration and production industry in Australia and abroad.	"
	d. Visits to field operations and discussions with company and State and Territory officials and technical officers.	
	e. Carry out studies into the application of computers (ADP/EDP) for the storage, retrieval and interpretation of well, cost and reservoir data.	
Oil Advisory Committee	All matters of the Oil Advisory Committee (Mr. H.S. Taylor-Rogers is the Secretary/Convenor and full member of the Oil Advisory Committee).	Continuous
<u>Publications:</u>	a. Wells and footage drilling (Quarterly, annually) Rig Activity (monthly) List of addresses of petroleum explorations companies (annually) List of addresses of petroleum contractors, consultants, etc. (annually) Petroleum Newsletter (quarterly)	
	b. Petroleum Titles Map and Key compiled and published twice a year (as at 30th June and 31st December)	
	c. Chapters on "petroleum" in the A.M.I. Annual Review and in various other Government and trade publications as required.	